CRM D0012881.A2/Final
November 2005

Performance-Based Logistics Contracts: A Basic Overview

Rebecca L. Kirk
Thomas J. DePalma

CNA

4825 Mark Center Drive • Alexandria, Virginia 22311-1850

Approved for distribution: November 2005

Alan J. Marcus, Director
Infrastructure and Readiness Team
Resource Analysis Division

Contents

Summary 3
- Approach 3
- Findings. 4

Performance-Based Logistics Contracts 7
- Study Objective: Then and Now. 7
- What is a PBL contract? 8
  - Types of PBL contracts 9
  - Memorandums of Agreement 9
  - How many PBL contracts are there? 10
- How much money is spent on PBL contracts? 10
  - DD Form 350s. 10
  - NAVICP PBL money 12
  - An incomplete picture in both cases—still significant PBL money 13
  - A breakdown of those PBL contracts identified in the DD Form 350s 14
  - The top 15 most expensive PBL contracts. 18
- How are candidates for PBL contracts identified? 20

A review of thirteen PBL contracts 21
- The contracts. 21
- Contract money 22
- SE JSECST contract—an example of an inadequate PBL contract? 25
- Contract maturity 26
- How are PBL contracts measured? 27
- Metrics in the sample of thirteen PBL contracts 28
- Performance measurement—initial PBL study 30
- H–60 FLIR 31
- F/A–18 ARF 36
- Defining availability 37
- Reliability 38

Risk 39
Electronic clearinghouse 40
Awards 40
The contracts—aviation versus maritime 40
Working Capital Fund 41
Depot maintenance and Title X. 42

Summary and conclusions. 43

Appendix A: A description of the types of PBL contracts 45

Appendix B: Lists of awarded aviation and maritime PBL contracts 47
i) Aviation PBL contracts 47
ii) Maritime PBL contracts 49

Appendix C: Estimated regression models used to forecast FY 2005 PBL contract money 53

Appendix D: Cumulative FY 2001-2004 money for the 75 PBL contracts. 55

References 59

List of figures 61

List of tables 63

Summary

Performance-Based Logistics (PBL) contracts provide services or support where the provider is held to customer-oriented performance requirements. These contracts are not necessarily designed to save money, but rather to maintain or improve current system or platform performance in a cost constrained world.

The Navy began using PBL contracts in 1999, and since then, contract managers have reported improved availability and reduced customer wait time. The Chief of Naval Operations, Director of Assessments, Deputy for Readiness (N-814) asked CNA to look at the Department of Navy's use of PBL contracts and determine whether they were providing the advertised results.

This study is expands on an earlier study in which CNA was asked to examine the success of PBL contracts for three programs. The objective of that study was to analyze and assess Navy PBL contracts in order to compare expected versus achieved cost savings and identify traits that characterize PBL contracts that deliver the highest return on investment [1]. This present effort began with four questions:

- Do PBL contracts provide improved availability and less customer wait time?
- Are PBL contracts measured against the best possible performance criteria?
- Is there a way to measure expected versus achieved cost savings?
- Can a standard be developed that will characterize PBL contracts that deliver the highest return on investment?

Approach

The first step was to contact the H-60 IPT Team Leader for PBL contracts. NAVICP Philadelphia (Aviation) referred the H-60 PBL program as the "standard" for NAVAIR PBL practices. Through the H-60

office, meetings were arranged with staff members from NAVICP Philadelphia (Aviation), NAVICP Mechanicsburg, and NAVSEA. Data was provided by other studies and instructions from the Office of the Secretary of Defense (OSD), the General Accounting Office (GAO), and the Defense Acquisition University (DAU). Elsewhere in CNA, an ongoing Business Case Analyses (BCA) effort, sponsored by OSD, and followed by N41, provided insights into the candidate selection and criteria methods [2].

The search for data led CNA to the Department of Defense (DoD) website that holds all contract DD Form 350s[1]—forms that are completed for every PBL contract. The files for FY 2000 through February of FY 2005 were download and became the basis for the analysis.

CNA also independently computed fill rates using AV–3M data as proxy. By using AV–3M data, additional performance measures, beyond what is specified in the PBL contracts, were explored such as the number of removals for failure. These metrics, when combined with those specified in the contracts, may help to paint a more complete picture of the performance effects these contracts are having on the parts and/or systems.

Findings

The impact of PBL contracts, which was once barely noticed, has become a growing topic of conversation at all levels of budgeting and programming. Over the past year, the subject of PBL contracts has appeared in a wide range of briefings.

PBL contracts are currently implemented differently between maritime and aviation and also differently between the services. PBL contracts may well be improving logistic processes, but there is not enough empirical data to state this as fact. We can summarize our findings as follows:

- With contract dollar amounts exceeding $1 billion dollars a year, PBL contracts are a significant part of the budget.

1. http://www.dior.whs.mil/peidhome/guide/procoper.htm

- Currently there is no guidance, other than the broad-brush encouragement from OSD [3]. An OPNAV manager should be appointed to provide guidance through written policy, and act as the centralized point for the PBL process. There is not a current Navy instruction that outlines the responsibility and oversight for PBL contracts.

- Measurement of the performance of these contracts lacks visibility. Performance data are required, but not located in a centralized repository. PBL reporting is conducted on a case-by-case basis.

- The effects of one PBL contract (H–60 FLIR) on performance were independently analyzed via CNA's access to the AV–3M database. There is some evidence that the PBL contract may have helped to improve the availability (improved ML–1 and ML–2 rates) and reliability (fewer removals for malfunctions and increased mean flight hours before failure) of the FLIR since FY 2004—a possible example of a PBL success story.

- PBL contracts are still relatively immature in that not enough contracts have been in place long enough to provide end to end tracking. Much is still unknown, including whether there are increasing or decreasing costs over time, or risks that have not yet been experienced.

- Budget processes could better reflect PBL processes. Currently the majority of contracts are through working capital funds, and therefore invisible to the account managers. Real consideration must be given to long-term contracts moving from procurement accounts to enabling or supporting accounts.

- The future portends increasing PBL contract dollar amounts. Current OSD policy and Navy efforts to date are attempting to use PBL contracts as a vehicle for logistics support for future platforms. Consideration must be given on how best to fund and manage these contracts before they are in place.

Performance-Based Logistics Contracts

Study Objective: Then and Now

The stated objective of this expanded study was to analyze and assess Navy PBL contracts in order to compare expected versus actual cost savings, if any, and identify traits of PBL contracts that tend to yield higher returns on investment. In other words, the ultimate goal of this analysis was to shed light on whether the Navy is getting its money worth out of these PBL contracts.

CNA was unable to determine if that is actually the case due in large part to two issues. First, despite numerous attempts to obtain the BCAs on these PBL contracts, CNA and the sponsor were not given permission to review them. The BCA is a decision support tool that analyzes the economic feasibility of PBL on that system or part. The costs and benefits of implementing PBL vice other alternatives are documented; these BCAs would have been a valuable resource to help assess the impact of PBL contracts on the Navy. Secondly, the first thing CNA learned was the PBL contracts for legacy systems were not necessarily to save money—rather to provide the same or better availability at close to the current costs.

The decision not to press harder for the BCAs was a result of the concurrent investigation by the General Accounting Office. It was decided that since the GAO was already pulling and measuring BCAs, CNA should focus on Navy and Marine Corps specific performances, measurement and tracking. It is interesting to note the findings of this study, although independent of GAO's, came to the same conclusions [4].

Additionally, although the essence of the PBL contract is the performance aspect, little is currently being done to monitor the performance of these contracts. As a result, the Navy does not really know if PBL contracts are improving performance and worth the effort. If the fleet is not complaining about a particular PBL contract, the Program

Manager essentially views this as a sign that everything is fine, but this is clearly no substitute for actually monitoring and quantifying the performance.

CNA analyzed thirteen different PBL contracts in depth and found great variety among the contracts—even if they were of a similar type. As a result, it has been difficult to shed much light on any characteristic traits of PBL contracts that tend to generate logistical success for the Navy. PBL contracts are many times unique due to the type of logistic support being contracted.

Instead of the ultimate goal of this study—is the Navy getting its money worth out of PBL contracts?—CNA developed a basic overview of PBL contracts. First, CNA learned that little is being done to monitor the existing PBL contracts; information on the performance side is lacking, and without this information, the Navy cannot truly know PBL contract's impact on its mission. Second, CNA verified that, indeed, a significant amount of money is involved with these contracts, further highlighting the need to better monitor the performance of the contracts. Reliability metrics with explicit goals may not be specified in every PBL contract. Whether this is commonplace or just a function of those contracts sampled in this study remains to be seen.

What is a PBL contract?

PBL contracts are contracts that allow the Department of the Navy (DoN) to obtain commercial support or services for parts, systems, or platforms. These services and/or support are measured, contractually, to ensure that the DoN is getting the best possible logistics for the money. The contractual measures will be discussed in the Metrics Section. In simple terms, a PBL contract does not stipulate a fixed amount of work to be performed by the contractor but rather provides the contractor with the flexibility to perform the work that is required during the life of the contract. In effect, the Navy is buying outcomes, or the output (e.g., availability, reliability, etc.) of the support work, rather than the work itself. The goal of a PBL contract is to improve logistical support beyond what is generally achieved via a traditional support contract, and this flexibility is viewed as a means to that end. These contracts can be anything from stocking a single part thereby saving the Navy from having to manage, warehouse, inventory, and ship the part to providing complete support for an aircraft engine from flight line through depot maintenance.

Types of PBL contracts

The types of PBL contracts are officially designated as full contracts or partial contracts. They can be commercial, organic, or a partnership of the two. PBL contracts are sometimes referred to as contractor logistic support (CLS), but not all CLS contracts are PBL contracts. Appendix A defines the different types of PBL contracts. Some examples of these contracts are reviewed in greater detail in a later section.

Memorandums of Agreement

Another type of PBL contract is a Memorandum of Agreement (MOA) or a Memorandum of Understanding (MOU). The MOA/MOU, which is often written when the support provider is organic, consists mainly of a statement of work that defines terms of agreement, performance metrics and outcomes, and responsibilities. However, the MOA/MOU tends to be a more concise document, with less legal jargon than the other PBL contracts, because the contractor is in-house and is not a commercial entity. The MOA/MOU may also be broad in scope but with specific individual program requirements that are outlined in detail in various addendum. In contrast, a non-MOA PBL contract would detail such requirements in the actual document. Estimated costs of the PBL contract are not documented in the MOA/MOU, and DD Form 350s do not exist for a PBL contract written as an MOA/MOU. As a result, the costs of these in-house PBL contracts are more difficult to track. Several such contracts exist, but they are visible only to two parties involved.

NAVICP in Mechanicsburg, Pennsylvania, provided CNA with an example of an MOA. The MOA is between the Commander of NAVICP and the Space and Naval Warfare Systems Center (SPAWARSYSCEN) in Charleston, South Carolina. SPAWARSYSCEN-Charleston supports various systems (e.g., IT-21, C4I, Varied Band Communications, Ships TV and Mobile systems) that meet the requirements of an organic PBL effort. This MOA is a general agreement concerning PBL issues, and individual program requirements are addressed in addendum that were not provided. It is stipulated that SPAWARSYSCEN-Charleston is responsible for meeting various performance criteria, but the criteria for each system are identified in the addendum. Performance metrics are average fill rate, average casualty report (CASREP) response time, average issue response time, unfilled customer order response time, and percent accurate inventory data.

How many PBL contracts are there?

In a number of places, it is stated that 106 PBL contracts are now in effect. This number, which is reported by NAVSUP, has been used in a number of NAVAIR briefings about the success of PBL contracts. However, when CNA began to track down the PBL contracts, some of them, counted as PBL, were in fact logistic support contracts. Appendix B lists the current awarded PBL contracts; these lists often appear in NAVSUP PBL briefs.

How much money is spent on PBL contracts?

Because PBL contracts are increasingly the Navy's chosen vehicle for logistical support, it is necessary to know how much money is involved before CNA can determine whether the Navy getting good value from PBL contracts.

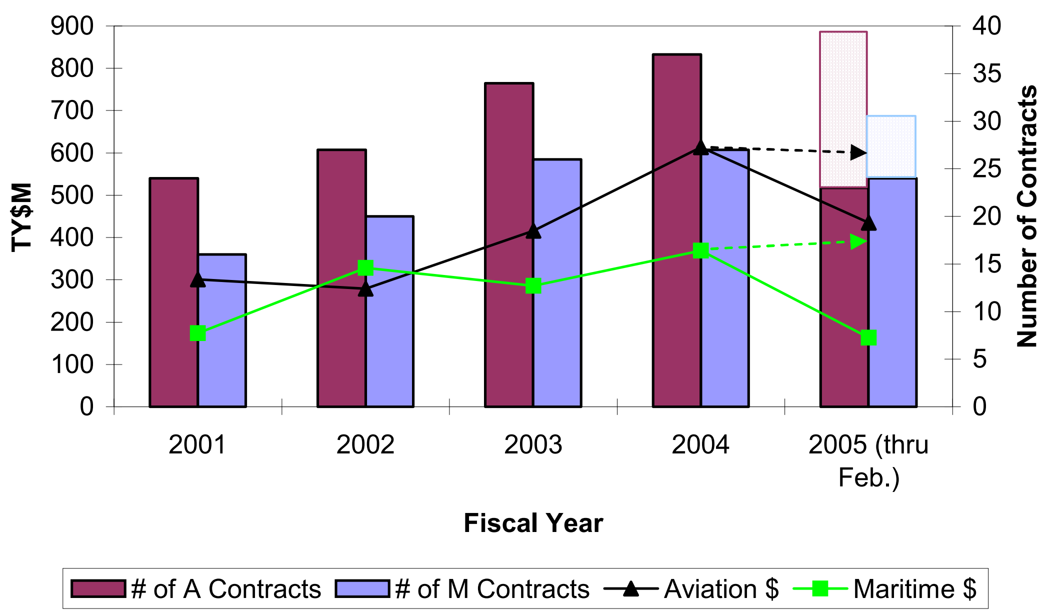
DD Form 350s

Information on the amount of money the Navy spends on PBL contracts is detailed on DD Form 350s. Contracting offices must complete this form for all reportable contracting actions over $25,000. This form specifies the number of dollars that were actually obligated or de-obligated by the contracting action.

Using these forms, CNA can determine PBL costs for actions that took place in FY 2001 through February of FY 2005. Contract numbers for the aviation and maritime PBL contracts are on lists provided by NAVAIR and NAVSEA, respectively. It is impossible to locate the appropriate DD Form 350s without these numbers because weapon system information from the forms often does not appear in the database. CNA was unable to estimate the total amount of money spent on all PBL contracts on these lists because not every contract number was listed in the database. However, CNA did find 75 of the 106 PBL at least once among the DD Form 350s.

In most cases, multiple forms were submitted for the same PBL contract, with each form representing a portion of the money spent on the PBL contract. A simple aggregation over all forms yields total dollars for each PBL contract during the fiscal year. Figure 1 shows the numbers of aviation and maritime PBL contracts and the aggregate amounts of money involved, based on these submitted forms. The dotted lines represent the *total* forecasted amounts of PBL money for all of FY 2005, and the extended bars represent the *additional* numbers of PBL contracts for which DD Form 350s are expected to be submitted in FY 2005.

Figure 1. Funding for aviation and maritime PBL contracts



Despite not finding every PBL, the results are instructive nevertheless. Since FY 2001, there has been a considerable increase in PBL money. In FY 2001, net obligated funds of $475 million were spent on 40 combined aviation and maritime PBL contracts. By FY 2004, the amount had increased to $982 million on 64 PBL contracts. Between FY 2001 and FY 2004, a total of 75 PBL contracts were identified, and many of these had corresponding DD Form 350s in each fiscal year. During this period, the number of contracts found in the DD Form 350s increased as more PBL contracts were written and set into motion.

Expenditures for all of FY 2005 are still in question, but $598 million has already been spent through February on 46 PBL contracts. Over the entire fiscal year, $996 million are forecasted to be spent on an expected 70 PBL contracts. A 95 percent confidence interval on FY 2005 money is ($528 million, $1460 million); considerable growth in FY 2005 PBL expense is possible, and given that $598 million has already been spent through February, over $1 billion in PBL money is certainly feasible for the whole year.

To obtain this forecast of FY 2005 expenditures, a regression model of the number of PBL contracts on total money spent between FY 2001 and FY 2004 was estimated (see appendix C). The 70 expected PBL contracts represent an estimate of the number of PBL contracts that would eventually be located among the DD Form 350s, not the number of PBL contracts that will exist in FY 2005. Because many of the identified PBL contracts have completed DD Form 350s in all four years, it is expected that all contracts found in FY 2004 (64) will also be found in FY 2005 because none of these contracts were in their final year in FY 2004. If two PBL contracts starting in FY 2005 are included, as well as four PBL contracts found in the first part of FY 2005 that were not found in all of FY 2004, the total comes to 70 expected PBL contracts in FY 2005—39 aviation and 31 maritime PBL contracts.

Alternatively, if a simple quadratic time series forecast of FY 2005 money is calculated, not taking the number of PBL contracts into account, $1281 million is estimated for FY 2005 (see details in appendix C). This result is contained within the above 95 percent confidence interval—as previously stated, over $1 billion in PBL money in FY 2005 is a real possibility.

NAVICP PBL money

A recent NAVSUP brief presented to the ASO Symposium on 3 May 2005 also reveals a partial picture of how much money is involved with PBL contracts [5]. Figure 2 displays the numbers cited in the brief.

Figure 2. Total NAVICP PBL obligations (FY 1998–2005)

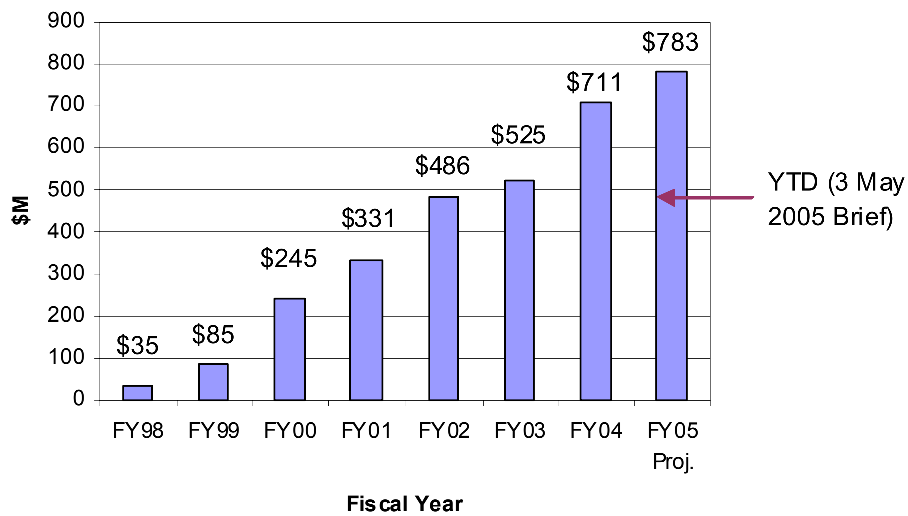


Figure 2 includes only NAVICP obligations (i.e., contracts funded out of the NWCF) and omits those PBL contracts funded by other sources. Nonetheless, these numbers tell a story similar to the one derived using data from the DD Form 350s. First, there has been significant growth in PBL contract money since FY 1998, and second, obligated PBL contract money totaled close to $1 billion by the end of FY 2004. These amounts are similar to those obtained from the DD Form 350s and help to validate the DD Form 350 as a viable source of information on actual PBL spending.

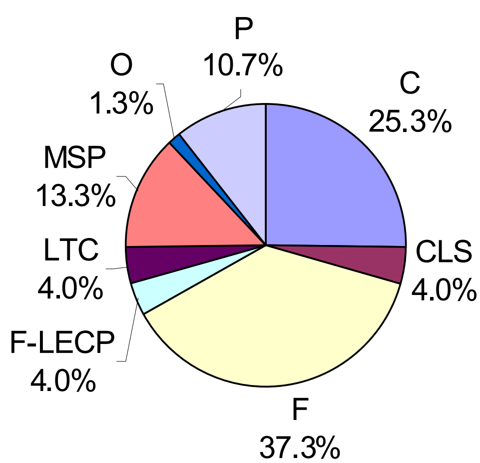
An incomplete picture in both cases—still significant PBL money

The results from the DD Form 350s and the recent NAVSUP brief suggest that a significant amount of money is tied up in these PBL contracts, and yet the true total amount over all existing PBL contracts is even higher. In the DD350 case, not all PBL contracts were found due to the missing contract numbers. In addition, some of the maritime PBL contracts are not contracts but rather MOAs—without the MOA "contract" numbers, DD Form 350s would also not be found for these PBL contracts. The slide from the NAVSUP brief showing PBL money only documents NAVICP obligations only and does not include those PBL contracts not written by NAVICP. Both methods understate the total amount of PBL money that has been spent in recent years. Nonetheless, both the monetary amounts located by CNA and those provided in the NAVSUP brief are significant enough to demonstrate the need for the Navy to better monitor the progress of PBL contracts.

A breakdown of those PBL contracts identified in the DD Form 350s

Figures 3 and 4 show the distribution of the number of contracts and cumulative amount of money spent from FY 2001 through FY 2004 by PBL type. A detailed description of each PBL contract type is in appendix A.

Figure 3. Proportion of PBL contracts by type

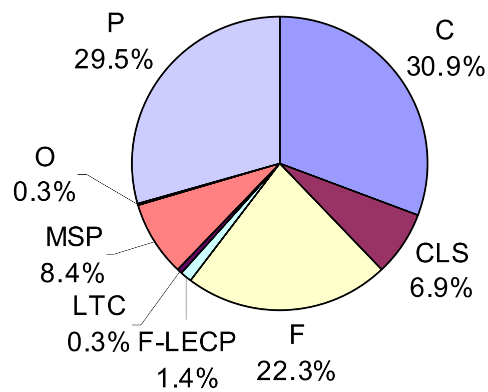


PBL type key

F – Full	O – Organic
F-LECP – Logistic engineering change proposal	C – Commercial
CLS – Contractor logistics support	P – Partnership
MSP – Mini-stock point	LTC – Long-term contract

Of the 75 PBL contracts identified in the DD Form 350s, more than a third of them are full PBL contracts (37.3 percent). Commercial PBL contracts are the second-most frequent type at 25.3 percent. Organic PBL contracts represent the smallest category (1.3 percent), but this is due in part to the common use of MOAs with in-house PBL contracts. No PBL contracts written using MOAs were identified in the DD Form 350s.

Figure 4. Proportion of PBL money by type



From FY 2001 through FY 2004, commercial PBL contracts are the most expensive—30.9 percent of all DD Form 350 money is spent on this type of PBL. Although there are more full PBL contracts than any other type, these PBL contracts amount to only 22.3 percent of the cumulative money spent over this period. Some of the full PBL contracts are relatively small in terms of obligated money. On the other hand, partnership PBL contracts make up roughly 30 percent of all money with only 10.7 percent of the PBL contracts. This indicates that a few of these partnership PBL contracts are for big-ticket items involving large sums of money.

Figures 5 through 8 show the distribution of the number of contracts and money by source of funding and the activity writing the contract.

Figure 5. Proportion of PBL contracts by source of funding

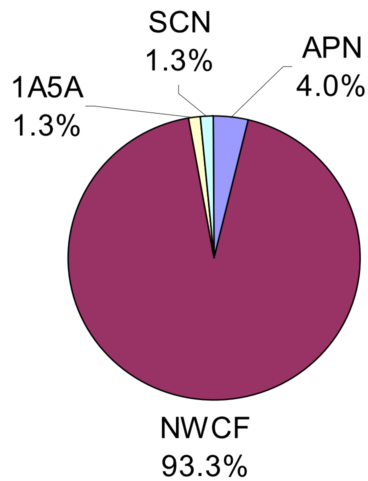


Figure 6. Proportion of PBL money by source of funding

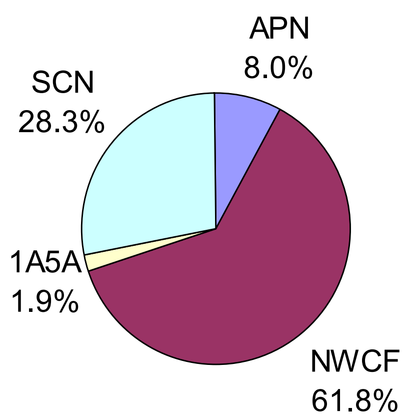


Figure 7. Proportion of PBL contracts by activity

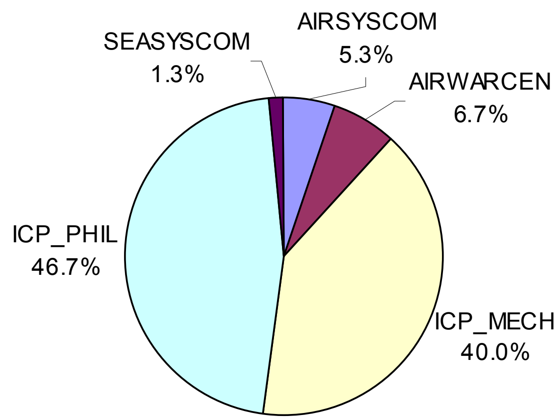
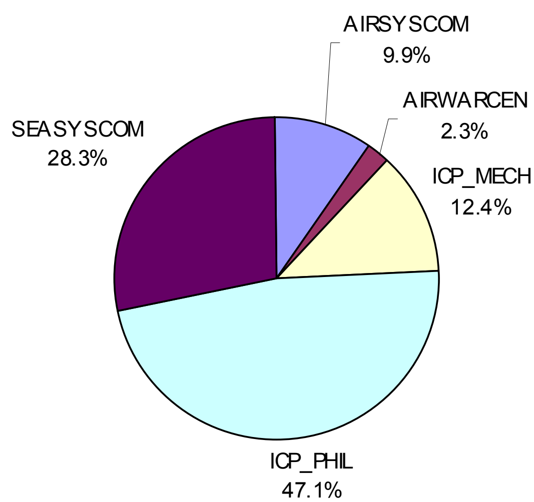


Figure 8. Proportion of PBL money by activity



The vast majority of these 75 PBL contracts are funded out of the NWCF (93.3 percent) vice APN (4.0 percent) and written by either NAVICP in Philadelphia (46.7 percent) or Mechanicsburg (40.0 percent). As a result, 61.8 percent of the PBL money, spent on these 75 contracts, came from the NWCF. However, the lone PBL contract funded with SCN money and written by SEASYSCOM represents 28.3 percent of all money—a huge PBL contract. A few of the maritime PBL contracts written by NAVICP-Mechanicsburg are relatively small; these PBL contracts add up to 12.4 percent of all money between FY 2001 and FY 2004.

The contract numbers contain the information needed to classify the PBL contracts according to activity and fund. Digits 2 through 6 of the contract number correspond to the UIC and identify the activity that wrote the PBL contract, as well as the source of the money. The following is a list of these UICs:

UIC	Activity	Fund
00019	NAVAIRSYSCOM	APN
00024	NAVSEASYSCOM	SCN
00104	NAVICP-MECH	NWCF
00383	NAVICP-PHIL	NWCF
68335	NAVAIRWARCENAD	NWCF.

One of the PBL contracts could not be identified according to UIC. The contract number of the V-22 PBL did not incorporate a recognizable UIC and required further research. This PBL contract was written by NAVAIRSYSCOM but is funded out of the 1A5A AG-SAG (Aircraft Depot Maintenance), not APN.

The top 15 most expensive PBL contracts

Table 1 lists the top 15 PBL contracts in terms of cumulative money spent between FY 2001 and FY 2004 (source: DD Form 350s). Appendix D lists all 75 contracts.

Table 1. The 15 most expensive PBL contracts between FY 2001 and FY 2004

PBL	Aviation/ maritime	Type	Source of funds	Activity	Cumulative FY01-04 $
AN/UYQ-70 Advance Display System	M	C	SCN	SEASYSCOM	$784,354,923
F/A-18E/F FIRST	A	P	NWCF	ICP_PHIL	$464,145,066
Engines T-406 PBTH	A	CLS	APN	AIRSYSCOM	$177,696,109
Engines F404	A	P	NWCF	ICP_PHIL	$145,960,619
CIWS	M	F	NWCF	ICP_MECH	$117,124,302
S-3/E-2/C-2/F-18-A-D/ P-3 APUs	A	P	NWCF	ICP_PHIL	$94,189,070
H-60 Dyn Comp (rolls into T2T Oct-05)	A	F	NWCF	ICP_PHIL	$69,685,717
F-18 ARF	A	MSP	NWCF	ICP_PHIL	$62,829,439
V-22/H-53 HNVS NAVFLIR	A	F	1A5A	AIRSYSCOM	$52,291,803
Common Tires	A	F	NWCF	ICP_PHIL	$48,021,937
AEGIS (MK 99 Fire Control)	M	F	NWCF	ICP_MECH	$42,465,273
H-60 T2T	A	P	NWCF	ICP_PHIL	$38,910,104
VA Beach BOA	M	MSP	NWCF	ICP_MECH	$35,521,097
H-60 FLIR	A	P	NWCF	ICP_PHIL	$35,356,427
H-53 MRH	A	MSP	NWCF	ICP_PHIL	$34,099,414

Most of these 15 PBL contracts are aviation contracts, funded with NWCF money and written by NAVICP. Two-thirds are either full or partnership PBL contracts. The cumulative amounts spent between FY 2001 and FY 2004 range from $34 million to $784 million, and five contracts expended more than $100 million over this period. The PBL contract for the AN/UYQ-70 Advance Display System is, by far, the most expensive contract discovered in the DD Form 350s; this is not surprising because this system is used on many platforms.

How are candidates for PBL contracts identified?

NAVICP has an 18-step process that has evolved since 1998.[2] High demand candidates that are expensive, capable of degrading readiness, and hard to manage are at the top of the list of potential candidates. NAVICP uses a Cost Opportunity Index to identify candidates for PBL contracts. This index looks at reliability, supportability, and cost. At a minimum:

- There must be a vendor who is willing to contract with the Navy
- The vendor must be affordable to the Navy.

Not all likely candidates have been selected, including the FA–18 APG–75 radar system, for one or both of the reasons listed above.

New acquisition systems are expanding the roles of PBL and may change the definition of support as understood today. Currently, there are large PBL efforts for the Multi-mission Maritime Aircraft (MMA) (the P–3 replacement), DDX, and Joint Strike Fighter.

The MMA is unique in that PBL concepts were considered very early in system development. The current AOA process has already included the PBL team in initial purchasing decisions with regard to the future support of this platform.

2. This was discussed during a meeting with NAVICP-Philadelphia on 8 March 2005.

A review of thirteen PBL contracts

CNA reviewed thirteen PBL contracts.[3] By studying these contracts, CNA was able to gain some insight as to the types of metrics implemented to track the contractor's performance. Overall, these contracts indicate that measures of availability are common whereas reliability metrics are less frequently specified. Unfortunately, the latter provides a more useful gauge of what the Navy is getting for its money and should be stressed more in the contracts—ideally, both types of metrics should be included. In addition, some dollar amounts were pulled from the contracts to compare with the DD Form 350 dollar amounts. Based on the amounts specified in the contracts, there is some evidence that they underestimate actual PBL expenditures.

The contracts

Table 2 lists the thirteen PBL contracts that were analyzed. All but one are aviation contracts, and they tend to be either a full or partnership PBL. All but one (i.e., Engines T–406 PBTH) are funded out of the NWCF, and among those in the sample are a few big-ticket PBL contracts (F/A–18 FIRST, Engines T–406 PBTH, Engines F404, and CIWS). Most of the contracts were written by NAVICP.

3. Some CNA specifically asked to review because of the initial PBL study (e.g., H–60 contracts) or special interest from the sponsor (e.g., CASS contracts). The rest of the contracts are what NAVICP provided CNA.

Table 2. Ten PBL contracts

PBL	Type	Activity	Cumulative FY01-04 DD350 $
Aviation			
S-3/E-2/C-2/F-18-A-D/P-3 APUs	Full	ICP_PHIL	$94,189,070
Common ALR-67 V(3)	Partnership	ICP_PHIL	$33,161,388
H-60 T2T	Partnership	ICP_PHIL	$38,910,104
H-60 FLIR	Partnership	ICP_PHIL	$35,356,427
F/A-18/F-14 HUD/DDI	Mini-stock point	ICP_PHIL	$27,133,795
SE JSECST	Full	AIRWARCEN	$2,644,000
SE CASS Hi Power	Partnership	AIRWARCEN	$14,211,833
F/A-18E/F FIRST	Full	ICP_PHIL	$464,145,066
SE CASS/CASS CSP	Full	AIRWARCEN	$24,017,147
Engines T-406 PBTH	Contractor logistics support	AIRSYSCOM	$177,696,109
Engines F404	Partnership	ICP_PHIL	$145,960,619
F-18 ARF	Mini-stock point	ICP_PHIL	$62,829,439
Maritime			
CIWS	Partnership	ICP_MECH	$117,124,302

Contract money

Twelve of the thirteen contracts also provide details on the amount of money that may be spent in support of the PBL contracts. From these contracts, there are two approaches to handling money. The first, and more common method, is to use firm (FP) or fixed-firm (FFP) pricing to estimate each period's cost for each CLIN in the contract and/or the total cost. These costs were often calculated based on estimated numbers of flying hours, and cost adjustment language often appears in the contract to account for any future changes in the number of flying hours. In general, these amounts include any potential incentive money that the contractor may earn over the course of the contract. The other method is to list a negotiated firm cost target ceiling—a "not to exceed" amount that also includes any potential award fees. Based on CNA's study of these twelve contracts, it appears that any stipulated monetary amounts are only estimates of how costly the PBL contract will be and may not even represent the amounts budgeted, especially when potential incentive money is already embedded in the totals. Actual PBL expenditures are documented using DD Form 350s, and the contract and DD350 costs can be compared to determine by how much the contracted amounts have been over or under actual.

Table 3 lists the net contract money in each relevant fiscal year. Net money is calculated by subtracting DD350 money from contract money; a negative net amount, denoted with parentheses, indicates that the contract contains underestimated costs of the PBL contract

.

Table 3. A comparison of contracted and DD Form 350 money

PBL	FY01 Net $	FY02 Net $	FY03 Net $	FY04 Net $	Contract notes
Aviation					
S-3/E-2/C-2/F-18-A-D/P-3 APUs	($10.7M)	($2.8M)	($10.2M)	($16.4M)	FP
Common ALR-67 V(3)	$0.3M	($1.3M)	$6.9M	$3.1M	FFP
H-60 T2T				$-	FP w/ adjustments
H-60 FLIR				($21.4M)	FFP w/ adjustments
F/A-18/F-14 HUD/DDI				($2.1M)	FFP w/ adjustments
SE JSECST			$1.0M	$1.0M	Only total $given, no distribution or details
SE CASS Hi Power			($2.4M)		FP
F/A-18E/F FIRST				($16.6M)	Cost target ceiling
SE CASS/CASS CSP	$2.0M			$15.4M	FP in FY04; cost ceiling in FY01
Engines F404			$80M	($0.8M)	FFP w/ adjustments
Engines T-406 PBTH				$95M	FFP; contract costs only consist of engine install/ spare and program management costs
Maritime					
CIWS	$0.5M	($24.5M)	($10.8M)	($6.9M)	
Total Net $	($7.9M)	($28.6M)	$64.5M	$50.3M	

In only one case (H–60 T2T in FY 2004) are the contract and DD350 amounts exactly equal. Otherwise, there are differences (sometimes large) between these monetary amounts. In fact, these PBL contracts tend to underestimate total costs, though in the aggregate, total net money are negative only in FY 2001 and FY2002 because the two engine contract costs are much higher than the corresponding DD350 costs. Either it is very difficult to estimate an accurate cost for inclusion in a PBL contract, or this is some evidence that actual PBL spending tends to be more than what was expected (and documented).

SE JSECST contract—an example of an inadequate PBL contract?

After reviewing this contract for the Joint Service Electronic Countermeasures System Tester (JSECST), it appears to be a prime example of an inadequate PBL contract. The 10-year period of performance began in March 2003 and is broken into two phases: Phase-I is a 2-year interim PBL contract and Phase-II is the full PBL contract. The total amount of the contract is recorded as $4.7 million, but it is unclear how this money is distributed across the years and whether this amount is just for Phase-I or for the full 10 years.

What is unique about this PBL contract is the lack of rigor with respect to incentives/penalties and metrics.[4] The contractor must meet requisition response times of 24 hours for Broad Arrow/MICAP requests and 30 days for non-Broad Arrow/non-MICAP requests. For Phase-I, no incentives or penalties are outlined. For Phase-II, if the contractor fails to fill any Broad Arrow/MICAP requisition within 24 hours, "a 10 percent reduction in the monthly maintenance rate for that specific system *can* be imposed (emphasis added)." It is questionable whether a possibility of a penalty could maintain the required response time as well as a definitive penalty. Furthermore, it is not specified what actions would (or may) be taken if the contractor fails to fill any non-Broad Arrow/non-MICAP requisition.

The contract also fails to adequately address reliability requirements. In fact, no specific requirements, incentives, or penalties are listed. Instead, the contractor is told to provide a "reliability program." In this program, the contractor is to determine the relationship between reliability and FRACAS (failure reporting, analysis, and corrective action system) results, identify reliability performance trends, and determine its own effects on the JSECST system to "ensure *existing* reliability levels are maintained or improved (emphasis added)."

4. CNA does not have the complete contract; the attachments were not provided. Greater detail may be found in these attachments, but there are no references to the attachments in the sections of the contract dealing with the metrics.

Unless very little was known about the JSECST system when the contract was written[5], and the reliability program was the best alternative, then the *existing* performance levels should have received greater attention. Therefore, explicit numbers along with incentives or penalties should have been written into the contract.

Overall, this contract does not sufficiently specify incentives and/or penalties associated with the metrics. In particular, it lacks the performance aspect of the PBL contract. The contractor appears to have little incentive to maintain or improve the performance of the JSECST system, and it is basically up to the contractor to define the performance levels in the first place. NAVICP-Mechanicsburg mentioned, during a meeting with CNA, that this contract is being rewritten.

Contract maturity

The process of writing PBL contracts would be expected to improve as more PBL contracts are written and executed, and lessons are learned from previous contracts. A comparison of two of the sampled contracts helps to illustrate this point. Both the SE CASS and F/A–18 FIRST contracts, signed in FY 2001 and FY 2004, respectively, are for full PBL contracts and both use a target ceiling to estimate costs. However, the newer FIRST contract includes much greater detail about metrics and incentives and is an example of the rigor with which a PBL contract can be written.

The SE CASS contract does not detail metrics and incentives, but the FIRST contract devotes many pages to these matters. For example, the contract outlines the roles of the Award Fee Determining Officials (ADOs) and Award Fee Board; the latter makes recommendations concerning the award fee earned by the contractor. Award fee periods cover 6 months of work, and detailed evaluation criteria are provided for each period. In particular, the metrics to be monitored are listed, along with the award fee pool for each and how much weight

5. Initial production of the JSECST began in April 2001, and the PBL contract was signed in March 2003.

each metric is to be given in determining the total earned award fee. The levels that must be achieved to earn various percentages of the potential award fee pool are also described. Finally, the FIRST contract is the only one in the sample to also use subjective metrics of performance, and the contract explains how these metrics are to be developed and combined with the objective metrics.

Clearly, the FIRST contract is an improvement over the CASS contract. Because the older CASS contract does not outline metrics and incentives, it is unclear how the contractor's performance will be assessed and rewarded. On the other hand, the FIRST contract is very explicit in these matters and appears provide a level of detail that can assist in the writing of future PBL contracts.

How are PBL contracts measured?

Metrics are a necessary component of PBL contracts that serve to highlight performance and optimize PBL effectiveness. Metrics that are outlined in the contract should measure availability (e.g., on-time fill rates, supply material goals, and CASREP response times); reliability (e.g., failure rates, MTBF, MFHBR, and MFHBUR); and fleet support (e.g., response timeliness, and supply chain support). In particular, reliability metrics are valuable because they measure what is really important to the Navy and ultimately help assess whether PBL contracts are having a positive effect on readiness. As important as quick fill rates are, reliability is key to the success of the logistic system. Although it is important for the PBL contract to specify metrics, they are of value to the Program Manager only if they are given proper attention during the monitoring process.

When asked for performance reports, representatives from the ICP stated the need to contact the Program Managers. The Program Managers, however, referred CNA back to the ICP. There should be a centralized location where contract execution monitoring data are available.

Metrics in the sample of thirteen PBL contracts

Unfortunately, reliability metrics are not much in evidence in these contracts. Of the thirteen contracts sampled, only six used some form of a reliability measure. Three of these six contracts explicitly specified a reliability growth plan that must be achieved over the life of the PBL contract. The JSECST contract, as previously discussed, details a generic reliability program that the contractor needs to establish, but actual metrics and numbers do not appear in the contract. The Engines F404 contract also does not provide specific reliability details other than stating that the Government will evaluate the contractor's contribution to reliability improvement and determine any award. On the other hand, eleven of the contracts have varying degrees of availability measures, thus demonstrating that availability garners more attention than reliability. The most common availability measure is the on-time fill rate (i.e., *X* percent of item *Y* fills must be within a time of *Z*). Finally, two of the contracts did not specify metrics of any kind, but this may be because the complete contracts were not acquired by CNA. Table 4 lists the metrics discussed in these thirteen contracts.

Table 4. Metrics specified in the contracts

PBL	Availability[a]	Reliability	Other
Aviation			
S-3/E-2/C-2/F-18-A-D/P-3 APUs	On-time rates >= 90%	Assembly MFHBUR (varies by aircraft but must show improvement from year 1 to 10)	
Common ALR-67 V(3)	On-time rates >= 90%	System MFHBF >= 300 hrs. (year 2); >= 475 hrs. (by year 6)	Retrograde: on-time rate to contractor >= 90%
H-60 T2T	On-time rates >= 73%	Item failure rate per 100,000 FH	
H-60 FLIR	On-time rates >= 90% on Priority 4-15 items; = 100% on Priority 1-3 items	System MTBF and MTBUR (varies by unit but must show improvement from year 2 to 4)	
F/A-18/F-14 HUD/DDI	On-time rates >= 91%	None found	
SE JSECST	None found	Establish "reliability program"	
SE CASS Hi Power	None found	None found	
F/A-18E/F FIRST	Supply response times, time on backorder, avg. age of unfilled backorder	None found	Fleet Support: response timeliness (NAMDRP reports, requests for assistance/info); supply chain support
SE CASS/CASS CSP	None found	None found	
Engines F404	On-time rates >= 86%	Government evaluates contractor contribution to reliability improvement	
Engines T-406 PBTH	On-time rates >= 90%	None found	Inventory effectiveness: accommodation rate >= 80%, net effectiveness >= 85%; inventory accuracy: repairables = 100%, consumables >= 90%
F-18 ARF	Number of awaiting parts, turn around time, cumulative awaiting parts days of the repair cycle	None found	
Maritime			
CIWS	Supply material availability goal of 85%; CASREP response time	None found	

a. The time limit to fill an item depends on its priority level (1-15) and its destination in the United States or overseas.

Performance measurement—initial PBL study

In the initial 3-month study, CNA wanted to identify three systems that met the following criteria:

- Had been in place for more than two years
- Had available data from before and after the contract was let
- Had readily available points of contact.

There are no PBL contracts that have two years of data to examine. Three contracts were selected to help frame questions by what will become available. Initially, three aviation contracts were chosen based on the amount of data available: the H–60, which has three PBL contracts on-going; the E–2C APS 145 radar; and the KC–130J engine/propeller system. Table 5 details these initial contracts.

Table 5. Initial contracts examined

PBL	Type	Participants	Start date	Comments
H–60 FLIR	Partial	Private (commercial)	Sept. 2003	NAVSUP Brief "H-60 FLIR...40% increase" in guaranteed reliability
H–60 Dynamic Components	Partial	Private (commercial)	Feb. 2003	Dampener PBL from 1999 rolled into H-60 Tip to Tail
H–60 Tip to Tail	Partial	Private (commercial partnering)	Dec. 2003	1100 NIINs will be covered by this PBL
E–2C APS–145 Radar	Full	Commercial manufacturer	Feb. 2001	Legacy radar with good tail of historical data
KC–130J Engine/propeller	Full (CLS)	Private (commercial)	Dec. 2002	Potential to compare to similar type engine organically supported

CNA began by comparing the contractual performance measurements against the actual performance. These are NAVICP contracts, that are under management by an IPT team that includes representatives from the NAVAIR program office. The basic performance measurement for all three contracts is supply effectiveness. It is NAVICP's position that wholesale health can be measured by parts availability and that other measures are not needed. This belief is driven largely by the data available to the NAVICP—supply data that provide a ready source of effectiveness measurement. NAVICP talks about reliability but believes that it will be inherent in fewer demands. Contracts are not written to contain reliability measurements other than those provided by the contractor. NAVAIR is able to measure reliability for itself, but NAVSEA has only Casualty Reports as its primary data source.

Discussions with NAVICP suggested that PBL measurement was a matter of time—none of the current contracts have existed long enough to measure their performance. It was also brought up that it is important not to measure the wrong things, and not to have contractors provide useless reports.

The H–60 program is a success story in PBL contracts. It is now viewed as the standard by which other PBL contracts are measured. The following background was obtained in conversations with staff members of the program office. There are three current H–60 contracts and two beginning contracts with a PBL "flavor." The first three are "rolled up" into one (the FLIR PBL contract examined by CNA now). The H–60 is a cross-service platform, but not all H–60 aircraft are the same. The Navy H–60s have folding rotors that fit on the decks of ships, sonobuoy capability, and parts specific to the Navy—parts that have been "marinized" against the corrosive salt water operating environment. Due to these differences, the contract specifically excludes parts used by the U.S. Army or parts that are managed by the Defense Logistics Agency (DLA). The original contracts were ground breaking in that they were the first contracts let on old or "legacy" systems.

H–60 FLIR

The H–60 FLIR is carried by both the SH–60B and the HH–60H helicopters. The PBL contract covers three weapons replaceable assemblies (WRAs):

- 74DCO AN/AAS44 IR DET-RNG TRACKING SET

- 74DC1 RT1735/AAS44 IR LASER RCVR-XMTTR-CON
- 74DC5C 12394/AAS44 GIMBLE POSITION CONTROL.

This PBL contract applies to H–60 spares specific to the Navy (no Army parts). It is paid for by the WCF. The contract manager provides monthly reports to the H–60 PBL IPT. The contractor must be able to satisfy wholesale effectiveness at both the squadron (or organizational) level and the intermediate level.

Table 6. H–60 FLIR contractual measurements

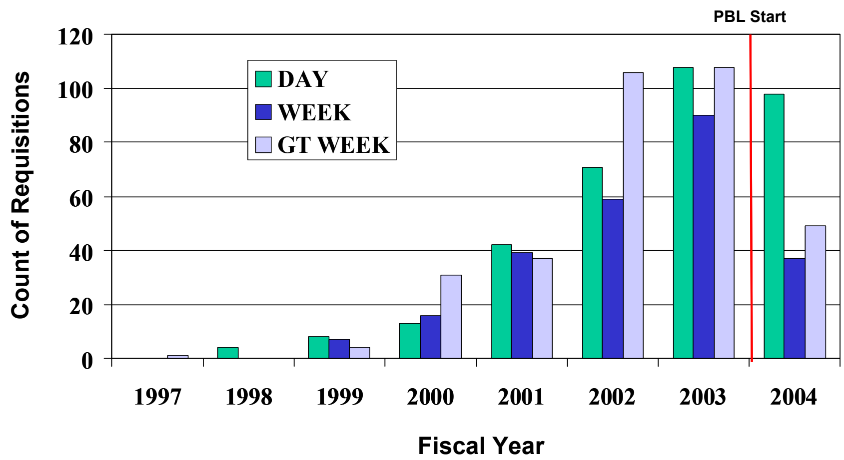
Issue group	Priority	Delivery CONUS/HI	Delivery overseas
1	01-03	24 hours	72 hours
2	04-08	72 hours	7 days
3	09-15	192 hours	10 days

CNA used AV–3M data to perform an independent assessment of the requisition fill rates. Using card type 60* records and supply receipts, CNA obtained a proxy for the data that ICP might use to monitor fill rates. Because the following is not taken from the same data set that the contractor submitted to the NAVICP, the numbers will not match exactly. CNA's intention was to objectively assess, from an outside view, the effectiveness of the requisition fill rates. As shown in Table 6, the number of requisitions received are grouped into three time periods:

- Received within 24 hours (or 1 day)
- Received within 1 week
- Received greater than one week.

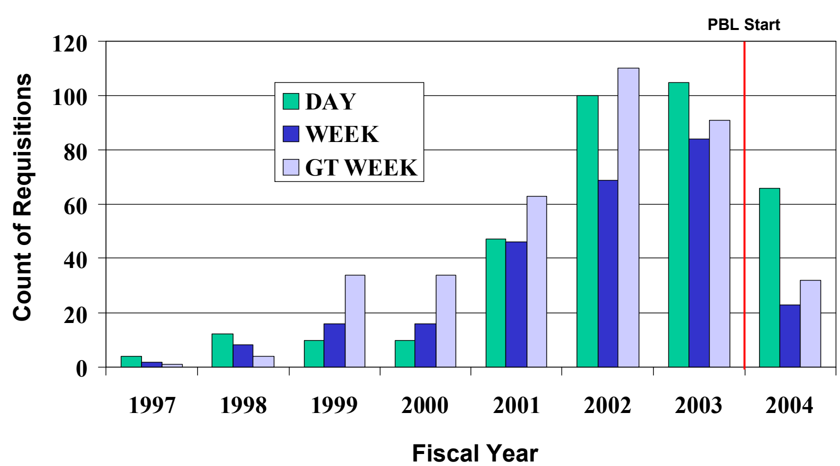
The label ML–1 is the organizational level or squadron level. From Figure 9, the shortened time-frame and independent data, it would appear that the PBL contract is effective.

Figure 9. ML–1 fill rates (FLIR)



The issue of fill rates can be deceiving, however. This is a relatively new system for aircraft. There were not as many requisitions early on because there were not as many systems in use before 2000. Is one year of data enough to determine increased reliability? These graphs are not so much an actual measure of this PBL contract but may provide alternatives to measuring the effectiveness of a PBL system in ways other than by requisition fill rates alone. Figure 10 shows the ML–2 fill rates.

Figure 10. ML–2 fill rates (FLIR)



CNA also used AV–3M data to look at the number of removals on the H–60 due to malfunctions. As a proxy for reliability, a decrease in the number of removals may signal increased reliability as a result of the PBL contract. Figure 11 shows the number of removals.

Figure 11. Number of removals for malfunctions (FLIR)

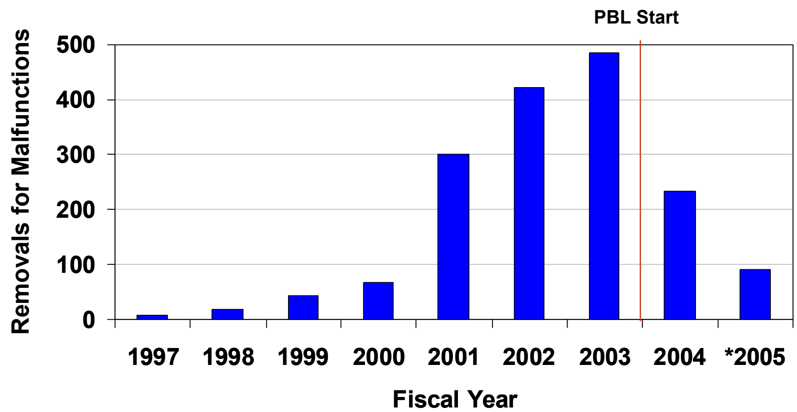


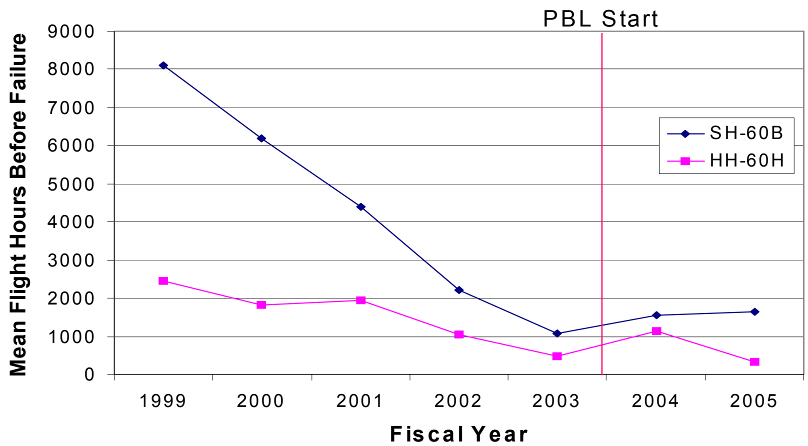
Figure 11 shows that the number of removals has significantly decreased since FY 2003, after a steady increase from FY 1997 to FY 2003[6]—again, the PBL contract may be effective. The number of removals in FY 2005 represents approximately half the fiscal year—even if one doubles the number, the downward trend continues in FY 2005. While the decrease coincides with the start of the H–60 FLIR PBL contract, it is not recommended that one or two data points be used as definitive analysis. This graph is included to demonstrate one simple measure of reliability improvements over time. This type of metric is available for most parts/systems under PBL contract.

However, the number of removals does not take into account the number of FLIRs in the fleet. For example, there could have been more removals over time (i.e., prior to the start of the PBL contract) simply because more FLIR systems were in the field, while the reliability of the FLIR may not have decreased. Therefore, a more useful measure of reliability is Mean Flight Hours Before Failure (MFHBF) because it helps to eliminate any potential bias in the numbers shown

6. CNA learned from the H–60 PBL representatives that the FLIR has a history of maintenance problems.

in figure 11. Figure 12 shows the MFHBF for the FLIR—FLIRs on the SH–60B and HH–60H are shown separately.

Figure 12. Mean flight hours before failure (FLIR)



The MFHBF data suggest that the reliability of the FLIR did indeed decrease from FY 1999 through FY 2003, prior to the start of the PBL contract. The contract appears to have had some positive effect on the SH–60B, as reliability has increased in both years after the PBL start. The positive effect may have been less with the HH–60H. After an increase in MFHBF in FY 2004, the reliability of the FLIR on the HH–60H decreased once again in FY 2005 to its lowest level over this time period. Overall, there is some evidence that the FLIR PBL contract has been effective in improving the reliability of the system.

During this study, the H–60 community had several issues with the largest PBL contract—the H–60 Tip To Tail. The contract was let based on historical demand that, two years after the analysis was complete and the contract was issued, did not materialize. This reduced demand created costs that the program office was unprepared for—due to the WCF rules. This is further explained in the WCF section but is raised here because there are several cases where NAVICP and NAVAIR tout a particular PBL contract as an enormous success—and it may be from their perspective—yet the fleet has a much different opinion but not much data to support that opinion.

F/A–18 ARF

The F/A–18 Avionics Repair Facility (ARF) contract is the longest running aviation PBL contract, effective since FY 1996. The current contract, effective since FY 2002, covers hundreds of spare repairable assemblies to be repaired and is paid for by the WCF. The contractor furnishes labor and material at NAS Lemoore and NAS Cecil Field to repair F/A–18 A/B/C/D aircraft assemblies and sub-assemblies.[7]

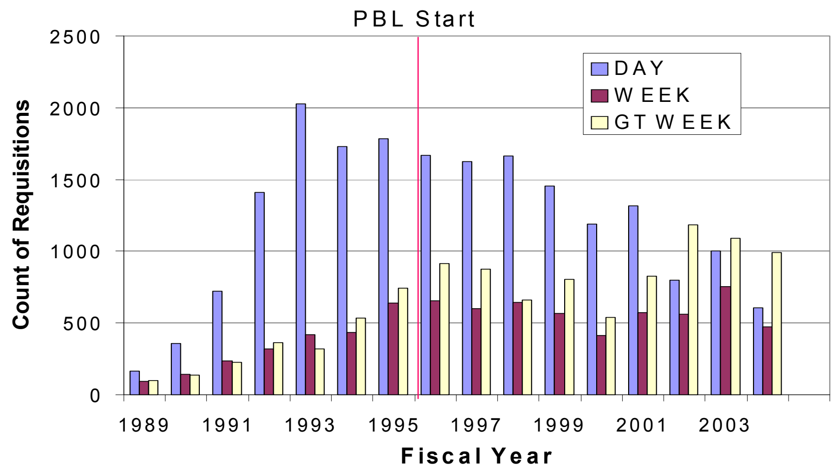
The contractor is to develop a process on awaiting parts (AWP) at both ARFs to increase the availability of WRAs and SRAs. This process is intended to:

- Reduce the total number of AWP requirements
- Reduce the Turn Around Time (TAT) of repair
- Reduce the cumulative AWP days of the repair cycle.

Although specific improvement goals are not specified in the contract, CNA once again used AV–3M data to independently assess requisition fill rates (using the same three time periods with the H–60 FLIR). Figure 13 shows the ML–1 rates for nine of the parts (classified by family group codes) covered by the contract. These nine parts represent those that were most often repaired since FY 1989.

7. The contractor also provides material control for F/A–18 and AV-8B assemblies and sub-assemblies at NAVICP–Philadelphia.

Figure 13. ML–1 fill rates (ARF)



The fill rates suggest that this PBL contract may not be achieving the desirable results. Since the start of the PBL contract, the numbers of requisitions within one day and within one week have decreased and increased, respectively. Furthermore, the proportion of requisitions taking at least one day (i.e., the Week and GT Week categories) has grown over time. As previously stated, this measure may provide an alternative to assessing the effectiveness of the contract but is not a substitute for following the metrics specified in the contract itself.

Defining availability

NAVICP is using this term as a parts availability in terms of shipping time, delivery time, or receipt time. Not all contracts are written in the same way. This is an important point because some of the stated availability percentages used by NAVSUP have been thought to be larger increases than actually exist. For example, the following availability improvements, shown in figure 14, are from a NAVSUP brief on 17 February 2004 that highlight recent "PBL successes" [6].

Figure 14. PBL successes according to NAVSUP

Slide from 17 Feb 2004 NAVSUP Brief*:
"PBL Successes…A Sampling"

- F/A-18 SMS – availability was 65% … now 98%
- Tires – availability was 81% … now 98%
- F404 Rotor – availability was 40% … now 100%
- ARC-210 Radio – availability was 70% … now 85%
- APU – availability was 70% … now 90%
- F-14 LANTIRN – availability was 73% … now 90%
- H-60 Avionics – availability was 71% … now 85%
- F/A-18 E/F FIRST – 85% availability … F/A-18 C/D 62%

* NAVSUP Brief "APML Training", 17 Feb 2004

Although the above sample of successes suggests that many programs have experienced a significant improvement in availability as a result of PBL contracts, the before and after numbers are not directly comparable. The "was" availabilities were all Navy organic point to point—the requestor received the item at his site. In contrast, the "now" availabilities are based on whatever the contract says (i.e., to the nearest FISC, to the nearest warehouse, to nearest shipping dock—very different). Designated delivery points in the contract can be point of entry (POE), Beach DETS, loading docks, etc. These are not like comparisons, and the "was" numbers may even represent the better situations. It is, therefore, questionable how much of a success story is really being told in the above slide.

Reliability

A simple and effective measurement to determine whether reliability is improving over time is to monitor the number of removals for failure. This is something that can be measured by both the aviation and the maritime communities. The real issue with reliability measures in the PBL contracts are from the ICP side of things. The bulk of the existing PBL contracts are written by the ICPs using WCF. ICP has the ability to see fill rates and supply measures. ICP does not currently have access to maintenance data systems that show reliability measures. Due to this, ICP is relying on the implied reliability improvements and they attempt to write contracts that incentivize the contractors to increase reliability for their own gain.

Risk

There are also some risks associated with PBL contracts. For example, lack of competition for the contract may introduce risk. During the discussions with NAVICP-Mechanicsburg, they mentioned that they had tried to bundle several unattractive systems together into a single PBL contract, but negotiations with commercial entities were not successful. However, if one commercial contractor had been willing to support those systems but clearly was not the best fit for the contract, NAVICP would have had a tough decision to make. Second, a PBL contract is created in part because it passes the BCA process, but Backs are difficult to perform if there is no baseline or historical information on a system. Does the Navy really know what it is going to get out of a PBL contract based on a questionable BCA? Other potential risks include the Navy's inability to regain organic capability in the future, and the use of sole source to fund the PBL contract.

In addition, budget processes could better reflect PBL processes. During this study, one PBL contract that provides the engine support for the KC–130J aircraft illustrates a hint of the risk associated with these contracts. The contract stipulates a certain number of flight hours per year for a stated cost. Due to the global war on terrorism, this particular aircraft flew more than the contracted number of hours—an occurrence that is not uncommon for a warplane. The contractor required payment in August 2005. This particular PBL contract is in the OP–30 Aircraft Depot Account. By August of each year, all the funds in this execution account have been obligated. This leaves, in this case, NAVAIRSYSCOM with a significant bill to pay—somehow. The account is not the issue but the fact that this particular account manager has no way to track PBL contract execution costs. These contract costs are fixed costs that these accounts must fund for the duration of the contract, yet the account manager is not in the contract execution loop.

Electronic clearinghouse

CNA has read about an electronic clearinghouse for PBL contracts and believes it would be a source of contract execution measurements. There is a webbiest, but it is for contractors who want to contract with NAVICP. The current site provides information on contracting and the Navy Supply data system for contractors to comply with the supply measures. There is no money to establish E-bulletin boards, but these boards are needed and would be fairly inexpensive to create.

Awards

The PBL contracts are all incentivised by awards written into the contract. These agreements stipulate that if the contractor meets certain benchmarks, a lump sum of money will be awarded on an agreed to periodicity. CNA attempted to determine if there were statistical tracking measures in place on the award fees. What occurs when an award is not given? This indicated poor or unacceptable performance levels. Was anyone tracking how much in award fees were issued by year?

Awards paid out of the working capital fund are set. It the amount due to the contractor differs, either higher or lower, the next payment is changed to reflect that difference AND the fleet will see the change in the next price change.

Award fee tracking provides historical measurement of contract execution and should be data readily available for examination.CNA was unable to obtain any data on the contract execution but understands that NAVICP does track this in-house.

The contracts—aviation versus maritime

Most of the aviation PBL contracts have been led by NAVICP Philadelphia, and from its perspective, "there aren't any bad PBL contracts." Maritime PBL contracts often involve less money, cover more parts, and use more MOAs than do aviation PBL contracts. In addition, maritime contracts tend to track performance using CASREPS rather than MTBF. According to NAVICP Mechanicsburg, work is being done on a maritime PBL for an entire platform.

Working Capital Fund

NAVICP Philadelphia's goal for PBL contracts is to dramatically improve performance in a cost-contained environment. PBL contracts are not necessarily issued to lower the cost of any part or system. ICP believes that occasionally the fleet or the various program offices have a different understanding of what PBL contracts are supposed to accomplish. NAVICP controls Working Capital Fund (WCF) money—cost recovery rates or charges applied to parts, systems or platforms in various Operations and Maintenance accounts. This fund is governed by OSD[8], and strict guidelines are in place. The Working Capital Fund must be self-sufficient. It cannot grow too large, and it must maintain a 7-day hedge—the amount of time needed to turn over 25 percent of the fund.

Because this is the money that NAVICP has available, these are the funds it uses to pay for PBL contracts. Anything funded through the WCF must pay for itself in five years. This means that when issuing a PBL contract, NAVICP must predict the demand rate for the part and the cost close to the actual execution, or the fleet experiences a wide variation in the rates. Typically, ICP looks at a PBL contract (the goal is a 5-year contract) and increases the rate for the initial lay in with the understanding that over the 5-year span of the contract, the cost will go down due to a projected increase in reliability. Anticipating the demand can prove difficult, and in a few cases, ICP has had to re-price contracts [7].

The benefits and costs of using the WCF for PBL contracts are many. The benefits include the following:

- The cost of parts or system easily visible and identifiable
- Firm fixed price

---

8. *DOD Financial Management Regulations*, Volume 2B, Chapter 9, June 2004 is a basic instruction.

- Money does not "die"
- Fluctuations in prices and demand can be accommodated
- Maritime contracts are included in the total number of dollars tracked.

But there are also disadvantages:

- Cannot co-contract with the Army and the Air Force
- There are limits on the total ability to contract
- There is an impact on non-PBL parts in the same fund
- Award fees are paid out of the fund.

Depot maintenance and Title X

The PBL office is greatly concerned about the issue of Depot Core. Any PBL contract that touches depot level maintenance at a depot facility requires a letter to Congress. Depot maintenance is a concern for a several reasons:

- All contracts with the civilian companies and manufacturers may take repair costs out of the depot core work, and by law, it must be a 50/50 split[9].
- Nothing says that the contractor cannot set up shop in an organic depot—and this has been done for a couple of contracts. This is a "win-win" situation because the contractor bears the burden of updating equipment and the depots benefit from the on-site technical expertise and training.
- A negative aspect is that depot capability may increase, and this must be carefully managed. Also, some contractors are increasing depot capability near the sites where their parts are flowing.

---

9. 10 USC 2471 Persons outside the Department of Defense: lease of excess depot-level equipment and facilities by; P.L. 99-145, Section 1231. Core logistics functions subject to contracting out limitations;

Summary and conclusions

N-814 asked CNA to look at the DoN's use of PBL contracts to determine whether they are providing the advertised results. While this may be the case, there is not enough empirical data to state this as fact, and the monitoring of the performance of these contracts is inadequate.

Currently, there is no guidance, other than the broad-brush encouragement from OSD. An OPNAV manager should be appointed to provide guidance through written policy, and act as the centralized point for the PBL process. There is not a current Navy instruction that outlines the responsibility and oversight for these contracts.

It will be interesting to see how PBL contracts evolve as the next generation of support undergoes acquisition and planning. PBL contracts as known today may be very different for the Joint Strike Fighter ten years from now. Because the future portends increasing PBL contract dollar amounts, the fleet needs to be more aware of what is happening up and down the entire maintenance and material chain of PBL contracts.

There seems to be a generalized belief that once a PBL contract is written nothing further need be done unless there is a problem. The dollar amounts of these contracts is becoming significant, likely exceeding $1 billion in FY 2005. The Navy, as a corporation, needs to understand where it's commitments are, and where the lack of flexibility exits. There is a complete lack of feedback in the current PBL process, and the measurement of the performance of these contracts lacks visibility. Performance data, though required, are only reported on a case-by-case basis—a centralized repository needs to be established to collect and maintain these data.

NAVICP strongly believes that PBL contracts provide insurance against obsolescence issues, one of their greatest problems. Obsolescence is a real issue, but it is not measurable in any current empirical way. Nonetheless, NAVICP may think highly of PBL contracts because contractors are willing, for profit, to fix the reliability problems of legacy systems. This is interesting because the Navy needs to learn how to provide incentives to these same manufacturers that will encourage them to strive for increased reliability during acquisition and share in the profits with the commercial companies.

Finally, much has been written about the fact that the purpose of PBL contracts is *not* primarily to save money. This is true of the legacy systems but not for the large new platforms currently under discussion (i.e., JSF). However, should there not be an expectation of return for each investment? If so, it needs to be clearly stated and tracked. It is worthwhile to look at what the availability and reliability of a part or system is with the PBL contract versus without the contract and to consider what the performance might be in 10 to 15 years. Unfortunately, PBL contracts are still relatively immature in that not enough have been in place long enough to provide end-to-end tracking. Much is still unknown about changes in performance and the risks involved, as well as whether costs are increasing or decreasing over time. The true impact of PBL contracts will remain a topic of interest and research for some time.

Appendix A: A description of the types of PBL contracts[10]

F - "Full" PBL. A contractual arrangement where the contractor manages (and may also own) the inventory, determines stockage levels, typically repairs NRFI material, and is required to meet specific performance metrics. Requisitions still flow through ICP, and ICP pays the contractor for performance but bills customers traditionally. Reliability improvements, technology insertion and reduced obsolescence may be some of the inherent benefits of a Full PBL. The contractor usually is given Class II ECP authority and in some cases may also have configuration control. Additionally, Logistics Engineering Change Proposal (LECP) arrangements will be considered a subset of this category if they contain supply support clauses that fall under the definition noted above. All ILS elements can be covered in a full or partnership PBL if funding resources are properly allocated.

P - PBL-Partnership (PBL-P). A Full PBL that incorporates a partnership between a commercial entity and an organic depot. An arrangement between a contractor and Navy such that the Navy performs a portion of support required by and for the contractor. For example, the contractor may sub-contract the Navy to perform maintenance support at an organic depot. This can be highly beneficial when addressing Core maintenance issues, in that the Navy is able to retain Core capability while acting as a "sub" to the contractor.

MSP - Mini-Stock Point. Navy owns the inventory. The contractor receives, stores, issues, and may also repair the material. Usually, performance metrics do not apply. Mini-Stock Point Plus (MSP+). All the functions of a MSP, but also includes a negotiated level of requirements determination (MIN/MAX).

10. Naval Aviation Systems Team. *Performance Based Logistics Overview, Presented to the National Defense Industrial Association*, 25 Oct 2001.

O - PBL-Organic (PBL-O). An arrangement with an organic activity (normally via MOA) to procure, repair, stock and issue material. Performance metrics can apply.

C - PBL-Commercial (PBL-C). An arrangement where commercial items are supplied by a contractor. Customer requisitions are automatically routed through ITIMP directly to the contractor as a delivery order.

CLS - Contractor Logistics Support. The contractor manages most or all facets of logistic support (i.e. ILS elements), including inventory levels, maintenance philosophy, training manuals, PHS&T, full configuration control, support equipment, etc. CLS does not always equal PBL.

LTC - Long-Term Contract

Appendix B: Lists of awarded aviation and maritime PBL contracts

i) Aviation PBL contracts

Contractor	PBL	Award date	Contractor	PBL	Award date
Boeing	F-18 ARF	Dec-95	Tel Inst	SE IFFITTS	Mar-01
Litton	Common RINU	Sep-96	NWS Crane	S-3 Elec Tubes	Apr-01
Lear	H-46 AHRS	Sep-97	Boeing	F/A-18E/F FIRST	May-01
NWS Crane	P-3 SSIP	Oct-97	Charleston	P-3 EP-3J Mod	May-01
Testek	SE AGTS	Apr-98	Lockheed	SE EOSS+	Jun-01
GE Strother	Engines T-700	Sep-98	TRW Inc.	E-2 GRIIM RePr	Sep-01
GEC Marcon	Common SCADC	Sep-98	Smith Ind.	Common ASN-50	Oct-01
Sikorsky	H-60 Damper (rolled into T2T)	Mar-99	Raytheon	H-53 HNVS FLIR (renewed)	Oct-01/Mar-03
Rolls-Royce	Engines T-406 PBTH	Mar-99	Honeywell	C-130 APU	Feb-02
Marconi	Common NGS	Jul-99	Honeywell	F-18 E/F APU	Feb-02
Smith Ind.	F-18/F-14/AV-8 SMS	Sep-99	Kollsman	AH-1W NTS	Apr-02
Raytheon	Common ALR-67 (V)3	Oct-99	Lockheed	H-60 Avionics (rolls into T2T Oct 2004)	May-02
Honeywell	EA-6B EFIS	Dec-99	FST Jax	SE SALSA	Jul-02
Deval	SE AHE	Dec-99	LSI	T-2 Cockpit (renewed)	Mar-99/Jul-02
NAVAIR/Dyn-corp	SE GOSSPL	Feb-00	Raytheon	Common ALE-50A	Aug-02
LMIS	SE CASS/CASS CSP	Dec-97/May-00	Keyport	EA-6B Tailpipes	Dec-02
Honeywell	S-3/E-2/C-2/F-18-A-D/P-3 APUs	Jun-00	Rolls-Royce	Engines AE2100D3 PBTH	Dec-02
Dyncorp	SE QEC	Jun-00	Sikorsky	H-60 Dyn Comp (rolls into T2T Oct 2005)	Feb-03

i) Aviation PBL contracts

Contractor	PBL	Award date	Contractor	PBL	Award date
Raytheon	V-22 NAVFLIR (renewed)	Jun-00/Mar-03	BAE	SE EWSE (renewed)	Jan-01/Feb-03
FST Noris	SE CRATE	Jun-00	AAI	SE JSCST (interim PBL for 3 yrs.)	Mar-03
Multi Rae	SE Gas Detector	Jun-00	Boeing	F/A-18 MSP (mod to ARF)	May-03
Sikorsky	H-53 MRH	Jul-00	GE	Engines F404	Jul-03
Sikorsky	H-53 MGear Box	Jul-00	Lockheed	SE CASS Hi Power	Jul-03
Kaman	H-2 A/C	Aug-00	Kaiser	F/A-18/F-14 HUD/DDI	Sep-03
L-3 Comm.	E-2 EMDU	Aug-00	Raytheon	H-60 FLIR	Sep-03
Boeing	V-22 DLRs	Jan-01	Ham Sundst	H-46/H-53 APU	Oct-03
FST Jax	SE EOTS	Jan-01	Honeywell	P-3 EDC (APU add-on)	Oct-03
Rockwell	Common ARC-210	Jan-01	MHSCO	H-60 Tip to Tail	Dec-03
Lockheed	F-14 LANTIRN	Jan-01	Honeywell	F404-400/402 Main Fuel Controls (APU add-on)	Jun-04
Michelin	Common Tires	Feb-01	F.A.G.	Engines TF-34 Bearings	Jul-04
Jay-Em	EA-6B Main Wheels	Feb-01	GE	Engines T-700 (follow-on)	Sep-04
Lockheed	E-2 APS-145	Feb-01	GE	Engines F414 C & A	Nov-04
			ESI	F-14/EA-6B Hydraulics	Dec-04

ii) Maritime PBL contracts

Contractor	PBL	Award date	Contractor	PBL	Award date
Integraph	ICAS	Jun-96	NUWC Newport RI	AN/BYQ-6	Nov-00
AEA Technology	Isotopes	Sep-96	SSC Charleston	TRDF	Jan-01
GTSI,SOSI&Sea bird	AN/SQQ-32(V), BSP	Oct-97	NAWC-AD St. Inigoes MD	AN/UPX 24 & OE-120	Feb-01
Zodiac	F-470	Dec-97	Carleton Technologies	Life Raft Inflat Cylinder	Mar-01
Lockheed Martin	AEGIS (LM)	Jan-98	Allen Bradley	PLC	Apr-01
Ocenco	EEBD	Feb-98	Keystone Fire Protection Co	PKP Fire Extinguisher	Apr-01
Lockheed Martin TDS	AN/UYQ-70	Sep-98	Katadyn North America	MROD	May-01
NSWC Crane	AN/SLQ-32 LSS	Oct-98	ISSI	50 Person Life Raft	Jun-01
Chromalloy	LM2500	Mar-99	LINPAC	Reusable Bulk Containers	Aug-01
Village Marine Technology	Reverse Os. Desal	Apr-99	S.E.I.	Life Raft Inflation Valve	Aug-01
Interlink Communicator	AN/AMP-383	May-99	A.W. Chesterton Co	Chesterton	Sep-01
SPAWARSYS SD	ADNS	Jun-99	Parasense	Refrigerant Leak Monitors	Oct-01
SSC Charleston	NAVMACS II	Jun-99	Lockheed Martin	AEGIS SPY 1 Radar	Mar-02
Various	GPETE/CAL Stds	Jun-99	NAWC-AD St. Inigoes MD	MX XII IFF	Mar-02
Lockheed Martin	MK-92	Jun-99	Pointer Technology	FTIC	Mar-02
FTSCLANT	AN/SQQ-89(V)6	Jun-99	Northrup/ Grumman/ Sperry	AN/BPS - 15J Radar	Mar-02
SSC Charleston	SSEE, Inc. B	Jul-99	SSC San Diego	AN/BSQ-9(V) TFDS	Apr-02
Raytheon Service Co	Sidewinder	Aug-99	Harris	WSC-8(v) 1&2	Jul-02
Raytheon Service Co	AN/UYA-4	Aug-99	Super Vacuum Mfg Co.	Tubeaxial Fan	Sep-02

ii) Maritime PBL contracts

Contractor	PBL	Award date	Contractor	PBL	Award date
Raytheon Service Co	AN/UYQ-21	Aug-99	Northrup Grumman/ Sperry	AN/BPS-16(V) 2/3 &4	Oct-02
SSC Charleston	NTCSS	Aug-99	Rexnord	Magnetic Couplings	Dec-02
SSC Charleston	SNAP III	Aug-99	Qualified Fasteners, Inc.	Fasteners CTC	Feb-03
SSC Charleston	NALCOMIS	Aug-99	Ocenco	EEBD Resolicitation	Apr-03
SSC St. Juliens	TAC 3	Aug-99	Northrop Grumman Corp	ASDS	Apr-03
SSC St. Juliens	TAC 4	Aug-99	Bath Iron Works	DDG 51 Ships Store Ref	May-03
Raytheon	Raytheon Svcs	Aug-99	CSS Panama City	Dry Deck Shelter	May-03
Lockheed Martin	AN/BSY-2	Aug-99	L3 Communications	CDL-N, AN/ USQ-123	May-03
Lockheed Martin	AN/BQG-5	Aug-99	Ericsson Inc.	HYDRA	Jul-00/Jun-03
SSC Charleston	JMCIS	Oct-99	NSWC Crane	High Security Padlocks	Oct-03
ISSI	25 Man Life Raft	Feb-00	Raytheon	NATO Seasparrow/TAS	Oct-03
SSC Charleston	SCCTV	Feb-00	BAE Systems	IFF Digital Transponder	Jan-00/Oct-03
Raytheon	CIWS	Mar-00	NUWC Keyport	VLS Cables	Oct-03
SSC Charleston	BGPHES	Apr-00	SSC San Diego	TACAN	Nov-03
SSC San Diego	AN/WRR-12 SLVR	May-00	Lockheed Martin	MK-41 VLS	Nov-00/Mar-04
Raytheon/Newport	CCS MK2 Mod 0	May-00	Air Prgms-Torpedoes-ATC	AN/TPX-42(V)	Mar-04
W.S. Darley & Co.	P100 Pumps	Jun-00	Lockheed Martin	ARCI	Apr-99/Sep-04
Triway Industries	Berthing	Jul-00	Northrup Grumman	WSN-7	Sep-04
SSC Charleston	AN/URC-109	Aug-00	Northrup Grumman	AN/BPS-15/16	Sep-04
NUWC Keyport	MPIU	Sep-00	SSC Charleston	COBLU	Oct-04
CSS Panama City	SDV	Oct-00	NSWC Pt. Hueneme	SSDS/RAIDS	Oct-04
SSC Charleston	SSEE Inc. D	Oct-00	NSWC Crane	AN/SLQ-32	Dec-04

ii) Maritime PBL contracts

Contractor	PBL	Award date	Contractor	PBL	Award date
Raytheon	AEGIS - Raytheon	Oct-00	NAWC St. Inigoes	AN/UPX-37	Dec-04
NUWC Keyport	CV-TSC AN/SQQ-34	Oct-00	SSC Charleston	SSEE, Inc. E	Dec-04
Northrup Grumman/ Sperry	AN/BPS-15H	Oct-00	SSC Charleston	Combat DF	Feb-05

Appendix C: Estimated regression models used to forecast FY 2005 PBL contract money

1) Estimated model:
Total $ = -2.38E+08 + 17621301 * #PBL

Predictor	Coef	SE Coef	P
Constant	-237716075	294481124	0.504
#PBL	17621301	5490908	0.085

S = 106295521 R-Sq = 83.7% R-Sq(adj) = 75.6%

Predicted values for new observations

New Obs	Fit	SE Fit
#PBL = 70	9.96E+08	108610377

95% CI: (5.28E+08,1.46E+09)

2) Estimated time series equation:
Yt = 4.72E+08 - 22960662 * t + 36970660 * t**2

Accuracy measures
MAPE: 3.41151
MAD: 22125705

Predicted values for new observations

Period	Forecast
t = 5	1.28E+09

Forecast Notes

- Model 1: FY05 total money = $996M
  - Aviation PBL contracts = $598M* (*via a separate estimated model for each)
  - Maritime PBL contracts = $398M*
  - 95% CI for FY05 total money: ($528M, $1460M)

- Alternative Model 2: FY05 total money = $1280M
  - Does not take into account the expected number of PBL contracts to be found in the DD Form 350s ? a simple time series forecast of total money.
  - Forecast is within the CI from Model 1.

Appendix D: Cumulative FY 2001-2004 money for the 75 PBL contracts

PBL	Aviation/ maritime	Type	Source of funds	Activity	Cumulative FY01-04 $
AN/UYQ-70 Advance Display System	M	C	SCN	SEASYSCOM	$784,354,923
F/A-18E/F FIRST	A	P	NWCF	ICP_PHIL	$464,145,066
Engines T-406 PBTH	A	CLS	APN	AIRSYSCOM	$177,696,109
Engines F404	A	P	NWCF	ICP_PHIL	$145,960,619
CIWS	M	F	NWCF	ICP_MECH	$117,124,302
S-3/E-2/C-2/F-18-A-D/P-3 APUs	A	P	NWCF	ICP_PHIL	$94,189,070
H-60 Dyn Comp (rolls into T2T Oct-05)	A	F	NWCF	ICP_PHIL	$69,685,717
F-18 ARF	A	MSP	NWCF	ICP_PHIL	$62,829,439
V-22/H-53 HNVS NAVFLIR	A	F	1A5A	AIRSYSCOM	$52,291,803
Common Tires	A	F	NWCF	ICP_PHIL	$48,021,937
AEGIS (MK 99 Fire Control)	M	F	NWCF	ICP_MECH	$42,465,273
H-60 T2T	A	P	NWCF	ICP_PHIL	$38,910,104
VA Beach BOA	M	MSP	NWCF	ICP_MECH	$35,521,097
H-60 FLIR	A	P	NWCF	ICP_PHIL	$35,356,427
H-53 MRH	A	MSP	NWCF	ICP_PHIL	$34,099,414
AH-1W NTS	A	MSP	NWCF	ICP_PHIL	$33,205,657
Common ALR-67 v(3)	A	F	NWCF	ICP_PHIL	$33,161,388
H-53 MGear Box	A	MSP	NWCF	ICP_PHIL	$33,116,578
25 Man Life Raft	M	C	NWCF	ICP_MECH	$30,710,821
Digital Transponder (IFF)	M	F	APN	AIRSYSCOM	$29,786,204
CCS MK2 Fire Control (Block 1) Upgrade	M	F	NWCF	ICP_MECH	$27,546,031
E-2 GRIM RePr	A	F-LECP	NWCF	ICP_PHIL	$27,308,413
F/A-18/F-14 HUD/DDI	A	P	NWCF	ICP_PHIL	$27,133,795

PBL	Aviation/ maritime	Type	Source of funds	Activity	Cumulative FY01-04 $
SE CASS/CASS CSP	A	F	NWCF	AIRWARCEN	$24,017,147
E-2 APS-145	A	MSP	NWCF	ICP_PHIL	$21,000,477
V-22 DLRs	A	F	NWCF	ICP_PHIL	$19,041,479
F-14 LANTIRN	A	F	NWCF	ICP_PHIL	$16,813,362
Common ARC-210	A	F	NWCF	ICP_PHIL	$16,227,707
SE AGTS	A	F	NWCF	AIRWARCEN	$15,517,502
SE CASS Hi Power	A	F	NWCF	AIRWARCEN	$14,211,833
Engines AE2100D3 PBTH	A	CLS	APN	AIRSYSCOM	$13,125,053
H-60 Damper (rolled into T2T)	A	F	NWCF	ICP_PHIL	$12,537,266
EEBD Resolicitation	M	C	NWCF	ICP_MECH	$12,116,561
ARCI (AN/BQQ-10)	M	F	NWCF	ICP_MECH	$11,101,112
ASDS (Advanced Seal Delivery System)	M	F	NWCF	ICP_MECH	$10,742,610
NATO SEASPARROW/ TAS	M	F	NWCF	ICP_MECH	$10,125,739
Common SCADC	A	F	NWCF	ICP_PHIL	$9,974,952
H-46/H-53 APU	A	P	NWCF	ICP_PHIL	$9,230,660
F-470 Boat CRRC (ZODIAC)	M	C	NWCF	ICP_MECH	$8,819,324
MK 92 FCS	M	MSP	NWCF	ICP_MECH	$8,770,265
Common NGS	A	F-LECP	NWCF	ICP_PHIL	$8,458,897
WSC-8 v 1&2	M	F	NWCF	ICP_MECH	$7,317,811
SE CRATE	A	O	NWCF	ICP_PHIL	$7,157,378
SE EOSS+	A	F	NWCF	AIRWARCEN	$6,921,050
Common ALE-50A	A	F	NWCF	ICP_PHIL	$6,151,764
SE EWSE	A	F	NWCF	ICP_PHIL	$5,946,456
H-60 Avionics (rolls into T2T Oct-04)	A	F	NWCF	ICP_PHIL	$4,334,125
EA-6B EFIS	A	LTC	NWCF	ICP_PHIL	$4,077,900
Berthing	M	C	NWCF	ICP_MECH	$4,054,074
FTIC (Firefighters Thermal Imaging Camera)	M	C	NWCF	ICP_MECH	$3,876,000
Engines T-700	A	F	NWCF	ICP_PHIL	$3,147,991
EA-6B Main Wheels	A	LTC	NWCF	ICP_PHIL	$3,063,114
P-100 Pumps	M	C	NWCF	ICP_MECH	$2,941,536
SE AHE	A	F	NWCF	ICP_PHIL	$2,649,500

PBL	Aviation/ maritime	Type	Source of funds	Activity	Cumulative FY01-04 $
SE JSECST (interim PBL for 3yrs)	A	MSP	NWCF	AIRWARCEN	$2,644,000
Common ASN-50	A	LTC	NWCF	ICP_PHIL	$2,190,807
Chesterton (Seals,Packing)	M	C	NWCF	ICP_MECH	$2,116,635
E-2 EMDU	A	F-LECP	NWCF	ICP_PHIL	$1,712,066
MROD (Desalinator)	M	C	NWCF	ICP_MECH	$1,495,570
ROD (Reverse Osmosis Desal)	M	C	NWCF	ICP_MECH	$1,176,817
CDL-N, AN/USQ-123A (was CHBDL)	M	MSP	NWCF	ICP_MECH	$922,967
T-2 Cockpit	A	MSP	NWCF	ICP_PHIL	$909,136
Magnetic Couplings	M	C	NWCF	ICP_MECH	$876,774
Common RINU	A	F	NWCF	ICP_PHIL	$866,810
Engines TF-34 Bearings	A	F	NWCF	ICP_PHIL	$731,737
HYDRA	M	C	NWCF	ICP_MECH	$673,857
AN/BPS-15&16	M	P	NWCF	ICP_MECH	$653,570
DDG-51 FLT II Refrigeration Unit	M	CLS	NWCF	ICP_MECH	$649,925
Refrigerant Leak Monitors	M	C	NWCF	ICP_MECH	$436,705
Life Raft Inflation Valve	M	C	NWCF	ICP_MECH	$397,290
PKP Fire Ext	M	C	NWCF	ICP_MECH	$296,271
Life Raft Infla. Cylinder	M	C	NWCF	ICP_MECH	$148,223
Fasteners CTC	M	C	NWCF	ICP_MECH	$136,549
Tubeaxial Fan	M	C	NWCF	ICP_MECH	$103,588
Radiographic Isotopes	M	C	NWCF	ICP_MECH	$-

References

[1] Rebecca Kirk et al. *Performance-Based Logistics Criteria Analysis* (U), Nov 2004 (CNA Annotated Brief D0010999.A1/SR1).

[2] Jino Choi et al. *Business Case Analysis Guidebook for Assessing Economic Feasibility of PBL* (U), Dec 2004 (CNA Research Memorandum D0010677.A2/Final).

[3] Department of Defense. *Product Support for the 21st Century: A Program Manager's Guide to Buying Performance*, 6 Nov 2001.

[4] General Accounting Office. *Defense Management: DOD Needs to Demonstrate That Performance-Based Logistics Contracts Are Achieving Expected Benefits*, Sep 2005.

[5] COL Laura Sampsel and LTCOL Bill Ivory. *Naval Inventory Control Point, Presented to: ASO Symposium*, 3 May 2005.

[6] NAVSUP. *APML Training Brief*, 17 Feb 2004.

[7] CDR Ken Epps. *NAVICP WCF, FHP Conference Briefing*, 2005

List of figures

Figure 1. Funding for aviation and maritime PBL contracts. . 11

Figure 2. Total NAVICP PBL obligations (FY 1998–2005) . . . 13

Figure 3. Proportion of PBL contracts by type 14

Figure 4. Proportion of PBL money by type 15

Figure 5. Proportion of PBL contracts by source of funding . 16

Figure 6. Proportion of PBL money by source of funding. . . 16

Figure 7. Proportion of PBL contracts by activity 17

Figure 8. Proportion of PBL money by activity. 17

Figure 9. ML–1 fill rates (FLIR) 33

Figure 10. ML–2 fill rates (FLIR) 33

Figure 11. Number of removals for malfunctions (FLIR) 34

Figure 12. Mean flight hours before failure (FLIR) 35

Figure 13. ML–1 fill rates (ARF) 37

Figure 14. PBL successes according to NAVSUP. 38

List of tables

Table 1. The 15 most expensive PBL contracts between FY 2001 and FY 2004 19

Table 2. Ten PBL contracts 22

Table 3. A comparison of contracted and DD Form 350 money 24

Table 4. Metrics specified in the contracts. 29

Table 5. Initial contracts examined 30

Table 6. H–60 FLIR contractual measurements 32

CRM D0012881.A2/Final