
Alternative Strategies for Managing MK48 Intermediate Maintenance Activity (IMA)



William Lucyshyn
Director of Research
Center for Public Policy and Private Enterprise
University of Maryland

Report Documentation Page

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Overview

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- Background
- Raytheon Contract
- Demonstrated Results
- Preliminary Observations
- Conclusion

Introduction—Why are we looking at the MK 48 Case?

DoD Logistics Today

- Spend over \$90 Billion/year (\$126 Billion in FY 04 with the Supplemental)
- Employ approx. 1 Million government people
- Have an inventory of approx. \$67 Billion
- **But do not do a world-class job, by any measure (response time, flexibility, cost, etc.)**
- Logistics has been a major problem in Iraq, and it is critical to 21st Century warfighting
- DoD Logistics has little cost visibility or performance accountability

We need to work to realize the potential for dramatic improvement in performance, with billions of dollars of savings.

Opportunity for Improved Performance at Lower Cost

Process	DoD	Commercial Companies		
Distribution (for in-stock items)	21 days (DoD average)	1 day (Motorola)	3 days (Boeing)	2 days (Caterpillar)
Repair (cycle time)	4-144 days (DoD average)	3 days (Compaq)	14 days (Boeing electronics)	14 days (Detroit Diesel)
Repair (shop time)	8-35 days (Army tank/truck)	1 day (Compaq)	10 days (Boeing electronics)	5 days (Detroit Diesel)
Procurement (administrative lead time)	88 days (DLA)	4 days (Texas Inst.)	0.5 days (Portland General)	Minutes (Boeing, Caterpillar)

Some of this data re from 1996 DSB report.

Background— The MK 48

- The MK 48 (or MK 48 ADCAP) is carried by all Navy attack and ballistic missile submarines.
 - Both variants are designed to combat fast, deep diving nuclear submarines and high performance surface ships.
 - Both can operate with or without wire guidance and use active and/or passive homing.
- The MK 48 has been operational in the U.S. Navy since 1972.
- The MK 48 **Advanced Capability** (ADCAP) became operational in 1988 and was approved for full production in 1989.
 - The ADCAP has significantly increased capabilities over the MK 48.



CHARACTERISTICS

- Length: 19 feet
- Diameter: 21 inches
- Weight: 3434 lbs (MK 48), 3695 lbs (ADCAP)
- Speed: Greater than 28 kts
- Power Plant: Piston engine; pump jet
- Range: Greater than 5 miles;
- Depth: Greater than 1200 ft
- Warhead: 650 lbs high explosive

Background—MK-48 Life Cycle Model

- The MK 48 torpedoes are upgraded and modified by Raytheon at their facility in Keyport (the Navy Depot is also at Keyport)
- The MK 48 IMA mission is to provide essential torpedo maintenance services and ready for issue weapons to the submarine fleet
 - Refuel, and prep for reuse as an exercise torpedo or convert to a warshot (nominally after 10 in-water runs).
 - Warshot periodic maintenance
 - Warshot verification
 - Occasional R&D as directed
- The Intermediate maintenance is conducted at three facilities:
 - Keyport—manned by government civilians
 - Yorktown—manned primarily by active duty sailors
 - Pearl Harbor—outsourced to Raytheon

Background—MK 48 IMAs

- Three Facilities Yorktown, Pearl Harbor, Keyport
 - Yorktown and Pearl Harbor were virtual mirror images prior to the outsourcing
- During 1990s active duty sailor resources were in large demand
 - In June 1999, CinCPACFLT made the decision to convert the sailor billets at the Naval Magazine, Pearl Harbor to civilian positions
 - Then, outsource the IMA to a contractor—transitioning in FY01
- Contract competitively awarded to Raytheon in Apr 2000, with 4 one year options



Initial Raytheon Contract

- The original contract goals were to:
 - Process and issue approximately 360 full and partial weapon maintenance actions
 - Meet 100% of fleet deliveries (in needed time)
 - Demonstrate required reliability and availability standards
 - Maintain a flexible planning process to adapt to schedule changes
- “Since the scope and type of work is well defined, a fixed price contract is anticipated.”



Initial Contract Incentives

- The original contract (approx \$4M to \$7M per year) provided the following incentives structure

Incentive Fee Allotment per Incentive Category		
Category	% of Incentive Pool	Incentive Fee Allocated Per Period
Torpedo Quality Indicators* (QI)	65%	\$325, 000
Torpedo Scheduling Responsiveness and Planning	35%	\$175,000

* Quality Indicators Include sub-categories of reliability, availability, and warshot sampling

- There was also a separate incentive to reduce the use of government provided parts—contractor could earn 50% of the savings realized in parts usage.

Follow-on Contract

- Sole-source contract signed with Raytheon in Apr 2006 (approx \$9M per year), with one option year

Incentive Fee Allotment Categories		
Incentive Category	% of Incentive Pool	Incentive Fee Allocated Per Period
Torpedo Workmanship Failure Evaluation Quality	70%	\$280,000
Fleet Failure Analysis (FFA) Hold	20%	\$80,000
Supply	10%	\$40,000

Demonstrated Results in Other Programs

Performance Based Logistics

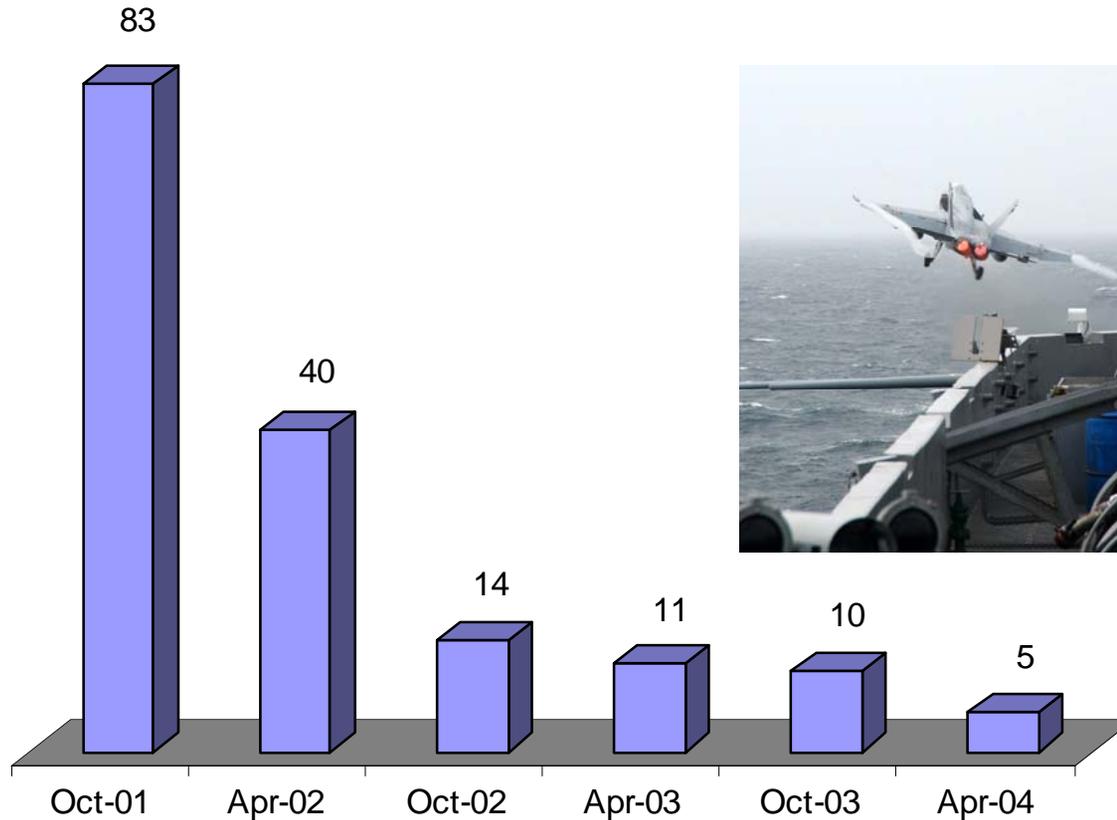
Material Availability

Logistics Response Time

Navy Program	Pre-PBL	Post-PBL	Pre-PBL	Post-PBL
 F-14 LANTIRN	73%	90%	56.9 Days	5 Days
 H-60 Avionics	71%	85%	52.7 Days	8 Days
 F/A-18 Stores Mgmt System (SMS)	65%	98%	42.6 Days	2 Days CONUS 7 Days OCONUS
 Tires	70%	85%	28.9 Days	2 Days CONUS 4 Days OCONUS
 APU	65%	90%	35 Days	6.5 Days

Demonstrated Results in Other Programs

Organic Assets with a Focus on Continuous Improvement



**AIMD Lemoore Power Plants Shop
F404 Engine Repair Cycle Time in Days**

ADUSD(MR&MP) Dave Pauling

Demonstrated Results in Other Programs

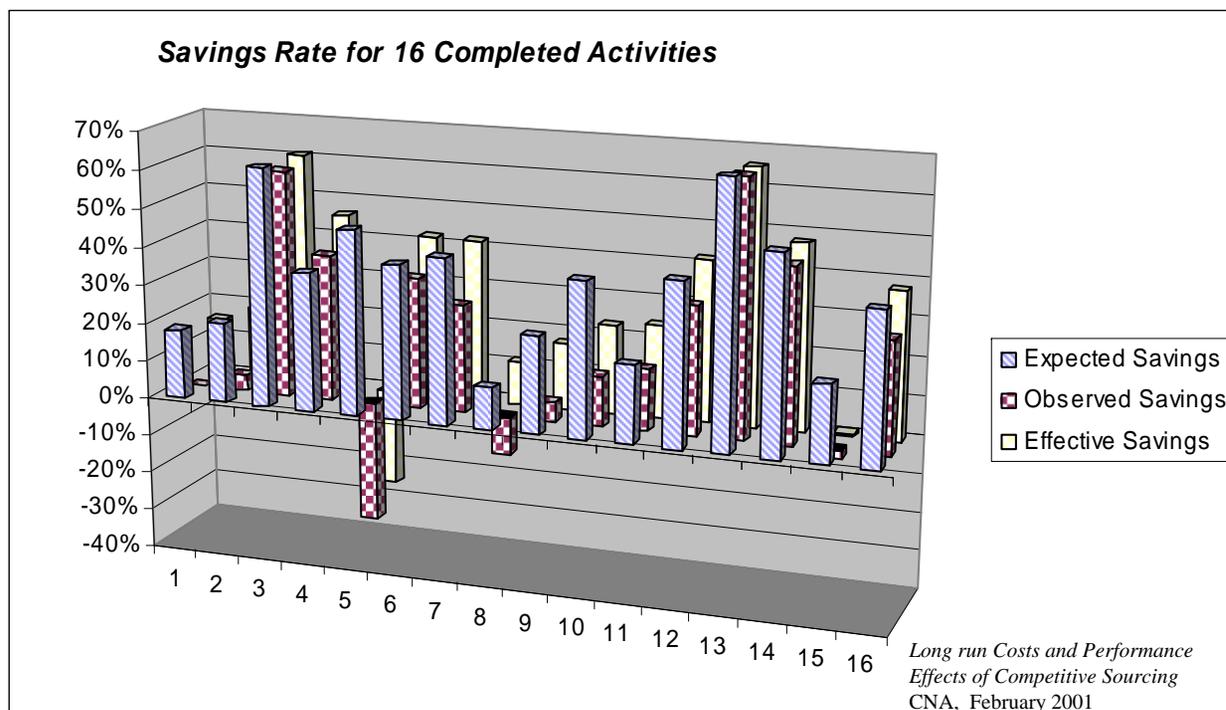
DoD A-76 Competitions 1994 – 2003

Winning Bidder	Competitions Won	Civilian Positions Competed (Excluding Direct Conversions)	MEO FTEs (Excluding Direct Conversions)	% Decrease from Civilian Authorizations to Government MEO FTEs
In-House	525 (44%)	41,793	23,253	44%
Contractor	667 (56%)	23,364	16,848	28%
Total	1,192	65,157	40,101	

Competitive Sourcing: What Happens to Federal Employees?
 Jacques S. Gansler and William Lucyshyn, October 2004

Demonstrated Results in Other Programs

CNA Study of Long-Run Costs of Competitive Sourcing



Weighted Averages

- ➔ Expected Savings (as bid by winner – government or private) **35%**
- ➔ Observed Savings (realized results, including scope & quantity changes) **24%**
- ➔ Effective Savings (realized results on same scope & quantity) **34%**

Strengths of Outsourcing

- Outsourcing is more efficient and generally reduces costs significantly because:
 - It harnesses competition--brings the pressure of the marketplace to bear on the inefficient producers.
 - It permits better management control--frees government managers of most of the distracting influences e.g. civil service constraints.
 - Managers can see more directly the costs and benefits of their decisions.
- Outsourcing enables the government to take advantage of specialized skills, new technology, and innovation that are often lacking in its own organization.
- Outsourcing can reduce dependence on a single supplier (i.e., the government), and the potential for future competition provides a continuing incentive for higher performance at lower cost.

Moving Toward Market-Based Government: The Changing Role of Government as the Provider, Jacques S. Gansler, June 2003,

Meanwhile...

- Yorktown is still manned primarily by active duty sailors.
- Use sailors on a 3 year shore rotation
 - Many of the technicians are torpedo-men
 - Highly motivated workforce with ties to the fleet
 - 6 month qualification with 8 week formal training program.

	Authorized	Onboard
Officer	4	4
Enlisted	100	90
Civilian	17	20
Total	121	114



Raytheon Results

- Raytheon signed a bridge contract in Nov 2005 to Apr 2006 to complete the work from the original contract
 - The Navy paid for security, to allow Raytheon to complete the required number of torpedoes—Raytheon was approximately 200 torpedoes behind
- At Pearl Harbor the effort for an exercise to exercise torpedo takes approx. 350 man hrs
- Aggregate data Yorktown and Keyport is 250-260 man hrs for an equivalent turn.
- Cost per employee is approximately \$50,000 a year less per employee at Yorktown, than Pearl harbor



Raytheon results are counterintuitive. Although government employees are generally cheaper, both measures at Pearl Harbor IMA are going the wrong way i.e. more man-hours at a higher rate

Preliminary Observations

- **Contract**
 - Fixed price contract may not have been the most appropriate
 - Second contract was sole source, in spite of performance
 - Contract incentives did not work
 - Since contractor must use gov't furnished parts, there is limited impact on availability, reliability
 - Supply incentive in first contract created perverse incentive—parts were stockpiled until the last year, then turned in
- **Limited use of metrics**
 - The Torpedo Enterprise Optimization program, tracked the rework statistics at all three of the IMAs
 - Collecting the data was viewed a burden and the requirement was eliminated—Yorktown still uses them

Preliminary Observations (cont)

■ Employees

- Oahu has a limited pool of individuals qualified for the work that can also get a security clearance
- Contractor does not use the Yorktown formal training program
- Living in paradise, “If you have to work at all in Hawaii, you’re working too much”

■ Process Improvement

- IMA is staffed by Raytheon employees, but uses Gov’t facility, tools, parts, and procedures
- There are many ordinance related restrictions—it is not a contractor owned process, and therefore more difficult to reengineer, innovate, and improve

Lessons Learned

If you want what you've always had, do what you've always done

Otherwise:

- Use the power of competition
- To the degree possible, allow flexibility and empowerment
- Develop meaningful metrics
 - Measurement is key to performance improvement and problem identification
 - Metrics should be understandable, economical, timely, and improvement oriented
- Improve contract incentives
- Improve training
 - Take advantage of the in-residence program
 - Courses are also available online

