

The Secretary of Defense Performance-Based Logistics Awards Program
For
Excellence in Performance-Based Logistics
Section 2
Summary of Criteria Accomplishments

Mission Success: Leading edge F-22 PBL strategy soundly delivered war-winning capability to the Raptor Warfighter at a significant value to the taxpayer. The Raptor PBL team includes the 478th Aeronautical Systems Wing (program manager), 577th Aeronautical Systems Group (engine program manager), contractors Lockheed Martin Aeronautics (LMA, Product Support Integrator), Boeing, Pratt and Whitney (P&W), all three Air Logistics Centers (ALC), and Air Combat Command (ACC). Innovative teaming and process management resulted in the first F-22 stand-alone PBL sustainment contracts worth \$1.5B for CY08 & CY09; the team also produced the highest readiness rates in program history. Through ingenious application of Air Force Smart Operation 21, the team drastically shortened the standard 18-month proposal process by 8-months and captured a 39 percent reduction in the Operations and Maintenance (O&M) budget totaling \$500M, while driving a joint agreement for a 20 percent improvement in aircraft availability. This AFSSO 21 initiative equates to seven additional F-22s in the Warfighter's hands! Empowered by an expertly crafted PBL strategy, the team re-evaluated and transformed the current O&M support Concept of Operations (CONOPS) to achieve significant performance outcomes and clearly meet or surpass the Warfighter's demanding expectations. Additionally, the team delivered an amazing 15 percent improvement in Mission Capable (MC) rates -- a solid 58 percent improvement in Mean Time Between Maintenance (MTBM) and a 35 percent improvement in Not Mission Capable Supply (NMCS) rates. Repair rates saw impressive results with reduced diagnostics ambiguity by an astounding 50 percent, retest okay by 49 percent, and overall repair time by 20 percent. Through dedicated public-private

partnering efforts, the team infused Raptor pride into our nation's federal civilian industrial base by standing up four full-service depot maintenance docks at Ogden ALC and initiating organic workload for wheels and brakes. On the Warfighter's turf, the team overcame monumental obstacles to accelerate the activation of the F-22 unit at Elmendorf AFB by 2 full years, while simultaneously completing the Raptor maintenance training standup at Sheppard AFB. Success confirmed, the Air Force declared Full Operational Capability (FOC) for the Raptor on 12 December 2007. Earlier in the year, the Air Force Operational Test and Evaluation Center (AFOTEC) rated the F-22 weapon system in FOT&E 2 as "Effective, Suitable and Mission Capable" – ready to fly, fight, and win!

Aircraft Availability (A_o): Absolute focus on key sustainment objectives resulted in the most successful A_o in F-22 history. With a full court press on rapidly returning aircraft to combat status, the F-22 PBL team negotiated and achieved an impressive A_o improvement that drove a 6-month average of 60.6 percent. This corresponds to a superior MC rate of 70 percent, an 11 percent increase over the previous year. The team exceeded Warfighter expectations despite a 58 percent increase in tasked flying hours and huge challenges in operational funding availability. Thinking and working outside the box, the PBL strategy shifted program focus from a Mil-Spec design to a design for the true operational environment of the Raptor. The strategy resulted in a huge reduction in risk of equipment failures and an impressive series of cause-and-effect analyses and rigorous environmental qualification tests, validating requirements for the F-22 to obtain an 8,000 hour service life. Capstone for the improved Warfighter capability came through the innovative Reliability and Maintainability Maturation Program (RAMMP) that infused critical improvements into the fielded aircraft. Because of this distinctive program, the lead the fleet or "Raptor Reach" aircraft already surpassed the developmental specification value

of 3.0 MTBM well before 100,000 flying hours and way before the anticipated 2010 maturity timeframe.

Ownership Cost Management: The F-22 was designed for supportability and self-sufficiency with a concerted focus on reduced logistics costs. The improved reliability of the fifth generation F-22 Raptor is projected to save the taxpayer about \$14B over the life of the aircraft, with attendant savings of more than 35 percent in support costs. These reductions were achieved by maximizing the number of sorties between major maintenance actions, drastically reducing the C-17s needed to deploy a squadron, and cutting the manpower spaces per aircraft. Repair costs per flight hour improved 14 percent in 2007. A 50 percent reduction in diagnostics ambiguity and a 15 percent improvement in fault isolation were also key contributors to driving down ownership costs.

Public-Private Partnering: The F-22 PBL strategy incorporated a robust public-private partnering strategy designed to maintain the industrial base throughout the Raptor's life. This effort is facilitated by contractor-government integration coupled with long-term contract and partnering agreements. The Air Force-Contractor partnership is a win-win reality for both, while maximizing performance and minimizing cost by standardizing repairs and equipment. Further strengthening the sustainment acquisition strategy, the F-22 partnering strategy conducted frequent joint business case analyses and used performance-based incentives for both the Contractor and ALC teams. The PBL partnering strategy successfully blended the Air Force's Title 10 depot maintenance requirements and preserved core USAF organic capabilities in the ALCs. Built on a ground-breaking business relationship, the F-22 PBL partners solidified continuous information flow across the team which vastly improved performance to the Warfighter.

Systems Engineering (SE) Approach: The PBL team embraced a robust SE process that addressed Operational, Safety, Suitability and Effectiveness (OSS&E) and Air Worthiness concerns in meeting Warfighter commitments. The integral SE process optimized sustainment performance while implementing fielded retrofits and managing configuration changes due to upgraded hardware and Operational Flight Program (OFP) configurations. The Product Support Integrator (PSI) institutionalized the challenge through PBL to integrate these modernization efforts with sustainment requirements, ensuring Warfighter needs are met.

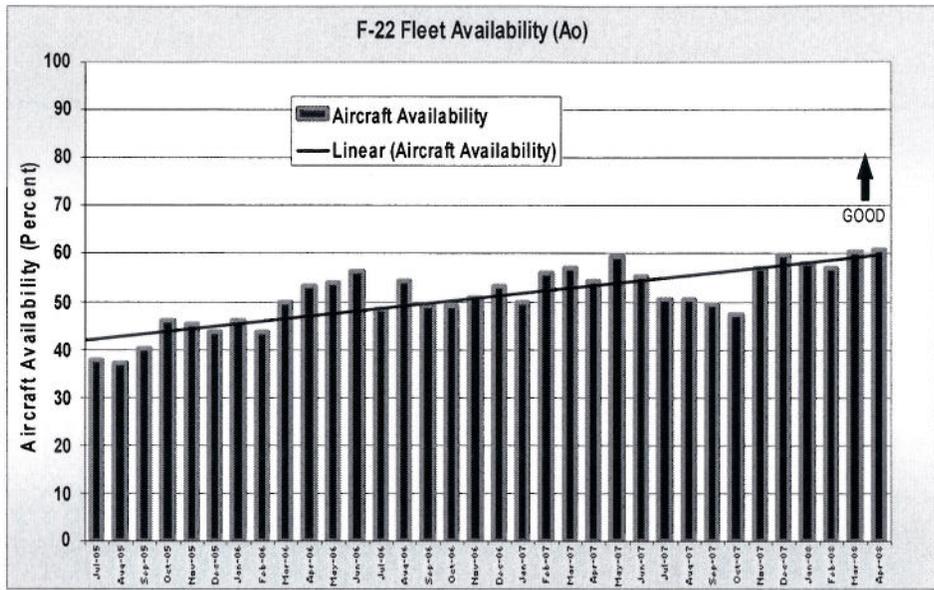
Footprint Reduction: The F-22 is on track to reduce deployment footprint by 47 percent from 2007 to 2010. The F-22 has numerous self-sufficient features such as highly reliable built-in diagnostics and modular electronics which significantly reduced the quantity of support equipment needed for deployment. Additionally, electronic technical orders linked to the diagnostics systems of the aircraft added to the success story in footprint reduction. Even more footprint shrinkage resulted from technological advances in aircraft components and improved reliability that minimized the need for specialized backshop capability and support equipment. The well-integrated PBL team used a wide range of metrics (Sortie Generation Rate, MC Rate, MTBM, Direct Maintenance Man Hours per Flight Hour, number of C-17s to deploy a squadron, etc.) to monitor, manage, and achieve field support requirements specified in the Warfighter's Operational Requirements Document (ORD). These metrics formed the basis for near-term performance improvements and meeting long-term maturity goals. A unique closed-loop process was developed to integrate engineering, technical orders, quality, material management, supply support – Depot Level Repairables, and suppliers for hardware and software – to establish preferred spares enabling effective Warfighter support. Constant communication between the

Warfighter and PBL team continues to reduce sustainment costs, improve fleet readiness and shrink the logistics footprint.

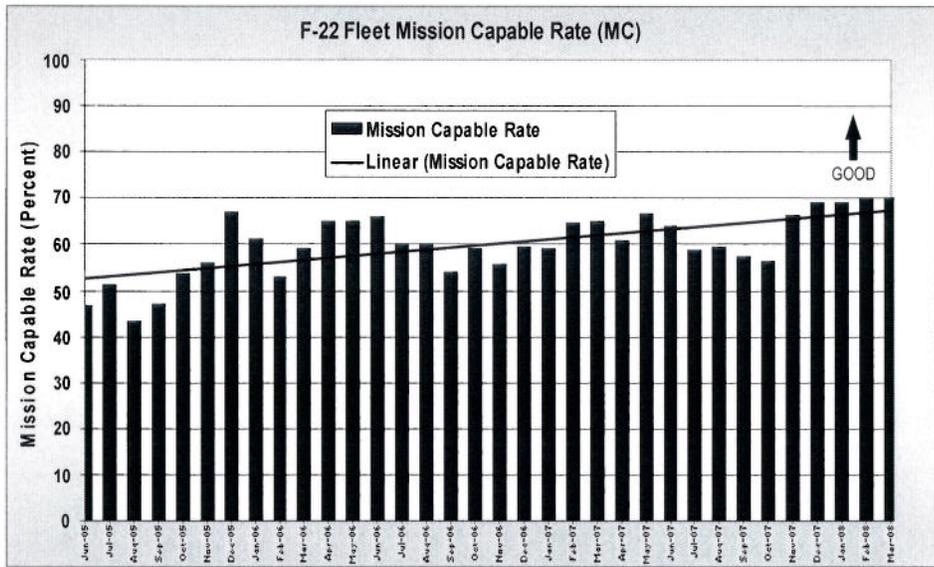
Obsolescence Management: A multi-faceted attack on obsolescence through innovative management ensured future parts availability. First, the government contractor team conducted an aggressive obsolescence management program addressing 30,098 part numbers per Raptor with 80,000 unique parts from approximately 1,000 first-tier suppliers in 45 CONUS and six foreign countries. In spite of these challenges, the team has been very effective through team use of unique tools and methods such as an interactive web site to improve obsolescence management and work-related issues. Second, the PBL strategy optimized incorporation of modernization and technology to replace obsolete components. Under PBL, the PSI provided state-of-the-art supply modeling and simulation techniques forecasting accurate material availability and visibility within the parts pipeline. Focused on availability throughout the F-22 life cycle, the PBL strategy also assimilated parts control, proactive obsolescence mitigation, and Diminishing Manufacturing Sources (DMS) mitigation to maximize Raptor support. The integrated PBL strategy combined sustainment and engineering expertise to improve fielded material to reduce cost and risk to the Warfighter.

Reliability, Maintainability, and Supportability Improvements: The F-22 PBL strategy focused on life cycle program improvements and driving continuous improvements in weapon system reliability and maintainability. All improvements were screened to ensure they met the criteria of affordability, technical viability, and timeliness. The program level effort included development, retrofit and earliest possible production cut-in of upgrades. Over the past 3 years, this focused effort increased MTBM an amazing 69 percent across the F-22 fleet.

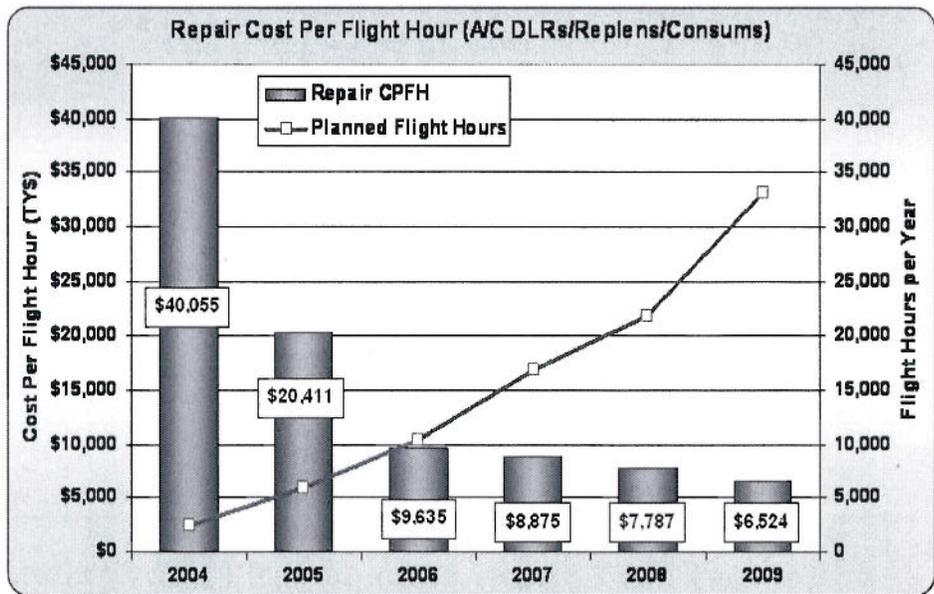
Aircraft Availability (Ao)



Mission Capable (MC) Rate

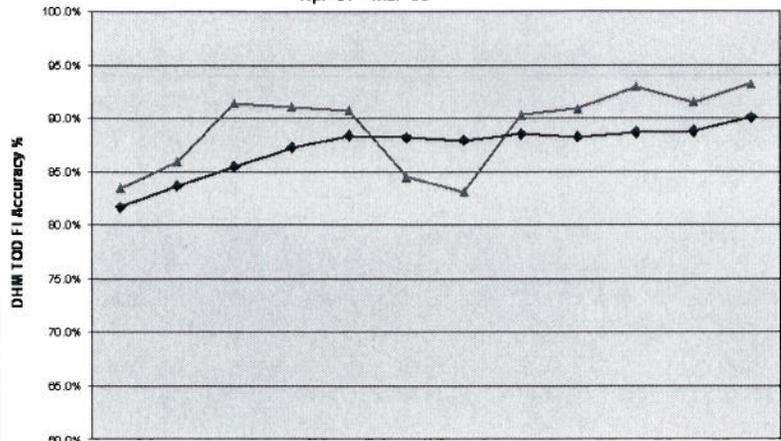


Ownership Cost Management



Fleet DHM TOD FI Accuracy
Excludes Code 98 FRC's
Apr '07 - Mar '08

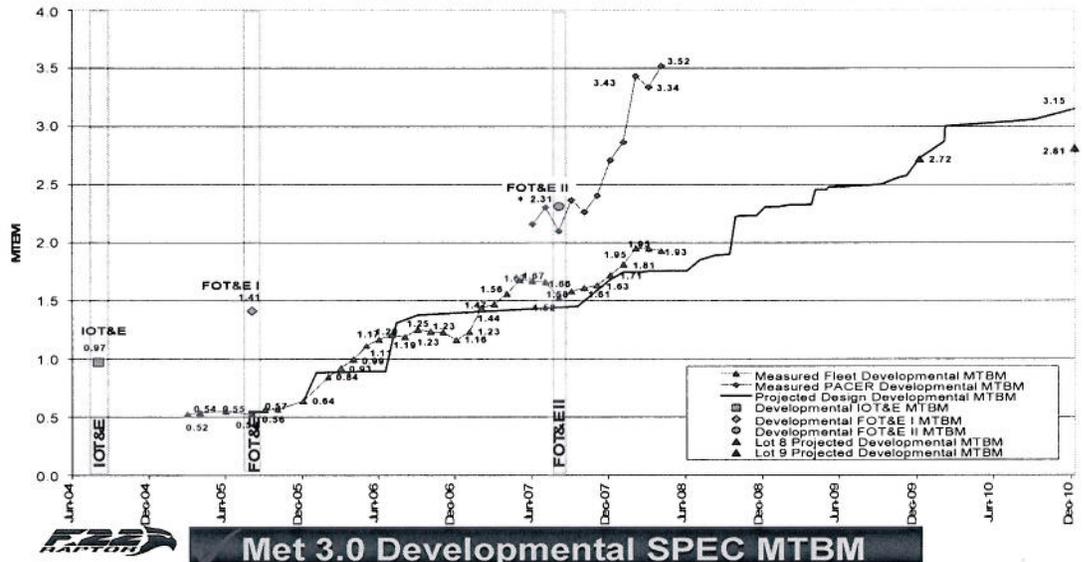
- ▼ DHM-IMIS Files
- ▼ ERF Files
- ▼ OFP Deliveries
- ▼ TOD Deliveries



- Total Accurate Mx JCNs per month
- Total Mx JCNs per month
- Combined Langley, Nellis and Elmendorf Data
- Tyndall Added In January 08
- Excludes Engine & Code 98 FRCs
 - Code 98 FRC's Approx Equivalent to Pilot Reported Discrepancies

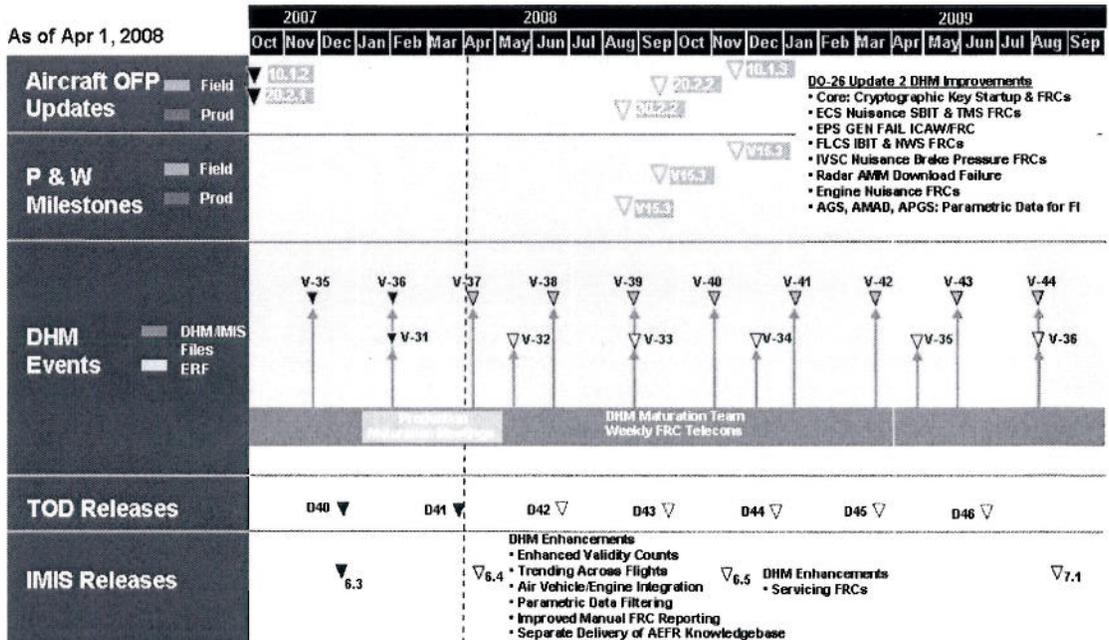
	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08
Mx JCNs (Less 98s & Eng)	314	298	383	347	336	251	402	270	263	371	306	341
F I Accurate JCNs	262	250	350	316	304	212	304	252	230	346	280	318
F I Accuracy %	83.4%	85.9%	91.4%	91.1%	90.7%	84.5%	83.1%	90.3%	90.9%	93.0%	91.5%	93.3%
6 M Avg FI Acc %	81.7%	83.6%	85.4%	87.3%	88.4%	88.2%	87.0%	88.6%	89.3%	88.7%	88.8%	90.1%

Ownership Cost Management



Reliability

As of Apr 1, 2008

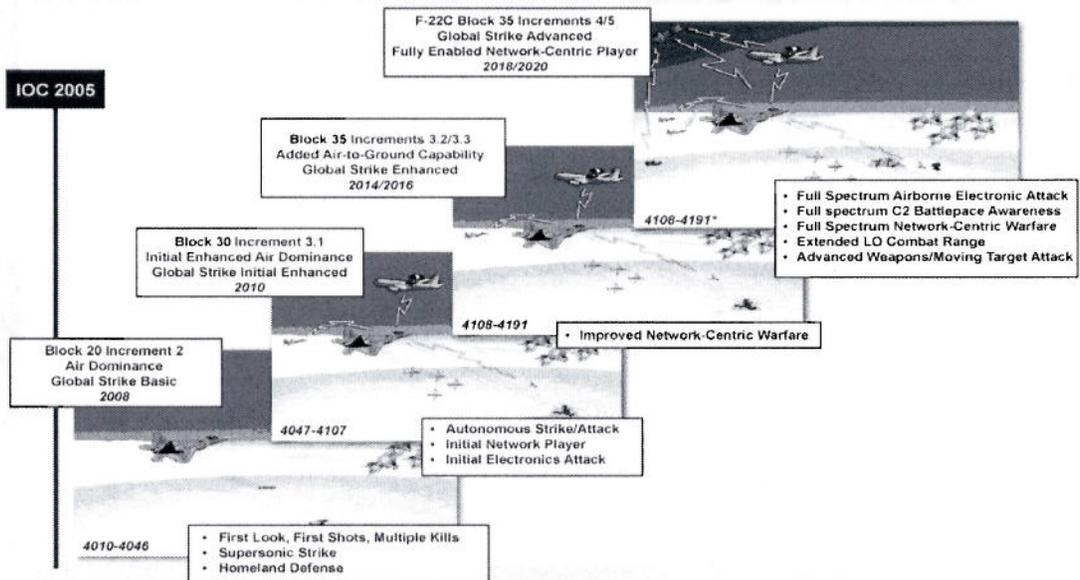


Systems Engineering

Completed Activations 3	MODs	Wheels & Brakes	F119	Boeing	LM	PAW
2008 Activations 5	EPS - Generators	EPS - Distro	PTO Shaft	Doors & Panels	ECS - LCP	
Activations in Work 12	OO-ALC	OC-ALC	WR-ALC			
2008 Assessments 25	OO-ALC	OC-ALC	WR-ALC			
2009 Assessments 23	OO-ALC	OC-ALC	WR-ALC			

Public- Private Partnering

F-22 Modernization Roadmap

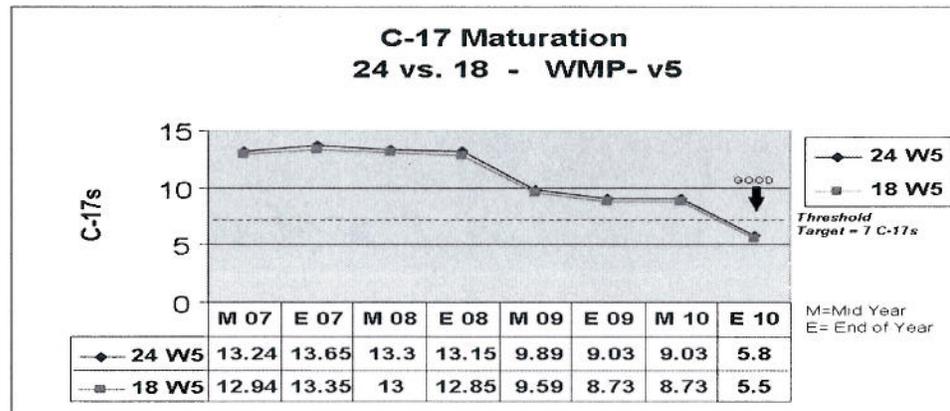


Obsolescence Management

* Recommend Increments 4 and 5 Be Put on Aircraft Beyond Lot 9

A06-1940401

Footprint Reduction



- WMP - v5 (War and Mobilization Plan)
- Analysis is Based on RAMMP Project Production Break-In
- Assumes All Currently Proposed RAMMP Projects are Funded

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Section 4

Achievements

The world's first fifth generation fighter program employed leading edge Performance Based Logistics strategies that proved instrumental in delivering war-winning capability to the F-22 Raptor fleet at significant value to the taxpayers. This world class PBL team includes the 478th Aeronautical Systems Wing (program manager), the 577th Aeronautical Systems Group (engine program manager), contractors Lockheed Martin Aeronautics and Pratt and Whitney, USAF Air Logistics Centers, and Air Combat Command. Lockheed Martin facilitates PBL execution as the weapon system Product Support Integrator. This dynamic, well-coordinated team successfully awarded the first F-22 stand-alone PBL sustainment contracts worth \$1.5B for CY08 & CY09. With exemplary partnering, the team shortened the proposal time by 8-months and still negotiated a 39 percent reduction in their Operations and Maintenance budget. More importantly to the Warfighter, the PBL arrangement consummated a demanding 20 percent improvement in Aircraft Availability – that is seven additional F-22s in the Warfighter's hands! The team continues to deliver impressive results in reducing cost of ownership and sustainment through innovative public-private partnering, while meeting all 50/50 and core requirements. Using a strategy focused on life-cycle program improvements, the team implemented a continuous reliability improvement program that increased Mean Time Between Maintenance by 69 percent across the fleet. The team drove a 15 percent improved mission rate and drastically reduced repair time by 20 percent in solid support of Warfighter requirements. Through exceptional PBL strategy execution, the F-22 activated four maintenance docks at Ogden ALC and accelerated the

standup of Elmendorf AFB 2 years and flawlessly stood up Sheppard AFB technical training programs. The program's huge successes were further affirmed by the Air Force's declaration of Full Operational Capability on 12 December 2007. Preceding that, in October, the Air Force Operational Test and Evaluation Center rated the F-22 weapon system in FOT&E 2 as "Effective, Suitable and Mission Capable." The 5th generation stealth fighter technologies that make the Raptor untouchable in combat are only possible because of the efforts of the world-class team that implemented an innovative PBL strategy that delivers unrivaled warfighter capability – anytime, anywhere.