

Joint Strike Fighter

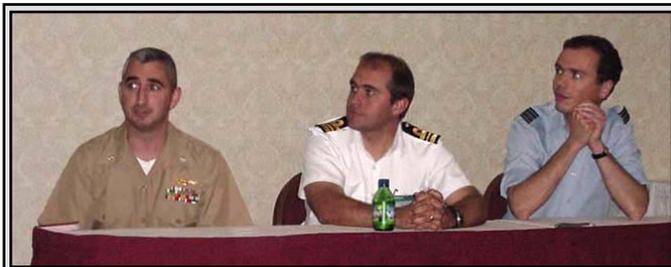
NEWSLETTER



JSF at the 2002 International Powered Lift Conference

by Ian A. Maddock

On November 5-7, 2002, over 150 engineers, scientists, system designers, operators, managers, and service providers participated in the Biennial International Powered Lift Conference (IPLC) held in Williamsburg, Virginia. IPLC is a forum for the presentation and discussion of current and future powered lift aircraft, their enabling technologies, the systems and subsystems that enhance their capabilities, and the technological advances that they will achieve. Cosponsors of the event were the American Institute of Aeronautics and Astronautics, the American Helicopter Society, the Royal Aeronautical Society, and the Society of Automotive Engineers.



(L to R) LtCol Art "Turbo" Tomassetti, USMC; LCDR Paul "Stoney" Stone, UK RN; Squadron Leader Justin "Jif" Paines, UK RAF

This year's conference provided the public with a windfall of previously undisclosed JSF information. Personnel from the JSF Program Office, along with engineers from NASA Ames, Lockheed Martin, Northrop Grumman, BAE Systems, Pratt & Whitney, and Rolls-Royce all presented papers or spoke at the conference. Kicking off the conference with a keynote speech

was former JSF Program Executive Officer, Lieutenant General Mike Hough who is currently serving as the Deputy Commandant for Aviation (AA) Headquarters, United States Marine Corps.

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On Board the USS John F. Kennedy

by Karen Skelton

It was the opportunity of a lifetime for me. How many people get to actually go on board an aircraft carrier, observe day and night flight operations up close and personal from the flight deck, see every nook and cranny of the ship, and sleep in a small, but somewhat comfortable bunk bed as a grown-up? Let me answer that...unless you're in the United States Navy, not many!

The trip was planned and organized by our own CDR Tom "Hoho" Hoios, from the JSF basing and Ship Suitability IPT, who seems to really enjoy doing this sort of thing. Why? To give people a first-hand look at what it takes for an airplane to thrive and survive the daily grind on

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Message from the Directors

Whenever we need a jolt to understand how important this program is, we need only to reflect on Secretary Aldridge's speeches on how different we are or listen to any of our partner country Ministers of Defense when they talk about obligating their procurement budgets to develop and buy this weapon system.

On October 26, 2001 the Lockheed team was selected to provide the next generation multi-role combat aircraft infrastructure upgrade program for the United States and its Coalition Allies. This challenge is unprecedented in its scale, complexity, and extraordinary importance to transforming global politico-military concerns.

As we reflect on our first year of that journey we are faced with many challenges—the most important of which is to fully meet the demands of our many war fighters who will eventually employ this weapon system. We have great expectations from our international partners for participation in this project as well as many internal and external demands on our time from audit, oversight and insight groups, as well as an overwhelming visitor workload.

Over the past 2 years the contractor team conducted a series of leadership offsite meetings, the first of which focused on lessons learned which led to some of the Lockheed fundamental management concepts on the F-35. The second offsite, actually held one week before the contract was awarded, was a focus on guiding principles—what did we intend to hold each other accountable for? We developed our four overarching guiding principles, which remain today fundamental to the way we do business on the F-35. The third offsite focused on capturing defining moments—those experiences that each of us have had that truly inspired us to perform to a higher level. Our intent was to capture the power of positive leadership experiences and make sure we were developing a collaborative motivational environment within the Joint Strike Fighter Program.

We've now completed our first year and are doing well. However, we will continue to face significant challenges as we turn the corner at Christmas and go into 2003. We need to stop and step back to gain perspective and prioritize. We need to apply our best strategic thinking to the challenges ahead as we roar into the Air System PDR. The team is extremely busy and the parallel processing dimension of this program is truly staggering...which brings us to the fourth leadership summit.

The fourth leadership summit will address two specific areas: (1) the alignment of our management team, and (2) the design of work flow across our JSF enterprise. Now that we have truly grown a full order of magnitude, we need to rethink the way we do our business and ask ourselves these questions: Can we do better as this program gets more complex, not less? How can we become more productive? How can we enter new territories of technical complexity, use different management tools and, most importantly, stand up to those leadership challenges ahead with courage and collaboration?

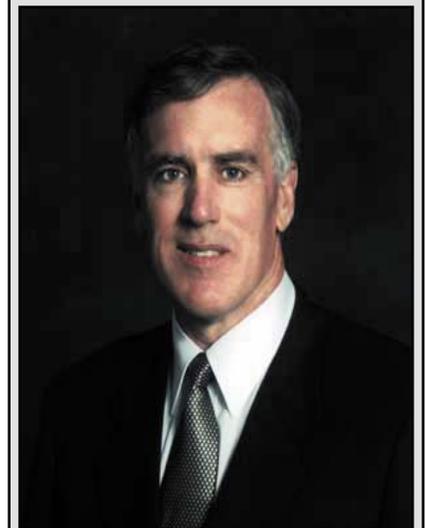
The F-35 is changing the way we do business—within our industry, within our government, nationally, and internationally. This incredible challenge definitely deserves (and requires) deep and dedicated strategic thinking. The fourth Leadership Summit is immensely important to our success going forward.

Wishing everyone a very happy and safe holiday season. Take care of yourselves, your families, and each other.

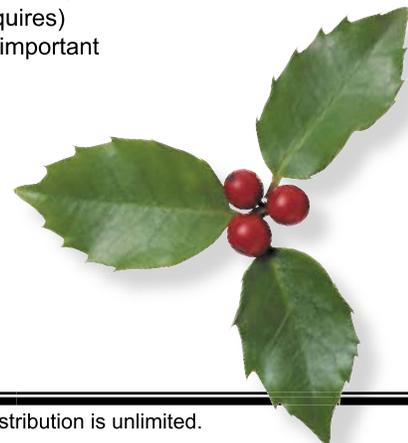
Major General Hudson, PEO, Joint Strike Fighter Program
Tom Burbage, Executive Vice President and JSF General Manager, LMCO



*Top: Major General Hudson, PEO,
Joint Strike Fighter Program*



*Bottom: Tom Burbage,
Executive Vice President and
JSF General Manager, LMCO*





JSF at the 2002 International Powered Lift Conference *(continued from page 1)*

The conference, however, wasn't centered entirely on JSF. The V-22 Osprey sessions drew large crowds as did the session on Defense Advanced Research Projects Agency (DARPA) unmanned vehicles.

Mr. Steve George, Manager of the JSF UK Basing & Ship Suitability at BAE Systems, delivered an extremely well received presentation on the history of naval aviation with an emphasis on the ever-important US-UK relationship.

Following briefs on flow fields in ground effect and hot gas ingestion, a dinner was held at the Virginia Air & Space Museum in Hampton. It was really neat to be dining underneath an F-4 that had scored kills in Vietnam, one of two YF-16 prototypes, one of the original Kestral prototypes for the Harrier, and various other aviation artifacts.

After the dinner we proceeded to the IMAX theater where the F.E. Newbold Award (AIAA's highest honor for contributions to V/STOL) was awarded to Mr. Sam Wilson, previously a JSF teammate and currently at DARPA, and Dr. Barnes McCormick of Pennsylvania State University for his contributions to the theory and practice of V/STOL, including authoring several textbooks covering the subject.

Following the presentation of the award, Major General Jack Hudson, JSF Program Executive Officer, delivered an update on the current status of the JSF program that was well received. We were then treated to a screening of the IMAX film, Everest.

On the final day, sessions were held on the Lockheed JSF propulsion system and JSF flight controls as well as active flow control and powered lift research. The day was capped off by an afternoon session of presentations from test pilots. The first presenter was CW3 Bill Fell, a U.S. Army RAH-66 Comanche test pilot, followed by Tom MacDonald, the chief test pilot and manager of flight operations for the Bell-Boeing V-22 test program at NAS Patuxent River.

For the first time ever, three JSF test pilots delivered a combined presentation on the X-32B and the X-35B flight test programs. Lt. Col. Art "Turbo" Tomassetti, USMC, flew the first Mission-X and is also the only test pilot to fly all three variants of the X-35. Squadron Leader Justin Paines, X-35A/B test pilot was also present. Lieutenant Commander Paul Stone, X-32B test pilot, presented his experiences from the flight test program. All three JSF test pilots did an excellent job of providing flight test performance feedback from the X-32B and X-35B aircraft. Being an engineer or an analyst during flight test is one thing—hearing the pilots' perspective is something else altogether!

And so concludes another IPLC conference—this year with outstanding support from the JSF Program Office and the Lockheed Martin JSF team.

Featured Field Site: Edwards Air Force Base

Edwards Air Force Base is located about 100 miles northeast of Los Angeles, CA, and presently occupies territory once explored by Spanish colonists and settled by pioneer homesteaders. The military base began as a stark and remote bombing range in 1933 and went on to become a major bomber-training base in World War II. The Air Force Flight Test Center originated during the darkest days of the war, and has since achieved more major milestones in flight than anywhere else in the world.

The Air Force Flight Test Center at Edwards AFB is the free world's largest aircraft test facility. Nearly every aircraft used by the Air Force over the past four decades has been tested and developed at Edwards, which makes it the most logical choice for testing the F-35 Joint Strike Fighter.

Joe Dowden, Director of the JSF Integrated Test Force (ITF) at Edwards AFB, says the pace is already picking up even though the first test aircraft isn't expected to arrive until October of 2005.

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Joe Dowden, (right) director of the Joint Strike Fighter Integrated Test Force at Edwards, and Mark Crawford, JSF chief engineer, use a model of the fighter to demonstrate steps they are taking to keep its development on track. (Photo by Carlos Rolon)



“Keeping the test program on track at this early stage is a top priority,” Dowden said. “We want to field these aircraft as quickly as possible to replace aging aircraft in the Air Force, Navy, and Marine inventories.”

The JSF test program is unique in that three different versions of the same aircraft will be tested using one integrated test plan, said Mark Crawford, chief engineer for JSF at Edwards. This means the test force at Edwards is working closely with an expanded group of test partners from around the world.

Plans call for five Air Force JSF variants to be based at Edwards for developmental testing along with three transient aircraft from Naval Air Station Patuxant River. Both the Air Force and the Navy will conduct testing on all of the JSF variants, including the Air Force, Navy, and Marine versions as well as the United Kingdom’s version. An additional 18 aircraft are expected to arrive at Edwards once the program moves into operational testing in 2010.

With the 10-and-a-half year contract awarded, Dowden is starting to build up the integrated test force at Edwards while working closely with his counterparts at the JSF Integrated Test Force in Patuxent River. Both will support a three-phased block approach to evolve the aircraft’s mission capabilities. The first block of testing includes the evaluation of the aircraft’s airworthiness, its ability to carry internal weapons, and its envelope expansion qualities. Overall, the test program encompasses development and demonstration of more than 46 different weapon configurations and associated mission systems capabilities, Dowden said.

“Our developmental, demonstration test and evaluation challenge now is to improve our joint processes between Edwards and Patuxent River Naval Air Station so that we ensure seamless testing of the Air Force, Navy, Marine Corps, and the United Kingdom variants on the West and East Coasts,” Dowden said. “All this will be necessary to get the JSF aircraft to the warfighters on schedule, with the capabilities they will need for future defense of our national interests.”

The ITF at Edwards will be made up of military personnel, government engineers and the prime contractor employees and is expected to grow to more than 600 people as developmental testing of the aircraft accelerates toward the operational test phase, Dowden said. JSF operational testing using Edwards as the principal site could bring the combined total of developmental and operational testers at Edwards to more than 1,000 by 2009, he added.

“As the program progresses, there is no doubt we will be looking for civilian and military flight test engineers as well as test pilots,” Dowden said. “This is the place to be if you interested in developing a weapon system for the warfighter of tomorrow.”



L to R Maj Gen Hudson, MSgt Marraccino, Ms. Christine Verdugo

Major General Hudson Visits the JSF Integrated Test Force, Edwards AFB California

In October 2002, Major General Jack Hudson visited the Air Force Flight Test Center. During this visit, Gen Hudson presented the DoD Joint Service Commendation Medal to Technical Sergeant Robert Marraccino, for his exceptional meritorious service as a member of the Joint Test Force, X-32 Maintenance Team, Joint Strike Fighter Program, from February 2000 to May 2001. During this period, Sergeant Marraccino’s outstanding professional skill and unsurpassed maintenance expertise was instrumental in the safe and efficient execution of the X-32 flight test program. Through his commitment



to excellence and judicious management of resources, he provided time-of-the-essence maintenance support to the X-32 JTF and contributed to the successful completion of JSF flight demonstration objectives while achieving unprecedented X aircraft sortie rates without mishap. Sergeant Marraccino's efforts allowed the X-32A to complete 66 high-risk test missions totaling over 50.4 hours.

General Hudson presented the medal outside, with all JSF ITF teammates present and the X-35B L-M aircraft in the background (insert file photo attached). Gen Hudson said that he was extremely pleased to present this award as part recognition for exceptional service to JSF and the Department of Defense. After the award presentation, Gen Hudson rounded up all the ITF JSF team for a team photo to commemorate his visit.

Gen Hudson then moved on to a JSF "All Hands" meeting. To kick off this meeting, Gen Hudson provided a JSF Status Briefing that provided current information about "what's going on" in

the JSF program. ITF flight test team members introduced themselves to Gen Hudson after the briefing, and had an opportunity to identify the IPT they support and describe their duties. This exchange facilitated a good Q&A session between the JSF ITF team members and Gen Hudson.

General Hudson's day concluded with a tour of the ITF facility, including the ITF complex and Ridley Mission Control Center.

A capstone of the General's visit to Edwards AFB was a dinner hosted by AFFTC Commander Major General Doug Pearson. Others guests included Brig Gen Chuck Yeager (USAF retired) and Maj Gen Joe Engle ANG (ret). Gen Hudson said, "I felt honored to talk at length with Gen Yeager and gained more insight into the man and history of aviation".



Joint Strike Fighter ITF TEam, Edwards AFB



PBS NOVA to Air “Battle of the X-Planes” on 4 February 2003

Over the past year, the most frequently asked question of Kathy Crawford, JSF Public Affairs Officer, has been “Hey, when are they going to air that documentary?”

For those of you who don't know what documentary we are referring to, it is a project that has been in the works during the past five years. Many of you took part in the documentary or at least saw the film crew in your spaces during the filming process. The Public Broadcasting Service Science and Technology show, NOVA, through First Light Productions, Edmonton, Canada, contracted with Boeing, Lockheed Martin, and the U.S. Government to produce a full-length, feature documentary on the Concept Demonstration Phase of the JSF program. The documentary will highlight the competition between the world's two largest aerospace companies for the largest contract in U.S. Department of Defense history, and will take viewers behind the scenes and show the strategies and processes that Boeing and Lockheed Martin used to develop and demonstrate their JSF concepts.



L to R are Mike Jorgensen, Kathy Crawford, and Neil Thomas

This odyssey began with negotiations for access agreements with the two prime contractors in early 1996. Agreements were signed in July 1997 and filming began in early 1998. The film crew—Mike Jorgensen, Producer, Neil Thomas, Researcher and Writer, and Igal Petel, Audio, along with Kathy as their escort, spent the next four years filming at Boeing, Lockheed Martin, Pratt & Whitney, and a host of government facilities. Close to 400 hours of raw footage exists as a result. Filming concluded on 26 October 2001 with the announcement that Lockheed had won the contract to take their Joint Strike Fighter into the System Development and Demonstration phase.

During the past year, the crew has been busy at WGBH in Boston, with post-production work involving carving the absolute best 2 hours from the raw footage, setting the documentary to music, and finally handing it to the narrator to tell the story.

So, mark your calendars, pop some popcorn, find a cozy spot on the couch, and finally watch what went on behind the scenes at Boeing and Lockheed Martin during the competition. “Battle of the X-Planes” will air on PBS on Tuesday, 4 February at 8:00 p.m. EST.

Professionalism Personified



Congratulations go to our very own MSgt Curtis Foy for his selection as the 2002 Aeronautical Systems Center (ASC) Human Resources Management Support Professional of the Year. The competition was fierce among Human Resource professionals of the ASC, evaluating the total person in the areas of personnel management and policy, self initiated professional improvement, and community involvement. Competition was keen, and selecting a winner was no simple task for the panel. However, MSgt Foy's professionalism, attention to detail, and consistent execution of his duties carried him to the top of the final selection process. Again, we send a hearty “well done” and congratulations to MSgt Foy on his selection for this most prestigious award.

Pictured from L to R is Lt Gen Reynolds, Commander Aeronautical Systems Center; MSgt Curtis Foy, Superintendent, JSF Military Personnel; and Mr. Leonard Kramer, Director, ASC/HR



On Board the USS John F. Kennedy *(continued from page 1)*

a carrier. Let's face it...the Navy is a bit skeptical when it comes to the F-35. The only way to eliminate or reduce the skepticism and to effectively design a state-of-the-art warfighter is to actually see where the F-35 will not only take off and land, but to also see where it will be maintained. It was truly an eye-opening experience for everyone.

Our group—some JPO folks and engineers from Lockheed Martin, Pratt & Whitney, and General Electric—walked on board the impressive JFK (called “Big John”) on Saturday, September 21st in Jacksonville, Florida. After schlepping our bags up numerous narrow ladders and down several small passageways (ask Capt Francesconi about the importance of packing light!), we were greeted by the JFK CVIC crew led by CDR Brett Markham.

CDR Markham took very good care of us the entire time we were on board the JFK, and gave us free reign of virtually every nook and cranny, except for the brig (but only because we didn't ask soon enough). The food was surprisingly good (we even had steak and shrimp one day for lunch), I didn't get sea sick, and—for this prior enlisted Air Force maintainer—the trip became more like my own private episode of “Survivor” due to the enormous physical strain one goes through to simply get through what appears to be a normal Navy workday (it is not unusual for several members of the flight deck crew to work more than 12 hours a day).

We spent four action-packed days and three relatively sleepless nights on board the USS JFK. Aside from the night we stood on the Landing Signal Officer's platform watching planes catch the wire (also known as trapping), one of the highlights of the trip for me was the day we took a cat shot (Navy speak for being catapulted off the ship) in a C-2. It literally takes your breath away for about 4 or 5 seconds!

There are many things I'll remember about my experience on board the JFK—the numerous “knee knockers” I had to step over, the trek through and down three hatches to see the weapons storage area, the camaraderie I felt while visiting the enlisted smoking deck, the generosity of the “Shooter” who



Going down the hatch is Ms. Stephanie Hearon, Systems Engineer, Human Machine Interface, LCMO

gave me the best souvenir I could hope for, meeting CAPT Ron Henderson, Commanding Officer of the ship (and sitting in his chair when he wasn't there), and the obvious Navy pride that emanates from each and every crew member of the JFK—regardless of their assigned job or task. Thank you Hoho, CDR Markham, and CAPT Henderson for giving me the opportunity of a lifetime.

The “Other” Insider Threat

By Robert Hunt, Intelligence Analyst, AFOSI (contributed by Mark Sword, JSF Security)

The legend of the Trojan Horse involves a conflict between Troy and Greece, circa 1250 B.C., and recounts how the Greek army conquered Troy. The Greeks fooled the Trojans into thinking the Greek army had abandoned a ten-year siege of the city by sailing away. However, before departing, the Greeks placed a huge wooden horse outside the gates of the city. The curious and unwitting Trojans dragged the horse inside the walls of their city. That night, Greek soldiers crept from inside the horse and opened the city gates to the waiting Greek army. Most of the Trojans were killed and the city was burned. What the Greeks failed to accomplish in ten years through siege, they secured in one night with the unwitting help of the Trojans.

When we ignore the lessons of history, we are doomed to repeat them. Is the United States, standing today as the world's sole Superpower, becoming an unwitting accomplice in its own demise? We could be bringing the enemy inside our defensive perimeters. Both government and industry are increasingly ignoring basic security tenets by granting an adversary the opportunity to open the gates from within.

The Insider Threat, undoubtedly the greatest security threat facing the US has resulted in tremendous damage to America's National Security. The Insider has historically been depicted



as one of our own, lurking in our midst, stealing secrets and jeopardizing the lives of Americans everywhere. The image of the Insider was reinforced with the arrests of trusted Americans such as Aldrich Ames, John Walker, and, more recently, Robert Hanssen. Although descriptive of the traditional Insider, such cases can be misleading by creating a paradigm, as our perception of the Insider is restricted to an image of someone already established within the organization. By focusing on the trees, we may be missing the forest. Effectively countering the Insider threat requires us to expand beyond traditional, constrictive security paradigm. Consider the following stated from the 2000 DoD Insider Threat Mitigation Report, “the Insider is anyone who is or has been authorized access to a DoD information system, whether a military member, a DoD civilian employee, or employee of another Federal agency or the private sector”. This describes a trusted individual, to whom the organization has granted access to sensitive information. Now consider, for a moment, those individuals or organizations we deliberately bring inside, or envelop within, our defensive perimeters while NOT granting access. Although the proximity and actions of the new guests appear legitimate, our unwitting actions can have devastating consequences. Our understanding of the Insider should expand to encompass anyone, or anything, introduced inside our security perimeters. With this approach, we are better able to assess the constantly changing defensive perimeters, both in our professional and personal lives.



From physical walls to firewalls, security measures are designed to safeguard against known and suspected threats. However, these threats are increasingly difficult to detect, and are often disguised. To stay ahead of this changing threat environment, we need to constantly reassess and adjust our defensive perimeters. Maintaining awareness of these shifting perimeters, and mitigating the threat we unwittingly bring inside, requires the vigilance of every member of the organization. For some, this is a dramatic shift from the traditional way of doing business, where the onus for safeguarding sensitive information rests squarely on the shoulders of security personnel. In this scenario, the rest of the organization often abdicates its responsibility for safeguarding sensitive information. To be truly effective, security must be a corporate effort, with each member of an organization daily assessing his or her actions against increasingly fluid defensive perimeters.

How can we, like the Trojans, become unwitting accomplices to the non-traditional Insider? We create opportunities when we fail to consider the ever-present threat in our daily activities. When we converse in a restaurant, our voices carry to other customers. When we make an international phone call or send

an email, we include a global audience. When we maintain an Internet home page, or simply join in Internet chat-rooms, we play to a potential international audience. When we participate in joint exercises, our allies learn of our capabilities. When we contract with foreign firms for services or products, or enter into joint business ventures, we become linked, to varying degrees, with potential intelligence operatives or co-optees. Throughout the day, when we fail to consider the security implications resulting from our actions, we create opportunities for those positioned inside the defensive perimeter. It is virtually impossible for security professionals of an organization to monitor the actions of every member. Likewise, it is unrealistic for security experts to understand the varied professions, technologies, processes and nuances of the organization. When corporate managers and employees operate under these assumptions, they create an ideal environment for exploitation. This is especially true for the competitor or adversary, who has succeeded in gaining access within the defensive perimeter.

The greatest challenge in today’s security environment is persuading “non-security” employees that they are active and integral members of the greater security team – and extension of the security staff. To effect such a cultural change, managers must support a “buy in” at all levels, encouraging employees to assume responsibility and, to a degree, ownership for the security of the organization. The payoff—corporate synergy—will greatly enhance the security staff’s ability to protect the company, not only from those outside the gates, but also from those who are brought inside.

DCMA: It’s Not Just a Program; It’s a Culture

Defense Contract Management Agency (DCMA)...we may have heard the acronym from time to time, but also may have wondered what it is exactly. Shedding some light—or perhaps shining some light—on this independent DoD combat support agency is the goal of this article.

According to the DCMA Website, their mission is to “provide customer focused acquisition support and contract management services to ensure warfighter readiness, 24/7, worldwide.” DCMA provides a more focused and responsive contract management solution. Larger DoD contracts, such as JSF, have DCMA representatives on site.

Air Force Lt Col Bruce Ensor is the DCMA Program Integrator at Lockheed Martin Fort Worth. His job is to lead the on-site program support team (PST), conduct day-to-day program surveillance, and delegate tasks to DCMA Contract Management Offices (CMOs) for the subcontractors. “There are a lot of suppliers, a very large supplier network on JSF. One of my jobs is to establish a support program integrator (SPI) network with PST teams at all of the major and critical supplier CMOs.” Ensor said. “It is a very large undertaking to say the least, and is key to helping DCMA successfully execute the JSF mission in support of our JPO customer.”



Communicating is key to staying on schedule, and Ensor says that much of the JSF business is being conducted virtually. "Part of our JSF enterprise is that we use net meetings and audio conferencing," he said. "Every morning, we have a "stand up" meeting at 0730, where the Program Office in Washington DC, Lockheed Martin Fort Worth, Northrop Grumman in El Segundo, California, and other satellite sites dial in. We discuss the daily and weekly schedules, provide an overview of important meetings or events, and discuss the current issues going on in the program on a daily basis. We also use the JSF Data Library (JDL) for virtual communication. The JDL makes a wealth of program information available to all program personnel, including the DCMA SPI network."

A generous helping of brain power and lessons-learned is being applied to the JSF program. One of the best lessons learned, from a DCMA perspective, is that JSF contractors and subcontractors are being required to support the life cycle of the aircraft as part of their participation. This will require diligent tracking and monitoring of supplier development, production and delivery schedules by on-site DCMA representatives throughout the life of the JSF program.

Frank Lalumiere, the agency's executive director for Program Integration, says "We didn't want to get into the position we are in today with some of our weapons systems. The cost of flying an F/A-18 or an F-16 for one hour is just tremendous. We want to cut down those costs because the JSF is going to be with us for a long, long time, and we want to have it with us at an affordable cost."

According to Air Force Colonel Mary Mayer (retired), former commander of DCMA Northrop Grumman, "teammates" is a critical word for the JSF program. "The team is Lockheed Martin, Northrop Grumman and BAE Systems and they will sink or swim together," she said. John Barman, Mayer's Operations Group chief for DCMA at Northrop Grumman, agrees. "Lockheed Martin is the prime contractor, but BAE Systems and Northrop Grumman are truly partners on this fighter," he said. Barman emphasized that this is very unusual-the way this program is managed with an equal partnership relationship. "Within the government, we are also teaming," he added. "DCMA Northrop Grumman must treat Naval Air Systems Command as the customer on this program, in addition to DCMA Lockheed Martin, and in some cases, DCMA Northern Europe in England. We have become equals and that is truly unique because it is normally a contractor to subcontractor relationship."

Kate Curtin, the DCMA point of contact for Northern Europe and a liaison with BAE Systems, says the relationship "is a total teaming approach from DCMA Lockheed Martin Fort Worth, the Joint Program Office, the contractors, and in our case, Great Britain as a full Category I partner. I have not seen anything organized like this before."

DCMA personnel are on all of the Integrated Product Teams (IPTs) working on these efforts. According to Barman, there

are many IPTs for this program. Several of these IPTs are owned, led and managed by each one of the three partners. "So although Northrop Grumman is technically a subcontractor to Lockheed Martin, it manages and leads several of the IPTs," he said.

According to Air Force Colonel Mike Hubert, DCMA Fort Worth Commander, the SDD phase is critical because the contractor must prove that it can build the aircraft. He says, "The contractor has to prove that it can build the Air Force version with conventional take-off, the Navy version that lands on carriers, and, of course, the short take-off vertical landing STOVL-type to be used by the Marines, the British Royal Air Force, and the Royal Navy. Lockheed Martin must prove that it can build different aircraft on the same assembly line."

Col Mayer continues, "What is exciting about this is that it is a completely new way of doing business; it's more complex. But I think in the end, the relationships among the teammates necessitate a closer relationship with the DCMA commanders too." Hubert agrees. "The most challenging aspect is matching assets to the speed of the program," he said. "This is a highly collaborative program, moving at about 100 miles per hour. Trying to get assets to match up with that, with our personnel systems and our budgets is very difficult to do."

"We at DCMA have to be a part of the culture to really be an active member of the program," Hubert said. "If we do it right, I think this is the way contract administration should be done on all future programs." The Joint Strike Fighter (JSF) program, currently valued at \$200 billion, is the largest Department of Defense procurement program in history and the greatest customer challenge that the Defense Contract Management Agency (DCMA) has ever faced. Not only will this program ultimately touch 40 to 50 percent of DCMA's offices, it is possible that it will change how contract administration is performed in all future programs.

JSF Environmental Team Makes International Connections

By Captain J. Eric McAlpine, USAF (Reserve)

The combined JSF government and contractor Environmental, Safety, and Occupational Health (ESOH) Team traveled to the United Kingdom in October in an effort to capture European Union ESOH requirements as well as establish points of contact for ESOH-related issues. As more countries sign agreements and become JSF partners, universal deployability has become an issue from an environmental and safety point of view. Legacy programs have never had to deal with such ramifications so early in the design of a system as foreign military sales were an afterthought. The JSF ESOH Team is in a unique position with the acquisition focus shifting to foreign cooperation and support, supportability, and affordability. Meetings like these are not only helpful, but also critical in ensuring we meet the requirements of all JSF participants while serving as catalysts to bring together countries with like concerns.



The contractor ESOH team of Scott Fetter (Lockheed Martin, F-35 ESH Lead), Stan Bean (Northrop Grumman), Robert Trice (Lockheed Martin), and Mark Parker (BAE Systems) got a head start on the rest of the team by traveling a week earlier and meeting with key subcontractors and suppliers throughout the UK. Sites visits included:

- BAE Systems-Rochester – Active Interceptor System
- The Welding Institute – Research Institute
- Honeywell – On Board Oxygen Generating System
- Smiths – Electrical Distribution System and Remote Input/Output Devices
- Goodrich – Weapon Bay Door Drive System

These visits proved to be insightful as the contractor team was able to communicate the strict material requirements to the subcontractors as well as discuss best practices and material substitutions. With the numerous geographically dispersed subcontractors supporting the F-35, visits like these are necessary to ensure that all subcontractors are aware of the requirements and are utilizing cost-effective best practices and ultimately to ensure the entire system is deployable from an ESOH perspective.

The third official meeting of the F-35 Environmental Safety and Health Working Group (ESHWG) began on October 7th and was hosted by BAE Systems-Warton. The government ESOH team of Jean Hawkins (F-35 ESOH Team Lead), Capt Chad Schroeder (AF ESOH Lead), Capt Eric McAlpine (AF ESOH Reservist), Stacey Luker (Air Vehicle ESOH), and Pat Krevonick (Navy Occ Health) joined the meetings at this time. Topics discussed included:

- Qualification and implementation of non-chrome primers
- Non-cadmium connector finishes
- Participation in the Joint Group for Pollution Prevention lead-free solder Joint Test Protocol
- International ESOH regulations

The team was fortunate to have six authorities present the various ESOH regulations and restrictions from their home countries. The countries represented were Denmark, UK, Netherlands, and Sweden. It was interesting to learn that the Danish Air Force assigns hazard codes to their materials and maintains this information in a database. In the UK, a new EU directive is driving UK regulations towards Integrated Pollution Prevention Control that imposes controls and requirements for the entire process, not just air, water, or waste disposal. In the Netherlands, there is pending legislation to reduce allowable chrome exposure to $1.5\mu\text{g}/\text{m}^3$ and the UK's Ministry of Defense (MoD) is proposing an even stricter standard of $0.5\mu\text{g}/\text{m}^3$. At these levels, use of chrome for corrosion control purposes would severely be restricted. The final international presentation focused on Sweden's ESOH regulations and the country's restricted material list. They have regulations requiring products be free from the restricted materials if technically feasible by 2006, well before the JSF IOC.

The ultimate goal is to create a list of all of the regulated substances for each country and their respective human exposure limits. Once the team has determined the requirements country by country, more informed design decisions can be made to ensure supportability, affordability, and deployability.

The final day of the 3rd ESHWG meeting was hosted by the MoD Defense Procurement Agency at Abby Wood. This meeting was an information exchange between the JSF program and several MoD organizations that were unaware of ESOH initiatives within the JSF program. Topics discussed included an overview of the F-35 ESHWG, US Air Force Europe Environmental Executive Agency responsibilities and issues, an overview of the future UK aircraft carrier and how it relates to the JSF plans, MoD support for aircraft coatings, JSF appliqué initiatives, and noise and hearing protection issues. This meeting was a beneficial information exchange for all participants. There are many stakeholders in the JSF and information exchanges such as this ensure that everyone is aware of the challenges and agrees on the solutions.

The ESOH Team continues to strive to be the model acquisition program from an ESOH perspective and the effort is paying off. Not only will the JSF include less hazardous material than legacy platforms, these substitutions and solutions are saving the program money. Trips like this one to the UK are proving to be the crucial first step in determining what hurdles may lie ahead and how best to come to a feasible, affordable solution.

A special thanks goes to Mark Parker (BAE Systems-Warton) and Gary Adams (MoD Joint Combat Aircraft CPO) for graciously hosting the meetings.

News From the International Team

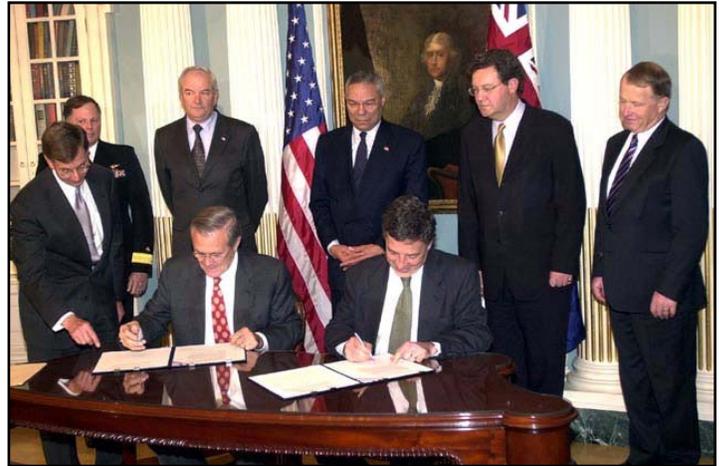
The Honorable Donald Rumsfeld, Secretary of Defense, and the Honorable Robert M. Hill, Australian Minister for Defence, signed an Exchange of Letters signifying the beginning of Australia's involvement in the JSF Systems Development and Demonstration (SDD) phase. The Exchange of Letters, signed on September 29, 2002, will be followed by the signing of several other documents including the Accession Amendment to the JSF Framework Memorandum of Understanding that applies to the US, Australia and other partner nations in the JSF program. Together these documents will define Australia's \$150M Level III partnership in the SDD phase of the JSF program as described in the Exchange of Letters.

As a Level III partner, Australia will participate with the UK, Italy, Netherlands, Canada, Denmark, Norway and Turkey over the next 9 years of the JSF Systems Development and Demonstration phase. This will enable Australia to share in the technological advances that are such a significant part of the SDD phase of the JSF program. Australian industry will benefit



through “Best Value” contracting with prime contractors, Lockheed Martin, Pratt & Whitney or General Electric Engines, along with many sub-vendors who are members of the JSF SDD contractor Team. Industry-to-industry discussions are taking place now and should culminate in a long-term relationship with the US and partner industries. Australia has a very capable technology sector that will surely play a substantial role in its industrial and JSF post-production involvement.

The signing of the JSF Exchange of Letters underscores the continuing relevance and vitality of the U.S. – Australia alliance across the full range of cooperative activities undertaken by the two countries in the Asia-Pacific region and beyond. This latest partnership is further evidence that the US and Australia share a common vision of a robust defense relationship in which interoperability will play a key role in the pursuit of coalition security and peace operations.



U.S. Secretary of Defense Rumsfeld and Australian Minister for Defence Hill sign an Exchange of Letters document for Australian participation in the System Development and Demonstration (SDD) phase of the Joint Strike Fighter (JSF) Program



Seated from left to right: Ron Neubauer, Linda Richardson, Frank Kenlon, AVM Raymond Conroy, Hellen Georgopoulos, Fred Schwartz, AIRCDRE John Harvey, Jon Schreiber, WGCDR Brian Walsh. Standing from left to right: LTC David Hills, Bruce George, Mike Dorman, Victoria Herman, Jennifer Schrock, Roger Lough, WGCDR Nigel Fort, Denise Hanley, Mike Lawson, Doug Allen, Mike Lyons, Wendy Steele, Dr. Kate LaStrange, Neil Chanowski.



Joint Strike Fighter: Will it be a Revolution in Military Affairs?

By Major Jeff Dunn, USMC

Joint Strike Fighter is truly a revolutionary concept, but it will require revolutionary thought to realize its full potential. A challenge that JSF, as a program, faces is that the team must envision an air system that has never before existed. The peril is that we, and our industry counter-parts, will create something that already exists. One helpful defense against that peril is to better understand the concept of a Revolution in Military Affairs.

The Revolution in Military Affairs (RMA) concept is often misunderstood and widely debated within the Joint community. One good definition holds that an RMA has three elements: the technological, the doctrinal, and the organizational. That definition is incomplete and should contain a fourth element: results.

Students of military affairs tend to mistakenly identify certain military technological revolutions (MTRs) as fully realized RMAs, despite the absence of the three other critical elements: doctrinal or operational innovation, organizational change, and results. There is also significant disagreement with regard to the difference between revolution and evolution. A revolution is a paradigm shift and as such is a phenomenon that forever changes an aspect, or numerous aspects, of warfare. Evolution occurs to both MTRs and RMAs over time. An MTR is born through invention and evolves. When it reaches a certain state of maturation it warrants doctrinal and organizational change. To become an RMA the phenomenon must be implemented with satisfactory results. The RMA as a whole continues to mature for many years with results normally increasing in magnitude and scope.

The submarine is a perfect example. In its infancy during the Civil War, the submarine was a novel, fascinating, and extraordinarily dangerous piece of equipment. Unfortunately, it was most dangerous to its crew. It sunk one sloop and was destroyed in the process. There was no doctrine, no organizational change, and the result was very disappointing. The U-Boats that terrorized the Allied powers in World War II were another matter entirely, and represented an RMA that had been evolving for some time. That formidable form of warfare continued to evolve throughout the Cold War and is evolving today.

Interestingly, there are no hard rules as to the order in which the four elements materialize. Consider the use of atomic weapons on Japan. In that case there was an MTR that created staggering results before doctrine had been written or organizations had been changed. Both atomic weapons were dropped in the same manner as all conventional, free

falling munitions had been delivered previously. Although the Squadron that launched "Enola Gay", and "Bock's Car" had undergone special training, it was not organizationally different from other units of the time. The revolution was not fully realized until after the war with the advent of doctrine and the creation of units that were designed to house nuclear capability. It is evident that results have grown significantly in magnitude and scope in the years following the war.

The fourth element, results, is critical to understanding RMAs. Until September 11, 2001 the world was unaware that the United States had unwittingly provided terrorists with 400,000-pound cruise missiles to which thousands of people would fall victim. In the Autumn 2000 edition of JFQ, General Shelton wrote, "It is natural for a dominant nation to perfect weapons that proved successful in the last conflict." He goes on to say that weaker nations are open to innovation and that we ignore change at our own risk. Are other Nations attempting to master RMA's that we have already capitalized on? There can be no doubt that some are attempting to develop RMAs of their own.

In the United States and other freedom loving nations, many different MTRs are currently evolving, doctrine is being written, and units are being organized to accommodate these MTRs. The U.S. Marines and the Central Intelligence Agency can see an example of this in the use of unmanned air vehicles. Another example can be found in the ABM development process, which involves numerous MTRs and may very well be a significant RMA someday. Joint Strike Fighter is truly in its infancy in this process. We can make it an RMA, but not by building the next F-16, F/A-18, or Harrier. It is the responsibility of all members of this extremely talented team to approach every issue with an open mind and a developmental imagination.

The RMA is a valid concept and a useful tool. It can be defined as a paradigm shift that changes at least one aspect of warfare in a dramatic manner. Our challenge is to maintain our revolutionary traditions and innovative edge. On the other hand, by failing to be innovative and visionary, we risk obsolescence. F-22 Raptor is currently reinventing itself because it has very little relevance in the current world. History is powerful if properly used. Lets not make a similar mistake. Finally, the most powerful word in our language is "why". If the answer is, "Because that's the way we've always done it," then your reply should be a resounding, "WRONG ANSWER!"



JSF Spotlight on Mariellen Curtis

Interview by Karen Skelton

Having been at the Joint Strike Fighter Program Office since March of 1997, Mariellen Curtis, Training & Manpower Lead for Autonomic Logistics, knows her business and is obviously good at it. I interviewed Mariellen the day after she returned from travel. Like many people in the program office, she travels a lot! When asked to name the most exciting place she's ever been, her response was, "I haven't been there...yet!"

As the Training & Manpower Lead for Autonomic Logistics, Mariellen's primary responsibilities are to assess the F-35 training needs and provide team input to Lockheed Martin in their development of a total training system for pilots and maintainers of the four Services (USAF, USN, USMC, and UK) and the seven international partners.

I asked Mariellen what she liked most about her job, and her response echoes what many of us feel here at the JPO: "JSF is exciting, and seeing so many of the internationals express enthusiasm about JSF [is exciting]." She also mentioned the fact that after nearly seven years at this job, she still finds it challenging. One particular challenge, she says, is the struggle to bring all the services together. Mariellen commented, "There is so much to do here that it becomes a real challenge to be efficient with some of the simple things...like finding the time to respond to all the emails and to give proper thanks to those who should be thanked."

Mariellen entered the Civil Service in 1974 as a graphic artist for the Navy. She's worked on many other DoD programs since then including the NAVSEA Shipyard Scheduling System acquisition, chairing the joint service team that converted the Military Standard for Training to a Performance Specification, development of the Navy's advanced Training System, the T-45 "Goshawk", and the Joint Primary Aircraft Training System (JPATS) – the Texan II.

Mariellen Curtis was born in Colorado and attended a British boarding school while accompanying her family in England. Her father served in the USAF, so Mariellen is used to moving around. She graduated from Boston University in 1970, and went on to complete her Masters in Education. Before entering Civil Service, Mariellen was a 5th grade teacher.

After our discussions on career and challenges, Mariellen and I talked a little about what she does when she's not at work. Quality time for her means spending time on their 25-foot trawler "Patience" with her husband. Her mother's advice is "no box aboard" meaning no laptop computer while out on the Bay relaxing! She also enjoys going on short trips to New York and taking in theatre productions. Favorite local restaurant? The Army/Navy Club.

When asked what three words she'd use to describe herself, she only came up with two: "crazy" and "over-the-top". I'd like to take the liberty of adding one more...gracious.

Mariellen Curtis and her husband Robert (of only 3 years—they're still practically newlyweds!) live in Chesapeake Beach, Maryland.



Mariellen Curtis, Training & Manpower Lead, JSF Autonomic Logistics



News Faces, Retirements, Farewells and Promotions

Since our last publication, we have welcomed some new faces, said goodbye to many friends, and congratulated individuals who received well-deserved promotions at the Joint Strike Fighter Program Office.

New Faces

Sep 02 Blair Dunleavy, Aegis
Oct 02 Rebecca Goodison, Veridian
Glenn Gillaspay, MCR Federal
Evan Haymes, Veridian
David Stifle
Kathryn Nesmith
Robert Anneielli
M. Arif Pazarlioglu
Mike McElwee
Nov 02 David Elswick, Stanley Associates
Herbert Hinch, A-Team
Joseph Newman, Jr., Aegis
WGCDR Brian Walsh, Australian National Deputy
Maj Mike Dahlstrom, USAF
2Lt Jason Woodruff, USAF
Dec 02 Linus Baker, Aegis
Christina Juergens
Daniel Richardson
Geoffrey Short
CAPT Guilio Calvello, Italian National Deputy
James Hassler
Capt John Brady, USAF
Kevin Sylvain, Stanley Associates

Retirements

Oct 02 LtCol Dale Willey, USMC
LtCol Michael Gray, USAF
Dec 02 MSgt Curtis Foy, USAF

Farewells

Sep 02 Andrea Nowicki
LtCol Dale Zimmerman, USAF
Oct 02 Jennifer Sawyer
LtCol Stephen DiDomenico, USAF
Patricia Roy; LtCol Daniel Vore, USAF
Nov 02 Paul Sheridan
Michele Midgett
Mark Thompson
Dec 02 CDR Rick Nielsen, USN

Promotions

Nov 02 Vertreace Joy (civilian)
Lt Aaron Ayers, USN
Dec 02 Col Joe Hoffman, USAF

'Tis the Season

Personnel from the Joint Program Office (JPO) in Crystal City gathered together on Thursday, December 12th, to celebrate the season and share an afternoon meal and merriment. Music was provided by our own Chief Michael Perry who impressed everyone with his soothing vocals from such holiday tunes as "The Christmas Song" and "Please Come Home for Christmas."

This year, thanks to the Autonomic Logistics party planning leadership, we held a JSF IPT Ornament design contest. Each IPT was tasked to design a tree ornament that would properly represent their team.

After extensive requirement analysis, design, and production (a significant number of minutes prior to the actual contest), the highly creative endeavors of the Systems Engineering group came up with a clever design that yielded quite a bit of attention from partygoers.

The SE ornament was deemed the winner by a panel of fair and impartial judges (Maj Gen Hudson, USAF, RDML Enewold,

USN, and Maj Gen Michael Hough, USMC). One of the judges revealed his preference for "golden balls" (see photos next page), which Group Capt. Green says is a "perfectly acceptable term in the United States."

A lot of work goes on behind the scenes for an event such as this one. We'd like to give special recognition to the following group of dedicated individuals who made our JSF Holiday party brighter...Donna Farrell, Donna "Mrs. Claus" Lowe, Denise "Elf #1" Wise, Aimee "Elf #2" Fahrner, Arlinda Kesock, Julie Holmes, Jill Wallace, Erik Powers, Jerome Collins, Jon Schreiber, Brenda Isles, Kathy Crawford, Cheryl Limick, Alicia Humphrey, Valerie Green, Claudia "Santa's Helper" Cruz. A very special "thank you" to Ms. Rose Martini of The Waterford Towers Condominiums for her gracious and generous support.





Happy Holiday Faces from the JPO Christmas Party





Joint Strike Fighter Program Office

JSF Newsletter Calendar of Events

January

- 13 JSF Media Event
- 29 Preliminary Design Review Summit

February

- 4 NOVA documentary airs on PBS

March

- 17 JSF Newsletter publishes this week
- 23 Preliminary Design Review

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Deputy PEO

RADM Enewold (703) 602-7640

Technical Director

Mr. Schwartz (703) 602-7640

Integrated Product Teams

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Col Howe (703) 601-5591

CAPT Weisbrook (703) 601-5578

Autonomic Logistics IPT

Capt Boyce (703) 601-5632

Mr. Bodnar (703) 601-5622

Integrated Test Force

CDR Murphy (703) 601-5564

Col Presuhn (703) 604-3810

Propulsion IPT

Mr. Kunec (703) 601-5508

Lt Col Nally (703) 601-5590

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Col Rader (703) 602-7640

Gp Capt Green (703) 602-5649

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Mr. Schreiber (703) 601-5711

Legal

Mr. Tschampel (703) 601-5518

Operations

Col Romano (703) 601-5659

Public Affairs

Ms. Crawford (703) 601-5664

Security

Ms. Boyd (703) 601-5630

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Scott Smith (760) 939-5557

Edwards AFB

Joe Dowden (661) 277-5242

Patuxent River

Ron Harney (301) 757-2211

Wright Patterson AFB

Forest Oberschlake (937) 255-9697

Mystery Mug Shot



Once again, it is time to play...How Well Do You Know Your Colleagues?

Clue: This "little" girl entered the world during the era of Camelot. Some of her favorite books as a child were Nancy Drew mysteries and Dr. Doolittle.

The first person to correctly identify the person in this issue's "Mystery Mug Shot" will receive a special gift from the JSF Drawer of Goodies. Please respond via email to: karen.skelton@jsf.mil. Good luck!

This newsletter is published quarterly. Its content is not necessarily the official view of, nor is it endorsed by the U.S. Government, the Department of Defense, the Department of the Air Force, or the Department of the Navy. Questions regarding this publication, its distribution, or how to obtain back issues can be directed to Karen S. Skelton, JSF Operations, (703) 601-5559. All members of the Joint Strike Fighter Program are encouraged to submit articles for the newsletter electronically to karen.skelton@jsf.mil.