Space Fence Contract Awarded

66TH AIR BASE GROUP PUBLIC AFFAIRS (JUNE 6, 2014)

HANSCOM AIR FORCE BASE, Mass.—Officials here awarded a $914,699,474 contract to Lockheed Martin on June 2, 2014, to develop a system that will track objects in Earth's orbit with far greater confidence and fidelity.

The contract brings the program to final system development with the delivery of Space Fence Increment 1, or site 1, radar and a Space Fence operations center. The projected initial operational capability is fiscal 2019. The contract also includes an option for procuring a second radar site.

The system will track space objects in Earth's orbit. According to program officials, it will improve space situational awareness by detecting and tracking objects such as commercial and military satellites and debris from break-up events. Coverage will extend down to just above the horizon to handle low-inclination orbits.

"Previously, the Air Force could only track and identify items the size of a basketball," said Dana Whalley, the Space Fence program manager, who is stationed at Hanscom AFB, Mass.

"With the new system, we'll be able to identify items down to the size of a softball. This will significantly increase our capability to provide predictive and actionable space situational awareness for the nation."

Space Fence will provide the capability for dedicated uncued surveillance of small objects in low-earth orbit with useful capability in the higher orbit regimes. Uncued detection provides a continuous "curtain" of radar pulses forming a "Fence" that enables detection, tracking, and determination of objects' orbits without prior knowledge of their existence or location. This will allow for more timely detections, higher cataloguing accuracy and completeness, and will augment launch coverage and aid object characterization. Space Fence will work in conjunction with the Joint Space Operations Center, or JSpOC, to provide an integrated picture of the space operating environment for the warfighter.

"The program will provide knowledge of objects, debris, and events that will help us to maintain U.S. and allied space capabilities, protect space assets, and prevent potential collisions in near-Earth orbit," Whalley said.

Originally, three contracts were awarded in June 2009 for initial prototyping and risk reduction of the Space Fence system. In the second quarter of 2011, a second full and open competition was held for final preliminary designs and prototyping. That contract was awarded to two offerors: Raytheon and Lockheed Martin. As part of that, two preliminary design reviews for the program were completed with final events demonstrating working radar prototypes capable of detecting and tracking a resident space object.

"This risk reduction acquisition approach was the best way to ensure the technology was at the appropriate maturation level prior to entering the EMD [engineering, manufacturing and development] phase," said Whalley.

Space Fence is designed to provide assured coverage at low Earth orbit for objects as small as 10 centimeters. The system will also support cued searches and uncued surveillance at medium Earth orbit and above. The increased Space Fence sensitivity, coupled with the increased computing capabilities of the JSpOC Mission System, will yield a greater understanding of the space operating environment and associated threats.

"By providing a better picture of the space operating environment, Space Fence will greatly improve the Air Force's ability to see and understand that battlespace," said Whalley.

Defense Logistics Agency Improves Support While Downsizing

AMERICAN FORCES PRESS SERVICE (JUNE 12, 2014)

Jim Garamone

WASHINGTON—The Defense Logistics Agency is downsizing as the U.S. military reduces its role in overseas conflicts and operations, the agency's director said today.

Through fiscal year 2019, DLA is going to have less people, infrastructure, inventory, as well as a smaller financial footprint, Navy Vice Adm. Mark D. Harnitchek told the Defense Writers' Group, a trend that is inevitable with a shrinking military.

"If the department's budget is less by 30 percent, I have to be less by 30 percent," Harnitchek said. "We have to be ready to significantly improve support at a whole lot less cost."

The agency, a $40 billion enterprise, has a goal of taking $13 billion out of the cost of material and operations by fiscal 2019.

Meanwhile, DLA is reducing its inventory and "right-sizing" the infrastructure needed to manage it. "Over the past two years, we have taken about $5 [billion] of our $15 billion inventory out of the system—stuff we don't need or excess to our needs," Harnitchek said. "There is a like-amount of downward pressure in the infrastructure that we house that material in."

The agency also has scrapped its World War II-vintage warehouse model. "With the inventory out, we've taken the equivalent of 45 football fields of covered storage out," the admiral said. "We are looking at the models here that tell us how much to keep and how long to keep it."

Harnitchek said DLA is achieving more efficiency from its inventory, now one-third smaller than it was two years ago. "That's because of the relentless focus on basic business 'blocking and tackling' and contract execution—buy enough, buy on time, and make sure the contractor delivers," he said.

Yet, the agency needs to be ready for any eventuality, the admiral said. "There is an arc of instability that goes from Central Asia through the Middle East into North Africa and the trans-Sahara," he said. "We need to be ready all the time, and we need to be quick."

Harnitchek said keeping military forces supplied is what dominates his discussions with combatant commanders.

"We don't talk about whether we have enough lumber or fuel," he said. "It's all about, 'Can I get the stuff there?' The big challenge for a logistician looking ahead is access and infrastructure."

DLA and U.S. Transportation Command work closely together and that will continue, Harnitchek said.

"Whether it's a steak that is sourced out of Sysco here in the western part of the state or it's eggs we're buying in Latvia to make omelets in Afghanistan, Transcom moves that," he said. "I buy it. I figure out where to source it from, and then we give it to Transcom and they put it in the Defense Transportation System and they move it."

Defense Department Releases Acquisition Performance Report

AMERICAN FORCES PRESS SERVICE (JUNE 13, 2014)
Claudette Roulo

WASHINGTON—The Defense Department's top acquisition official today announced the release of a second annual review of the work the department is doing to improve acquisition outcomes.

The process is one of continuous improvement, Frank Kendall, the undersecretary of defense for acquisition, technology and logistics told reporters in a briefing at the Pentagon.

The report provides a review of the efficacy of incentives in improving costs and performance as well as updating earlier analyses with more recent data.

"About two years ago, I introduced the second set of Better Buying Power initiatives," Kendall said. "We called it Better Buying Power 2.0, and it's timely to update that and think about where we're going to go from here. A lot happens in an evolutionary fashion all the time."

The primary obstacle to a more efficient acquisition process is uncertainty over future defense budgets, Kendall said.

"And that's driven by the threat of sequestration," he added. Improving the professionalism of the acquisition workforce also will improve efficiency, the undersecretary said.

Kendall went on to highlight some of the ways the review found the acquisition workforce is making significant progress toward the seven goals of Better Buying Power 2.0.

In seeking to achieve affordable programs, the programs were asked to set affordability targets. Most—about 30—of the acquisition Category One programs now have affordability targets, he said.

"They are being added as programs come through the acquisition system at various steps in their life cycle, and we're in the process of enforcing those," Kendall told reporters.

Nearly all 30 programs are within those caps, Kendall said, and the two or three exceptions are "very, very close."

The report shows that incentive-type contracts are working as the department seeks to fulfill the second goal of BBP 2.0: controlling costs throughout the acquisition life cycle.

"The news that's not quite as encouraging is we don't always employ those incentives as effectively as we could," the undersecretary said. In some cases, they're not effective at all, while in others, they appear to be counterproductive, he acknowledged.

"So, we've got to look at that carefully and try to do better there," Kendall said. One thing that his office is looking at is improving incentives for using a wider variety of contract types to ensure the contract matches up with the project, he said.

"Under the previous edition of Better Buying Power, there was a sense that we had to use certain types of contracts all the time," the undersecretary said. "I think we've done a lot to educate the workforce and train the workforce to be thoughtful and creative and think critically about the right type of contract to use and the right incentives to put in place."

Kendall said the acquisition corps also will begin recognizing companies that are performing well.

"We tried to do this under Better Buying Power 1.0, [but] we were not able to work our way through all the bureaucracy and the difficulties of how do you do this," he explained. "So, rather than introducing the DoD-wide system at that time, we decided to give the Navy the opportunity to do a pilot program in that area. ... So over the last year or so, we've been working on that."

The Army soon will adopt the Navy's methodology, Kendall said, noting that within a year the Services will publish results identifying their superior suppliers.

Declining budgets have reduced opportunities to promote more effective competition, the fifth goal of BBP 2.0, he said. "But there are enough opportunities still there that I think we can do better," the undersecretary added.

Kendall said the area with the greatest opportunity for improvement is BBP 2.0's sixth goal: improving tradecraft in the acquisition of services.

"Defense acquisition is complicated and varying," the undersecretary wrote in his foreword to the report. "There are no simple 'schoolhouse' solutions that should be mandated absent the particulars of each acquisition in question. These findings do, however, inform our individual program decisions and provide fresh insights into what generally works in what circumstances and why. This is critical to improving our performance: We must empower, encourage, and train our workforce to think—not dictate a cookbook that workforce members blindly follow."

"In these times of extreme budget pressures and uncertainty, combined with evolving and increasing national security threats, particularly threats to our technological superiority, improving the performance of the defense acquisition system is essential for the DoD," Kendall wrote. "We must ensure that our acquisition professionals have the knowledge they need to incentivize industry and to control cost, schedule, and performance. This report is one of many steps we are taking to achieve that goal."

MPS Increment IV Reaches Full Deployment

66TH AIR BASE GROUP PUBLIC AFFAIRS (JUNE 18, 2014)
Justin Oakes

HANSCOM AIR FORCE BASE, Mass.—Battle Management program executive officer Steven Wert recently declared full deployment of the Mission Planning System Increment IV, Joint Mission Planning System, ushering in a new generation of capabilities for mission planners.

"Now that MPS Increment IV is fully deployed and operational, the warfighter will have enhanced mission planning capabilities, while reducing risk and planning time for fighters, bombers, and weapons delivery," said Wert.

Warfighters use mission planning systems for combat and training missions, weapons delivery, and airdrops. The systems allow users to collect data such as maps, photos, weather, and aircraft performance information. Increment IV provides warfighters with an improved, faster operating computer architecture to execute these missions.

The Airspace Mission Planning Division—an Air Force Life Cycle Management Center team based here—was the driving force responsible for delivering MPS Increment IV.

According to program officials, the new system enables aircrews to spend more time in the target area with improved stand-off capability, keeping airmen safe while delivering precision guided weapons to exactly the right place.

Using the improved JMPS, field commanders will also have the ability to take on a higher operational tempo and maximize on assets within their area of operations.

"Responsiveness to strategic needs of field commanders and tactical support needs of troops on the ground has taken a big leap," said Brian Smith, MPS Increment IV integration manager.

The JMPS system received release under Increment IV and is currently equipped on multiple platforms and munitions to include the B-1 Lancer, E-8C Joint STARS, F-15 Strike Eagle, F-16 Fighting Falcon, A-10 Thunderbolt, and F-22 Raptor.

At the tactical aircraft squadron level, planning time has been reduced, ranging from 40 to 70 percent, which in turn lowers the turnaround time during daily missions. For example, B-1 bomber crews cut their planning time by 72 percent, from seven hours to less than two. Raptor aircrews are now able to plan missions in less than one hour compared to the two hours it took previously.

Another benefit of the new system includes the latest technology in software.

Enhanced software allows for greater situational awareness on the battlefield and in constantly evolving environments.

An F-22 Raptor maneuvers through the airspace above Langley Air Force Base, Va. In April, the Joint Mission Planning System became fully deployable under Increment IV and is currently equipped on multiple aircraft including the F-22. Mission planning systems like the JMPS allow airmen to collect data such as maps, photos, and weather and aircraft performance information.
U.S. Air Force photo by Justin Oakes

This capability translates to improved threat reaction time and spending minimal time in hostile areas.

To safeguard JMPS Increment IV software, the system is covered by a new certified protection plan that secures the integrity of the complex computer system. The program protection plan defines what information and components are most critical to the system, its threats, vulnerabilities, and how the Service intends to shield the system—an overarching document that covers cybersecurity, supply chain risk management, counterintelligence, and other facets.

"The plan gives us something to work from for future mission planning programs," said Capt. Warren Connell, a mission planning program manager that led the protection plan effort. "We are taking this updated version and expanding on it to ensure that new systems and capabilities coming down the line are secure before we field them."

With Increment IV fully deployed, the system now enters the sustainment phase.

"Increment IV is the culmination of many years of work in Air Force mission planning," said Col. Thomas Killeen, who was the chief of Airspace Mission Planning Division at the time of the release. "It was a team effort with multiple players ranging from the Airspace Mission Planning program office, Air Force Materiel Command, to the Air Staff. I am grateful to those who made this major milestone happen."

Air Force Secretary Outlines Changes for Nuclear Force

AMERICAN FORCES PRESS SERVICE (JUNE 18, 2014)
Army Sgt. 1st Class Tyrone C. Marshall Jr.

WASHINGTON—Air Force Secretary Deborah Lee James today outlined new incentives and measures designed to change the culture of the Service's nuclear force.

Following a cheating scandal involving intercontinental ballistic missile launch officers at Malmstrom Air Force Base, Mont., and the subsequent relief of nine officers, a commander's retirement, and 91 other airmen receiving discipline, James touched on ways the Air Force has begun to address "systemic issues."

"I do think this is more than a single issue," she said in remarks at a Defense Writers Group breakfast. "As I've said before, I do think we need some holistic fixes for the nuclear force. This is not something that happened in the last year

or two, or even 10. It's probably been happening gradually over the last 25 years."

The secretary said while there are likely no quick fixes to resolve these issues, there are measures she and Air Force Chief of Staff Gen. Mark A. Welsh III can implement now.

"Let's talk money," James said. "Money is not everything, but money's important. So right now, in [fiscal year 2014], just in the last few months, we have redirected $50 million—$50 million, by the way, is the most that the Global Strike Command said they could reasonably spend in [the fiscal year]."

Money should be spent reasonably, she said, so in addition to $50 million, $350 million more will be redirected to the nuclear mission over the next five years. The money will go to sustainment infrastructure and to some of the "people issues," the secretary added.

There could be more to come, James said, but this is what officials have decided so far.

Another issue being addressed is undermanning in the nuclear force, the secretary told the defense writers.

"When you're undermanned, that means the existing people have to work harder," she said. "That impacts morale and it could impact other things as well. We have, right now, already directed 1,100 additional people are going to be inserted into the nuclear force to get those manning levels up." They principally will be in the field, she said, and the Air Force is going to 100 percent manning in the eight critical nuclear specialties. Air Force officials have lifted some of the ongoing servicewide manpower reductions to add people back into the nuclear force, she added.

Along with those adjustments, the secretary noted, she has called for elevating the Global Strike Command commander's position to the four-star level and that the related major general position on the Air Force staff be made a lieutenant general position.

"We want to up the rank of the nuclear forces within the Air Force," she said. "Rank matters in the military, so that's another thing that we're doing."

Additionally, James said, the testing environment that produced the cheating scandal has been revamped, and the inspections environment will also see changes.
"It had become this zero-defect mentality, where even the smallest of the small kinds of errors could cause an entire failure," she explained. "That wasn't a healthy environment."

In the fall, James said, the Air Force also will introduce a variety of new financial incentives for the nuclear force "to kick it up a notch," including offering accession bonuses for new officers' ROTC scholarships and incentive pay.

James also noted 20th Air Force commander, Maj. Gen. Jack Weinstein, has issued a series of directives to the field designed to start to shift the culture.

"Now, you know memos don't shift culture," she said. "Leadership and time eventually shifts culture, but this is a start. This is designed to stop the micromanaging, to push down to the lower levels [and encourage] decision-making."

All of that will help, James said. "We didn't get here overnight, and we're not going to fix it overnight," she added. It will take persistent focus, leadership, and attention for years to come, she said.

"With all of what I've just said, I'm certain that additional resources are probably still in order," James said. "We're going to have to talk about those resources as we get into the next [program objective memorandum] cycle."

James said she believes the U.S. nuclear mission is a national mission for the entire Defense Department, not just the Air Force.

"So I'll be talking to the deputy [defense] secretary, the secretary of defense [and] the senior leaders of DoD to see what we can do about this," she said.

DoD Broadens, Updates Strategy for Countering WMD

AMERICAN FORCES PRESS SERVICE (JUNE 30, 2014)
Cheryl Pellerin

WASHINGTON—The Defense Department has released the first update since 2006 of the military's strategy to counter weapons of mass destruction, replacing it with a broader one that focuses on preventing adversaries from acquiring such weapons and mitigating threats at an early stage, a senior defense official said today.

During a briefing for reporters, the official called the strategy an "important milestone."

In a constrained fiscal environment, Defense Secretary Chuck Hagel wrote in the report's foreword, the department is focusing on preventing WMD acquisition and countering the most likely threats.

"Accordingly," he said, "this strategy emphasizes early action through pathway defeat, shaping the environment to dissuade actors from pursuing WMD, and cooperating with partners to achieve countering WMD goals."

Pathway defeat is defined as deliberate action taken against people of concern and their networks to delay, disrupt, destroy, or otherwise complicate WMD-related activities.

This updated strategy, the secretary added, "provides foundational guidance for enacting the department's countering WMD policies, plans, and programs, and advances a comprehensive response to existing and developing WMD threats."

The senior defense official told reporters the updated strategy allows DoD to align its efforts with the broader national strategy for countering WMD that are reflected in the administration's efforts over the past few years.

"It shifts the focus from some of the prior documents to allow us an increased emphasis on prevention and reducing and mitigating threats earlier," the official added, "rather than focusing more exclusively on military options [or] scenarios that might be associated with crises in later phases."

Although the strategy is just being released, the official explained that its approach is already being used.

"It reflects what we are doing and activities that we have underway, the ways we've been responding to events in the world over the last five years and the way we've been learning from those events," the official said.

Documenting such activities "does give us the ability to … capture and structure the changes that have developed, especially over the last five years," the official added, "so that going forward we can use a broad, flexible document to better guide investment planning, force and capability development, and so forth. … Its inherent value is to begin to set that stage for the future."

The document's key themes include early action, shaping the environment, and cooperating with partners across the department and the interagency, and with partners, allies, and international organizations around the world, the official said.

"In every tabletop exercise or war game that's ever involved weapons of mass destruction, especially if it involves the use of such weapons," the senior defense official said, the one lesson everyone learns is that they want to do more to prevent it from happening.

"And if we can't prevent it, how do we shape an environment and create conditions [in which] we can be more effective so that the problem we have to respond to is smaller and has effects that are less catastrophic? That's what we're really trying to do," the official said, "is open up that prevention space."

The updated strategy includes new priority objectives, the official said, and described some of the strategy's big elements.

One of these is to reduce incentives to pursue and possess and use WMD, to raise barriers to acquisition—make it more expensive, costly, and harder to acquire WMD, and to manage risks emanating from hostile, fragile, or failed states or safe havens.

"If we can eliminate the places in which WMD capabilities can grow, where nonstate or state actors can operate without good governmental controls," the official said, "we can make it much more difficult. So it's very important to look at those conditions and try to eliminate them as opportunities for WMD capabilities [to take hold] in the hands of state or nonstate actors."

Another priority objective is to have a fully layered and integrated set of defenses to mitigate the risks of WMD use and to look comprehensively on a global basis between the needs of combatant commanders and U.S. domestic needs.

The senior defense official said two important lessons learned since the 2006 National Military Strategy to Combat Weapons of Mass Destruction are that the efforts to keep state or nonstate actors from acquiring WMD have to involve the whole of DoD, and actions to counter the problem must begin earlier then they have in the past.

The 2006 document was a military strategy, the official said. "It didn't take into account other important efforts of the department, such as the Cooperative Threat Reduction, or CTR, program, established in 1991 to reduce WMD proliferation."

CTR has since expanded from 13 to more than 80 countries, and the program's work has evolved. Working with the departments of State and Energy and regional partners, DoD refocused the program to take on global biological threats. "That program focuses on reducing risks [and] improving capacity so partners can prevent the movement of WMD

capabilities and a whole other range of tasks that allow us to get at this problem," the official said.

The official also mentioned DoD's work with the Organization for the Prohibition of Chemical Weapons, the Department of Transportation's Maritime Administration and its vessel the *Cape Ray*. The ship was outfitted with two field-deployable hydrolysis systems to turn some of Syria's chemical stockpiles into low-level hazardous waste for long-term storage.

"If you look at ways that we have now over the last year been able to operate in the Middle East and use [such programs] to help bolster capabilities in countries, for example, surrounding Syria, and to do that in a collaborative way that [combines] civilian tools and military tools, you see that as an example of the strategy ... already at work," the official added.

The most important idea in the Syria-*Cape Ray* example in terms of future scenarios, the senior defense official explained, "was our ability to look at a problem and to quickly apply creative solution sets by working across this department and pulling all of those elements together. That's where we were able to apply innovation and creativity and unique processes to put us in a position where we could have a solution. That sort of thing is what I want to see replicated in the future."

Kendall: Initiative Aids DoD Acquisition Culture Change

DOD NEWS, DEFENSE MEDIA ACTIVITY (JULY 10, 2014)
Claudette Roulo

WASHINGTON—The undersecretary of defense for acquisition, technology and logistics told Congress today that numerous attempts to improve the acquisition process over the years have had little discernible impact.

"The evidence, in terms of major program costs and schedule slips, shows very little statistical change," Frank Kendall told members of the House Armed Services Committee.

Three conclusions, he said, can be drawn from this fact.

"The first is that fixing defense acquisition isn't as easy as a lot of people seem to think it is," Kendall said.

A second possibility, he said, is that the department hasn't been patient or tenacious enough with acquisition policies. "We don't always leave policies in place long enough to find out if they work or not," the undersecretary said. "The frequent rotation of leadership—particularly political appointees and career military people—makes it hard to sustain initiatives long enough to determine if they are succeeding or not."

Lastly, it's possible that the department has been focused on the wrong things, he said.

"Defense acquisition is a human endeavor. And my view is that we may have focused too much on organizational structures, processes, compliance with policy and oversight mechanisms, and not enough on providing people with the skills and incentives they need to succeed," Kendall said.

But, he added, with the introduction four years ago of the Better Buying Power initiatives, the acquisition process is showing signs of progress.

Better Buying Power is "an approach of continuous incremental improvement based on pragmatism and evidence," the undersecretary said.

"I can report to you today that after four years, I believe we are seeing changes for the better," Kendall told committee members. "And I'm encouraged that organizations, like the GAO [Government Accountability Office], agree with that conclusion."

Acquiring cutting-edge weapon systems is a complex job, he said.

"It requires getting every one of hundreds of decisions right in an environment where the real incentive systems are not always aligned with the goal of increased efficiency," the undersecretary said.

When there is uncertainty about future budgets, as there is currently, planning becomes excessively difficult, he said. Better Buying Power initiatives, Kendall said, are particularly beneficial in a constrained fiscal environment, when every dollar spent on one program could mean dollars are cut from some other program.

"The Better Buying Power approach identifies areas of acquisition where the greatest good can be achieved and tries to attack those opportunities," he said. "As we learn from our experience, we periodically make adjustments and bring in new ideas. We reject ideas that don't work."

This is a pragmatic, incremental approach that stretches across the entire acquisition program, Kendall said. From setting affordability caps to constrain program costs to de-

veloping strong contractual incentives…it's hard, detailed work, he added.

"It takes time, constancy of purpose, and tenacity to be effective. I don't believe there is any other way to achieve lasting improvement," the undersecretary said.

The changes in defense acquisition aren't just procedural—they're also cultural, Kendall told the committee.

"Academic business literature suggests that two things are necessary to effect major change in an organization; a period of four or five years of sustained commitment by senior leadership—and a crisis," he said. "I'm trying to supply the leadership. And the budget situation is supplying the crisis." Against this backdrop, the undersecretary said he is working to transition the acquisition workforce from a culture that values spending to one that values controlling costs.

"In government, the built-in incentive system is to spend one's budget so that funds are not rescinded or reduced in subsequent budgets," he said. "Many of the Better Buying Power initiatives are intended to reverse the situation."

The second cultural transformation is to eliminate the check-the-box, or school-solution approach to acquisition, Kendall said.

The defense acquisitions culture should be based on "professionalism, sound business and technical analysis, and most of all, critical thinking," he said.

"The vast array of product and service types the department buys makes this a necessity," the undersecretary added.

"One-size-fits-all rules are not the right answer for our acquisition problems, and cannot substitute for the effective professional judgments that are needed for success in defense acquisition," Kendall said. "I do believe we are making progress, but I also believe we have ample room for additional improvement."

AF Moves Forward with Future Bomber

SECRETARY OF THE AIR FORCE PUBLIC AFFAIRS (JULY 12, 2014)
Ed Gulick

WASHINGTON—The U.S. Air Force released its Long Range Strike Bomber, or LRS-B, request for proposal to industry July 9 with a contract award expected in spring 2015.

An artist's concept for a stealthy future Long-Range Strike Bomber.
Northrop Grumman artist's image

The new bomber is a top modernization priority for the Air Force and will provide the United States with the option to hold any target at risk at any point around the world.

"The LRS-B will be an adaptable and highly capable system based upon mature technology," said Secretary of the Air Force Deborah Lee James. "We have established an achievable and stable set of requirements that should make this capability a hallmark for the future. We've set a realistic target cost for the system and have a procurement strategy which allows us to affordably field a new bomber fleet. The program's strategy will ensure we get the best possible deal for the taxpayer."

The new bomber will be a long-range, air-refuelable, highly survivable aircraft with significant nuclear and conventional stand-off and direct-attack weapons payload. The LRS-B will provide operational flexibility across a wide range of military operations.

"The long range strike bomber will be essential to our ability to win a full-spectrum conflict in the future.

It is a must-have capability," said Air Force Chief of Staff General Mark Welsh.

The Air Force plans to purchase 80-100 LRS-B aircraft at a $550 million average unit procurement cost in base year 2010 dollars with an initial capability in the mid-2020s.

A request for proposal, or RFP, defines a future contract's requirements and informs industry on how to respond in their proposals. Release of the RFP precedes competitive selection based on contractor proposals.

Air Force Creates Air Force Installation and Mission Support Center

SECRETARY OF THE AIR FORCE PUBLIC AFFAIRS (JULY 14, 2014)

WASHINGTON (AFNS)—The Air Force is centralizing its installation support management within a newly created Air Force Installation and Mission Support Center, Air Force officials announced today.

The change resulted from a comprehensive effort to reduce overhead costs, increase efficiencies, eliminate redundant activities, improve effectiveness and business processes and will help meet the Department of Defense's directive to reduce costs and staff levels by at least 20 percent.

The new AFIMSC will report to Air Force Materiel Command. Maj. Gen. Theresa Carter has been announced as the Special Assistant to the Commander, Air Force Materiel Command. She is charged with developing the strategy and implementation plans for this new center.

"This is a fundamental paradigm shift in how the Air Force has historically controlled and delivered installation support capabilities," said Bill Booth, Air Force's Acting Deputy Chief Management Officer. "As we look ahead to 2023, this new command structure will focus on consolidating installation support responsibilities from the Headquarters Air Force, Major Commands and multiple Field Operating Agencies."

The Air Force currently delivers installation support capabilities through a decentralized control, decentralized execution concept of operation. Consequently, each MAJCOM has developed staffs and often created unique processes for the same functions, generating duplication of effort and inefficiencies.

"The current and projected fiscal constraints have driven the Air Force to make strategic decisions to reduce its size while retaining its combat effectiveness. Centralization of management support to the maximum extent possible improves our efficiency and effectiveness in providing installation and expeditionary combat support capabilities to our wing commanders and mission partners and delivers more standardized levels of service across the Air Force," Booth said. "While efficiency is our goal, we will not lose sight that installations are combat platforms for the Air Force—we deliver Global Vigilance, Global Reach, and Global Power from our installations in garrison and at deployed locations around the world."

DARPA Robots to Face Final Challenge in California

DOD NEWS, DEFENSE MEDIA ACTIVITY (JULY 15, 2014)
Cheryl Pellerin

WASHINGTON—The Defense Advanced Research Projects Agency's third and final challenge among 24 or so U.S. and international human-robot teams will take place in California next June, ending with a $2 million prize and robots that for the first time may be capable of helping first responders save lives when a disaster strikes anywhere in the world.

The main goal of the DARPA Robotics Challenge program is to develop ground-robotics capabilities for executing complex tasks in the dangerous, degraded human-engineered environments created when disasters strike cities.

"The purpose is to protect lives during manmade and natural disasters," DARPA program manager Dr. Gill Pratt told reporters during a recent media call. The program began in 2012, but DARPA has been trying to use robots to help in disasters since 2001.

In the days after 9/11, DARPA sent to New York City robots whose development the agency had funded. But those robots found no survivors, Pratt recalled in an analytic piece published last Dec. 3 in *The Bulletin of Atomic Scientists*.

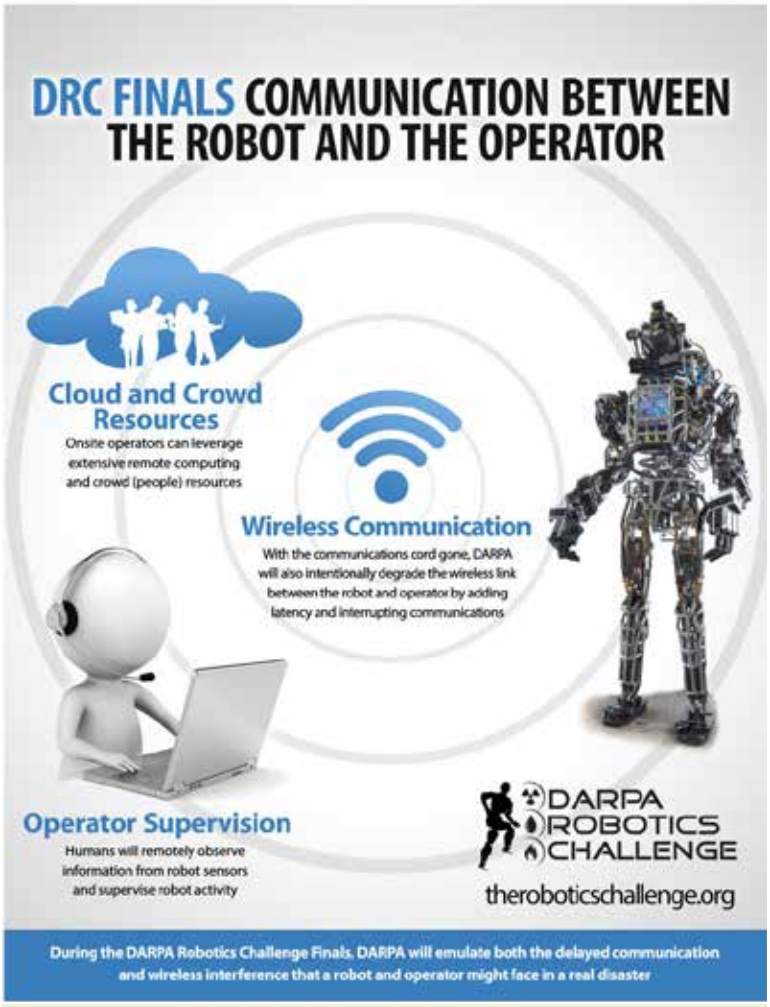
DARPA officials tried again in March 2011 when a magnitude 9.0 earthquake centered off the coast of Sendai on the eastern coast of Honshu Island, Japan, produced a 49-foot tsunami that killed 19,000 people, destroyed a million buildings, and flooded Tokyo Electric Power Co.'s Fukushima Daiichi nuclear plant.

In the plant, the reactor cores of three operating units melted, and a fourth was damaged. Japanese officials declared a nuclear emergency and ultimately evacuated people within 12 miles of the plant.

Humanitarian assistance and disaster relief is a primary DoD mission, Pratt wrote in the Dec. 3 Bulletin, and as the disaster unfolded in Japan, "DARPA officials contacted researchers who had designed robots for the Three Mile Island and Chernobyl [nuclear] disasters and coordinated with companies that DARPA had funded to develop other robots."

Each company already was making plans to send its robots and training personnel to Japan, he added, and others around the world sent robots, but it took weeks for power-plant personnel to complete the training they needed to operate the robots.

By then, Pratt said, it was too late for the robots to help.



This Defense Advanced Research Projects Agency graphic created for the DARPA Robotics Challenge illustrates communication between the robot and the operator.
DARPA graphic

"A key idea here is that these robots don't operate on their own," Pratt said during the media call. "In fact, the state of the art is not capable of having a robot do useful work on its own in these very difficult environments. So we partner them with operators who supervise the robots … at a distance from the disaster zone, connected through a communication link to the robot in the disaster zone."

In such a team, he added, "a robot does what it's best at, which is surviving difficult conditions in the disaster, and the human being does what they're best at, which is using human perception, planning, and experience to tell the robot what to do."

The DARPA Robotics Challenge launched in October 2012 and held two competitions in 2013—a virtual event in June and a two-day event in December at the Homestead-Miami Speedway in Florida.

The first competition tested software teams' abilities to guide a simulated robot through three sample tasks in a virtual environment. In December, teams had to guide real robots through as many as eight individual physical tasks that tested robot mobility, manipulation, dexterity, perception, and operator-control mechanisms.

At the trials in Miami, Pratt said, "we started with 16 teams and … went through eight different tasks, from cutting a hole

in a wall using a tool, climbing a ladder and traveling over rough terrain, and even driving a small vehicle that a robot might be called on [to use] to go back and forth between [a safe area] and a disaster zone."

DARPA officials developed the tasks in consultation with the teams, other experts, and first responders, the program manager explained, adding that DARPA is not trying to match team skills to a particular kind of disaster.

"We try to use inspiration from one disaster, like Fukushima or the ferry disaster in [South] Korea, and abstract away and talk to first responders—we've done that quite a bit now—and say, 'What's the common thread?'"

Bad communications almost always are a common thread, Pratt said, along with large areas of rubble and debris. First responders describe what bad comms or debris are like in a disaster zone, and DARPA comes up with a model for the robots.

"Often, what happens is that what we come up with is too hard for the robots," Pratt said. "So if you look at the trials, you say, 'Did the rubble in the trials disaster look like rubble in Fukushima?' And the answer is, 'Not even close.' But we have to get there, and this is the slope we're trying to climb in terms of difficulty."

But something did happen at the trials in Miami that no one, not even Pratt, expected.

"It turned out that things went better than we expected," he said, adding that the robots were more reliable than expected, with better mobility, grasping, and manipulation ability.

Because of that success and other factors, he said, DARPA officials are changing the scope of the program to raise the bar at the finals even more than they had planned.

Pratt said the other factors include a significant upswing in commercial investment in robotics, decisions by the governments of Japan, South Korea and countries in the European Union to sponsor and fund teams to participate in the finals, and a new concept in robotic autonomy called "cloud robotics."

In cloud robotics, he explained, the robot is able to exploit remote information and remote computing capability on the Internet through a high-speed link and share information to increase their effectiveness by reusing information that's provided from past sources.

"We think that particular technical advance has a lot of promise, and we believe the commercial world is going to take off with it," Pratt said. "But we want to exploit cloud robotics and the investment that's coming from other parts of the world in a way that is applicable to disaster response."

That means doing work DARPA officials believe the commercial sector will not do, the program manager said—"in particular, problems that are unique to disaster response."

One of these is operation without the possibility of physical human intervention if something goes wrong.

"In a disaster, the reason you use a robot in the first place is because the environment is very harsh, and you can't send a person in," he explained. "So we have to make sure the robot will continue to work well even if there's no way a human being can physically go there to help out."

Such an environment will be more austere than it is in a home environment or a factory, or even on a farm, he added, so the robots must be more capable in locomotion and manipulation than under normal circumstances. Maybe most importantly, the connection to the cloud will be intermittent, Pratt said.

"In disasters typically communications ... suffer most, so we are going to purposefully try to emulate the very degraded communication environments that happen in real disasters," he said. "We don't think that's something the commercial world will try to tackle in the near term."

But for the robots' human supervisors during the finals, DARPA will provide high-bandwidth links that go between the operators and their computers and the Internet, and teams will be able to use as much cloud computing power and computer disk storage, and also may use as many other experts as they like to help them help their robots.

To accommodate such evolutionary changes in the program, DARPA has added six months to the original timeline for the finals—moving from December 2014 out to June 2015. Total funding for the DARPA program, from October 2012 to June 2015, is $95 million. DARPA-funded teams will receive $1.5 million between now and June—other teams are self-funded—and the team that wins will receive $2 million.

Tasks for the finals are not yet solidified, but Pratt said they will be similar to tasks in the Miami trials, with some modifications.

"Instead of being eight separate tasks, each one of them done pretty slowly, we're going to put all the tasks together into a sequence that is much more authentic to a real disaster," he said. "For instance, you have to drive the vehicle to the site, get out of the vehicle, climb up the stairs, go over the rough ground, and each one follows the next, and the robot doesn't have a choice," he added. "It must keep managing to make it through the next challenge, and each one happens ... right after the other one."

Other differences include the following, Pratt said:

- The robots will not be connected to any kind of physical tethers or wires. Communication will be wireless, power sources will be onboard the robot and must allow the robot to run for one hour, and the human supervisor won't be allowed to physically intervene. "If a robot falls or gets stuck, the fall will have to occur without breaking something on the robot that is vital for its continued operation," Pratt said, "and the robot will have to be able to get up without assistance."
- All eight tasks must be completed in less than an hour, meaning that robots in the finals will be asked to go at least four times faster than they did at the Miami trials.
- Communications will be degraded to a greater degree than they were during the Miami trials, to be more authentic to real disasters. "We think it's going to require quite a bit of innovation from the teams to adapt to our adjustment of the goal," Pratt said. "We're sort of raising the bar, so ... we're going to give them more time and more funding to get that done," Pratt said.
- One of the tasks will be a surprise to all teams.

In general, Pratt said, "we'll give teams less prior information as to the specifics of the tasks. We're trying to slowly move things so that we're closer to a more authentic test of what a real disaster would be like."

Army Researchers Develop Cargo Pocket ISR

U.S. ARMY NATICK SOLDIER RESEARCH, DEVELOPMENT AND ENGINEERING CENTER PUBLIC AFFAIRS (JULY 21, 2014)
Jeffrey Sisto

NATICK, Mass.—Researchers at the U.S. Army Natick Soldier Research, Development and Engineering Center are developing a pocket-sized aerial surveillance device for soldiers and small units operating in challenging ground environments.

The Cargo Pocket Intelligence, Surveillance and Reconnaissance program, or CP-ISR, seeks to develop a mobile soldier sensor to increase the situational awareness of dismounted soldiers by providing real-time video surveillance of threat areas within their immediate operational environment.

While larger systems have been used to provide over-the-hill ISR capabilities on the battlefield for almost a decade, none of those delivers it directly to the squad level, where soldiers need the ability to see around the corner or into the next room during combat missions.

When soldiers and small units need to assess the threat in a village, or in thick canopy terrain where traditional ISR assets cannot penetrate, the CP-ISR can be deployed to provide that capability.

"The Cargo Pocket ISR is a true example of an applied systems approach for developing new soldier capabilities," said Dr. Laurel Allender, acting NSRDEC technical director. "It provides an integrated capability for the soldier and small unit for increased situational awareness and understanding with negligible impact on soldier load and agility."

NSRDEC engineers investigated existing commercial off-the-shelf technologies to identify a surrogate CP-ISR system.

Prox Dynamics' PD-100 Black Hornet, a palm-sized miniature helicopter weighing only 16 grams, has the ability to fly up to 20 minutes while providing real-time video via a digital data link from one of the three embedded cameras and operates remotely with GPS navigation. Tiny, electric propellers and motors make the device virtually undetectable to subjects under surveillance.

The size, weight, and image-gathering capabilities of the system are promising advancements that fulfill the burgeoning requirement for an organic, squad-level ISR capability, but more work still needs to be done.

Several efforts are underway to develop three different aspects of the technology to ensure it is ready for the soldier and small unit.

The first of these efforts is focused on a redesign of the digital data link to achieve compatibility with U.S. Army standards.

The second focuses on developing and integrating advanced payloads for low-light imaging, allowing for indoor and night operations.

Lastly, researchers are continuing to develop and enhance guidance, navigation and control, or GNC, algorithms for the CP-ISR surrogate system. This will allow the airborne sensor to operate in confined and indoor spaces, such as when soldiers advance from room to room as they are clearing buildings.

A British Soldier holds Prox Dynamics' PD-100 Black Hornet, a palm-sized miniature helicopter weighing only 16 grams. Researchers with the U.S. Army Natick Soldier Research, Development and Engineering Center are testing the Black Hornet to provide squad-sized small units with organic intelligence, surveillance, and reconnaissance capability.

U.S. Army Natick Soldier Research, Development & Engineering Center photo

In November 2014, NSRDEC will collaborate with the Maneuver Center of Excellence, the Army Research Laboratory, and other organizations to support the Army Capabilities Integration Center's Manned Unmanned Teaming (Ground) Limited Objective Experiment, or LOE, by demonstrating the current capabilities of mobile soldier sensors.

While the final system could be different from the surrogate system, NSRDEC is focused on proving the basic capability first.

The Natick Soldier Research, Development and Engineering Center is part of the U.S. Army Research, Development and Engineering Command, which has the mission to develop technology and engineering solutions for America's soldiers.

RDECOM is a major subordinate command of the U.S. Army Materiel Command. AMC is the Army's premier provider of materiel readiness—technology, acquisition support, materiel development, logistics power projection, and sustainment—to the total force, across the spectrum of joint military operations. If a soldier shoots it, drives it, flies it, wears it, eats it, or communicates with it, AMC provides it.