



GPS III Contest At Hand, But Context has Shifted Sharply

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After several years of shifting plans the competition to build the next tranche of GPS III satellites is poised to start, though the context in which that contest will take place has changed markedly from when planning first began.

The Request For Proposals (RFP) will go out in November 2017, the Air Force told *Inside GNSS* in response to a query. If that seems somewhat later than expected, it is. In a June 28 presentation,

the GPS Directorate's Deputy Director Col. Gerry Gleckel told the National Space-Based Positioning, Navigation, and Timing (PNT) Advisory Board the RFP would be out by the end of the 2017 fiscal year — that is by Sept. 30, 2017. Other than a delay, the November release should not create any new issues.

Gleckel also told the PNT Advisory Board that for cost and scheduling reasons the Air Force plans to select, and stick with, one contractor to build all 22 satellites.

"Every time we restart that (process), it's billions of dollars in nonrecurring engineering costs," Gleckel said. "There's delay going through the satellite design process and in qualification. We want to get some more stability in our satellites."

If the Air Force does indeed choose a winner-take-all approach, it will add to the pressure on would-be contractors. Not only will unsuccessful bidders lose out on what promises to be a multi-billion dollar contract, but the plan puts losing firms at a long-term disadvantage when it comes to future GPS-related deals. Key personnel and expertise will naturally coalesce around the new prime contractor, which according to Gleckel's presentation, will be developing and then building and launching GPS III satellites

into 2033 — that is for the next 16 years. That's a long time for a losing bidder to maintain resources while it waits for another chance.

A Long Process

The initial GPS III contract won by Lockheed Martin in 2008 was for two research and development satellites plus five options to build pairs of additional spacecraft for a total of 12 GPS IIIA satellites. The next phase, which was to be the GPS IIIB tranche of eight more spacecraft, was to be awarded in roughly 2011 followed sometime later by the final contract for 16 GPS IIIC spacecraft. The Air Force, however, retained the right to re-compete the procurement for GPS IIIB and GPS IIIC — a hedge against poor performance or the need to secure the industrial base for future space developments. That turned out to be a wise decision.

Work on IIIA started off smoothly but internal interference problems developed in the payload as ITT Exelis, the payload subcontractor, worked to add new signals. (Exelis became part of Harris Corp. in 2015). There were other problems as well including a failure to qualify and then properly test a ceramic capacitor — an oversight that added four months to the program's already delayed schedule. The Air Force became increasingly annoyed and didn't mind saying so in public.

"Obviously, we want a GPS III that does what it's supposed to do, delivered on time," said Lt. Gen. Ellen Pawlikowski, commander of Air Force Materiel Command, during the 2016 National Space Symposium, according to *Defense News*.

By 2014 GPS officials were so frustrated they went out of their way to boost competition for Lockheed Martin, creating a two-phase process for the follow-on procurement. Under Phase 1 they planned to award up to two Production Readiness Firm Fixed Price contracts worth \$200 million each. The winners were to go through critical design review for the space vehicle and navigation payload with demonstrations and qualification of the satellite subsystem

boxes. Then, in Phase 2, the Phase 1 firm or firms would compete against Lockheed Martin (which, along with Exelis, was barred from competing in Phase 1). The prize, after all of this, was a deal for as many as 22 satellites.

That plan, however, did not last. In May 2015, under budget pressure from sequestration, the Air Force reframed the competition to allow Lockheed Martin to compete — but shrunk the award from \$200 million to a scant \$6 million per firm. That money was to enable them only to demonstrate that they had, or could attain, a long list of capabilities, including the ability to produce an average of two satellites a year (down from the previous requirement to be able to produce two to three spacecraft annually).

The Air Force went ahead with the scaled-down awards, inking Production Readiness Feasibility Assessment contracts with Boeing Network and Space Systems, Lockheed Martin Space Systems Company, and Northrop Grumman Aerospace Systems in May 2016.

Phase 2

Earlier this year, in an April 19 Special Notice posted on *Fed Biz Opps* (www.fedbizopps.gov), Air Force Space Command announced the next step in its two-phase selection process — an Industry Day for potential GPS III bidders to be held May

4, 2017 in El Segundo, Calif. The Air Force wanted to share information on its plans with potential bidders and get feedback from them on what it intended to do. According to the notice, an RFP for a fixed-price contract to begin delivering GPS III spacecraft in 2025 was to be released later in 2017 with an announcement of the winning contractor to be made late in 2018.

Interestingly, the notice made clear that the three winners of Phase 1 were not the only ones being invited to compete. “Participation in Phase 1,” the Air Force wrote, “is not a prerequisite to participation in Phase 2.”

Even so, it’s unlikely that firms outside of the Phase 1 winners will compete, said Todd Harrison, director of the Aerospace Security Project and of defense budget analysis at the Center for Strategic and International Studies. “They are leaving it open that another company could bid,” he told *Inside GNSS* at the time, “but it doesn’t mean that some other company would actually be able to crack into this acquisition. There is still a substantial barrier to entry for building a GPS satellite.”

Circumstances Shift

Whoever bids on Phase 2 will be competing to provide spacecraft to an Air Force whose operational environment has sharply changed in just the last several years.

In April 2016, not quite a year after the Air Force released its Phase 1 RFP and month before the Phase 1 winners were revealed, Gen. John Hyten, then the commander of Air Force Space Command, announced the Space Enterprise Vision (SEV). The SEV framed how programs across the full range of military space activities were to take action to meet the threat posed by a more space-capable China and Russia

“In the recent past, the United States enjoyed unchallenged freedom of action in the space domain,” Hyten said in a statement formally announcing SEV. “Most U.S. military space systems were not designed with threats in mind, and were built for long-term functionality and efficiency, with systems operating for decades in some cases. Without the need to factor in threats, longevity and cost were the critical factors to design and these factors were applied in a mission stovepipe. This is no longer an adequate methodology to equip space forces.”

China became a particular focus of concern in 2007 after the nation used an anti-satellite missile (an ASAT) to destroy one of its own spacecraft, an aging weather satellite in low Earth orbit. And defense officials have made clear China is working hard to expand its military capabilities in space.

“The PLA (People’s Liberation Army) is acquiring a range of technologies to improve China’s counterspace capabilities,” the Department of Defense (DoD) said in its annual report to Congress on military and security developments in China. China was working on directed-energy weapons and satellite jammers, DoD wrote, and navigation satellites were among the targets suggested in Chinese PLA writings.

“The potential adversaries we have around the world know very well how important space is to us and how important it



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Deborah Lee James speaking at the Center for Strategic and International Studies on Sept. 6.

Photo: Dee Ann Divis.

is to our alliances and to our partners and how we would operate and fight,” confirmed Deborah Lee James, who served as secretary of the Air Force from December 2013 to January 2017.

China has been watching and learning from U.S. space operations for the last 25 years, James told a September 6 symposium on organizing military space.

“They’ve not been sitting still when it comes to investing and testing capabilities which ultimately could threaten our ability to be able to use space, our space assets, in the event of conflict,” she told the audience at the Center for Strategic and International Studies.

In addition to the ASAT test in 2007, she said, China in 2013 tested a direct-ascent, anti-satellite system that could reach geosynchronous orbit — where key military satellites reside. Both China and Russia have also demonstrated their ability to do robotic rendezvous and proximity operations and, James told the audience, a year or two ago a Russian satellite showed an unusual pattern of movements in GEO orbit including loitering near several U.S. commercial communications satellites.

“Space is no longer a peaceful domain if it ever was one,” said James. “It is now contested and congested.”

Must Go Faster

“In the not-too-distant future, they (the Chinese) will be able to use that capability to threaten every spacecraft we have in space. We have to prevent that, and the best way to prevent war is to be prepared for war,” Hyten told an audience in January at Stanford University in California, according to a DoD summary. “So, the United States is going to do that, and we’re going to make sure that everybody knows we’re prepared for war.”

Now the commander of United States Strategic Command, Hyten is pushing the service to make that happen. Though America still enjoys a significant advantage in space, he told the *Washington Free Beacon*, that advantage is eroding and space defense requires moving much more quickly than the Pentagon’s acquisitions processes currently allow.

“Can we go fast enough as a nation to stay ahead of our adversaries?” Hyten said in an interview. “We have to go fast.”

That sense of urgency was underscored in an SEV-related Sources Sought announcement posted August 30 by Air Force Space Command.

Defense officials reached out to determine what systems engineering and integration (SE&I) services industry had available to support, among other activities “new and on-going efforts in all phases of the acquisition life cycle and standardize systems engineering processes.” The eventual contractor would work on three programs: the Air Force

Satellite Control Network (AFSCN), the Launch and Test Range System (LTRS), and the Space Training Acquisition Office (STAO). Though not specific to the GPS III RFI, the work would cover a long list of mission areas including navigation satellites, next generation space navigation systems, navigation user equipment and satellite ground stations among its mission areas.

“The purpose of this Synopsis is to gain insight into existing Industry capabilities and systems,” Space Command wrote. “It is aimed at receiving feedback from industry on the capabilities out there to perform SE&I support within a diminished timeline due to the urgency of this Space Enterprise Vision (SEV) requirement directed from Space and Missile Systems Center (SMC) leadership.”

The Air Force may also be looking at other ways to speed up replenishment of the GPS constellation in a pinch. On July 31 Space Command posted a Special Notice asking for feedback on reducing the design life of the GPS satellites. Shorter-lived spacecraft can be made smaller, perhaps enabling more than one satellite to be launched per spacecraft. Though the July 31 notice asked for ideas for the generation of satellites after GPS III, the notion of building smaller GPS satellites has been discussed for years. Quick replenishment is one way to address the risk of losing satellites and also a way to update the constellation with important new technology.

In fact, the current GPS III work schedule, according to Gleckel, specifically incorporates “tech insertion points” aimed, at least in part, at adapting to the new, contested nature of space operations.

“That’s where we can add additional capabilities into a future flow,” Gleckel said during his presentation. “Again, with the same contractor without starting over, without the costs and time that go along with that — but still allowing us to change with the threats.” 