

Military Space Programs FY2010 Budget Request
Senate Armed Services Committee
Strategic Forces Subcommittee
May 20, 2009

Chair: [Sen. Bill Nelson](#) (D-FL)

Ranking Member: [Sen. David Vitter](#) (R-LA)

Witnesses

- Mr. Gary Payton, Deputy Under Secretary of the Air Force for Space Programs ([prepared statement](#))
- Gen. C. Robert Kehler, Commander, Air Force Space Command ([prepared statement](#))
- Lt. Gen. Larry D. James, Commander, 14th Air Force, and Commander, Joint Functional Component Command for Space, U.S. Strategic Command ([prepared statement](#))
- Vice Adm. Harry B. Harris, Jr., Deputy Chief of Naval Operations for Communication Networks ([prepared statement](#))
- Cristina T. Chaplain, Director, Acquisition and Sourcing Management, Government Accountability Office ([prepared statement](#))

Background

The subcommittee held an approximately one-hour open hearing on the FY2010 funding request for military space programs. Sen. Vitter gave an opening statement; Sen. Nelson did not, nor did the witnesses, leaving the majority of the session to questions and answers. The subcommittee members and witnesses then moved to another room for a closed (classified) hearing on these matters. This hearing summary obviously covers only the open session. For further information view the [webcast](#) of this hearing (scroll down to May 20) or the committee-provided [transcript](#).

Nuggets

Sen. Nelson revealed that an independent panel, chaired by Tom Young, that looked at the NPOESS program will recommend that NASA design and operate the system with the cooperation of DOD instead of the tri-agency management structure now in place, and that the program will cost an additional \$1-1.5 billion.

When asked by Sen. Vitter what the probability is that there will be a gap in GPS coverage, Lt. Gen. James said the “probability is relatively low that you would see major problems with a GPS signal worldwide.”

Hearing Highlights

Potential Gap in GPS Coverage

Ms. Chaplain was questioned about a recent GAO report that suggested that a gap may occur in DOD's Global Positioning System (GPS) of navigation satellites. She explained that DOD is about to begin launching satellites in the GPS-IIF series while they are building a newer version designated GPS-III A. She said that GAO's analysis showed that if those two programs remain on schedule, there is only an 80-90% probability that the GPS constellation will stay above the minimum of 24 operational satellites needed to ensure global coverage. If there was a 2-year delay in delivery of the GPS-III A satellites, that would drop to 10%. She said that GAO's analysis had been exaggerated in media reports because measures can be taken to extend the life of operating satellites. She stressed that GAO is concerned about aging satellites and delays in the GPS-IIF program. She added that the Air Force is taking measures in the GPS-III A program to avoid the problems experienced with GPS-IIF.

Mr. Payton said that GAO's concerns were the same as the Air Force's when it started "architecting" GPS-III A, which he described as the first "back to basics" acquisition program. Using that approach, he said, they had "intense conversations" with warfighters to determine requirements, obtained independent cost estimates, and did four years of systems engineering and technology risk reduction "in a competitive industrial environment to buy down the risks" and better understand how different designs could meet the requirements. He asserted that "we have much more confidence in the acquisition of GPS-III ... compared to the systemic problems prior space programs had suffered."

Gen. Kehler added that the world depends on GPS and the Air Force knows it and knows that it is responsible for the system. He assured the subcommittee that there are 30 GPS satellites operational today and "We know where the problems are here." The first of the GPS IIF satellites is due for launch later this year and GPS-III A is progressing well. When asked by Sen. Vitter what the probability is that there will be a gap in coverage, Lt. Gen. James said the "probability is relatively low that you would see major problems with a GPS signal worldwide. There could be areas ... over the poles or northern latitudes that you have less accurate coverage. ... It is a very dynamic position, as the satellites move around in the sky...."

Who's in Charge?

Sen. Vitter asked for comments on an Institute for Defense Analysis (IDA) report that said no one was in charge "in a global sense with regard to space." Mr. Payton said that the warfighter is in charge; requirements are set to meet warfighter needs. Sen. Vitter commented that that's a lot of people and asked who is in charge of integrating that into clear input. Mr. Payton said that was the responsibility of U.S. Strategic Command (StratCom). Gen. Kehler elaborated by saying that space requirements originate at StratCom and there is a process that hands those requirements to the Air Force, and his organization, Air Force Space Command, turns those requirements into

capabilities. StratCom also is in charge on the operational side for day-in and day-out operations, of which Lt. Gen. James is in charge. So there are two chains, which he said works pretty well – warfighter requirements follow the standard chain that other warfighting requirements follow, and space operations follow a standard set of activities that put the capabilities into the hands of people who need it. Lt. Gen. James further explained that his organization is responsible for Army, Navy and Air Force space requirements, which are turned into tasking orders. Gen. Kehler concluded by noting that IDA looked across all of national security space – DOD and the intelligence community – and the space posture review will look at all of that.

Small Satellites and Operationally Responsive Space (ORS)

Sen. Vitter asked whether there was sufficient focus on small satellites (smallsats). Mr. Payton announced that a developmental smallsat, TacSat 3, was launched the previous evening. Gen. Kehler added that the Air Force sees great potential in smallsats and “being able to put another strategic arrow in our quiver.” Vice Adm. Harris concurred and said the Navy was participating in the ORS program, saying it is “great for the country, it is great for industry and it gives the warfighter potential for on-call services down range.” Ms. Chaplain said that GAO is generally supportive of ORS because of standardized design techniques, lower launch costs, and the potential to bring in new players, but she cautioned that some requirements need bigger solutions.

Sen. Sessions (R-AL) also asked about ORS and Mr. Payton elaborated on the TacSat-3 launch, saying that everything looks good so far. He noted that in response to an urgent request from U.S. Central Command, the Air Force is building an operational smallsat called ORS Sat-1. Sen. Sessions remarked that *Space News* reported that the FY2010 request was insufficient to support that program. Mr. Payton explained that it is a milestone-driven program and the next milestone is this summer. If the program successfully passes it, the Air Force will seek funding to move forward with it. He said that industry has to prove that it can deliver on the required schedule.

National Polar-orbiting Operational Environmental Satellite System (NPOESS)

Sen. Nelson asked about the NPOESS program and the cost and schedule problems it continues to experience. He revealed that an independent study team, chaired by Tom Young, that looked at the program would release its findings next week and recommend that NASA design and operate the system for NOAA with the cooperation of DOD instead of the existing management structure, and that an additional \$1-1.5 billion would be need to complete the program. (*Currently, DOD and NOAA jointly fund the program, with NASA providing technical support. NPOESS is managed by a tri-agency Integrated Program Office.*) He asked if that was acceptable to the Air Force. Lt. Gen. James replied that, from the warfighter perspective, as long as the acquisition process meets warfighter requirements for weather data, he has no problem with it. He deferred to the acquisition side to talk about management of the program. Mr. Payton added that they would need “strong confidence” that NASA and NOAA could meet those warfighter needs.

Communications Satellites: TSAT and MUOS

Sen. Nelson asked if there was danger of a gap in protected communications in 2018. *(This refers to highly secure communications satellite links that are currently provided by the Milstar system. The Advanced Extremely High Frequency (AEHF) program is the successor to Milstar. The first AEHF launch is expected within the next year. It was to be succeeded by the Transformational Satellite (TSAT) program, a revolutionary jump to optical instead of radio frequency communications. DOD has recommended canceling the TSAT program, and buying an additional AEHF satellite instead.)* Gen. Kehler noted that changes in other parts of DOD requirements – such as the Future Combat Systems (FCS) program – postpones the need for some of these capabilities. He said that he was not concerned about a “gap” in terms of satellites on orbit, but that decisions will need to be made in the next budget cycle about what can be pulled into the AEHF program.

Sen. Nelson commented that \$2 billion had been spent on TSAT already. Mr. Payton added that they plan to “harvest” technologies from the program, including radiation hardened processors, laser communications, and a multitude of other technologies. They will be used for AEHF and the Wideband Gapfiller Satellite (WGS) program.

Ms. Chaplain said that GAO has not done a gap analysis in this area, but would like to do so. She cautioned that the AEHF program “isn’t out of the woods yet” either.

Sen. Nelson asked what lessons could be learned from the cancellation of TSAT. Gen. Kehler responded that this was a matter of “synchronizing capability with need” and the cancellation of TSAT was in response to changes in other DOD programs like FCS.

Sen. Nelson then asked Vice Adm. Harris about the Navy’s Multiple User Objective System (MUOS), a mobile communications satellite system, and its 11 month delay. Vice Adm. Harris acknowledged that there are some technical challenges with the antenna, and more problems may be revealed after thermal tests. He said that if MUOS is delayed by 11 months, there could be a gap in providing communications in the Ultra High Frequency (UHF) band in 2010, but that older UHF satellites (LEASESAT and FLEETSAT) are still working. Sen. Nelson asked if the Navy had considered putting a UHF transponder on a commercial satellite, and Vice Adm. Harris replied that it had been considered but could not be done in a timely and cost effective manner.

Space Situational Awareness (SSA)

Sen. Nelson asked about the collision between an active U.S. Iridium satellite and a defunct Russian satellite, and whether legislation passed previously to allow the Air Force to provide more data to commercial companies could reduce the chance of future collisions. He further asked if it would mean that the commercial companies might provide more data to the Air Force. Lt. Gen. James replied that the legislation allows the Air Force to provide data to commercial and foreign entities (CFEs), not the reverse, but that the Air Force is working on agreements with CFEs in that regard.

Overall. Lt. Gen. James explained that his organization, which is responsible for “conjunction analysis” between satellites, has received additional funds from the Air Force to enable them to perform analysis on more satellites than prior to the Iridium-Cosmos collision. Gen. Kehler added that the Air Force tracks more than 19,000 objects in space and there are thousands more too small to track. “We have now an investment roadmap for how we improve our space situational awareness.”

(Text in italics is provided for clarity.)

May 28, 2009