Washington Watch

By John A. Tirpak, Executive Editor

Good news and bad news; Setting straight a major myth; Working on lifetime No. 2; Competition matters ....

THE NON-ADVOCATE'S GOOD F-35 NEWS

The F-35 program can be made to work with the time and funds available, but everyone's going to have to be patient with the inevitable and normal setbacks, given the scope of the project, said Air Force Lt. Gen. Christopher C. Bogdan, F-35 program executive officer.

There's "more good news than bad news" on the program, said Bogdan at an *Aviation Week* conference on defense requirements and affordability in early March. The program received a "gift" from his predecessor, Vice Adm. David J. Venlet, in the form of an additional 30 months and $6 billion, which Venlet persuaded Congress to provide to get the program back on track. As such, Bogdan said he won't ask for any more time or money.

If problems arise that exceed the cash reserves already set aside to absorb further problems, he said he'll let the users decide whether to give up capability or add time or funds.

"Generally, we are on track. … We're not missing any major milestones," Bogdan said. "I see no reason we can't finish on time with the money we have planned." He said Venlet also left him a schedule which is "realistic" and "executable." However, he acknowledged "things are not perfect, … there's still risk."

Software is a key risk, Bogdan said, and while it's a "true statement" that software is behind schedule to the tune of five months, he's "reasonably … confident" the program will catch up.

"Only one-third of flight test is complete," Bogdan said. "You gotta figure we'll find things" as testing continues. Any development program will have problems, which is "why you do flight test," he noted.

Since taking over the project last December, Bogdan has captured media attention with unusually frank comments about the poor relationship between the government and its prime contractors on the F-35, Lockheed Martin and Pratt & Whitney. Nary a public appearance by Bogdan has failed to produce a headline focusing on a problem with the program.

During the Arlington, Va., symposium, Bogdan joked that he had "used up his quota" of controversial remarks for the month, having taken the two primes to task during a speech at the Australian International Air Show. Bogdan also frequently notes that he is a manager and not an "advocate" for the F-35.

USAF photo by A1C Jason Couillard

Production is the "shining star" of the F-35 program.

However, he said his previous remarks have been exaggerated and taken out of context. He's determined to provide "transparency" so that all the F-35 partners and "stakeholders" have a clear idea of what's happening on the project, but he said progress is good and re-emphasized the realism of the schedule.

In Australia, he said, he was merely making it publicly clear that he expects the vendors to "attack" threats to affordability every day. Based on numerous meetings with company executives since, he said he's confident they've gotten the message.

NO TRILLIONS

Bogdan took pains to address what he thinks is a major myth about the F-35: that its cost is far beyond reason. He acknowledged it's the largest procurement program in the Defense Department's history, but the numbers bandied about by critics are way out of line, he said.

The figure of $1.1 trillion as the operating and support cost of the F-35 program—a Pentagon assessment—is "not a good number," Bogdan insisted.

That's "what it will cost in 2056," he pointed out, and he challenged anyone to predict accurately what fuel will cost next year, let alone 43 years from now. Moreover, the price "is in 2056 dollars," and if adjusted back to today's dollars, would be around $580 million. At a half-trillion dollars, that's "still a lot of money" and is the reason he's so dogged about making sure everyone on the program is thinking constantly about how to keep the fighter as inexpensive as possible. The life cycle operating and support number includes buying the aircraft, fueling and fixing the fleet, spare parts, training, simulators, runways, hangars, and practically every other aspect of having and using the aircraft for the decades it will be in service.

The O&S numbers are large, but "if you don't start thinking about operation and support … now, it could be unaffordable" later, said Bogdan. He noted there are some costs "I can't control," such as crew ratios and how much training time is spent in the simulator vs. in a real flying airplane.

Some technical problems that have emerged on the F-35 program—a jittery helmet display, a fuel dump issue, and a redesigned arrestor hook, among others—"do not keep me up at night," Bogdan reported. "I have confidence" the problems will be resolved, he said; it's just that the solutions are not coming quickly.

Fixes are in the pipeline, but they require time for design, test, production, and installation, Bogdan pointed out. "It's just not happening fast." Such issues are what flight test is intended to reveal, and after 12 years, he understands that people are impatient, and he asked that the program be given time to address them.

THE GREAT SIN

The F-35 has been pilloried for "the great sin of concurrency," Bogdan noted, readily agreeing that finishing development,

ramping up production, and conducting flight test, standing up training, and weapon evaluation all at once is a monumental effort with "many moving parts."

However, the program has learned a lot about concurrency, he said, and the primary cost of it comes in the form of reworking already-produced or in-production aircraft when there is a "discovery" in flight test mandating a design change. Those costs are pretty well understood now, he said.

It's most expensive to rework an aircraft already delivered, but it's significantly less costly to correct one still on the line, Bogdan noted. Most design changes have flowed from things found during fatigue testing, in which a representative aircraft is subjected to the stresses of a normal 8,000-hour "lifetime" at an accelerated rate, to find out if the parts will hold up as long as expected.

"The good news" on this front is that the Air Force and Marine Corps versions—the F-35A and B—have already finished one "lifetime" and are well into a second lifetime. The Navy carrier version will finish its first life by the end of the year. With those data in hand, the number of changes can be expected to start coming down rapidly, Bogdan reported.

Furthermore, a feature of the Lot 5 contract with Lockheed Martin puts half the burden of any rework costs on the company. With "more skin in the game," he's sure the company will work hard to ensure that rework is done quickly and cost-effectively.

The development and installation of retrofit kits used to be 18 months, Bogdan said; now it's just under 13 months and he's aiming for less than 12.

A bigger schedule risk than rework or even software is in weapons certification, he said.

"We lost seven months" of certification flight-test time because of the discovery of a loads issue with the weapons bay doors, he noted. It will take a while to catch up; only three weapons are likely to be certified when the Marine Corps is expected to be first to declare initial operational capability.

Production is the "shining star" of the program, Bogdan reported, noting that production costs are declining with experience and increasing volume. Lot 5 was cheaper than Lot 4 and, he said, "I'm confident Lot 6 will be cheaper than 5, and Lot 7 will be cheaper than 6." He fully expects production costs "will come down" even further. That this is happening so early in production is an excellent sign, he said. "We still have 90 percent of production to go—about 3,000 airplanes."

WHEN IS IOC?

Bogdan confessed he has "very little say" in when one of the F-35's users will declare initial operational capability. Each user has unique criteria of what will constitute "required assets available," which is the precursor to declaring the system war-ready.

"The service tells me what they need to declare IOC," Bogdan said. "And it's not only just the airplane, … it's the tech orders, it's training pilots, training maintainers, … support equipment, … infrastructure. Those are all the things I have to provide the service. And it all has to come together—and work—before a service Chief is going to declare IOC," he said.

He expects to deliver to the Marine Corps version 2B of the F-35 software "somewhere near the end of 2015." He has received the required assets available list from the Marine Corps and believes he can meet that timetable. It's the "basic warfighting capability" suite.

"Radar, electronic attack, electronic warfare, sensor fusion, … all of those things are going to be working at a pretty high level" on version 2B. The key limiter will be probably the minimal number of certified weapons. "They may be comfortable" declaring IOC with that "limited … capability," he said.

Version 3I will be the same as 2B, with the difference that "it's hosted on a different set of computers on the airplane, and those new computers have more growth potential, but that's the exportable version of 2B, fundamentally."

USAF photo by Paul Weatherman

Bogdan has used up his quota of controversy.

To international partners, he said, the question of IOC depends on whether they consider that first, limited fighting potential sufficient to declare themselves operational: "Do they have the whole package ready to go?"

Shortly on the heels of delivering sufficient aircraft to the Marine Corps, "I have to deliver [to] the Italians, with 3I capability, in 2016, and … at the end of 2016/early 2017, I have to go with that 3I capability to the Israelis," Bogdan said. That country "may have" sufficient assets to declare the F-35 operational at that point.

"The Air Force has yet to determine what level of capability will constitute their IOC," Bogdan said. "That's understandable; up until this point in time, we could never give them any kind of assurance that we were going to deliver anything on time. And so you can understand why they're a little hesitant early on."

The Air Force has said it would leave the combat readiness determination up to whoever is the head of Air Combat Command when USAF has enough assets on hand to make an IOC declaration. With the F-22, IOC was declared in 2005 with six aircraft capable of deploying and fighting for two months.

MORE COMPETITION

In his drive to hold down F-35 costs, Bogdan said he will introduce competition on the program wherever he can, and Lockheed Martin will not enjoy sole-source status on sustainment. So far, he has determined four major areas of competition that were not previously expected to be competed.

One will be sustaining support equipment. "A lot of that will be common, some will be unique," but none of it needs to be sole source, he said.

Another will be training. The government owns "the software, the courseware, the syllabus, the simulators, and the buildings," and there's no reason that other contractors couldn't run that aspect of the program, Bogdan said.

The Autonomous Logistics Information System, or ALIS, which will manage the flow of parts and repairs at the user level, is another potentially huge competition, Bogdan said.

"It will be in every squadron, and there will be hundreds … of squadrons," he noted, adding that he'd like to "squeeze it down so it's deployable."

Last will be the global supply chain of parts to the various countries using the F-35.

The goal of all this competition is not to take work away from Lockheed Martin and Pratt & Whitney; indeed, they may win all or most of it. But "if nothing else, competition will drive down costs" and get everyone to make the most efficient proposals possible, Bogdan said. ■