DEPARTMENT OF DEFENSE

ORAL TESTIMONY FOR THE
AUSTRALIAN PARLIAMENT
SENATE COMMITTEE ON
FOREIGN AFFAIRS, DEFENCE AND TRADE

SUBJECT: F-35 Lightning II Program Update

ORAL STATEMENT OF: Lieutenant General Christopher C. Bogdan, USAF
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Chairman Gallacher, Deputy Chairman Back, and distinguished Members of this committee, thank you for the opportunity to address you regarding the F-35 Lightning II Program. It is indeed my honor to appear before you today.

Before I begin to give my assessment of the F-35 program, I would like to make a few points with the committee… First and foremost I am not a salesman for the F-35. THAT IS NOT MY JOB. My job is to run the best possible F-35 program I can, delivering the capability my customers need within the cost, schedule, and resources I have been given. My purpose here today is not to try and "sell you" on the F-35 program, but rather provide you an honest, balanced assessment of where the program stands today. That means I will tell you the good, bad, and the ugly about the program and tell you what my team is doing to reduce cost on the program and improve the F-35 weapon system. I will consider myself successful here today if I leave you with an accurate picture of the F-35 program—so that you and the Government of Australia can draw your own conclusions based on facts about the program and then make the best possible decisions for your great nation.

The second point I would like to make is in reference to the comments made by Air Vice Marshall Deeble during the Senate estimates he gave on 10 February. I understand he said in his Q&A session that it is easy to tell the difference between pilots & navigators, because navigators are much better looking…As a pilot with over 3200 hours flying time, some of it in F-111s with navigators like Air Vice Marshall Deeble…I must strenuously disagree with him…With very few exceptions, pilots are clearly better looking than navigators…and I would like that fact entered into the official record, please. Now, on to the F-35 program…

The F-35 Lightning II is of vital importance to the security of the United States and its allies, including Australia. I have been on the job for three years and three months as the Program Executive Officer and Program Director. I am committed to delivering an affordable, reliable and sustainable fifth-generation fighter to our warfighters within the time, money, and resources I have been given. The F-35 will form the backbone of air combat superiority for decades to come. It will replace the legacy tactical fighter fleets with a dominant, multirole, fifth-

generation capability to project and deter potential adversaries. The F-35 will become a linchpin for future coalition operations and will help to close a crucial capability gap that will enhance the strength of our security alliances.

Despite what you might have heard in the press and elsewhere, the F-35 program is executing well across the entire spectrum of acquisition, to include development and design, flight test, production, fielding, base stand-up, sustainment of fielded aircraft, and building a global sustainment enterprise. The program is at a pivot point where we have moved from slow and steady progress to a rapidly changing, growing and accelerating program. We will be finishing our 15-year development program in late 2017 and beginning to transition to a leaner, more efficient Follow-on Modernization Program. We'll see production grow from delivering 45 aircraft in 2015 to delivering over 100+ aircraft in 2018 and 145 aircraft by 2020. Additionally, in the next four years we will accelerate the stand-up of 17 new operating F-35 bases all over the world. We are also accelerating the creation of our heavy maintenance

and repair capabilities and supply chain in the Pacific, European and North American regions – creating a truly global sustainment capability.

However, the Program is not without risks and challenges—as these come with any program of this size and complexity. But I am confident that the current risks will be resolved and we will be able to overcome any future problems and deliver the F-35's full combat capability. I have often said the mark of a good program is not that it has no problems…but rather that it discovers problems, implements solutions, makes the weapon system better, and keeps the program moving along. And that is what we have been doing for years.

First let me provide you facts about some of the things we accomplished last year:

Last summer we celebrated a major accomplishment, with the United States Marine Corps declaring Initial Operating Capability with their squadron of F-35Bs at Yuma Marine Corps Air Station. Today the United States Marine Corps is successfully flying and deploying to austere sites for training--dropping and shooting live weapons. The F-35 team also took our F-35C aircraft to the USS EISENHOWER--a large

deck aircraft carrier--to conduct its second round of F-35 sea-based trials. This sea trial was a great success; we completed all testing and training days early and moved one step closer to full sea qualification for the F-35C. The program also conducted the first AIM-9X missile launch from the F-35, delivered the initial version of our Block 3 software, and began testing our final block of software known as 3F. Another test-related accomplishment was the successful completion of aerial refueling testing in October in support of the certification to refuel the F-35A from the Royal Australian Air Force KC-30As.

Last year we also began U.S. Air Force and Partner pilot training at Luke Air Force Base, where Australia's first two F-35s and your first two F-35 instructor pilots are helping to train U.S Air Force and other Partner pilots. In addition, industry committed to and then successfully delivered 45 aircraft last year including the first aircraft produced in the Italian assembly facility in Cameri, Italy. From a production perspective, overall as of mid-January of this year, a total of 171 F-35s have been delivered to our test, operational, and training sites,

On the cost front, the price of purchasing F-35s continues to decline steadily Lot after Lot. For example, the price of a Lot 7 aircraft was 4.7 percent less than a lot 6 aircraft, and a Lot 8 aircraft was approximately 3.6 percent less than a Lot 7 aircraft. I fully expect this trend to continue well into the future. Today an F-35A costs around $108 million U.S. Dollars. I anticipate that by 2019 an F-35A with an engine, industry's fee, in FY19 dollars will cost around $85 million U.S. dollars.

The Lot 10 contract which we are negotiating right now includes 8 F-35As for the Royal Australian Air Force. Today, working with the Royal Australian Air Force, we plan to deliver the first two F-35As to Royal Australian Air Force Base Williamtown in December 2018. Upon first aircraft arrival, Australian Operational Test and Evaluation will commence toward validating the F-35A capability against Australia's requirements. Williamtown will also host Australia's first training squadron--Number Two Operational Conversion Unit--and your first operational squadron --Three Squadron. In addition to the F-35A aircraft, Australia will be receiving significant training capability at

Williamtown, including six Full Mission Simulators. Given that we estimate the full final capability of the F-35A to be fielded in the fall of 2017, I believe Australia's timelines and schedule for IOC in 2020 are considered a low risk with schedule margin for any unforeseen issues.

In an effort to continue to drive costs down, the F-35 JPO is exploring the possibility of entering into a Block Buy Contract for aircraft production Lots 12, 13, and 14 aligning with fiscal years 2018, 2019, and 2020. A Block Buy would enable the Partners to save a significant amount of money by allowing industry to purchase material for three lots of aircraft together, gaining economies of scale. Preliminary results from an independent assessment indicated that savings in excess of two billion U.S. dollars—or a 5-10% price decrease per aircraft for those three lots--for all 14 customers-- is achievable.

We have also begun planning for the Follow-on Modernization effort, which will be the means to deliver improved capabilities to ensure the F-35 remains relevant and capable against advanced and emerging threats throughout the next few decades. Work continues with the US services and International Partners to ensure the Modernization

Program will be “right-sized” so it is affordable and sustainable. We intend to begin the Modernization Program in 2018 with delivery of the first increment of improved capability in about 2021. This will be followed by new increments every two years to include Partner unique weapons and capabilities such as the Joint Strike Missile.

Switching gears, I would like to highlight Australia’s industrial participation in both production and sustainment. Currently Australian Industry has earned nearly 555 million US Dollars of parts production with the potential for billions more in the next two decades as we ramp up production. My job is to ensure that Australian industry is given a fair opportunity to continue to compete on a best-value basis for all this potential work.

On the sustainment side, as you know, Australia has been selected by the U.S. Department of Defense to provide regional maintenance, repair, overhaul, and upgrade capability …also known as MRO&U… for both airframe and engine for the Pacific region. We are currently working with your government-industry team to standup these important capabilities over the next few years. This provides a superb opportunity

for your industry to secure long-term work and opens the door for future innovation and investment by the program as we attempt to drive cost out of the program.

As I said before the program is changing, growing, and accelerating, but it is not without its issues, risks, and challenges. So let me highlight some of these areas and what we are doing about them.

On the technical front, we have a number of risks I would like to mention. At the top of my list are both aircraft software and our maintenance IT system known as ALIS. First, the software: with over eight million lines of software code on the aircraft, the F-35 is orders of magnitude bigger and more complex than any current fighter aircraft in the world. Our mission systems software--the software that controls the sensors and weapons, and also provides the pilot with battlespace awareness--is a complex, sometimes tricky, and often frustrating part of the program. The current initial Block 3 software is not nearly as stable as it needs to be to support our warfighters. What I mean by this is that about once every four to four-and-a-half hours of flight time the radar or one of the other sensors has to be reset. Our goal is to reduce this

phenomenon to less than once every eight hours. In order to ensure that the software demonstrates the needed levels of stability, the government has launched an in-depth look at the software stability—called a Red Team—to help understand the causes and solutions to this problem. I believe that by the May-June time frame of this year we will have this issue resolved. However this added work to fix the current software has added more schedule risk to our final version, Block 3F software, which now has the potential to be about four months later than we planned—meaning we will finish our final version of software fielding sometime around the September 2017 timeframe, still in time for key program events like the U.S. Navy Initial Operating Capability, the start of formal Operational Test, and delivery of our Partners jets starting in 2018.

Our maintenance IT system, known as ALIS, has also had difficulties and deficiencies that we are trying to fix. ALIS itself has over fifteen million lines of software code …so its development is also complicated. The current ALIS system is not nearly good enough for our maintainers, and today they must live with many time consuming workarounds to diagnose, fix, maintain, and launch F-35s. Fortunately

we installed a new disciplined systems engineering process starting in 2015 to address these problems and with each new version of ALIS we are seeing much better performance. As an example, just three years ago it took nearly four hours to "turn" an F-35 from landing from one mission to being ready for the next mission. Today F-35 squadrons are turning jets in about two hours and forty-five minutes—a trend that continues to improve with every increment of ALIS we field. Unfortunately, despite the progress we are making with ALIS in terms of its capability, the next increment of ALIS—the version needed for the U.S. Air Force Initial Operating Capability—is potentially one-to-two months later than we originally planned.

Another issue you may have been aware of is the problem we are having with our safe escape and ejection system. In 2015, the U.S. Services and Partners restricted F-35 pilots weighing less than 136 pounds from operating the F-35 after safe escape tests indicated the potential for increased risk of neck injury to these lighter weight pilots. The good news here is that we have identified the required fixes to remove this restriction and we will have these in place sometime in mid-

to late 2017. I am prepared to discuss all the issues in detail during the question and answer period.

In addition to these three program risks, you may have recently seen or read the latest report from the U.S. Director of Operational Test and Evaluation (or DOT&E) so I would like to address that report. First, the report is factually accurate and was entirely written based on information that came from the F-35 Program Office. There is absolutely nothing in that report that was not already known by the Program Office, the U.S. Services, and our Partners. Unfortunately the report only highlights issues and problems and stops short of describing the efforts that are underway to resolve these issues; thus this leaves the reader believing that we have many problems that remain unaddressed and that the program is in worse shape than it really is. What I would like people to understand is that the time to find and fix problems on the F-35 program is right now, while we have a small number of aircraft in the field and while we are still developing and testing the F-35. Additionally, the government-industry team over the past few years has had a very good track record of discovering and fixing problems without

derailing the program. A few examples are the F-35C tailhook, the F135 engine problem that resulted in an engine fire, and the technical problems with our helmet.

Let me quickly provide you with some background on these issues:

-- On the F-35C tailhook, our initial design was poor…in fact when we first tried to "catch the cable" during ground testing we missed the wire 7 out of 8 times. We went back to the drawing board, redesigned the hook, built it, tested it, and put it on the C-model. This new hook was used on our very first sea trial with the F-35C aboard the USS NIMITZ—a large deck carrier. During that sea trial we attempted over 100 "traps"—landing on the carrier and having the hook catch the wire. Our record was 124 attempts with 124 successful traps. Problem solved.

-- It was a similar story on our engine fire in 2014. We grounded the fleet for about 6 weeks, investigated and found the root cause, developed a new design for a portion of the three-stage compressor of the engine, built it, tested it, and put it into our

production line and also retrofitted the engines in the field—this was mostly paid for by industry, and 18 months later we haven't had a single problem, and it is no longer an issue we talk about.

-- Our helmet followed the same path. We originally had problems with our helmet; as you recall they were issues known as green glow, jitter, swimming, latency, and poor visual acuity. Twelve months after these discoveries, we fielded our new Gen III helmet…which pilots are using today…with no problems.

All three of these problems have been resolved, are behind us, and not a topic of controversy or discussion anymore. I believe the issues we are facing today—many outlined in the DOT&E report—will have similar outcomes. We will fix them, cut the fixes into the production line, retrofit the already fielded aircraft, and then move on with the program.

In addition to the issues raised in the DOT&E report, I am also prepared to discuss other areas of the program where the conventional wisdom and public perception don't quite match the facts or reality,

including the F-35's ability to dogfight, the noise levels of the aircraft, the aircraft's ability to operate in hot, humid environments, the aircraft's weapons and range capabilities, and the F-35's ability to survive against our enemy's most sophisticated fighters and threats, as well as any topics you may desire.

In summary, the F-35 program is moving forward, sometimes slower than I would like, but moving forward and making progress none the less. We are nearing the completion of development and flight test in 2017. We are ramping up production, standing up new bases, growing the global sustainment enterprise, and continuing to drive cost out of the program.

As with any big and complex program, new discoveries, challenges and obstacles will occur. The F-35 is still in development and it is the time when technical challenges are expected; however, we believe the combined Government/Industry team has the ability to resolve our current issues and any future discoveries. My team's commitment to overcoming these challenges is unwavering.

I intend to continue leading this program with integrity, discipline, transparency, and accountability. It is my intention to complete this program within the budget and schedule I have been given, and I intend on holding my team and myself accountable for the success of this program.

The program is fundamentally on the right track as evidenced by the accomplishments I have highlighted here and the many fixes we have incorporated over the past few years. The basic design of the F-35 is sound and the results we have seen so far reinforce my confidence in the ultimate performance and capabilities of the F-35.

Thank you again for this opportunity to discuss the F-35 Program and I look forward to answering your questions.