

Crossing

This year's first transatlantic flight by an F-35 and the recent sovereign deployment of two aircraft to the Netherlands each made history.

Both events are significant to the F-35 programme.

Riccardo Niccoli and Kees van der Mark provide the detail



History was made on the evening of Monday, May 23, when two Royal Netherlands Air Force Lockheed Martin F-35A Lightning IIs touched down on Dutch soil for the very first time. First to land on runway 05 at Leeuwarden Air Base,

at 21:17hrs, was F-35A F-001 (AN-01), flown by Colonel Bert de Smit, commanding officer of the Netherlands Operational Test and Evaluation (OT&E) Detachment at Edwards Air Force Base, California. Major Pascal Smaal followed ten minutes later in F-002 (AN-02). Both jets got the traditional hose down by the air base fire department before taxiing onto Leeuwarden's northern flight line together. As the last light of the day faded, the two fifth-generation fighters came to a stand-still in front of hundreds of Royal Netherlands

Air Force personnel, invited guests and media representatives. The deployment was historical for the Royal Netherlands Air Force, but also for the F-35 community, as it marked the first-ever transatlantic crossing from the United States to Europe by an F-35.

An Interesting Endeavour

The main reason for the Royal Netherlands Air Force to deploy its F-35s to Leeuwarden was to conduct noise comparison flights, which became known as perception flights in the Netherlands. Early last year, Defence minister Jeanine Hennis-Plasschaert first mentioned her intention to bring one of the Edwards-based Royal Netherlands Air Force F-35As to the Netherlands to allow residents of the villages surrounding Leeuwarden and Volkel Air Bases to compare the noise produced by an F-35 to that of an F-16. The two Dutch bases will see F-35 operations commence in late 2019 and late

2021 respectively. Based on reports of the noise generated by the F-35, many feared increased levels of noise.

Deploying the jet to the Netherlands also enabled the air force to show its newest weapon system to the public during the F-35's European air show debut at Leeuwarden on June 10 and 11, ahead of the type's planned participation at the Royal International Air Tattoo at RAF Fairford and the Farnborough International Airshow in the UK during early July.

Col Bert de Smit told AIR International: "Once the Ministry of Defence had tasked us to do the perception flights in the Netherlands, we started thinking about the opportunities the deployment could give us within the framework of the multinational F-35 OT&E. Several deployments have been scheduled in this programme, but none of them outside the United States. So that would certainly be an extra. And unlike in the United

the Pond



States, in Europe we usually operate from a hardened aircraft shelter [HAS]. Taking this opportunity to carry out HAS measurements is a useful addition to the OT&E programme as well. We're also using this deployment to assess how ALIS [the Autonomic Logistics Information System] operates with the Dutch Forces' TITAAN network away from our base at Edwards. With all these extras, our deployment has become an interesting endeavour for the JPO [the F-35 Joint Project Office] and Lockheed Martin as well."

He added: "Apart from 30 Edwards-based Royal Netherlands Air Force personnel deployed – including all four Dutch F-35 pilots, maintainers, IT and intelligence specialists – there is a so-called white force OT&E monitoring team here consisting of a dozen people from the United States, Australia and the Netherlands, as well as five representatives from Lockheed Martin and Pratt & Whitney."

The Leeuwarden deployment gave the Royal Netherlands Air Force the opportunity to fly combined missions with F-16s in the Netherlands for the first time, including these two Volkel-based F-16AMs. Kees van der Mark





1 & 2 Vapour cones around a Dutch F-35A during an air power demonstration at Leeuwarden air show on June 11. Formed of condensed water, vapour cones are formed when the pressure, density and temperature of the water vapour is suddenly increased across the stern shock wave in transonic flight. **Kees van der Mark** **3** Major Di Loreto of the Aeronautica Militare taken post-flight, after his first flight in an F-35A. **56th Fighter Wing/US Air Force** **4** Colonel Bert de Smit is the commanding officer of the Royal Netherlands Air Force F-35 OT&E Detachment at Edward Air Force Base.

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DUTCH F-35 FACTS

After years of political debate, on November 6, 2013, the Dutch Parliament finally approved the acquisition of F-35As to replace Royal Netherlands Air Force F-16s. By that time the Royal Netherlands Air Force had already taken delivery of two F-35As – ordered in 2009 and 2011 – to enable participation in the multinational Operational Test and Evaluation programme at Edwards Air Force Base between 2015 and 2019. Initial plans foresaw up to 85 entering air force service. For political reasons, the budget available was limited to €4.5 billion, allowing acquisition of at least 37 F-35s including the two already in service. Deliveries to the operational units is planned for 2019-2023, with the initial six going to Luke Air Force Base in 2019 for pilot training and the remaining 29 – which will be built at Cameri, Italy – to 322 Tactical Training, Evaluation and Standardisation (TACTES) Squadron at Leeuwarden (from late 2019), followed by 312 and 313 Squadrons at Volkel (from late 2021). The six aircraft at Luke will be joined by the two aircraft currently based at Edwards in 2019. When initial conversion of Royal Netherlands Air Force F-16 pilots to the F-35 is completed in 2023, the number of US-based F-35s will be reduced to five. Current plans foresee retirement of the last of the 61 F-16s remaining in service by 2024.



2 weapon system on its first deployment, so there were challenges in several fields. For instance, which spare parts and tools do you take with you for this kind of deployment? Taking everything is just too much. Which spare parts you take, is normally based on experience. With the F-16 we usually know which parts are likely to break if you deploy the jets for a couple of weeks. That data does not yet exist – or at least it is not mature – for the F-35, and there will always be parts breaking that were not taken into account. There is no logistic system for the F-35 in place yet in Europe, requiring any part to be ordered from the United States.”

At the end of the deployment only one part was required, which arrived from America within 48 hours.

Coming Over

Preparations for the deployment involved certification of the Royal Netherlands Air Force KDC-10 tankers to refuel the F-35. One of the Eindhoven-based 334 Squadron KDC-10s spent two weeks at Edwards in March and April for this purpose. Certification was complete by April 4. “With a lot of similarities between our KDC-10 and the US Air Force KC-10A we did not expect any issues, and it worked out well,” according to the Dutch OT&E commander.

In accordance with the deployment plan, the two Dutch F-35s made the four-and-a-half-hour flight from Edwards to Naval Air Station Patuxent River, Maryland, on May 21. Both KDC-10s provided tanker support and passenger transportation for the majority of the personnel involved in the deployment.

The two aircraft took off from the Maryland super base at 07:10hrs (13:10hrs Central European Time) for the 8.1-hour flight to Leeuwarden. A C-17A Globemaster III from



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Not One but Two

Col De Smit said: “We initially planned to come over with a single jet only, but due to the attention this deployment got in the press and the resulting political pressure, we needed to be sure the perception flights would go ahead, even if an aircraft broke down. So we decided to bring the second aircraft as well. Originally AN-01 was due to come over while AN-02 was in the depot for scheduled modification. But due to a change in the schedule, AN-02 was also available.” Some sources stated that AN-02 was not allowed to go outside the United States due to specific test equipment installed. “It is not an issue,” according to Col De Smit: “AN-02 does not have the complete instrumentation package fitted at the moment, and while in the Netherlands both aircraft operated from shelters in the sealed-off QRA [Quick Reaction Alert] compound at Leeuwarden, which is subject to additional protection measures.”

Col De Smit continued: “We have flown our F-16s across the Atlantic for some 30 years now, but this is a complete new



5 Major Di Loreto holds the Italian flag aloft during his transatlantic flight in an F-35 on February 5. *Aeronautica Militare* **6** Major Di Loreto completes pre-flight checks to AL-01 at Lajes in preparation for the second leg of the transatlantic flight to Naval Air Station Patuxent River. *Aeronautica Militare* **7** The first Italian Lightning II on the ramp at Lajes. Note the 13° Gruppo badge on the air intake: the squadron was re-activated on May 12, 2016 and will be the first Aeronautica Militare unit to operate the F-35A. *Aeronautica Militare* **8** The base fire brigade welcomed the F-35s with a water curtain as they taxied to the Leeuwarden flight line. *Kees van der Mark*

the European Heavy Airlift Wing at Papa Air Base, Hungary, followed the fighters across the Atlantic packed with some 38.5 tons of support equipment and spare parts.

According to Col de Smit, take-off from Patuxent River was delayed by 40 minutes due to air traffic control issues, a delay further compounded by the lack of a tail wind over the Atlantic. Consequently, the historic arrival in the Netherlands was delayed by about hour. Once in Scottish air space, the two F-35s were joined by 334 Squadron's Gulfstream IV, which had the Defence minister and outgoing Royal Netherlands Air Force commander Lt Gen Alexander Schnitger on board. Two F-16BMs also joined the formation as photo ships. Back at Leeuwarden Air Base, thousands of people were present around the perimeter fence to witness the arrival. The weather was not at its best. Nevertheless, everyone was treated to a formation flypast by the Gulfstream IV with an F-35A in close formation on each wing.

Perception Flights

The F-35 perception flights gave people living in the vicinity of Leeuwarden and Volkel Air Bases the chance to give feedback on how they experienced the sound generated by the F-35A and the F-16: sound was measured at five different locations around each air base during the same flights. Both the survey among residents and the measurements were carried out by the Netherlands Aerospace Centre or NLR.

Lt Col Frank den Edel, head of the Royal Netherlands Air Force F-35 Transition Team said: "During these flights, both the F-35 and the F-16 flew seven different take-off and landing profiles, including VFR [visual flight rules] an IFR [instrument flight rules] approaches, using both ends of the runway. These profiles represent 95% of the daily flight manoeuvres near the air bases. Although normal operations would not necessitate the F-35 to use its afterburner, we included burner take-offs at the request of the residents."

After a 24-hour delay caused by low clouds – which made it impossible to fly all profiles as planned – the perception flights were carried out on May 26. Two flights were made at each of the two air bases: one in the afternoon and another in the early evening, to allow as many people as possible to participate in the survey.

After taking off from Leeuwarden at 14:30hrs, Lt Col Laurens-Jan Vijge – who is the commander of Edwards-based 323 Test

and Evaluation Squadron – first flew F-35A F-002/OT (call sign Archer 01) to Volkel to fly the profiles, together with F-16AM J-511. Both aircraft landed at Volkel for a hot pit refuelling, before taking off again. After performing similar profiles at Leeuwarden, both aircraft landed there shortly after 17:00hrs. The F-35A received another hot pit refuelling before taking off for the third time at 17:30hrs, now with F-16BM J-065 following a few minutes behind. Once the profiles were complete at Volkel, both aircraft returned to Leeuwarden without refuelling, and after performing approaches landed again around 19:20hrs. Afterburner was used during all three take-offs.

The first results of the survey and measurements were made public by the Royal Netherlands Air Force and NLR the next day. Differences in the sound of the F-16 and F-35 perceived by the 1,193 survey participants were small, which was consistent with the measurements. In most cases the maximum peak sound level generated by the F-35 was no more than 3 dB(A) higher than that of the F-16. In some circumstances, the F-16 was noisier than the F-35.

Busy Weeks

Measurements taken in the hardened aircraft shelter as part of the OT&E commenced on May 24 and lasted until May 27.

Col de Smit said: "A concrete shelter creates an environment that is very different from a flight line or sun shelter. Aspects looked at included vibration and pollution levels. For this purpose, dozens of sensors were applied to AN-01."

Once the HAS testing was complete, AN-01 had to be stripped of the sensors and its

condition assessed. The aircraft was ready to fly again by June 2. The Colonel added: "With two main goals of the deployment completed during the first week of the deployment, we took the opportunity to generate as many



sorties as we could during the rest of our stay. The aircraft performed better than expected, and we were able to fly twice on most days. This enabled us to show the F-35's capabilities to F-16 pilots. While operating together with Royal Netherlands Air Force F-16s at Edwards last August, we had already proven the F-35 can be a real force multiplier, for instance by supplying additional data that improves the situational awareness of fourth-generation jets like the F-16."



Both Dutch F-35s seen on the flight line at Leeuwarden in the early twilight following their historic arrival on May 23. Kees van der Mark

Parlare

Major Gianmarco Di Loreto, Chief Project Pilot for the Italian

Major Di Loreto, how were you selected by the Aeronautica Militare for this important assignment?

In the spring of 2015, two test pilots had to be selected to complete a transition course (TX) on the F-35 with the US Air Force, in order to ferry the first Italian aircraft to the International Training Center at Luke Air Force Base, Arizona. The Aeronautica Militare leadership decided to choose two pilots who had worked on the programme during the various development phases. Captain Marco Mangini and I were already assigned to the Reparto Sperimentale Volo's F-35 programme, and so both had a solid background on the type.

How was the transition course?

The course lasted three months, from September 15 to December 16, 2015. First we attended six weeks of ground school, the so-called academic part of the course, instructed by Lockheed Martin personnel at the academic training centre and then carried out the flying part, which included training events in the full mission simulator with the 61st Fighter Squadron. The first flight was preceded by a flight rehearsal in the simulator, which must be carried out with the same instructor pilot with whom you fly for the first time and within 24 hours of the live mission [the instructor pilot flies as wingman to the student]. This rigid rule is necessary because there are no two-seat versions of the F-35. Preparation for the first flight includes a dozen simulator sessions followed by a test. The TX course comprises eight missions, the first five of which are dedicated to transition. Four

flights are flown in pairs with an instructor, the fourth of which is the solo check flight that allows you to fly alone, and one mission flown at night. The remaining three flights are dedicated to the use of the mission systems in various roles, including in-flight refuelling, all mixed together. The flying part is preceded by preparation of your personal flight equipment, which is tailored to each pilot. This includes of course the helmet, which is sized using laser technology, and the safety jacket, anti-g suit and underwear. Because of our need to practise in-flight refuelling ahead of the transatlantic flights, we Italians carried out two sorties with tanker support, one more than is usually scheduled.

The course was quite short.

Was it a different version of the standard F-35 transition course?

Yes, we took a course designed for experienced, test or instructor pilots. The courses for operational pilots is longer in duration, while those for the young pilots coming directly from undergraduate pilot training will be even longer.

Which version of the F-35 did you fly at Luke, and what type is currently in production for Italy?

We flew US Air Force and Royal Australian Air Force aircraft configured to Block 2B and Block 3i standard. Currently, the Italian aircraft are configured at Block 3i S5 standard with more operational capabilities [than Block 2B], waiting for the full potential of the F-35 when it reaches full operational capability [configured to Block 3F standard].

As a test pilot, you have lots of experience of combat aircraft,

in particular those operated by the Aeronautica Militare: Typhoon, Tornado and AMX. How do you find the F-35?

First of all, it's important to note how the full mission simulator provides very good preparation for flying the aircraft even when configured to Block 2A standard – it is able to represent over 95% of the aircraft's behaviour and capability. The cockpit is very large and comfortable, with only a few controls and switches. It has a side stick control and a big touch screen, better described as a position screen, which dominates the cockpit. The screen is divided into two main displays, but the pilot can divide them into up to twelve different screens. There are about 20 main pages plus a huge number of sub-pages.

How are the pages selected and is there a standard that is trained during the course?

Presently there is not a coded standard, also because all the expert pilots have been trained, so it was decided to leave room for everybody's personal preference. In general, on the left side we select the images relating to the sensors and navigational functions, while on the right side we display pages showing the situational awareness and targeting. In the event of an emergency, such as disorientation or a problem with the helmet, the pilot can recall a legacy-style head-up display screen [HUD] simply using a switch on the throttle.

The HMDS [helmet-mounted display system] is a fundamental part of the F-35. The HMDS visor displays much more information than a traditional HUD, so besides flying parameters there is

data about the mission [air-to-air or air-to-ground], armament release, navigation, threats, and possible system failures. In addition, all the ground or air threats appear on the visor as soon as the pilot looks in the direction of interest. The helmet also includes a night vision mode and displays the image fed from the AAQ-37 Distributed Aperture System or DAS, an infrared sensor system that provides a 360° spherical view of the outside. This system knows where the pilot is looking, in order to represent situational awareness in the direction that he or she is looking anywhere within the 360° sphere. Through the helmet, the pilot can aim at targets, and all the on board sensors slave to where he or she is looking, identifying the threat. Then, with a simple touch of a switch on the side stick, the pilot can lock on to the target, and the various sensors provide the exact identification of the threat. This is the fusion by design capability of the aircraft.

What is piloting the F-35 like?

The flight controls are exceptional, very well harmonised, and as a whole the aircraft is very intuitive to the pilot. In addition, the flight controls are designed to change their control laws when in landing configuration, when the aircraft automatically makes itself set [engine included] to follow the pilot's input coming just from the side stick. This also happens during in-flight refuelling, when all the control surfaces are positioned in order to create more drag, and allow



On June 7, AN-01 flew over multiple locations in the Netherlands to show the new jet to the public and shoot images of the F-35 against typical Dutch backdrops. Supported by both KDC-10s and a C-18A, both Dutch F-35As were returned to the United States on June 14. **Kees van der Mark**

Italy's F-35 Programme

Recent months have been busy for the Italian F-35 programme. After the maiden flight of

Italiano

F-35 programme, speaks exclusively to AIR International.

the pilot, with a higher engine setting, to use the power more quickly. The aircraft is speedy, keeps its energy well, and has low fuel consumption. At Luke, for example, we flew 90-minute long missions, and landed because it was necessary to allow other training missions to fly, not because we were low on gas. What can surprise is the fact that even with armament in the internal hold, the aircraft endurance changes very little.

In flight, the F-35 is optimised for high subsonic speeds and is always on the edge [of its flight envelope]. When it manoeuvres, even at low G, it buffets, which in my opinion helps the pilot to instinctively understand which zone of the flight envelope he or she is in.

What is its operational application like?

The man-machine interface is very simple, and tailored to the pilot's needs. Operationally, the F-35 can be considered omniscient, which means it can carry out any kind of tasking on the same mission. Its strengths are the integrated electro-optical sensor [the AAQ-37 EOTS], the APG-81 active electronically scanned radar, its datalink capability, and the ability to carry a lot of fuel internally. But above all, the difference [in combat scenarios] is its sensor fusion and low observability capability.

In close air support [CAS] or air-to-ground missions, for example, the F-35 can easily fly in a permissive environment, one with a very low threat level, or in a non-permissive environment with a very high level of threat. For example, the A-10 is still a very effective CAS aircraft as proven

Afghanistan, which is a passive environment. In a high-level threat scenario, the A-10 can only operate after SEAD and DEAD aircraft have secured the area from any surface-to-air threat. The F-35 can fly CAS missions in a non-permissive environment without the help of other assets. [SEAD and DEAD refer to the suppression/destruction of enemy air defences].

The F-35 has been designed to conduct electronic warfare [EW] and conduct DEAD missions in scenarios full of threats. An operational mission is built by adding air-to-air or air-to-ground events based on the EW scenario, which is always included. The radar is part of the aircraft's EW suite. All mission criteria are accomplished by using only the internal equipment and systems. In order to fly SEAD/DEAD missions, legacy fighter-bombers must carry electro-optical targeting pods, EW pods, bombs, missiles and auxiliary fuel tanks – all carried externally. The F-35 does not need any external stores.

The pilot can concentrate exclusively on conducting the mission, and much less on piloting the aircraft. In earlier generation fighters, the pilot has to manage all the information, separately gathered from various sensors and displayed on different screens. In the F-35, the pilot manages the whole mission because of the situational awareness displayed on one screen, thanks to the sensor fusion.

In the offensive air-to-air role, the F-35 can be compared to other fighters that use the AIM-120 missile. Its advantages include superior situational

awareness and low observability to remain undetected by ground defence systems and fighters, and the capability to detect enemy fighters and threats at very long distances. On board sensor management is automatic through the sensor fusion, including the radar, which is only activated when necessary to reduce active emissions.

What can you tell us about logistic support?

The Autonomic Logistics Information System or ALIS has been heavily criticised so far.

The ALIS is a complex system, which not only includes the maintenance aspect, but also management of spare parts, training and planning. It fuses the needs of all the units within its system. It's very different compared to traditional systems, and in order to attain the desired results, it's necessary for maintenance personnel to absorb its logic, adapt and comply to the system. Continuous software upgrades are foreseen, and the results to date are clear.

Can you tell us about the transatlantic flight, a remarkable first for Italy, that you had the honour and responsibility to plan and carry out?

The most difficult aspect of the transatlantic flight was the planning phase: to consider and evaluate all elements of the puzzle, and ensure nothing was forgotten that could pose a potential source of risk or danger. The biggest problem was to draw a route that, in the event of an emergency, made it possible to reach an alternate airport. It was also crucial to determine which cases would allow the flight to continue in the

event of a small emergency, and when circumstances deemed it necessary turn back to the airport of departure. The aircraft flight manuals were a big help, but remember that no such flight had been accomplished before with an F-35. We also had to consider the characteristics of the various aircraft included in the mission [F-35, KC-767, Typhoon], their in-flight refuelling requirements, management of the two tankers in case of an emergency, the logistical needs and be prepared for any kind of scenario that could develop. For example, having a Typhoon as chase aircraft was necessary, so Captain Mangini, the other Italian F-35 pilot, was there to help me [also with the checklist] in case of an emergency, and also to have a radar-equipped aircraft alongside. My aircraft had not completed the necessary check tests on the radar because it was the first APG-81 radar system fitted in an F-35 outside the United States. The flight was divided into two legs, the first from Italy to Lajes [Azores Island], about a six-hour leg, with three in-flight refuellings. The second leg was from Lajes to Naval Air Station Patuxent River [Portsmouth, New Hampshire, for the Typhoon chase aircraft], about a seven-hour leg, with four in-flight refuellings. Near the end, we were getting tired and the last refuelling took place in the clouds, with bad weather, which wasn't simple. We flew at FL270 [27,000ft], at Mach 0.75, lower than what's possible for the F-35 and KC-767, in order to allow mixed refuelling, also with the hose and drogue system for the Typhoon.

Everything went well. The F-35 showed no problems at all. **Riccardo Niccoli**

- 1 F-35A F-002 turns onto final approach as part of the perception flight in the early evening of May 26. *Kees van der Mark*
- 2 Aircraft AL-01, piloted by Major Di Loreto, landing at Naval Air Station Patuxent River, on February 5. *Lockheed Martin*
- 3 F-35A F-002 parked in front of a hardened aircraft shelter at Leeuwarden in between missions. *Kees van der Mark*



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the first aircraft MM.7332/32-01 (AL-01) on September 07, 2015, a series of significant events have taken place.

After completing Lockheed Martin check flights and US Defence Contract Management Agency (DCMA) acceptance flights, MM.7332 was handed over to the Aeronautica Militare on December 3. The aircraft remained at the FACO on Cameri Air Base for preparation work for its delivery flight to the United States. Five Italian F-35As will be assigned to the 56th Fighter Wing at Luke Air Force Base, Arizona.

In preparation for the transatlantic delivery flights a 14° Stormo KC-767A deployed to Edwards Air Force Base, California to complete a flight test campaign to certify air refuelling of the F-35A.

Flight testing was carried out by personnel from the Italian RSV and the US Air Force Test Center, and technicians from Boeing and Lockheed Martin. The first test flight took place on July 22, followed by the first wet contacts one week later; 24 sorties were flown involving 655 contacts and transfer of 330,000lb of fuel. The KC-767 and F-35A air refuelling trials defined a standard protocol for certification with other tankers, and was next used in the qualification of the Royal Australian Air Force KC-30A in September.

The first two Italian pilots selected for

the ferry flights started their F-35 training at Luke Air Force Base on September 15 and graduated from the transition course on December 16. In January, the pilots continued their training in Italy, with the first contact between a KC-767A and an Italian F-35A (MM.7332) recorded on January 19, just four days after the second Italian F-35A MM.7333/32-02 (AL-02) made its maiden flight.

The first transatlantic flight by an F-35 was scheduled to start on February 2, but technical problems meant a 24-hour delay. The ferry flight involved six other aircraft supporting the F-35A: two TF-2000A Typhoons as chase aircraft (one was a spare and flew only to Lajes Air Base in the Azores); two KC-767As (capable of air refuelling both types of fighter); and two C-130Js tasked with oceanic search and rescue.

Aircraft MM.7332 arrived at Naval Air Station Patuxent River, Maryland on February 5, and remained at Naval Air System Command's Integrated Battlespace Simulation and Test facility until early May. The Italian aircraft is the first assembled outside of the United States and underwent radar cross-section and emission testing to ensure its build quality, APG-81 radar and other sensor functionality were in accordance with the stringent tolerances set by the US Department of Defense. The aircraft was flown to Luke on May 24.

The second ferry flight involving aircraft AL-02 and AL-03 started on May 18 supported by two KC-767As and two C-130Js providing oceanic search and rescue. The ferry between Cameri and Luke involved three legs to Lajes, then Portsmouth, New Hampshire and finally Luke.

Aircraft MM.7334/32-03 (AL-03) made its maiden flight from Cameri on March 22; MM.7335/32-04 (AL-04) on May 24 with

MM.7336/32-05 (AL-05) due to follow in July.

The first two Italian instructor pilots started training at Luke in March, the same month the first group of technicians started their F-35 maintenance training course at Eglin Air Force Base.

According to the latest Italian Defence Staff plan, only four Italian F-35As will be based at Luke and the fifth aircraft will now be assigned to Amendola Air Base, home of 32° Stormo, in late 2016 or early 2017. The first F-35A squadron will be 13° Gruppo, a former AMX unit de-activated in December 2013, and re-established on May 12, 2016.

The Italian Defence Staff recently made another change to its F-35 fielding plan. All 30 F-35Bs (equally split between the Aeronautica Militare and Marina Militare) will be based at Amendola. Navy aircraft will no longer be based at Grottaglie Naval Air Station; a decision made to avoid funding of duplicate support infrastructure.

As of March, Italy had signed firm orders for eight F-35As for the Aeronautica Militare. In November 2015, the Italian Ministry of Defence was due to sign for six aircraft (one F-35A and one F-35B in LRIP 9, plus two F-35As and two F-35Bs in LRIP 10), but the signature was delayed because of a new Italian Government evaluation of the programme. In March, orders were signed for LRIP 9 and LRIP 10, but for four aircraft: two F-35As and two F-35Bs, one of each type from each lot. However, at the same time, Italy signed for long lead items for four F-35As and four F-35Bs in LRIP 11 and LRIP 12. This means Italy has ordered ten aircraft from the lots LRIP 9 to LRIP 12, six fewer than initially planned. The first F-35B is expected to be completed at the Cameri FACO in 2017. To date, Italy has signed for 18 F-35s (including six F-35Bs) from its total of 90 declared in 2012. *Riccardo Niccoli*

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