

Norway, the Joint Strike Fighter Program and its Implications for Transatlantic Defense Industrial Cooperation

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On September 22, 2015, Norwegian Defense Minister Ine Eriksen Sørreide welcomed the rollout of the first Norwegian Joint Strike Fighter jet (JSF), also known as the F-35, at a Lockheed Martin production facility in Fort Worth, Texas. Expressing satisfaction with “this extremely important acquisition,” Sørreide announced that the F-35 would replace the government’s current fleet of F-16 fighters.¹ As part of that effort, Norway has so far committed itself to purchasing 22 JSF jets out of a total requirement of 52, which together with the necessary support equipment and training is estimated to cost 67.9 billion Norwegian kroner (\$7.94 billion). The Norwegian Parliament, however, will reassess the requirement for the six last jets once 46 F-35s have been ordered. The first F-35 deliveries to Norway are expected in 2015 for training at the Partner Training Center at Luke Air Force Base in Arizona, with the first aircraft arriving in Norway in 2017. Deliveries are expected to be completed by 2024, with initial operating capability in 2019 and Full Operating Capability in 2025. Norway also intends to maintain four F-35s at Luke Air Force Base to train pilots; the remaining 48 jets will be stationed in Norway.

The F-35 program is a unique historic opportunity for Washington’s international allies to participate in its largest defense procurement program of all times. That being said, it appears increasingly unlikely that a similar program on this scale and magnitude will appear again.

Largest Defense Acquisition Program in Pentagon History

Norway, along with Australia, Canada, Denmark, Italy, Netherlands, Turkey, and the United Kingdom, is participating in the largest US weapons acquisition program in Pentagon history.

Not surprisingly, the biggest purchaser is the United States which aims to acquire a total of 2,443 jets of all variants for its Air Force, Navy and Marines. The United Kingdom plans to purchase 138 jets; Australia, 100; Canada, 100; Turkey, 100; Italy, 90; Netherlands, 37; and Denmark 30. However, Canada and Denmark have yet to finalize their plans.

Under the Foreign Military Sales (FMS) program, Japan, South Korea, and Israel will have the opportunity to purchase JSF jets, but not to help shape the program or influence its technological makeup by bidding for potentially lucrative subcontracts. Japan has committed to a procurement of 42; South Korea 40; and Israel 33 aircrafts. Singapore and Belgium have also expressed interest in acquiring JSF jets through the FMS program.

Competition from Rafale?

Should the JSF program succeed with significantly reducing the aircraft’s lifespan costs, additional orders through the FMS program by Washington’s remaining NATO allies could increase over time. The JSF has for all practical purposes established itself as a monopoly program that cannot be easily challenged, even by France’s Rafale program. Indeed, the Rafale jet can hardly be considered a competitor, as NATO allies have come to rely on US system integration and shared technologies to carry out increasingly complex joint operations under a US command structure. Thus, as the JSF program advances, smaller NATO members with limited capabilities are increasingly likely to opt for JSF jets to upgrade their capabilities within the alliances instead of selecting the Rafale, even if it is projected to be slightly less costly. As part of a bargaining strategy to obtain cheaper F-35s, NATO members that have not yet signed onto the US FMS program may publicly choose to explore bids for Rafale contracts; Singapore and India may adopt this approach as well.

¹ “Norway’s First F-35 Rolled Out,” Norwegian Embassy in Washington, DC, 22 September 2015 Available online at: http://www.norway.org/News_and_events/Embassy/Norways-First-F-35-Rolled-Out/#.VjtM04v1bzl

Adding to the JSF program’s attractiveness is the fact that each international partner will receive nearly the same capabilities within its aircrafts as the US version. Apparently, the only difference between

the US and the international version is that the software on a US F-35 has a newer computer. Further, the JSF program has been so designed that only the partners in the program can have an influence on the process: those participating through the FMS program may request what should be in the plane, but will not have a say on the technologies to be included.²

As the JSF program moves forward, it is likely to face domestic political hurdles within the various partner countries, including in the US, with critics questioning the overall affordability of the F-35, and whether Lockheed will be able to reduce costs per aircraft. Canada's recent political upset has added renewed uncertainty about the program's affordability, should the new government in Ottawa decide to pull out. A decision by Canada or any other country to cancel orders of the JSF would add some \$1 million to the cost of each plane purchased by the US military or other partners, according to the senior U.S. government official in charge of the program, Lt. Gen. Chris Bogdan.³ It should be noted, however, that domestic politics within the various partner countries concerning the JSF program can also serve as an important bargaining chip for these governments to push prices down for the partnership as a whole. While the partnership model means that individual partner nations are unable to negotiate individual pricing agreements for their respective aircrafts, as the base price is the same for all partner nations for the same aircraft configuration in each production series, uncertainty about partner commitments may be used by Bogdan in negotiations with Lockheed Martin and Pratt & Whitney for the airframe and the engine respectively as an argument to achieve additional cost reductions. Also, the various countries may use such uncertainty to gain preference in terms of industrial participation, either directly related to the F-35 or more generally through their bilateral relationship with the United States.⁴

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Big Business for Norway

Early industry estimates indicate that Lockheed's multi-service JSF contract could have a potential value of over \$200 billion depending on the number of planes built over the program's lifespan.⁵ During the Concept Development Phase, from 1997 to 2001, the Pentagon invited other governments to seek participation in the program. Under the program, international partners would be granted the opportunity to influence the development and production of the most advanced aircraft the US had ever produced. In the late 1990s, Washington feared that Europe "would keep American defence firms and their weapons out of the market that provided the strongest impetus for international collaboration on the Joint Strike Programme," Ethan Kapstein of Arizona State University argued in an article published in *Survival* in 2004.⁶ In addition to winning market

shares while taking on competition presented by the multinational Eurofighter Program, the Rafale and Gripen, Washington sought through the JSF program to protect the US defense industrial base. Politically, the JSF also promised to create thousands of jobs within the US and for its national partners, while allowing for the transfer of highly advanced technologies to its international allies. Consistent with that vision, under the JSF program, factories will be built in Italy, Turkey and in Japan, Bogdan announced in an interview with the *Joint Force Quarterly* in May 2015. Factories will be built in Italy and in Japan to assemble and check out F-35s; for engines, maintenance and overhaul facilities will initially be built in Turkey and in Japan; and later in the Netherlands and Norway. For Norway's part, state-owned enterprise AIM Norway has qualified as a potential future provider of engine maintenance services "on several hundred" engines for the F-35 beyond 2050.⁷ "We are also building a supply, repair, and heavy maintenance capability in both Europe and the Pacific regions—just like the one we are building here in North America," Bogdan explained.⁸

For Norway, along with its international partners, the program has enabled it to bid for subcontracts and to ultimately buy the finished product. In addition to its deliveries to the production of the F-35, Kongsberg Defense and Aerospace is also developing the Joint Strike Missile (JSM) under a contract from the Norwegian government; and while it is initially being developed to satisfy Norwegian operational requirements, it will also become part of the potential weapons fit for all A, and C-variants of the F-35.⁹ Once the 3,000 aircrafts intended for customers worldwide have been completed, Norway, through its consortium of defense industry ventures, is expected to have recovered the value of the aircraft themselves within its staggering multi-billion dollar investment in the JSF program. As yet, however, no JSF partner has purchased or ordered the JSM, although Australia has agreed to contribute to the development of the missile, providing additional capability and thereby market potential beyond what is already funded by the Norwegian government.¹⁰

Why Norway Looks to Washington for Defense Industry Cooperation

While Norway's participation in the program continues to enjoy broad-based political support, critics have argued that the JSF is too expensive, and that the country's defense needs would be better served by partnering with Sweden's aerospace giant, Saab, which has developed its own fighter jet program, the JSA 39 Gripen. In the end, Norway chose to purchase the JSF, after Lockheed beat off competition from Saab.

As a founding member of NATO, Norway has retained the US as its principal strategic ally. It was not surprising that Norway chose to partner with Washington and not neighbor-

2 This according to multiple sources familiar with the program.

3 "Pentagon says F-35 jet cost to rise if Canada, others skip orders", *Reuters*, 21 October 2015.*

4 Interview with senior Norwegian Defense Ministry official, 5 November, 2015.

5 E. Kapstein, "Capturing Fortress Europe: International Collaboration and the Joint Strike Fighter", *Survival*, vol. 46, no. 3, Autumn 2004.

6 Ibid.

7 "AIM Norway to maintain F-35-engines", *Norwegian Ministry of Defense*, November 12, 2014.

8 W. Eliason, "An Interview with Christopher C. Bogdan", *Joint Force Quarterly*, May 12, 2015.

9 Interview with senior Norwegian Defense Ministry official, November 5, 2015.

10 L. Selligman, "Norway, Australia Team To Upgrade Missile for F-35", *Defense News*, September 21, 2015.

ing Sweden, when it came to developing the next generation stealth fighter jet, as the program aims to transform the various partners' collective weapon systems into a unified force that can help protect NATO's technological superiority well into the 21st century and beyond.

For Norway, participating in the JSF program has also offered strategic opportunities for its small but competitive defense industry, as Oslo aims to strengthen US market access for its indigenously developed military technologies. Norway also recognizes that its defense industrial base cannot survive without an export-oriented market approach.

Program Challenges

Since Lockheed won the JSF contract in 2001, following five years of competition, the program has suffered numerous production and manufacturing delays, including booming costs, which at several points brought the long-term viability of the program into question. Naturally enough, such delays and development challenges have generated considerable criticism. Critics continue to argue that the program is over budget, behind schedule and its jets are inferior to existing planes; some are even calling for it to be cancelled altogether. While the program has indeed had its problems, it now appears to be on a positive trajectory, as unit prices are dropping and the JSF is meeting cost and schedule targets set in 2012. "We believe that we're going to finish the development program without asking for any more money," Bogdan said in May 2015. He also expressed confidence that the trend of reducing the cost per aircraft would continue as the program accelerated.¹¹ Currently, more than 160 jets have been produced, and annual deliveries are expected to grow significantly over the coming years. By 2018, several hundred additional aircrafts will have been delivered, *Defense News* reported in September 2015.¹²

Commenting on the various challenges, Andrew Hunter of the Center for Strategic International Studies in Washington DC explained that while F-35 production began in 2008, it was not until 2015 that it was approaching what could be termed a finished development. "The exceptionally long process can partly be explained by the US government and Lockheed's excessive optimism that the aircraft with its advanced technological capabilities could be produced in a relatively short period of time," Hunter said.¹³ This came as the US Government Accountability Office (GAO) released a report in April 2015, announcing that the Pentagon "plans to significantly increase annual F-35 funding from around \$8 billion to nearly \$12 billion over the next 5 years reaching \$14 billion in 2022 and remaining between \$14 and \$15 billion for nearly a decade" as part of an effort to reduce costs and enhance affordability.¹⁴

11 Ibid.

12 "Vago's Notebook: F-35 Progress", *Defense News*, September 13, 2015.

13 Interview with Andrew Hunter, Director, Defense-Industrial Initiatives Group and Senior Fellow, International Security Program, Center for Strategic International Studies, September 17, 2015.

14 "Assessment Needed to Address Affordability Challenges", U.S. Government Accountability Office, GAO-15-364, April 14, 2015.

With the US government's massive orders for F-35s as well as the program's export-oriented nature, proponents believe that this will help lower costs per aircraft even further in the coming years. Consequently, the Pentagon is currently planning for a significant ramp-up of the F-35. The Pentagon is also seeking to reduce costs by maintaining a high production rate through its "block buy" policy, aimed at securing a multi-year production contract. As of this writing (November 2015), no decision has yet been made by the Pentagon on whether to include a block buy provision in its budget request for next year.

Meanwhile, Lockheed has announced its own cost reduction measures, with the goal of reducing the average cost per F-35 even more than the current estimates to about \$80 million for each aircraft. Lockheed's objective appears to be consistent with the Pentagon's projection that by 2019, the price per aircraft could be between \$80 and \$85 million.¹⁵ At present, each F-35 costs more than \$100 million, though this is at a significantly lower annual production volume, which has remained at around 35 aircraft annually for several years.¹⁶ Lockheed contends that more efficient manufacturing methods will help it drive down the flyaway cost of the fifth-generation fighter by \$10 million by 2019, and even more if the US government invests.¹⁷ Maintenance and operational costs of the F-35 are also coming down, according to Bogdan, who projects that these will be within 10 percent of the F-16.¹⁸ However, further details regarding possible fuel efficiency and maintenance costs are hard to specify, as they build on a classified Pentagon report apparently conducted a few years ago. It should also be noted that independent figures concerning cost-reduction measures are nearly impossible to obtain, as the only available data have been provided by Lockheed, its consortium of international subcontractors and the participating governments. Given these factors, it remains unclear what the actual lifespan costs per aircraft will be for this highly complex program.

Nonetheless, with its cost-saving measures and the US government's planned block purchases, the JSF program is slowly but surely maturing; despite the initial challenges, the program appears to be turning into a success. As with other large-scale US defense procurement programs, the longer the JSF program prevails, the stronger are its chances for success, according to Jonathan D. Caverley of the Massachusetts Institute of Technology. Further, he noted, as the program develops and technological challenges are dealt with while new capabilities are added to the F-35, only a "catastrophic" event could topple the program, since the number of uncertainties continues to decline.¹⁹ Still, as the JSF has some monopolistic products, Lockheed's consortium of subcontractors are trying to negotiate to receive parts of the surplus, which inevitably pushes up prices.

15 S. Kaskovich and Y. Berard, "Lockheed, partners pledge to pump \$170 million into F-35", *Fort Worth Star Telegram*, July 10, 2014.

16 Interview with senior Norwegian Defense Ministry official, November 5, 2015.

17 B. Carey, "Lockheed Martin Follows 'Blueprint' To Drive Down F-35 Costs," *AIN Online*, June 12, 2015.

18 Eliason, op.cit.

19 Interview with Jonathan D. Caverley, Research Associate, Massachusetts Institute of Technology, October 20, 2015.

Under the F-35 monopoly, Lockheed's subcontractors do not have to worry about losing customers to competitors: they can set monopoly prices that are significantly higher than their marginal costs, allowing them an economic profit larger than the normal profit typical of a perfectly competitive industry. "By investing all eggs in one basket," Lockheed and its subcontractors are expected to increase profits from a massive economy of scale factor, should the program expand production from 3,000 to 4,000 or 5,000 aircraft, Caverley said.²⁰

While Lockheed anticipates that development will be completed by the end of 2017, its international partners have begun discussions about the program's "Block 4" aspect, which in addition to providing overall modernization of the aircraft and its associated systems will allow for the incorporation of partner weapons and technologies into the aircraft. It is under Block 4 that the Joint Strike Missile (JSM) will be developed by Kongsberg. During this process, there may, however, be some "foreign disappointments," said Hunter of CSIS, explaining that this could be because not all projects could be implemented into the program. But foreign products could be implemented at own expense, he added.²¹

Conclusions

Despite clear indications that the JSF program has become a success story for transatlantic defense industry cooperation, thanks to its ability to address technical challenges while maintaining its international coalition intact, it seems increasingly unlikely that a similar program on this scale and magnitude will come again in the foreseeable future, if ever. When Washington announced that it would produce 3000 F-35s, along with its invitation to international allies to participate in its largest-ever defense procurement program, this presented allies with a unique historic opportunity that

combined commerce, joint R&D, and US technology sharing while also enabling them to obtain the most advanced aircraft the United States had ever produced.

When it comes to other defense products – whether anti-missile systems or contracts for producing combat vehicles – a competitive international market is already in place, with the US struggling to maintain its Qualitative Military Edge. Given current technological developments, private-sector industry is becoming increasingly important, particularly in the digital sphere. Many dual-use technologies have been developed by US private-sector companies, not by Washington's defense industrial complex. Further, many of the US-developed technologies available in the commercial marketplace can be adopted for military purposes – which China, Russia, Iran and North Korea have already taken advantage of. Moreover, the US defense industry consistently faces large-scale industrial espionage through successive cyberattacks from China and Russia.

Within this context, the JSF is a unique program that builds on Washington's clear air superiority. As to other defense industry products, the marketplace is becoming increasingly competitive, with China and Russia developing their own capabilities that are slowly but surely rivaling Western military superiority. Given this trend and the economy of scale, it does not seem likely that Washington will engage again in a multinational joint industrial venture to produce weaponry or platforms like submarines, ships, and tanks, let alone smaller products. Instead, the United States is likely to strengthen its own capabilities by focusing on upgrading defense systems – as opposed to focusing on further technology sharing with key allies, which could add additional vulnerabilities to its critical infrastructure.

20 Interview with Jonathan D. Caverley, Research Associate, Massachusetts Institute of Technology, October 20, 2015.

21 Interview with Andrew Hunter, Director, Defense-Industrial Initiatives Group and Senior Fellow, International Security Program, Center for Strategic International Studies, September 17, 2015.

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