



# Potential F-22 *Raptor* Export to Japan

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## Summary

Japan has expressed interest in purchasing the F-22A *Raptor* aircraft from the United States. Although the export of the plane is now prohibited by U.S. law, Congress has recently and may again consider repealing this ban. Arguments for the sale include potential benefits to U.S. industry, contribution to the defense of Japan and the region, and promotion of U.S. interoperability with the Japanese military. Arguments against the transfer include concerns about technology proliferation and the potential for undermining regional stability. This report will be updated as warranted.

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## Background

The F-22A Raptor<sup>1</sup> is the U.S. Air Force's, and according to many observers, the world's, most advanced manned combat aircraft. Developed principally to defeat Soviet aircraft in air-to-air combat, the F-22 exploits the latest developments in stealth technology to reduce detection by enemy radar, as well as thrust-vectoring engines for more maneuverability, and avionics that fuse and display information from on-board and off-board sensors in a single battlefield display. Current plans call for the U.S. purchase of 183 F-22s, with the last aircraft being procured with FY2009 funds. Air Force leaders say that they require 381 F-22s, but lack the funds to purchase 198 additional aircraft. The debate over the export of F-22s, though not new, has become more pointed as the end of procurement funding (FY2009), and the closure of the assembly line, nears. Whether to continue production of the F-22 is an issue that will confront the 111<sup>th</sup> Congress early in its first session.

The Department of Defense (DoD) is officially neutral on whether the F-22 should be exported, but senior leaders have suggested that they favor foreign sales of the F-22.<sup>2</sup> However, since 1998, Congress has prohibited the use of appropriated funds to approve or license the sale of the F-22 to any foreign government.<sup>3</sup> This provision, known as the "Obey Amendment," was debated in the 109<sup>th</sup> Congress. The House Defense Appropriations Bill for FY2007 proposed to repeal the law, but export opponents in the House prevailed with the Senate in conference.<sup>4</sup>

## Japan's Defense Policy

For the United States, its alliance with Japan provides a platform for U.S. military readiness in Asia. About 53,000 U.S. troops are stationed in Japan and have the exclusive use of 89 facilities throughout the archipelago. Okinawa, hosting 37 of the facilities, is the major U.S. forward logistics base in the Asia-Pacific region. Echoing his predecessors, President Obama has labeled the U.S.-Japan alliance the "cornerstone of East Asian security." High-level U.S.-Japan bilateral initiatives since 2001 declared an expanded commitment to security cooperation by outlining major command changes and calling for greater interoperability between the two militaries.<sup>5</sup> Several of the agreements have stalled, however, due to resistance to base realignment by local host governments and political gridlock in Tokyo.

Japan faces a challenging regional context: both direct and potential security threats, as well as suspicion from other states that changes to Tokyo's defense policy indicate a return to its militarist past. North Korea poses a particularly acute and proximate threat to Japan, heightened by Pyongyang's ballistic missile and nuclear explosive device tests in 2006. Historical enmity and

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<sup>1</sup> For more information, see CRS Report RL31673, *F-22A Raptor*, by Christopher Bolkcom.

<sup>2</sup> Frank Wolfe, "Aldridge JSF Letter Hints at Administration Favor Toward F-22 Foreign Sales," *Defense Daily*, October 5, 2001.

<sup>3</sup> H.Rept. 105-265 (H.R. 2266), sec. 8118, p. 45; H.Rept. 106-754 (H.R. 4576), sec. 8087, p. 38; H.Rept. 108-662 (H.R. 4613), sec. 8074, p. 38; Explanatory Statement, Amendment of the House of Representatives to the Senate to H.R. 2638, p.441.

<sup>4</sup> H.Rept. 109-676 (H.R. 5631) sec. 8058, p. 31.

<sup>5</sup> See CRS Report RL33740, *The Changing U.S.-Japan Alliance: Implications for U.S. Interests*, by Emma Chanlett-Avery and CRS Report RL33436, *Japan-U.S. Relations: Issues for Congress*, coordinated by Emma Chanlett-Avery.

contemporary competition for influence with China makes Beijing's military modernization worrisome for Japanese defense planners. The Japanese Self Defense Forces (SDF, the official name for Japan's military) has detected periodic Chinese military activities in areas surrounding Japan's outlying islands, including submarine incursions close to Okinawa and a fleet of warships near a disputed gas field. Tokyo also faces difficult relations with South Korea because of Korean distrust based on the memory of Japan's 40-year annexation of the peninsula and some territorial disputes.

## Issues for Congress

The executive branch proposes and Congress reviews arms sales on a case-by-case basis.<sup>6</sup> The sale of F-22s to Japan raises both broad questions about the security environment in East Asia and questions that are specific to domestic interests. Factors that argue for a transfer include potential benefits to U.S. industry, contribution to the defense of allied countries, and promoting U.S. interoperability with those countries. Factors that argue against a particular arms transfer include the likelihood of technology proliferation and the potential for undermining regional stability.<sup>7</sup>

### U.S. Industrial Base

Exporting F-22s to Japan is one way to keep the F-22 production line running after U.S. Air Force procurement ends. Lockheed Martin, the F-22 prime contractor, estimates that it employs 3,351 F-22 workers at three plants (Marietta, GA; Fort Worth, TX; Palmdale, CA). Many others – perhaps as many as 25,000 – are also employed by major subcontractors Pratt & Whitney and Boeing, and by companies that produce F-22 parts and sub-components. Generally speaking, promoting employment in the aerospace sector is beneficial to the U.S. economy. However, some aerospace jobs are more important to promoting U.S. industrial competitiveness than others. At this stage of production, more F-22 employees are involved in aircraft assembly, which is relatively rote and unskilled compared to the design and engineering skills required earlier in the aircraft's development and initial production. Keeping the F-22 production line open by building aircraft for Japan would also help the prime contractor reduce per-aircraft costs, because labor and manufacturing processes become more efficient over time, and because sunk costs, such as R&D or capital investment, would be amortized over a larger number of aircraft. DoD and U.S. taxpayers would only benefit from reduced per-aircraft costs, however, if the Air Force were to purchase more F-22s *after* those produced for Japan, and in addition to the 183 aircraft currently planned.

A final industrial base issue pertains to the F-35 Joint Strike Fighter (JSF). Although originally intended to be complementary aircraft, F-22 and JSF capabilities, development, and production have converged. Implicitly if not explicitly, these aircraft are competing for scarce procurement funds. Extension of F-22 production would likely bring these aircraft into even sharper

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<sup>6</sup> For more information, see CRS Report RL33696, *Conventional Arms Transfers to Developing Nations, 1998-2005*, by Richard F. Grimmett, and CRS Report RL33758, *U.S. Arms Sales: Agreements with and Deliveries to Major Clients, 1998-2005*, by Richard F. Grimmett.

<sup>7</sup> In the late 1980s, Congress debated and denied a DoD request to co-develop a fighter aircraft with Japan based on the F-16 *Falcon*. Some of the issues weighed during that debate may be relevant today. CRS Report 90-986, *Japanese FSX Fighter Controversy*, out of print; available upon request.

competition. On the other hand, F-22 supporters argue, keeping the F-22 production line alive could serve as a useful hedge against any potential delay in JSF production.

## Technology Transfer

Air Force leaders have consistently touted the F-22 as the world's most technologically advanced and capable fighter aircraft. Protecting U.S. intellectual property in these technologies and denying access to adversaries are high national security priorities. It is unclear whether the United States and Japan could agree on the capabilities to be offered in the export variant of the F-22. Japan would likely want an aircraft the same as, or similar to, that flown by the U.S. Air Force, and would also likely prefer to license or co-manufacture the aircraft, which gives them more opportunity to acquire engineering and design knowledge, and technology transfer. Presumably, DoD would desire to export a less capable aircraft, in part to protect key technologies, and would have a strong aversion to license or co-production. Japan has traditionally placed great value on developing industrial defense "autonomy," that is, indigenous weapons production, although this imperative has relaxed somewhat in recent years, in part to cooperate with the United States on missile defense.<sup>8</sup>

The potential for technology transfer touches upon both military and economic concerns. Unlike some countries, Japan does not have a track record of re-exporting technology that it acquires through import. However, an inadvertent leak of U.S. technology or knowledge could also be a threat. The leak of secret data associated with the Aegis weapon system by Japanese military personnel in 2002 is an example of this potential danger.<sup>9</sup> Japan is a military ally, but also considered by some to be an economic rival. Many of the F-22 technologies or industrial processes could have commercial application. Some may be concerned that F-22 technology or knowledge could find their way into a myriad of Japanese products, to the competitive detriment of U.S. industry.

A second proliferation issue relates to the effect an F-22 sale could have on other countries. Other countries in the region could perceive the F-22 as causing an imbalance of military power in favor of Japan, and inciting them to seek their own advanced aircraft or defensive systems. Once Japan sets the precedent of F-22 export, other countries might pressure U.S. policy makers to sell them F-22s. Israel, for example, has reportedly expressed interest in the F-22.

## Interoperability and Interdependence

Bilateral agreements aim to expand the benefits of the alliance by increasing the interoperability of the U.S. and Japanese militaries, therefore multiplying their collective capability. Several joint facilities are planned, including an air operations coordination center at Yokota Air Base, to be operational by 2010. Japan's acquisition of the F-22 would boost interoperability because both militaries could use identical, state-of-the-art equipment. Because of the U.S. security guarantee to Japan, Japan's possession of the F-22s may allow the United States to rotate its own aircraft out

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<sup>8</sup> Richard J. Samuels, "Give & Take; The Outlook for U.S.-Japan Defense Industrial Cooperation," *Armed Forces Journal*. February 1, 2006.

<sup>9</sup> "High Barriers for Introduction of F-22," *Asahi News*. June 4, 2007. From the Daily Summary of Japanese Press, U.S. Embassy Public Affairs Section.

of the region when necessary. Similarly, by fielding the F-22, Japan could make up for the deficit of 198 *Raptors* the U.S. Air Force says it needs but cannot afford.

Despite these ambitions, however, achieving true interoperability is a difficult task. Constitutional, legal, and normative constraints limit SDF participation in many of the operations and training that traditionally integrate different national forces (see section below). Increasing the sophistication of bilateral training requires funding and facilities, currently under pressure because of SDF's budget requirements. Language barriers and differences in military doctrine also present challenges. In addition, localities affected by the noise of military bases, particularly those hosting aircraft, have been vocally opposed to many of the U.S. troop realignment proposals.

## **Regional Security**

China and South Korea have voiced concern about Japan's intention to upgrade its military capabilities, largely grounded in suspicions that Japan will inch toward returning to its pre-1945 militarism. Some analysts caution that selling the F-22s to Japan could destabilize the region, possibly even sparking an arms race, and contribute to an image of Japan becoming America's proxy in the region. The sale could complicate the U.S. effort to manage its relationship with China. South Korea has already registered its unease at Japan acquiring F-22s, and at one point suggested that it may seek a deal to purchase the aircraft in order to match Japan's capabilities.<sup>10</sup> Although the Lee Myung-bak government has made moves to strengthen U.S.-South Korean alliance, the Seoul-Washington relationship has been strained at times over the past several years, and some South Koreans chafe at indications that the United States prioritizes defense ties with Japan above those with Korea.

Japanese defense officials have pointed to China's acquisition of increasingly sophisticated air capabilities to justify their request for the F-22s, asserting that China's modern air fleet will soon dwarf Japan's. Despite the relatively strong state of relations between Tokyo and Beijing, the two nations remain wary of each other's intentions. Although the risk of military confrontation is considered small, there is the potential that territorial disputes over outlying islands could escalate into armed clashes, or that conflict could break out in the Taiwan Strait between the United States and China, which could involve Japan. For this reason, some U.S. and Japanese commentators have supported the sale of F-22s to Japan as necessary to maintain the "Taiwan balance."

## **Japanese Restraints**

Japan faces an array of legal and budgetary concerns about enhancing its military, raising questions about whether Tokyo could follow through on an F-22 sale. Article 9 of the Japanese constitution, drafted by American officials during the post-war occupation, outlaws war as a "sovereign right" of Japan and prohibits "the right of belligerency." Although Article 9 states that "land, sea, and air forces, as well as other war potential, will never be maintained," the Japanese SDF is in practice a well-funded and well-equipped military. Constitutional concerns do not appear to be significant for the purchase of the F-22, but provide a sense of the overall context and challenges to acquiring advanced weapons systems in a country with a strong pacifist sentiment.

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<sup>10</sup> In 2008, South Korea purchased 39 F-15ks and plan to buy 21 F-15K level aircraft between 2010-2012.

Under a self-imposed ban on exporting arms, Japan cannot in principle participate in joint development that requires it to export weapons parts and research data to other countries. This ban has been loosened to allow Japan to work on missile defense with the United States, but the issue remains contentious. Japan's aversion to military export led to Tokyo's decision not to participate in the international consortium to co-develop the F-35 Joint Strike Fighter.

A second legal issue that could generate debate in Japan, and therefore affect the sale, is the question of whether the F-22 is an offensive weapon; under the current interpretation of the Japanese constitution, the SDF is only allowed to possess defensive capability. Military aircraft are almost inherently flexible weapon systems and can be difficult to classify as "offensive" or "defensive." They can be used in primarily defensive roles, such as defending indigenous airspace from attack, or to attack an adversary's homeland or air forces. When the F-22 program was threatened by congressional budget cuts, advocates argued that its offensive capabilities mandated its continuation. Consistent emphasis on the F-22s' ability to penetrate contested airspace and destroy enemy defenses could lead many to believe that the *Raptor* is primarily an offensive weapon.

At \$44 billion (2007), Japan's defense budget is among the largest in the world.<sup>11</sup> However, Japanese leaders are under pressure to stem government spending, and many ministries face budget cuts as part of ongoing fiscal reform. Overall, Japan's defense budget has steadily if modestly declined over the past several years. Defense spending in Japan has traditionally been capped at 1% of GDP; most leaders are wary of surpassing that symbolic benchmark, although the cap is not a law. Tokyo's defense expenditures include ongoing host nation support for U.S. forces stationed in Japan (totaling \$110 billion from 1978-2007)<sup>12</sup> and an estimated \$20 billion for the realignment of U.S. troops in the region. Based on these burdens, some analysts have voiced concerns that the SDF runs the risk of becoming a "hollow force" because of its insufficient procurement system. Budget pressure is likely to remain high in Japan due to the demographic reality of an aging and shrinking population with a shortage of workers.

## Potential Alternatives to the F-22

There appear to be at least four U.S. alternatives to the F-22 and several from Europe that Japan might consider. Each alternatives presents strengths and weaknesses in terms of operational capabilities, and also vis-a-vis the security, proliferation, and industrial base issues outlined in this report.

### F-35 Joint Strike Fighter (JSF)

The JSF was designed from the beginning as a multinational aircraft. Technology transfer issues remain, but their resolution will likely be far easier than those presented by the F-22. While the JSF is not as fast or nimble as the F-22, its radar and avionics are *more* advanced. The JSF may be well suited to Japan's self-defense requirements while presenting a less offensive capability.

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<sup>11</sup> According to Stockholm International Peace Research Institute (SIPRI) data.

<sup>12</sup> CIA World Factbook; Japan. CIA (2007-03-15).

## F/A/18E/F Super Hornet

The F/A-18E/F Super Hornet is the most capable fighter aircraft flown by the U.S. Navy. It does not offer stealth technology like the F-22 or JSF, but is expected to be in the active inventory through at least 2020 and will retain its combat edge through upgrades and modifications. The Super Hornet's manufacturer, Boeing, recently signed its first export deal with Australia.

## F-15 Eagle

The F-15 Eagle has been the U.S. Air Force's top fighter aircraft since it was fielded in the 1970s. Today, Japan operates 203 F-15 aircraft. By purchasing additional F-15 aircraft instead of importing a new type of fighter, Japan could potentially realize economies of scale savings in training, maintenance, and supplies by operating a larger fleet. The F-15 is not as capable as the F-22 or JSF, but if upgraded, and operated in conjunction with support aircraft—such as AWACS and electronic warfare aircraft—might be sufficiently capable to meet Japan's needs.

## Unmanned Combat Aerial Vehicles (UCAV)

Another alternative would be to develop or import a UCAV. UAVs such as the USAF Predator are relatively well established weapons platforms, but limited compared to UAVs designed from the beginning as combat platforms. While advocates believe that UCAVs represent the future of combat aviation, true, dedicated combat UAVs have not yet been fielded. Pursuing UCAVs versus manned aircraft could be perceived as either *avant garde* or premature.

## European Options

Japan could import an advanced combat aircraft from Sweden (the *JAS Gripen*), Russia (Su-30 *Flanker* and MiG-29 *Fulcrum* series), or from a consortium of European countries (the Eurofighter *Typhoon*). Japan has relied almost exclusively on U.S. military imports in the past, and many believe it unlikely that it would import from non-U.S. sources. Purchasing European aircraft, however, would allow Japan to establish a second source of technology, and thus some autonomy from the United States, and European governments would be expected to offer very attractive terms to penetrate the heretofore closed Japanese market.

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