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## F-35, CAN IT BE A GOOD SOLUTION FOR SOUTH KOREA?

Maj S. Ko

**JCSP 41**

***Exercise Solo Flight***

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## INTRODUCTION

In South Korea, the procurement of new fighter aircraft has always been a top issue. Until the unveiling of a final selection by the government for the new fighter aircraft, all media and many Koreans have argued with each other about which fighter aircraft is the more suitable one for South Korea. It is no wonder that these arguments take place, because the procurement of new fighter aircraft has always been the most expensive item in the defense procurement business, and what kinds or how many fighter aircraft the country has is one of the meaningful tools that has been used to evaluate its military power.

Once again the spending of the sum of \$6.8 billion worth of next generation fighters was not an exception.<sup>1</sup> In August 2013, South Korea's Defense Acquisition Program Administration officially announced that Boeing's F-15SE was chosen as the new fighter aircraft over Lockheed Martin's F-35 and the Eurofighter Typhoon.<sup>2</sup> However, after the official announcement, public opinion against the procurement of the F-15SE began to increase, and months later, the South Korea's Defense Acquisition Program Administration eventually reversed course in favor of buying fewer of the Lockheed Martin's F-35s.<sup>3</sup> Although two years have passed since the announcement in favor of the F35, the argument about a new fighter aircraft is still ongoing. Public opinion

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<sup>1</sup>Reuters, "South Korea boosts air defenses with about \$6.8 billion budget for F-35s," last modified 24 March 2014, <http://www.reuters.com/article/2014/03/24/us-korea-jets-idUSBREA2N07220140324.htm>.

<sup>2</sup>Dan Parsons, "Fifth-Generation Fighters Will Determine Air Dominance in Future Conflicts," *National Defense Magazine*, no. 9 (September 2014), <http://www.nationaldefensemagazine.org/archive/2014/September/Pages/Fifth-GenerationFightersWillDetermineAirDominanceinFutureConflicts.aspx.htm>.

<sup>3</sup>Reuters, "South Korea boosts air defenses with about \$6.8 billion budget for F-35s," last modified 24 March 2014, <http://www.reuters.com/article/2014/03/24/us-korea-jets-idUSBREA2N07220140324.htm>.

which was against F-15SE initially has now turned to opposing the purchase of the F35. Especially, in terms of cost effectiveness, many people doubt that the F-35 the cost of which was over 400 billion dollars is really useful for South Korea.<sup>4</sup>

However, these criticisms against the procurement of the F-35 are wrong. The decision to buy F-35s is definitely the right one for South Korea particularly when one considers several aspects such as future warfare, North Korea, and regional security.

So, this essay will attempt to prove that the purchase of fifth generation aircraft such as the F-35 is the best option for South Korea. For effective approach and analysis, I will address the issue by looking at three specific areas. First, will be a brief look at the historical background of the South Korean search for a new fighter aircraft known as the FX3 project, as well as addressing what the fifth generation fighter aircraft and stealth function are. Secondly, it will analyze reasons why South Korea needs a stealth fighter aircraft such as F-35 by looking at the issue of North Korea which is South Korea's biggest security threat. Finally, in terms of regional security it will analyze reasons why South Korea needs a stealth fighter aircraft.

### **What is the FX-3 project?**

The FX-3 was a South Korean procurement project designed to select and purchase 60 fighter aircraft to replace the old F-4s.<sup>5</sup> The FX-3 project was scheduled to be

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<sup>4</sup>Fortune, "The F-35 Joint Strike Fighter remains years away from combat readiness," last modified 18 March 2015, <http://fortune.com/2015/03/18/f35-joint-strike-fighter/.htm>.

<sup>5</sup>Flight global, "Lockheed, Boeing and Eurofighter place formal bids for Seoul's F-X III requirement," last modified 19 June 2012, <http://www.flightglobal.com/news/articles/lockheed-boeing-and-eurofighter-place-formal-bids-for-seouls-f-x-iii-373141/.htm>.

completed and the replacement fighter aircraft delivered by 2014, but it was postponed to 2017 due to budget issues and a presidential election. The South Korean government initially showed their interest in purchasing the F-22 Raptor of Lockheed Martin, but it was actualized due to the opposition of the United States Department of Defense.<sup>6</sup> This left three remaining options for the procurement of an advanced fighter aircraft: the Boeing F-15SE Silent Eagle; the Eurofighter Typhoon; and the F-35 Lightning II Joint Strike Fighter.

In August 2013, South Korea's Defense Acquisition Program Administration officially announced that Boeing's F-15SE was chosen as an FX-3 winner, because F-15SE was only candidate whose cost met budgetary guidelines. As mentioned before, it was a \$6.8 trillion procurement project which was historically the most expensive one ever for South Korea. So, without exception, the decision to buy F-15SE had a big impact on South Korea society. Many Koreans, including retired generals, and members of the National Assembly sharply criticized the government's decision. While some negative opinion tended to focus on the overall cost of the project, most negative opinions were concerning the purchase of a 4.5 generation fighter that lacked radar-evading stealth capability. After further review the Defense Acquisition Program Executive Committee rejected the Defense Acquisition Program Administration's decision, and on 22 November 2013 the South Korean government finally officially announced that it intended to buy 40 F-35s instead of 60 F-15SEs.<sup>7</sup> According to Defense ministry spokesman Kim Min-seok, the South Korea government made a judgement that the F-35

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<sup>6</sup>Flight global, "South Korea's fighter requirements come to the fore," last modified 12 October 2009, <http://www.flightglobal.com/news/articles/south-korea39s-fighter-requirements-come-to-the-fore-333289/.htm>.

<sup>7</sup>Dong-a, "Where is the way out, FX," last modified 15 September 2013, <http://news.donga.com/Main/3/all/20130915/57647257/3.htm>.

was the preferred choice particularly when considering North Korea's increasing nuclear capabilities, missile threats, and overall regional security.<sup>8</sup> Additionally, this decision cost an additional \$1.0 trillion compared to the decision to buy 60 F-15SE. In other words, South Korea decided that it was better to purchase 40 fifth generation fighters than to purchase 60 fourth generation fighters.

### **What is the Fifth Generation Fighter Aircraft?**

According to Lockheed Martin, the manufacturer of the F-22 and F-35, the Fifth Generation Fight Aircraft (FGFA) can be define as an aircraft having all-aspect stealth even when armed, low probability of intercept radar (LPIR), high-performance airframes, advanced avionics features, and highly integrated computer systems capable of networking with other elements within the battlespace for situation awareness.<sup>9</sup> And, in accordance with Lt. Gen. Herbert J. Carlisle, the USAF Deputy Chief of Staff for Operations, Plans and Requirements, the FGFA aircraft must not only be stealth, but also be highly maneuverable, be able to conduct multiple roles, and must also be able to handle sensor and avionics information in a network integrated way not only for the pilot, but for the entire joint force.<sup>10</sup> Putting these definitions together, the FGFA can be defined as a next generation fighter aircraft with a stealth function and high tech-networked data fusion from sensors and avionics.

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<sup>8</sup>Bloomberg, "Boeing Spurned as South Korea Plans New Tender for Jet Fighters," last modified 24 September 2013, <http://www.bloomberg.com/news/articles/2013-09-23/boeing-favored-to-win-7-7-billion-south-korean-jet-fighter-deal.htm>.

<sup>9</sup>Lockheed Martin, *F-35 Defining the Future* (BETHESDA: Lockheed Martin, 2012), 2.

<sup>10</sup>U.S. Air Force, "Fifth generation fighters crucial to air superiority," last modified 2 March 2012, <http://www.af.mil/News/ArticleDisplay/tabid/223/Article/111590/fifth-generation-fighters-crucial-to-air-superiority.aspx.htm>.

In opposition to this definition, there are some critical opinions regarding the FGFA. According to Boeing, Eurofighter, and some aviation writers such as Bill Sweetman and Stephen Trimble, the FGFA is just a marketing term for selling the F-35.<sup>11</sup> As technologies which are represented as the FGFA's capabilities are already applicable to the F/A-18E/F and Euro Fighter so this assertion is not totally incorrect. For example, the F/A-18E/F which can be categorized as a 4.5<sup>th</sup> generation fighter aircraft has high technology capabilities such as AESA radar, the fuse data from its battery of sensors, and high-speed datalinks to share this and other data with friendly aircraft which are deemed part of the FGFA's necessary capabilities.<sup>12</sup>

Nevertheless, this assertion is getting unpersuasive overtime for several reasons. First, even though 4.5<sup>th</sup> generation fighter aircraft have some of the capabilities of the FGFA; they doesn't embody all-aspect stealth which is seen as a core capability of the FGFA. The FGFA has a totally different concept from other generation fighter aircraft at the design phase, because of all-aspect stealth technology. Of course, there is some skeptical opinion of the all-aspect stealth function, because China has developed road-mobile radars such as JY-26 which has stealth target detection capability. In other words, all-aspect stealth cannot be a core capability of the FGFA anymore. However, it is not true. According to John Wise, a UK-based radar specialist, if the JY-26 system has true anti-stealth aircraft detection and tracking capability, it would need to operate down at the bottom end of the UHF band.<sup>13</sup> As such it might be susceptible to radar jamming. And, if

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<sup>11</sup>Eurofighter GmgH, "Eurofighter, 5th Generation; the Debate Heats up", *Defence Talk* (blog), July 24, 2010, <https://www.defencetalk.com/eurofighter-5th-generation-the-debate-heats-up-27579/.htm>.

<sup>12</sup>The Australian, "Bridging fighter' packs quite a punch," last modified 23 August 2010, <http://www.theaustralian.com.au/national-affairs/defence/bridging-fighter-packs-quite-a-punch/story-e6frg8yo-1225940224669.htm>.

China has anti-stealth technology, it will take a long time to for it to be reduced in size to the point where it can be installed inside a radome.<sup>14</sup> In conclusion, the all-aspect stealth function is a core capability that categorizes fighter aircraft by generation.

Second, the USA is not the only country developing a FGFA. In these days, many countries such as Russia, China, and India are trying to produce such an aircraft. They are also using the concept of the FGFA as a method of defining the next manned fighter aircraft. For example, according to the Russian Defense Ministry, the future fighter must possess all the technical characteristics of the FGFA including elements of stealth technology, supersonic cruising speed, highly-integrated avionics, electronics, and fire-control systems.<sup>15</sup> In other word, the concept of the FGFA is no longer just a marketing term used by a USA military defence contractor to sell aircraft.

### **F-35 vs North Korea?**

As mentioned previously, the main reason why South Korea selected the F-35 as their new fighter aircraft is its all-aspect stealth function. There is still criticism that an all-aspect stealth function is not useful to South Korea when it consider its military operational environments. However, this is not right. Rather, when it considers the main threat, North Korea, an all-aspect stealth fighter aircraft will give many benefits to South Korea. The usefulness of an all-aspect stealth fighter aircraft is addressed in the following paragraphs.

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<sup>13</sup>SOF, "China Rolls Out its Anti F-22 and F-35 Stealth Radar," last modified 18 January 2015, <https://www.sofmag.com/china-rolls-out-its-f-35-anti-stealth-radar/.htm>.

<sup>14</sup>*Ibis*.

<sup>15</sup>Sputnik, "Russia must build two variants of 5G fighter," last modified 12 February 2012, <http://sputniknews.com/military/20120216/171344471.html.htm>.



First of all, an all-aspect stealth fighter has a deterrent capability against North Korean provocation. In 2013, a B-2 stealth bomber flew more than 6,500 miles from Whiteman Air Force Base in Missouri to South Korea.<sup>16</sup> This was to participate in the Foal Eagle exercise which was held in South Korea. When the USA revealed the fact that a stealth bomber would attend the exercise, the most surprised person was Kim Jong-un, the supreme leader of North Korea. After taking hurried refuge in an underground bunker, he convened an emergency meeting in the middle of the night.<sup>17</sup> The following day, North Korean state television reported that Kim signed orders to put the nation's rockets on combat-ready status.<sup>18</sup> However, when the USA made a decision to send an F-22, which is the world best stealth fighter aircraft, North Korea was lost for words. North Korea tried to turn the tables by threatening the use of nuclear weapons and ballistic missiles, but they could do nothing against stealth aircraft. The use of stealth aircraft is an asymmetric warfare capability that North Korea could not defend against.

Second, the F-35 will be an essential asset which can act as South Korea's countermeasures against the North Korean nuclear program. South Korea has a three stage countermeasures strategy for the suppression against the use of North Korea's nuclear weapons.<sup>19</sup> First, South Korea would bring to bring economic and diplomatic pressure to bear on North Korea at the initial phase when any sign of nuclear weapons employment is observed. At the mid-phase when the launch of nuclear weapons seems

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<sup>16</sup>CNN, "U.S. says it sent B-2 stealth bombers over South Korea," last modified 28 March 2013, <http://www.cnn.com/2013/03/28/world/asia/korea-us-b2-flights/.htm>.

<sup>17</sup>The Wall Street Journal, "North Korea Warned," last modified 29 March 2013, <http://www.wsj.com/articles/SB10001424127887323501004578389162106323642.htm>.

<sup>18</sup>FOX News, "N. Korea threats raise concern Kim backing regime into corner," last modified 29 March 2013, <http://www.foxnews.com/politics/2013/03/29/north-korea-orders-rocket-prep-b2-drill/.htm>.

<sup>19</sup>Ministry of National Defense, *2012 White Paper* (Seoul: South Korea Government Printing Office, 2012), 44.

imminent, South Korea would try to neutralize the threat within 30 minutes by employing a so called kill chain. If, in the case that missiles are launched, they would be intercepted in flight through the KAMD (Korea Air and Missile Defence system).<sup>20</sup> South Korea aims to have these capabilities in place by 2022.<sup>21</sup> As mentioned before, as a stealth fighter the F-35 would be an essential asset in the kill chain. If fourth generation fighter aircraft are used to eliminate nuclear weapon after any reconnaissance satellite and/or aircraft capture the signs of a nuclear weapons launch, a considerable number of military assets will be needed to deploy against the incoming threat. So much so that unless these assets are in place and ready for immediate launch it is unlikely that the 30 minute time frame can be met. However, if the F-35 and its all-aspect stealth function are used, it may be a totally different story. If the F-35 is able to penetrate North Korean airspace undetected by North Korea's early warning RADAR system, it is quite possible that they could eliminate the nuclear weapons within a half hour using only a minimum number of F-35s.

Third, the F-35 can be used to suppress North Korea's air defense system efficiently at the initial phase of war. North Korea is known as a country which has a dense air defense system that covers most of the country.<sup>22</sup> Air defense sites are amongst the best hardened globally, with reports of engagement radars mounted on elevating platforms, to permit the radars to be hidden in underground shafts to defeat air attacks.<sup>23</sup> Additionally, North Korea recently finished combat readiness testing of the KN-06 which

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<sup>20</sup>Ministry of National Defense, *2012 White Paper* (Seoul: South Korea Government Printing Office, 2012), 45.

<sup>21</sup>Eun-jung Kim, "South Korea to Deploy Indigenous Missile Defense System in July," *Yonhap News*, 10 April 2013.

<sup>22</sup>Popular Mechanics, "This Is What Air War Over North Korea Would Look Like," last modified 1 April 2013, <http://www.popularmechanics.com/military/a11906/this-is-what-air-war-over-korea-would-look-like-15293363/.htm>.

<sup>23</sup>Congressional Research Service, *Operation Odyssey Dawn - the collapse of Libya's relic air defence system* (Washington, DC: U.S. Government Printing Office, 2011), 14.

is the newest Surface to Air missile.<sup>24</sup> This air defense system will be a big challenge to South Korea-US coalition forces that want to maintain air superiority during wartime. So, South Korea-US coalition forces allocate most of their air power assets to the mission of destroying North Korea's air defense system at the initial phase of wartime. As a result, attacks on strategic targets such as military headquarters and command posts are limited and are pushed back on the priority list. However, if South Korea has an FGFA such as the F-35, the situation will be changed. Due to its all-aspect stealth function, the FGFA could not only effectively destroy the air defense system and any other strategic targets.

### **F-35 vs National Security**

In according to a recent government white paper, South Korea has started to increase its military capabilities in order to deal with potential security issues.<sup>25</sup> This does not mean that South Korea deems its neighbor countries in Northeast Asia as a threat. It means that South Korea needs to have military assets equivalent to other Northeast Asia countries in order to create a regional security balance. This policy can be understood by considering the current regional security situation. The Northeast Asia area, consisting of South and North Korea, China, Russia and Japan, countries which are economically robust, and have a deepening relationship with each other economically even though their economies are at different stages of development.<sup>26</sup> However, in spite of these economic interdependencies and relationships, Northeast Asia is still a region where the interests of

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<sup>24</sup>Ministry of National Defense, *2012 White Paper* (Seoul: South Korea Government Printing Office, 2012), 33.

<sup>25</sup>*Ibis.*, 156.

<sup>26</sup>Sanghee Ko, "The Effectiveness of China's regional strategy in the Northeast Asia after 2000" (Global Vortex Paper, Canadian Forces College, 2014), 4.

military powers such as the United States, Japan, China, and Russia intersect.<sup>27</sup> In addition, there are not any military structures or peace agreements in place to deny using military forces.<sup>28</sup> The absence of credible region security arrangements is aggravating this paradoxical situation. The Air Defense Zone (ADIZ) confliction that happened in late 2013, the Senkaku Islands dispute between China and Japan, and the Dokdo Island issue between South Korea and Japan can be used as good examples to support this assertion. The Northeast Asia area has the potential to become a new arena for armed conflict and a regional arms race. In fact, competition involving the procurement of stealth aircraft is a starting point of the Northeast Asian countries' arms race.

In late 2014, China unveiled new stealth fighter aircraft, the J-31. However, the J-31 is not the first stealth fighter aircraft they produced. China had already astonished the world with the unveiling of its first stealth aircraft the J-20 in early 2014.<sup>29</sup> Japan is no exception in the arm race to acquire stealth fighter aircraft. It has already made the decision to purchase the American F-35 stealth fighter aircraft, and is on the way to developing its own stealth fighter aircraft called the ATD-X.<sup>30</sup> Russia also is pushing forward to complete a project to develop its stealth fighter aircraft to be called T-50, which is scheduled to enter service with the Russian Air Force starting in 2016.<sup>31</sup> Recently, there is news that North Korea is trying to buy Russian T-50 stealth fighter

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<sup>27</sup>Ministry of National Defense, *2012 White Paper* (Seoul: South Korea Government Printing Office, 2012), 14.

<sup>28</sup>Sang-Hwan Lee, "Security Concerns in Northeast Asia and ROK's Roles," *International Area Studies Review* 12, no. 3 (winter 2009): 142, <http://www.sagepublications.com>.

<sup>29</sup>HIS Jane's 360, "Analysis: End of year surge for Chengdu J-20 fighter programme," last modified 6 January 2015, <http://www.janes.com/article/47601/analysis-end-of-year-surge-for-chengdu-j-20-fighter-programme.htm>.

<sup>30</sup>Ministry of National Defense, *2012 White Paper* (Seoul: South Korea Government Printing Office, 2012), 19.

<sup>31</sup>HIS Jane's 360, "Analysis: Expectations for deployment of fifth-generation fighters," last modified 23 September 2014, <http://www.janes.com/article/43616/analysis-expectations-for-deployment-of-fifth-generation-fighters.htm>.

aircraft.<sup>32</sup> Without exception, it would appear that the previously mentioned countries in Northeast Asia are all trying to acquire stealth fighter aircraft and ten years from now, in 2025, it is expected that the aircraft will be in situ and operationally ready. By then Northeast Asia will be the region having the largest number of stealth fighter aircraft in the world.<sup>33</sup>

So, what should South Korea do in regards the arms race for stealth fighter aircraft? Should it just seek diplomatic solutions whenever potential conflicts arise with its regional neighbors? Diplomacy can be an effective way of solving disputes without the use of the military option. However, in the real time, a diplomatic solution may not always be the best solution and in some instances the use of force may be absolutely necessary. Thus it is required that a country have at its disposal a degree of military power. Proper military power is necessary to protect national interest and security.

In fact, South Korea currently has several regional issues with other neighboring countries. In spite of deep economic relationships, South Korea is involved in a territorial dispute and ADIZ conflict with China. And South Korea and Japan have long clashed over Dokdo Island. Russia is assessed as a potential threat against the USA, South Korea's staunchest ally. This regional security situation can explain why South Korea needs a stealth fighter aircraft like the F-35. If South Korea does not have any stealth fighters, South Korea will have one less option available to it to help it solve regional security issues. It does not mean that South Korea will have to resort to military action for every issue which may well be solved by diplomatic means. It means that South Korea

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<sup>32</sup>Jong-won Kim, "North Korea's fast movement to purchase stealth jet," *Asiantoday News*, 25 March 2015.

<sup>33</sup>Ministry of National Defense, *2012 White Paper* (Seoul: South Korea Government Printing Office, 2012), 14.

can more efficiently react to regional security issues related to its national interest using the deterrent power inherent in having stealth fighter aircraft.

## **Conclusion**

South Korea recently made the decision to buy the F-35 stealth fighter as the replacement for its much older F4 fighters. Historically it was the most expensive military project ever, and thus drew keen public attention, and aroused considerable public opinion. However, because the decision as to why it was necessary to obtain this particular aircraft was never articulated clearly and the astronomical cost associated with the project, now, two years after the original decision, arguments about the utility of the F-35 is still ongoing.

So, this essay has attempted to prove the usefulness of the F-35 as a new fighter aircraft for South Korea. The F-35 is a different generation fighter aircraft from others such as the F-15E, F/A-18E/F and Euro Fighter. It is a so called Fifth Generation Fighter Aircraft (FGFA). The core function of the FGFA is all-aspect stealth. There are some critics on the stealth function and the term “FGFA”, however the production and employment of stealth fighter aircraft has become an irreversible trend particularly so when considering that the Americans, Chinese and Russians have already developed stealth fighter aircraft. South Korea has also joined this trend.

The usefulness of the F-35 for South Korea is evaluated from two aspects. First, when considering North Korea which is the biggest threat to South Korea, the all-aspect stealth function of the F-35 can act as a deterrent against North Korea provocation towards South Korea. Second, the F-35 will be an essential asset within the kill chain

forming part of South Korea's countermeasures against any provocative use of North Korea's nuclear assets and can be employed to suppress the North Korean air defense system at the initial outbreak of any hostilities.

In terms of national security, there is no question about the F-35's usefulness. Currently, North East Asia is in a paradoxical situation. In spite of economic interdependence and increasingly deepening diplomatic and other relationships, North East Asia countries do not have any credible security arrangements to address potential issues concerning regional military conflicts. Therefore, I strongly believe that regional security would certainly be enhanced should South Korea acquire a force of F35 stealth aircraft.

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