

GLOBAL DETERRENCE

THE ROLE OF THE F-22



FINDINGS IN BRIEF

According to Chairman of the Joint Chiefs of Staff Admiral Michael Mullen, “It’s way past time to re-examine our strategic thinking about deterrence.”

Conventional deterrence is all about how to posture America’s air and naval forces, in particular, to safeguard allies and national interests without resorting to war. Make adversaries aware they’ll pay a price for action and it will boost the chance for peace.

The last few years have brought forth a wider set of goals for conventional deterrence against rising powers and rogue states. “Our goal is, in part, to reduce their ability to hold other nations hostage, and to deny them the ability to project power,” explained Secretary of Defense Robert Gates.¹

Military forces for conventional deterrence range from missile defense to airstrike options. However, tailored, proportional conventional airstrikes are a tool central to conventional deterrence.

Only one aircraft was designed to guarantee that option by staying ahead of evolving threats: the F-22.

For example, commanders need intelligence, surveillance and reconnaissance (ISR) at the start of a crisis. Formidable adversary air defenses could keep ISR platforms out. They’d also make it tough to intervene against states like Iran if called on to do so by the international community. Even NATO is facing renewed challenges. The F-22’s abilities will be critical when US forces are outnumbered or sent on extremely difficult tasks, such as hunting and tracking mobile missile launchers.

What’s of concern is whether America is shaping the force to meet the demands of conventional deterrence in the next 20 years. Decisions made now affect the health of the conventional deterrent because competitors are moving ahead with sophisticated systems at a pace not seen since the Cold War. If the F-22 fleet remains stuck at 183 aircraft, it will put future conventional deterrence abilities at risk. Commanders may not have enough of these specially-designed aircraft to defeat threats with confidence, and the overall fleet life will be used up years before it should be, due to heavy tasking.

Right now the US has the ability to stay ahead in the conventional deterrence game by upgrading its airpower with the unique capabilities of the F-22. When production ceases, the door will close. It would take many years and billions of dollars to begin a new program to surpass the F-22. Long before then, the US could see its policy options cramped by the limits of its own military power.

Shoring up a prime element of US conventional deterrence – its ability to conduct precise airstrikes anywhere – will take not less than 250 F-22s, for the good of the nation and the world.

This report was written by Dr. Rebecca Grant for the Lexington Institute.



INTRODUCTION

Deterrence isn't in the daily headlines when Afghanistan and Iraq loom large, but behind the scenes, it's become a big pre-occupation for the US national security leaders in the last few years.

Chances are deterrence will put much more emphasis on America's airpower – and the F-22, which is the one fighter designed to make sure US forces can always do their appointed tasks from surveillance to strike.

Deterrence is all about influencing a potential aggressor's cost-benefit calculation. Make your rival think they'll pay too high a price for action, and they may refrain.

In the Cold War, nuclear deterrence was called the balance of terror. Of course, the threat levels have changed and arms control agreements allow smaller numbers of nuclear warheads. However, the US keeps nuclear-armed bombers and submarines ready for alert, and several hundred nuclear-armed intercontinental ballistic missiles.

But today's challenges are different. What's emerging is how *conventional* deterrence may dominate America's hard and soft power options in the years ahead.

Just look at the landscape. Russia has been engaging in Cold War-style antics. China's "peaceful rise" policy is buttressed by its military build-up. Many nations are pursuing sophisticated technologies from stealthy unmanned systems to advanced air defenses capable of finding and destroying targets 100 miles away. Rogue states are getting closer to nuclear weapons arsenals of their own, and most already have significant conventional forces.

As Chairman of the Joint Chiefs of Staff Admiral Michael G. Mullen put it: "It is way past time to reexamine our strategic thinking about deterrence."²

Defining Conventional Deterrence

Conventional deterrence is the ability of one nation (or a group of allies) to show they have and will use stronger forces to make sure an aggressor state can't achieve its ends. Calculation is everything, so conventional deterrence works only when an aggressor is certain that they can't get away with what they are contemplating because they will be stopped cold by superior force.

Airpower is one of the important tools for conventional deterrence. It's certainly a credible instrument. The US put on displays of air mastery in Iraq (1991), Kosovo (1999), Afghanistan (2001) and again in Iraq (2003).

In the last two decades, the US has used airstrikes to contain dictators, punish aggression, turn around international violations of sovereignty and stop regime-inflicted humanitarian disasters. No-fly zones squelched Iraqi military activity for a decade.

There's no reason to think the US will depend less on airpower for conventional deterrence in the future. It remains just the type of flexible, proportionate tool essential to credible, conventional deterrence. Gates explained the need for options well. "A conventional strike force means that more targets are vulnerable without our having to resort to nuclear weapons," he said.³

So it's reasonable to ask: is the US keeping far enough ahead to make its conventional deterrence effective? The answer depends, in part, on US airpower in general, and the F-22 in particular.

This paper examines one vital aspect of conventional deterrence: how to assure that the US can open up the airspace and execute a conventional strike. Trends now suggest that America can't take that advantage for granted, or rely on airpower's conventional deterrence for much longer. Potential adversaries are moving way too fast on aircraft, weapons and tactics and the gap is narrowing. Instead of nuclear warhead throw-weight



and survivable second strike, the technical details of the balance for conventional deterrence in the 21st Century may come down to stealth and supersonic speed without afterburner.

Conventional Deterrence Then And Now

America's defense officials once followed the relative standings of conventional forces very closely.

Conventional deterrence came into vogue in the 1980s when Cold War tensions with the Soviet Union revived interest in strong conventional forces as deterrents in their own right. Back then, scholars researched case studies on historical and regional conflicts and re-examined how military might on each side influenced the causes of wars. Keen interest developed in whether NATO (North Atlantic Treaty Organization) and the Warsaw Pact could restrain themselves and fight a conventional war in Europe without resorting to nuclear weapons – and if so, who would prevail. Major improvements in air and land forces followed.

All that preparation for Europe turned out to be unnecessary – but highly useful elsewhere. No challengers arose to test the ability of the US to employ airpower as it chose.

However, the balance may be shifting again. In the last two years, Russia, India and China have all announced or clarified major defense programs that include everything from the development of advanced fighters to upgrading aircraft carriers. Turns out, adversaries took careful note of the way America and its allies used air dominance in all its operations. They reshaped their defense plans to make inroads on that asymmetric advantage. They are building advanced missiles, aircraft and subsystems and there's also a world market for their best wares.

For all these reasons, conventional deterrence is moving up the list of jobs for America's military. According to Mullen:



A big part of credibility, of course, lies in our conventional capability. The capability to project U.S. military power globally and conduct effective theater-level operations across the domains of land, sea, air, space, cyberspace, and information – including the capability to win decisively – remains essential to deterrence effectiveness. We must therefore address our conventional force structure and its readiness as a deterrent factor, especially after 7 years at war.

No one is suggesting that deterrence in this multi-polar world will be the same as the Cold War. Far from it. For one thing, America will not have the same economic dominance it once enjoyed. America's economy will still probably be the biggest for a time, but economic and financial peers are already on the scene. Some forecast China's economy may grow fast enough to overtake the US.

With China, and other nations, military deterrence will be one part of a much wider relationship encompassing trade agreements, financial deals, diplomacy, and yes, other competition for global influence as China navigates its "peaceful rise." Instead of spies and the Berlin Wall, the deterrence of the 21st Century will include gala state dinners, toasts with strong liquor, and a shifting series of international consortia and negotiations on everything from trade to climate change.

However, low-level military friction is likely to be a constant. Russia will be active on its borders and China will continue to build global ties. Expect the spheres of influence of the major world powers to collide from time to time.



THE NEW DETERRENCE METRICS

Conventional deterrence will have a big role in shaping those collisions – and whether they turn out to be occasional jostling or more serious face-offs.

What type of military forces will be most in demand? Telling signs are already evident.

- In 2007, Russian Tu-95 Bear bombers and IL-78 tankers resumed patrols in the Pacific, Atlantic and near the Arctic Circle after a 15-year absence
- China's active space program has tested satellite destruction and manned orbital capabilities
- Russia may have had a hand in cyber attacks on Estonia in 2007 and Georgia in 2008
- China has been admonished by Germany, Great Britain and the US for attempted penetrations of government networks
- Russia conducted a combined-arms incursion into Georgia in August 2008, complete with mechanized vehicles, airstrikes and mobile missile forces

In this environment, conventional deterrence will rely heavily on superior air, space and cyberspace capabilities. The US's big advantage comes from the ability to threaten a successful and persistent airstrike against key targets. Calibrating the flexible deterrent options requires real-time information on threats and options. Job one is to survey and assess the situation.

ISR Lockout

One of the most important aspects of deterrence (both conventional and nuclear) is correctly characterizing crises and the actions and posture of adversary military forces.

Real-time intelligence, surveillance and reconnaissance (ISR) is in high demand by the international community as they take their first steps in considering action during a crisis. Decision-makers want to know what friendly and adversary forces are really doing, where key units are positioned, and how the situation is changing. Reflecting



this, US joint doctrine explicitly lists positioning of ISR assets as part of flexible deterrent operations. In the Balkans in the early 1990s, NATO set up surveillance and no-fly zones long before committing to further action. Operations against terrorism consume ISR.

With current forces, it is easy to picture force options such as a deployment of the Global Hawk unmanned aerial system and other ISR assets along with fighter forces to signal resolve and shape a crisis.

In Iraq and Afghanistan, the US and its partners have grown accustomed to a level of ISR unprecedented in warfare. It began with the early use of unmanned aerial systems Predator and Global Hawk in Afghanistan, and has spiraled to the point where a combination of systems can track terrorist movements visually and electronically. ISR is not perfect, but it provides an addictive level of information.

Space platforms play a role but the most sophisticated, sensitive ISR depends on near-complete control of the airspace so that aircraft of all types may operate with impunity.

However, for some adversaries, the solution is near at hand. Positioning of advanced surface-to-air missiles along border regions can put all current unmanned ISR platforms at risk of being unable to survey crisis areas.

Russia's actions in Georgia in August 2008 lasted briefly but they were enough to create a prototype lock-out scenario. The Russian Northern Caucasus military district had nearly 300 fighter aircraft: 105 MiG-29s, 30 Su-24s, 59 Su-27s, and 100 Su-25s. Add in the now-common SA-20 with its fire-control range of 75 miles and it would have been possible to layer enough air defenses to make reconnaissance nearly impossible. Even the high-flying Global Hawk might not be able to evade top-line Russian air defenses every time.



Airborne ISR lock-out would put the US and the international community in a very uncomfortable position. One potential solution is deployment of the F-22 to signal the potential to hold surface-to-air missile systems at risk.

ISR lockout is also imminent over Iran. Reports from summer 2008 suggested that Iran was awaiting delivery of the SA-20, and could have operational systems by the end of 2009. US Defense Secretary Robert Gates remarked on July 9, 2008 that Iran would not get the SA-20s “any time soon” but a senior defense official quickly clarified that the time period indicated was “months.”⁴

Beyond this, several scenarios are possible, and all show the need for the F-22’s contribution to conventional deterrence.

Intervention

One of the most vexing, near-term scenarios would be F-22 deployment to support action over Iran. Two factors are at work. First is the strengthening of Iran’s air defenses which threaten lock-out. Second, recent intelligence reports have estimated that the period of vulnerability for Iran to develop nuclear weapons would be around 2015.

Stern words have had little impact to date. “The international community cannot allow Iran to develop nuclear weapons,” wrote US Ambassador to the United Nations Zalmay Khalilzad in March 2008.⁵ Half a year later, nothing had changed. Iran is “determined to develop nuclear weapons at this point,” said Secretary of Defense Robert Gates in October 2008.⁶

Definitive signs of weapons deployment by a bellicose regime in Iran might lead to a decision in favor of pre-emptive, multinational action. While none would be eager for this kind of scenario, the fact remains that it would task F-22s heavily.

A combat scenario would most likely involve careful strikes on selected Iranian military installations and weapons facilities. Iran’s air defenses will be clustered close together. By 2015, Iran’s air defenses will include

fully deployed SA-10s and SA-20s. The minimum ranges of these surface-to-air missiles exceed 75 miles. Laced together along the coast, they will provide effective lock-out of “aluminum” aircraft such as the F-15 and F-16 and the Navy F/A-18EF.

Beyond the coastal surface-to-air missile belt, Islamic Republic of Iran air forces will be on the lookout for strikers that make it through. Published sources indicate that Iran’s air force has about 100 modern fighter and attack aircraft. These range from the highly capable MiG-29 to older aircraft such as the Mirage F-1 and F-14, which may be too old to be effective due to limited maintenance. Su-24 attack aircraft are also in the inventory. While only the MiG-29 would pose a credible challenge, other aircraft armed with air-to-air missiles could significantly complicate matters for attacking aircraft.

The aim of a US-led strike would be to achieve objectives and be both surgical and survivable. F-22s would today be the only fighter aircraft capable of the mission.

What would happen if the deployment order for such a strike was issued? F-22s would be required for two missions. First, packages of F-22s would most likely lead strikes to disable surface-to-air missiles. Some F-22s would also strike ground targets, and others might support the B-2 on missions to drop heavier, penetrating weapons.

Second, the Coalition force would have to ensure air supremacy over the Persian Gulf in case of counterattacks by Iran on nations supporting the activity. Defense against cruise missiles would be a large part of the task. In Operation Desert Storm in 1991, a major concern of Gulf state allies was to make sure no bombs fell on their territory. Preventing even nuisance attacks from cruise missiles or Iranian fighters will require extensive combat air patrols over several nations. While other aircraft will assist, the cruise missile defense role in particular will require the F-22’s radar search volume and quick dash capacity to engage missiles in flight. Needless to say, positioning these forces will be a deterrent in itself, but only if the force deployed is credible for both the strike mission and the Gulf state defense missions.



NATO

The return of Russia as a world power comes after a brief, economically-driven absence in the late 1990s. Russia has been through periods of inward retrenchment before. However, with control over massive oil and gas reserves, Russia has re-emerged as a powerhouse. Now that nation is causing friction around its borders on issues from energy supplies to missile defense. New NATO members have been particular targets.

A series of Cold War antics is enough to worry Europe and the world. The F-22 squadrons at Elmendorf Air Force Base already have pictures of their F-22s flying alongside the Russian “Bear” bombers. Russian bombers also buzzed the USS *Nimitz*.

“All Russian Air Force flights are performed...in strict accordance with international rules on the use of airspace over neutral waters without violating the borders of other states,” insisted Colonel Alexander Drobyshevsky, a Russian Air Force spokesman.⁷

Russia’s ambitions are global. Rumbings about deployment of bombers to Venezuela coincided with a sale of 24

Su-30 fighters to President Hugo Chavez. “We do what we can to defend ourselves,” said Chavez, who also oversaw a purchase of air defense from Russia via Belarus “just in case the Americans were thinking of doing anything similar to Venezuela” referring to what the air campaign did to Iraq in 2003.⁸

It’s hard to say what the future direction of Russian activity will be. Many analysts have noted a certain rustiness in Russian military actions. However, at this rate of activity, the Russian military will regain its form quickly enough.

Either way, deterring Russian conventional activity is once again a major task for NATO. NATO nations need credible air defenses and a collective ability to intervene in border regions if necessary.

Since 2004, NATO has been deploying fighters to Latvia for air defense patrols. The Baltic air policing initiative is part of NATO’s quick reaction capability and is necessary since Latvia, for example, has an air force numbering less than 300 people and no air defense capability of its own. Typically, detachments of four aircraft guard airspace over all three Baltic nations.

Recently, F-15Es from the US base at RAF Lakenheath, in Britain, have joined in the rotation. “The United States is committed to the air sovereignty of its NATO allies and to ensuring the regional peace and stability for these countries,” said Lieutenant Colonel Michael King, the unit’s commander, in October 2008.⁹

As threats shift, the ability of the F-22 to cover a volume of airspace against air and surface-to-air threats could become a significant edge. There are no plans to base F-22s in Europe. Still, the time may come when they deploy there often. It’s not hard to picture a situation where Russian fighters overwhelm a four-aircraft NATO detachment. Being able to bring highly capable forces to bear would be the essence of deterrence over the Baltic region. Pair border probes with future capabilities and potential ISR degradation, and the case for F-22 availability in a NATO scenario becomes clear.



China

China is a world power, a major trading partner, and without question, a potential military competitor. With China there may be a decades-long balance between confrontation and cooperation. Conventional deterrence will be a big part of calibrating the balance. For the US, relying on airpower's conventional deterrent will be a prime tool.

China has already demarcated the realms of air, space and cyberspace as arenas for competition and de-emphasized its land forces. In 2004, China's Defense White Paper stated bluntly: "The Army is streamlined by reducing the ordinary troops that are technologically backward while the Navy, Air Force and Second Artillery Force [China's nuclear weapons unit] are strengthened."

Instead, current Chinese military doctrine focuses on local (or regional) war under high technology conditions, which they define as "a limited war, fought in a restricted

geographic area for limited objectives with limited means and a conscious effort to curtail destruction." Rapid defeat of the enemy is the main objective and the preferred tool is to inflict strategic and operational paralysis or even defeat the enemy with one strike. The Chinese do not much worry about global power projection, stability operations or major land campaigns.

Deterring China will be all about providing persistence, to make clear US and allied forces won't back off until goals are met. Credible deterrence will include the ability to target mobile launchers like the one China used to shoot a missile into orbit to destroy its defunct weather satellite. That launch brought home how difficult it could be to track, target and kill mobile launchers.

Those mobile launchers could threaten everything from anti-satellite attack to use of nuclear weapons. Mobile launchers are notoriously difficult to pin down.



Scud-hunting in Iraq in 1991 soaked up resources. A decade later, despite years of work, the Coalition still encountered unlocated, mobile surface-to-air missiles as the war with Iraq began in 2003.

Holding mobile missile launchers at risk of attack will probably be the gold standard for conventional deterrence. Some analysts maintain that stand-off missiles are a valid option against important targets deep in enemy airspace. While they have their uses, stand-off missiles suffer from a big drawback in attacking mobile targets. To reach a target, the missile is launched, and then flies in to make the strike. The time of flight may be several

minutes. That's ample time for the target to move far enough to avoid being killed or even damaged. Harassment is not deterrence.

Nor can all aircraft withstand the risks. Hunting for mobile targets could also take the F-22 deep into enemy defenses, where it will probably be outnumbered by enemy fighters. In that scenario, F-22s may have to fight off enemy aircraft, then continue on to strike the assigned mobile target. The superior internal carriage of F-22 air-to-air and air-to-ground weapons will help it survive and complete its mission.



PACING DETERRENCE

Conventional deterrence is driven by the military weight in each side of the balance and the calculation of interests which goes into the decision to act. Interests vary, but it is easier to track over time the rise and fall of the military power.

Will the US be “deterred” from taking military actions in support of international aims? Americans like to think of their military forces deterring bad actions of others. Yet as balances shift there’s a real prospect that American forces might find their options more constrained if they cannot establish that conventional overmatch so central to cold, hard conventional deterrence. Based on the last decade of experience, the freedom to act may range from ISR overwatch to use of special forces to limited strikes. None of these will be possible if US air dominance slips to the point of self-detering action.

The developments most likely to interrupt the ability of the US to carry out missions up to and including conventional airstrikes and thus imperil deterrence come from a range of technologies. Developments in these areas can be seen as pacesetters.

- **Fighters.** After a long lull, the world fighter market has seen new procurement plans, and research on advanced types. First up are variants incorporating advanced tracking and targeting systems explicitly intended to match current US fighters. In March 2008, Russian President Vladimir Putin called on the defense ministry to add more Su-35s and MiG-35s (an upgrade of the MiG-29) in the interim before Sukhoi’s “fifth-generation” PAK-FA type is developed.¹⁰ Together Russia and China have 12 open military aircraft production lines.
- **Jammers.** Digital Radio Frequency Memory is an electronics countermeasure technology that samples and digitally duplicates a waveform. The digitized waveform can be reconstructed at will and projected back to give false information on position, speed, heading, and more.
- **Infrared Search and Track.** New systems like that incorporated on the MiG-35 are capable of passive

detection of heat from air resistance on a missile nose cone. Coupled with laser range-finding or other techniques, infrared search and track (IRST) offers a potential fire control solution, too. While IRST has some operational disadvantages, it has the potential to be a formidable new weapon.

- **Ultra-long range missiles.** According to the Air Force, new missiles are under development which will cut into some AMRAAM (Advanced Medium Range Air-to-Air Missile) and stealth tactics. Longer-range adversary missiles will make fighter aircraft speed crucial because it enables the F-22 to engage at longer ranges with the same effect.

These are just some of the technical trends relevant to conventional deterrence as it relates to the ability to conduct airstrikes. Many of these technologies debuted in rudimentary form years ago, and most are in the inventory or well within reach of the US and Western partners. Together, they open tactical possibilities that present a near-even match with current US fighters.

The F-22 and Deterrence

The F-22 was designed to combat developments like these. Much of its edge is built into the aerodynamics of the platform. The whole intent of the F-22 was to create one fighter with the performance to ensure superiority against upgraded and new adversary fighters, even as they add advanced capabilities. No other fighter flying today has that mission.

Why is a combination of legacy fighters and the F-35 not sufficient to provide conventional deterrence for the US Air Force? Like many other systems, aircraft are all about trade-offs. Yet it’s been understood for a long time that at least one fighter platform had to reach for uncompromised design in order to provide a deterrent stretching over several decades.

That aircraft is the F-22. One of its top characteristics is speed. Tests with derivative F-16s in the years between 1982 and 1985 demonstrated the possibility of brief



periods of supersonic flight without afterburner. The Air Force added the requirement for supercruise – flying at Mach 1 to Mach 1.6 or more without afterburner – because it would give the F-22 significant advantages against other fighters or surface-to-air missiles. No one had attempted to build supersonic speed with stealth before, but the F-22 did it, and remains the only aircraft in the world with this ability.

The other advantage waiting to be claimed was altitude. Stealth designers favored altitudes above 40,000 feet because enemy radar might be less effective in those reaches. However, the F-22 would have to operate with exceptional maneuverability, which required another technology known as thrust vectoring.

Knowing the F-22 would take care of the toughest threats, the F-35 was designed as a single-engine attack aircraft to suit a wide range of customers and operating environments. Beyond this, the whole design of the F-35 was predicated

on having the F-22, which was ahead of it by about ten years, in the force.

Today the F-35 is beginning rigorous flight testing and initial results are promising. However, there are several years to go before the F-35 reaches its initial operating capability. (The F-22 reached that status in 2005.)

What's clear already is that the decision to optimize F-22 and F-35 for different missions was wise. There will be challenges ahead, and some of the specific, high-performance features of the F-22 will be extremely important.

The best place to be for evading surface-to-air missiles and moving through enemy fighters is at high altitude and high speed. Just how high and how fast depends on the threats.

Against today's fighters, airspeeds of .8 Mach or greater and altitudes above 35,000 feet are usually sufficient.





The problem emerges about 5-7 years out, as advanced modifications to adversary fighters, missiles and on-board systems begin to change the equation.

Fighters need stealth to get around surface-to-air missiles. The F-22 brings a unique advantage because it was designed to claim the ultimate sweet spot for air combat. That is the zone centering on an altitude of 50,000 feet and a sustained speed of 1.6 Mach.

Analysis suggests that the F-22 operating at 1.6 Mach and 50,000 feet or higher is twice as successful at defeating air-to-air threats in 2015 and beyond.

This is the prime operating regime for the F-22. In actual operations, an aircraft using afterburner can reach the sweet spot. However, the F-22's unique advantage is that it can operate in the sweet spot without afterburner. That allows the F-22 to stay there longer and at less risk.

Against advanced threats, flying fast delivers many advantages. The F-22 can engage other fighters from longer distances and still expect the same probability of kill. This ability becomes vital when F-22s are outnumbered and must contend with two, four or eight adversaries en route to striking a surface-to-air missile target, for example. Of course, the F-22 will rely heavily on shared information available to other platforms like F-35, but executing combined air and surface strikes will call for all the stealth, speed and maneuverability advantages which belong to the F-22.

Deterrence for Life

The F-22's deterrence qualities will be even more important about a decade from now.

However, that's when fleet size will begin to show a serious impact on the force. The F-22 has a design life of 8,000 hours, a typical mark for a land-based fighter. (Carrier-based fighters often have shorter design life due to the stresses of catapults and arrested landings.) Design life is the set of engineering trades that balances sturdy structure with aerodynamic qualities. Over time, the airframe will accumulate fatigue and stress, and



enter a red zone where the risk of major structural failure becomes unacceptable. Fighters typically have a shorter design life than cargo or other mobility aircraft because of the g-forces imposed during training and wartime fighter maneuvers. A fighter executing a routine 3-g climb-out on take-off is enduring stress unknown to other types of aircraft.

How long fighters stay in service depends primarily on how fast pilots use up the design life hours – and what they do during those sorties.

A small fleet uses up service life more quickly than the Air Force planned.

The oldest F-22s delivered in the late 1990s would begin retiring just as the 2015 to 2020 threat fully emerges. A major block of about 50 F-22s which were delivered to the Air Force before 2005 would retire by 2025 to 2030.

There's yet another dilemma. The smaller the fleet, the less time the Air Force has to research and develop a follow-on for the F-22. At some point, the Air Force will have to develop an F-22 replacement. A boutique fleet will burn through the F-22's service life at a rate that forces premature decisions on investment for a follow-on force. A fleet of no less than 250 F-22s would provide forces for conventional deterrence, and allow more time to mature technologies before making a huge new investment.



CONCLUSION

A strong conventional deterrent with airpower remains essential to international security. As Secretary Gates said “let’s not forget the deterrent value...of our conventional military forces.”¹¹

Yet this is exactly the risk the nation is taking with conventional deterrence. Unless the F-22 is bought in sufficient numbers, the risks to all joint forces go up and up in the years ahead. Right now the US has the ability to stay ahead in the conventional deterrence game by upgrading its airpower with the unique capabilities of the F-22. When production ceases, the door will close. It would take many years and billions of dollars to begin a new program to surpass the F-22. Long before then, the US could see its policy options cramped by the limits of its own military power.

“I believe we are going to need a nuclear deterrent in this country for the remainder of this century, the 21st century,” General Kevin P. Chilton, Commander, United States Strategic Command. “So long as there are other countries in the world that possess enough nuclear weapons to destroy the United States of America and our way of life ... we will have to deter those types of countries.”¹²

That’s just as true for conventional deterrence. No one wants America locked out of surveying a developing crisis or forced to escalate when a strong, conventional airstrike option would have done the job.

To fail to provide air dominance would allow other nations to deter US forces and international coalitions. Within a half decade, by some counts, other nations will build up enough lock-out capability to foreclose all but very costly action. The door is already swinging shut for ISR and other types of early crisis response.

The F-22 is a key ingredient in ensuring the kind of conventional deterrence that leaves the US and its allies with access when they need it. It’s a capability that can make other nations think twice about their antics and ambitions. To cut it short with a truncated fleet unable to cover multiple theaters or sustain its service life would strike a blow to US military power for all joint forces.

¹ Secretary of Defense Robert Gates, Speech to the Carnegie Endowment, October 28, 2008.

² Admiral Michael Mullen, “From the Chairman: It’s Time for a New Deterrence Model,” *Joint Forces Quarterly*, Fall 2008.

³ Secretary of Defense Robert Gates, Speech to the Carnegie Endowment, October 28, 2008.

⁴ Dan Williams, “Iran to Get new Russian Air Defense By '09: Israel,” Reuters, July 23, 2008.

⁵ Zalmay Khalilzad, “Iran’s Nuclear Threat,” *Wall Street Journal*, March 4, 2008.

⁶ Walter Pincus, “Gates Suggests New Arms Deal with Russia,” *Washington Post*, October 29, 2008, p. A9.

⁷ “Russian Bombers Patrol Over Atlantic Ocean,” *Moscow News*, April 24, 2008.

⁸ Jon Lee Anderson, “Fidel’s Heir,” *The New Yorker*, June 23, 2008, p. 48.

⁹ J. Lavoie, “US Forces Begin Air Policing Missions in Baltic,” *Air Force News Service*, October 2, 2008.

¹⁰ Alexey Komarov, “Bear Market,” *Aviation Week and Space Technology*, March 3, 2008, p. 41.

¹¹ Secretary of Defense Robert Gates, Speech to the Carnegie Endowment, October 28, 2008.

¹² Remarks by General Kevin P. Chilton, Defense Writers’ Group, March 4, 2008.

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