Center for a New American Security

Military Elements in a Strategy to Deal with Iran's Nuclear Program

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My assigned topic is "military options for dealing with Iran's nuclear program," but I have re-titled this paper to reflect one of its main conclusions: none of the military actions described here can be considered an "option" separate and distinct from diplomacy or containment or some other overall strategy toward Iran's nuclear program. The reason for this is that whenever military action is contemplated, one must ask the question, "What happens next?" None of the scenarios of military action described below ends, in and of itself, the Iranian nuclear program once and for all. Military actions might be enablers of a variety of wider strategies to end or contain the Iranian nuclear program but do not appear, in this analysis, to be alternatives by themselves.

In a paper growing out of a Harvard-Stanford Preventive Defense Project workshop two years ago entitled "Plan B for Iran: What if Nuclear Diplomacy Fails?" Bill Perry and I defined three broad options to the current diplomatic impasse: 1) direct U.S.-Iran talks with an attempt at breakthrough; 2) a program of political, economic, and military coercion to set the stage for better diplomatic results, including option 1; and 3) adjustment to the fact of an Iranian bomb, including deterrence and containment. Military action was not a separate option in our analysis, but an ingredient of options 2 and 3.[1]

The search for an alternative to the prevailing strategy of tough talk coupled with incongruously mild diplomacy (small sticks because China and Russia will not wield them, small carrots because the United States will not proffer them) will grow urgent early in 2009 unless the Bush administration takes some action to change the game in its last months in office. The textbook solution to the diplomatic impasse, well described by Dennis Ross in his paper in this series, is some strategy of turbocharged sticks and turbocharged carrots, preferably closely coupled. In various versions of this strategy, the United States would approach Iran's leaders directly through some mechanism – secret talks, informal emissaries, a Six-Party talks-like multilateral forum providing cover for bilateral U.S.-Iran contacts, a direct presidential appeal, and so on – and offer comprehensive reconciliation and relaxation of pressure in return for comprehensive behavior change by Tehran, especially a curb on its nuclear program. At the same time, Russia and China would threaten to impose real economic sanctions, or to stand on the sidelines while the United States took military action, if Tehran refused.

There is some evidence that such an approach might have worked if it had been adopted in 2003. This is the real message of the intelligence underlying the ill-starred Iran National Intelligence Estimate (NIE) of November 2007. But that was then and now is now. Since 2003, Iran has advanced its program technically, probably become more deeply wedded to the whole idea of a nuclear option as essential to its

strategic outlook, and possibly become convinced that the outside world will huff and puff but never blow its house down. Meanwhile the U.S. position has slipped. Therefore one would be hard pressed to make an analytic case to Senators McCain, Clinton, or Obama that even if the United States and its erstwhile Chinese and Russian partners could mount a turbocharged carrots-and-sticks approach, it would have a high probability of succeeding with the Iranians under current conditions.

What might change the equation is not so much the U.S. presidential election, but conceivably the Iranian presidential election to be held in the summer of 2009. Given the timetable dictated by the two elections, therefore, it will be more than a year before the turbocharged diplomacy experiment can be conducted.

In the meantime, efforts like this one by the Center for a New American Security to analyze all the ingredients of strategy towards Iran are especially important. The following pages will describe military actions that might form elements of different strategies towards Iran's nuclear program.

Airstrike on Iran's Nuclear Program

This much-discussed scenario would involve an airstrike on Iran's key military facilities with the objective of delaying the date at which Iran could get enough fissile material to fashion a bomb. It is patterned on the Israeli strike on Iraq's Osirak reactor in 1981 and the contemplated U.S. airstrike on North Korea's Yongbyon complex in 1994. (It is too early, and there is too little information publicly available, to judge the impact of Israel's September 2007 airstrike on a Syrian reactor built with North Korean assistance.) The former derailed Saddam Hussein's nuclear program for years, a delay that proved decisive since it gave time for subsequent events – Desert Storm, the inspections and sanctions of the 1990s, and ultimately the invasion of 2003 – to eliminate the Iraqi program for good. The destruction of the Yongbyon complex in 1994 would have entombed the fuel rods containing eight bombs' worth of plutonium in the core of the destroyed reactor building. (It was these fuel rods that were instead stored in unreprocessed form from 1994 to 2003 under the Agreed Framework before being allowed to be removed and reprocessed in 2003, finally providing plutonium for an underground test in 2006). Had the 1994 strike been conducted, North Korea would have had to dig the shattered and highly radioactive fuel rods out of the rubble, rebuild the reprocessing facility to get the plutonium, and then rebuild the reactor to be able to produce more – a process that would take many years.

Unfortunately, a strike on Iran's nuclear complexes would not have as decisive a technical result as either Osirak in 1981 or Yongbyon in 1994.

The first and most important target in such a strike would be Natanz, where a growing number of P-1 centrifuges, currently several thousand, are in various stages of start-up operation. If run continuously, 3000 P-1 centrifuges can make 25 kilograms of highly enriched uranium (HEU) – a bomb's worth – per year. Iran claims it ultimately plans to operate no fewer than 54,000 P-1s at Natanz, though it claims it will be using them only to make low enriched uranium (LEU). (Iran is also reportedly developing P-2 centrifuges that enrich almost three times faster.)

Other key installations of the Iranian nuclear complex are at Esfahan, Bushehr, Arak, and Tehran. The Esfahan Nuclear Technology Center houses the uranium conversion facility where uranium ore is made

into feedstock for Natanz, and where fuel rods are to be produced for reactors fueled by LEU from Natanz. Bushehr is the site of two gigawatt-sized light water reactors built and fueled by Russia and expected to begin operation in 2008. Enough plutonium will be made at Bushehr in every year of its operation for dozens of bombs, though Iran would have to break its promise to return the spent fuel to Russia and then reprocess the fuel rods to obtain the plutonium (Iran does not currently have a reprocessing facility in which to do so). The plutonium diverted from Bushehr would have a higher contamination of Pu-240 and Pu-241 in relation to Pu-239 than Yongbyon's, making it somewhat more difficult to use in a weapon. And Russia is unlikely to refuel the reactor after such a diversion, so this is a trick Iran could pull only once. Arak is the site where a small heavy water moderated reactor is in the early stages of construction that could eventually make better plutonium than Bushehr (more purely Pu-239) but in much smaller quantities. Finally, Tehran Nuclear Research Center has been the scientific headquarters of Iran's program for decades.

These five installations are scattered about western Iran. Each of these installations consists of a complex of buildings and thus many individual bombing aimpoints. Natanz presents the additional issue that its centrifuge hall is underground and would require special techniques to ensure damage. In fact, many targets in Iran would require attack by a variety of "bunker-buster" conventional munitions in the U.S. arsenal. The total number of aimpoints might be in the neighborhood of 100-200, few enough to be easily dispatched in a few nights by U.S. bombs and cruise missiles. The aircraft delivering bombs could launch from aircraft carriers or, in the case of long-range bombers, from the continental United States. Use of bases in Iraq, Afghanistan, the Gulf, Turkey, or Diego Garcia would be politically sensitive, and their availability would depend on the political context of the strikes. The five Iranian nuclear facilities are protected by air defenses, but weakly, and a large accompanying air campaign of defense suppression would not be necessary.

For the most part, the nuclear complexes including Natanz are far from residential areas and their destruction would not entail a great deal of collateral damage. An important exception would involve the Bushehr reactors when they are fueled and operating. Breaching their containment vessels while also destroying their cores or cooling systems could lead to a serious release of radioactivity.

While the diplomatic choreography leading up to such a strike would be absolutely critical, there are a few military steps that would also need to be taken.

Positioning the requisite air forces would not be difficult. The United States routinely positions one carrier battle group in the Gulf and sometimes two. These offer 75 or so strike aircraft, and associated surface ships and submarines provide many tens of cruise missiles. Short-range strike aircraft could be positioned quickly, and bombers could be operated from the continental United States, the United Kingdom, or Diego Garcia.

Important preparatory steps would also be needed to protect U.S. forces in the region, including in Iraq, from Iranian retaliation and to deter escalation. Measures would also be needed to safeguard friends and interests (such as oil infrastructure) or to give them reasonable notice to protect themselves. Most of the

nations that would be associated with the United States in the doomed diplomatic effort that is presumed to have preceded a strike have embassies in Tehran that might be attacked if these nations were believed to have supported or even acquiesced to the U.S. strike. The United States would need to be able to threaten a wider air campaign targeting Iranian conventional forces, leadership, and other targets if Iran escalated the conflict.

Evaluating the Effectiveness of an Airstrike

What would such an airstrike accomplish?

First of all, it would accomplish little if there were a parallel, secret and undiscovered Iranian enrichment program that was further along than Natanz. In that case, destroying Natanz would not delay Iran's quest for the bomb at all. Most analysts believe that there are facilities involved with Iran's nuclear program that have not been declared to the International Atomic Energy Agency (IAEA). After all, Natanz itself was not "discovered" until the early years of this decade. Therefore, the target list for this hypothesized airstrike would probably be lengthened to include various facilities suspected, on the basis of intelligence information, of being part of a covert Iranian program. While there have been many reports of such suspected sites, and covert sites are widely assumed to exist, there have been no reports that they amount to a parallel path to the bomb that is faster than Natanz itself.

If there is indeed no covert program that compares with Natanz, the main value of the strike would lie in its disruption of the centrifuge enrichment activity going on there. This value would in turn be measured by the time it delayed Iranian acquisition of enough HEU to make a bomb.

After a strike, Iran could end IAEA inspections, rebuild its facilities, and begin again. Within a few years, Iran's nuclear program could be back to where it is now. Iran has surely prepared for this scenario, hiding and dispersing the key ingredients of a reconstituted program. How many years it would take Iran to reconstitute its enrichment program to the current level is an educated guess, but let us suppose for illustrative purposes that it would take about two years. The benefit of a single strike, therefore, would only be two years of delay. This relatively modest delay could be lengthened in two ways. First, if the airstrike was carried out as part of a process of coercive diplomacy rather than in the hope that it would produce a decisive result in itself, that diplomatic process could lead to a more lasting end to Iran's nuclear ambitions. Second, the delay would be lengthened if the initial strike were followed up by periodic "refresher" strikes on the rebuilt facilities. These subsequent strikes would become more difficult to carry out, however, since after a first strike Iran would conceal, harden, and defend its reconstituted nuclear program.

To see how the overall effect of a single strike works out in the absence of a diplomatic follow up or periodic re-strikes, suppose that on the current path Iran is five years away from producing its first bomb containing HEU from Natanz. This number, like the estimate of two years to reconstitute a bombed enrichment program, is used here illustratively. In reality, no such quantitative certainty is likely to be available to those actually planning an airstrike. But five years seems consistent with the 2007 NIE. During

these five or so years, according to the scenario that lies behind such estimates, Iran would first construct and learn to operate a few thousand more centrifuges than it now has at Natanz. It would buy time for this by claiming it was only enriching uranium to 5 percent to make reactor fuel. Then it would abruptly throw out any inspectors and rapidly enrich the 5 percent uranium to 90 percent. Attacking Natanz now would lengthen the front end of this scenario while the enrichment program was rebuilt to today's level, as noted above, but it would likely shorten the five years at the back end because Iran would have no need to pretend it was only making reactor fuel. Putting all this together, under these hypothesized timelines, the airstrike would delay the Iranian bomb from 2013 to 2015. (On the other hand, a strike conducted a few years from now, when Natanz was further along and therefore would take Iran longer to rebuild, would destroy more and thus impose more delay. In this sense, a mature program always makes a better target than a fledgling program.)

Costs of an Airstrike

The benefit of this much-debated type of air attack on Iran's nuclear program would be a delay in the date by which it could have its first bomb. Against this benefit must be weighed the costs, which are described in greater length in Vali Nasr's paper in this series.

First, Iran could retaliate against U.S. and partner targets in the region. This retaliation might include taking diplomatic personnel or other foreign nationals hostage. It might extend to action by the Iranian military against U.S. forces in Iraq, Afghanistan, or elsewhere in the Middle East. It could take the form of increased meddling, through Hezbollah and other proxies in Iraq, Lebanon, the West Bank and Gaza. Iran could attempt to interrupt Gulf oil shipping with missiles, mines, fast patrol boats, and submarines, although most analysts believe that the U.S. Navy could put an end to such harassment within days. Finally, Iran could threaten to cut off its oil exports, which are the fourth largest in the world and which exceed any amount that Saudi Arabia could easily substitute through increased production. While this move would undoubtedly drive up oil prices, it would also eliminate some $60 billion in annual income to Iran, which comprises 85 percent of the government's budget.

Second, if the strike was done unilaterally without agreement from the European Union, Russia, and China that it was the necessary result of a failure by Iran to respond to reasonable and forthcoming diplomacy on the part of the United States in concert with them, it would probably doom any further multilateral diplomacy. Such a strike is therefore probably a one-way exit from the path of multilateral diplomacy. Subsequent diplomacy conducted by the United States unilaterally with Iran would lack the economic and political "sticks" wielded by the non-U.S. players. A military strike without a wider strategy that was clearly understood and supported by these other nations would also likely cause them to distance themselves from the United States.

Third, an attack on their country might have an irreversible effect on Iranian opinion. This opinion is reportedly supportive of a nuclear option for Iran in principle, but not necessarily at the price of prolonged hardship or isolation. An attack might harden this opinion, further dooming any diplomacy that followed the airstrike. Iranian public opinion is also reportedly comparatively pro-American. An airstrike could turn a generation of Iranians against rapprochement with the United States, as the Iranian

hostage taking in 1979 left a quarter century of bitterness toward Iran in Americans. It is possible that this effect could be softened by a public announcement accompanying the strike asserting that the target of the attack was only the Iranian nuclear program, not the nation or people of Iran. But once again, the context for military action would make all the difference.

Fourth, Vali Nasr describes important impacts of U.S. military action on the attitudes of people and governments in the region in his companion piece in this series. He points out, for example, that opinion in countries key to U.S. interests, like Pakistan and Saudi Arabia, might swing towards Iran in sympathy.

The Israeli Option

The same technical issues of effectiveness would face Israel if it carried out an air attack of its own on Iran's nuclear program, with some important differences. First, Israel would have to choose an air route to get to Iran. There are several possibilities, and all are long and involve overflying the airspace of states not likely to wish to be implicated in the strike: Jordan, Saudi Arabia, Turkey, Syria, and Iraq (the last implying U.S. permission or at least detection). Second, some routes exceed the unrefueled round-trip range of Israeli tactical aircraft. One option for the Israelis is mid-air refueling, but here again there is the problem of finding a location for the tankers to await the strike aircraft, and the possibility of detection or interception. Another possibility is simply to seize an airport somewhere on the route for the duration of the strike and use it as a refueling stop. Third, because of these difficulties an Israeli strike would be a small, one-flight affair covering far fewer bombing aimpoints than a U.S. bombardment, which could involve hundreds of separate aimpoints. Israel would probably therefore focus on Natanz.

The benefit to Israel of such a strike – delaying Iran's acquisition of a bomb – could be estimated in much the same way as the benefit of a U.S. strike. The cost to Israel is harder to estimate. Unlike the United States, Israel is not involved in any multilateral negotiations with Iran that would be compromised by military action. Israel has no regional or global reputation to safeguard when it comes to dealing with Iran. The Iranian people harbor no good will toward Israel that would be shattered. And Iran would likely calibrate its retaliation against Israel in the certain knowledge that Israel was prepared to take further action to dominate any escalation.

The costs to the United States of an Israeli strike are easier to discern. Even if the United States had no complicity in or knowledge of an Israeli strike, few people on the street throughout the Middle East would believe it. It would also be a challenge for the United States to prove to the Europeans, Russians, Chinese, and others outside the region that are key to any kind of lasting settlement with Iran that it had nothing to do with the attack. The costs to the United States of an Israeli strike on Iran's nuclear program might therefore be almost as large as the costs of a U.S. strike.

Other Target Categories

Destruction of other Iranian target sets not associated with the nuclear program would not contribute directly to delaying Iran's nuclear program. But threatening other categories of Iranian targets could form the coercive dimension of big-carrot/big-stick diplomacy, and carrying out these threats in such a context might be a means of resetting Iran's expectations about its options. Another reason it is worthwhile to

consider these other target categories is that they would be held at risk to deter Iranian retaliation for an initial strike confined to its nuclear installations. Finally, while the topic of this paper is U.S.-initiated military action, there is also the possibility – perhaps even the likelihood – of Iranian provocations that would necessitate an American military action in response.

Air Defenses

Extensive air defense suppression would probably not be necessary as a prelude to a short air campaign, but would be necessary if the United States wanted to sustain an air threat over wide areas of Iran for a long period of time. Iran's air defenses consist of Russian, American, Chinese and European surface-to-air missiles of older design and their accompanying radars, anti-aircraft artillery (AAA), Man Portable Air Defense System (MANPAD)-like short-range anti-air missiles, and Russian and American fighter aircraft equipped with air-to-air missiles of older design. The fixed defensive sites are concentrated around Tehran, key cities like Esfahan, and along the Persian Gulf coast.

Key Retaliatory Forces

Another target set that could be included in an initial coercive air campaign would be forces Iran might use to retaliate for the U.S. attack. Certainly the Iranian Navy, which could be used to disrupt Gulf shipping, would be such a target. Airbases, missile bases, and select military and intelligence installations supporting Iran's proxies in Iraq, Lebanon, and elsewhere in the Middle East could be targeted to suppress their ability to mount retaliatory attacks. Iranian diplomatic installations worldwide that provide bases for intelligence and paramilitary operatives could also be "rolled up" if other nations were willing to do so, either to support the United States or in their own self defense.

Iranian Revolutionary Guard Corps, Intelligence, and Leadership Targets

A target set containing the key retaliatory forces but extending well beyond would encompass the leadership and command and control of the Iranian Revolutionary Guard Corps and its various Special Forces tentacles, Iranian intelligence installations, and the headquarters and leadership of these institutions.

Conventional Forces

A still wider target set would be the Iranian military generally, the objective of attack being to cripple Iran's conventional power in the region conspicuously and comprehensively.

Oil and Gas Infrastructure

Iran's outdated drilling, transport, and refining facilities are easy targets for air attack. Destroying the country's oil production capacity would eliminate the main source of export earnings for the country, some $60 billion per year, and 85 percent of the government's revenue. This move would therefore immediately bring the country to its knees. At the same time, the world's fourth largest oil source would be abruptly eliminated, and Saudi production could not make up the difference within a short time. The destruction of Iran's oil infrastructure would therefore have a long-term effect on oil prices.

Major Regional War

For many years the United States has maintained plans to invade Iran. During the Cold War these plans were conceived to help defend Iran, the gateway to the Middle East, from Soviet invasion. Beginning in the 1990s, invading and occupying Iran was one of the "Major Regional Conflicts" (MRCs) or "Major Theater Wars" (MTWs) that undergirded U.S. force sizing and budgeting. This planning construct survives today, though considerably modified over the years.

While a ground invasion and occupation of Iran has long been contemplated as a planning matter, today that "option" can be sharply discounted. First of all, the prospect of occupying another large and complicated Middle Eastern country and installing a government more to U.S. liking will look to anyone in Washington or allied capitals, after the Iraq episode, to be a forbidding one. After all, Iran has three times the population and four times the land area of Iraq. Second, the necessary ground forces – U.S. Army and Marines – are simply not available. The United States is scarcely able to sustain the force levels required in Iraq and Afghanistan today, and this is likely to remain substantially so for some time.

But while the United States is depleted of ground power, it is not depleted of air and naval power. This could be applied to Iran in a comprehensive program of punishment and weakening, with air attack applied to all the target categories listed above over a period of weeks or months.

An alternative form of comprehensive military pressure would be an air and sea blockade of Iran, coupled with an internal "no-fly zone." A blockade would serve some of the same purposes as sanctions, but could be imposed unilaterally by the United States.

Military Ingredients of a Containment Strategy

The comprehensive air and naval assault on Iran described above would presumably be incompatible with a return to negotiations with the current Iranian government and must be seen as part of the major alternative to negotiating a curb in Iran's nuclear program: a strategy of containment of an Iran destined to go nuclear. This strategy is described in Richard Haass's paper in this series. In the context of the containment strategy, the point of the air assault would be to do maximum damage to Iran before its nuclear arsenal grew to the point where it could deter such an attack, to punish Iran for defying the United States and the international community, and to weaken its conventional forces.

A strategy of containment of a nuclear Iran, if it comes to that, could have some other military elements that are worth noting.

Of first importance would be deterring an Iranian nuclear attack on the United States or its allies. From a technical standpoint, existing U.S. strategic forces – consisting of intercontinental ballistic missiles, submarine-launched ballistic missiles, and bombers – would be capable of holding at risk any Iranian targets believed necessary for deterrence. The only other U.S. nuclear weapons, so-called tactical weapons, consist of bombs dropped from tactical strike aircraft and cruise missiles launched from submarines. At this time, neither of the tactical forces is postured to be able to strike Iran, but they could be made ready quickly. U.S. conventional forces, which can cripple Iran and its military through the comprehensive air assault described above, should also serve as a strong deterrent to Iranian nuclear use.

While it might be possible to deter the use of Iranian nuclear weapons through the threat of retaliation, *use* is only one major security problem that a failure to stop Iran's nuclear program would cause. *Possession* and possible *diversion* of nuclear weapons by Iran are two other problems that deterrence does not solve.

Simple possession of nuclear weapons would intimidate neighbors and embolden Iran to take actions threatening to its neighbors, the United States, and others that it would never dare take without a shield of nuclear protection. The challenge of containing Iranian ambitions and hubris would be as large as the challenge of containing its nuclear arsenal.

Possession would lead to another problem: a possible cascade of nuclear proliferation in the Middle East. Among the neighboring states, Saudi Arabia, Egypt, and Turkey might see Iran's successful proliferation as necessitating their own, for both reasons of regional prestige and regional security. Syria might be both emboldened and assisted by Iran's program.

Finally, possession might lead to diversion. Iran might sell bombs or technology to other states. Rogue or corrupt elements of the nuclear technocracy or military, without authority from the top leadership, might sell pieces of the program. Or control of the weapons might be lost amidst factional strife or regime collapse. After all, the half-life of uranium-235 is 713 million years…many turns of the wheel of Iranian and regional politics. Once nukes are made, so also is a lasting problem of "loose nukes."

Careful consideration of the military measures that might accompany a comprehensive policy of containment of a nuclear Iran is beyond the scope of this paper. But these measures might include reintroduction of tactical nuclear weapons into the region for "extended deterrence," more comprehensive regional air and missile defenses, forward deployment of U.S. forces in the region, and provision of security guarantees to selected friends and allies.

Conclusion

Military action must be viewed as a component of a comprehensive strategy rather than a stand-alone option for dealing with Iran's nuclear program. But it is an element of any true option. A true option is a complete strategy integrating political, economic, and military elements and seeing the matter through to a defined and achievable end. For any military element, the sequel to action must be part of the strategy because the military action by itself will not finish the problem of Iran's nuclear ambitions once and for all. Airstrikes on the Iranian nuclear program or other targets could conceivably reset the diplomatic table in pursuit of a negotiated end to the nuclear program, but they could also easily overturn the diplomatic table.

The alternative to the diplomatic table, broadly speaking, is a strategy of containment and punishment of an Iran that ultimately proceeds with its nuclear program. A variety of military measures – air assault, blockade, encirclement, and deterrence – could be elements of such a containment strategy.

Sometime in 2009, still well before Iran can produce a bomb's worth of highly enriched uranium, a new American president will face a new Iranian president. Not too much longer after that, we will know which type of strategy the "military option" is supporting.

[1] *Ashton B. Carter and William J. Perry, "Plan B for Iran: What if Nuclear Diplomacy Fails?" (Cambridge, MA: Preventive Defense Project, Harvard University, June 2006), at http://www.preventivedefenseproject.org.*