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# Airpower Options for Syria

## Assessing Objectives and Missions for Aerial Intervention

*Karl P. Mueller, Jeffrey Martini, and Thomas Hamilton*

### Key findings

- Destroying the Syrian air force or grounding it through intimidation is operationally feasible but would have only marginal benefits for protecting Syrian civilians.
- Neutralizing the Syrian air defense system would be challenging but manageable; however, it would not be an end in itself.
- Defending safe areas in Syria's interior would amount to intervention on the side of the opposition.
- An air campaign against the Syrian army could do more to ensure that the regime fell than to determine its replacement.
- Airpower could reduce the Assad regime's ability or desire to launch chemical weapon attacks, but eliminating its arsenal would require a large ground operation.

**SUMMARY** ■ This report offers an operationally informed overview of options for U.S. and allied military intervention in the Syrian civil war using airpower. It does not argue that the United States should intervene in Syria, but seeks to inform discussion of the requirements and risks of various options should such a decision be made. We assume for purposes of this analysis that, as in Libya, deploying ground combat forces would not be part of an intervention.

An aerial intervention in Syria might seek to achieve one or more of a variety of goals. Some of these would be purely political, but the main strategic objectives could include

- protecting civilians
- limiting or containing the conflict
- changing the course of the war.

Each of these objectives might be pursued through several different military approaches, and particular strategic actions could contribute to more than one such

objective. In pursuit of one or more of these goals, U.S. and partner air forces might be tasked with any of five principal missions:

**Negate Syrian Airpower.** Maintaining a no-fly zone (NFZ) over Syria, or simply disabling or destroying the Syrian air force, would be relatively easy for U.S. and allied forces, not least because of the likely availability of nearby bases, although prolonged NFZ enforcement could impose significant burdens on the forces involved. Negating Syrian airpower would have only a marginal direct effect on civilian casualties, which have mostly been caused by ground forces. It could significantly assist Syrian opposition forces by denying air support and especially air mobility and resupply to the Syrian army, but the recent trajectory of the civil war suggests that genuinely turning the tide would likely require attacks against regime ground forces as well. An NFZ would not have to begin with a comprehensive attack on Syrian air defenses, but doing so would greatly simplify the task. Like the

other options considered here, even a very limited NFZ would constitute an act of war against Syria and might trigger greater involvement by pro-regime powers such as Iran and Russia.

**Neutralize Syrian Air Defenses.** The extensive but mostly antiquated Syrian integrated air defense system, while it should be taken seriously, is less formidable than many imagine. U.S. and allied airpower could readily destroy its fixed elements in a major campaign and is relatively well prepared to deal with the residual threat that surviving mobile systems would pose to other air operations over the longer term. However, experience in conflicts such as Kosovo and against less well-armed enemies has demonstrated how difficult completely suppressing even sparse, moderately capable, mobile air defenses can be and how serious the restrictions on U.S. air operations can be as a result. Suppressing air defenses would not be an end in itself, but a means of facilitating other missions over Syria.

**Defend Safe Areas.** Airpower could play a major role in defending designated safe areas against attack by regime forces, but because these threats would mainly come from artillery and other ground forces, there is a need for effective defensive forces on the ground, either foreign or indigenous. Protecting a large proportion of the threatened Syrian civilian populace would require expansive safe areas, including ones deep in Syria, along with secure logistics corridors to sustain them. Securing such areas against regime forces could be tantamount to full intervention on the side of the opposition, as well as more challenging operationally. Realistically, safe areas should be regarded as a way of providing the civilians within them with improved security, not complete safety, as the United States would not be able to govern the actions of opposition forces controlling the safe areas.

**Enable Opposition Forces to Defeat the Regime.** If applied with sufficient effort, airpower (along with material and advisory assistance to the Syrian opposition) could alter the course of the Syrian civil war by striking regime forces, particularly armor and artillery. However, tipping the balance on the battlefield to the point of enabling the opposition to stalemate or defeat regime forces would not automatically translate into influence over subsequent political events in Syria, either in the messy aftermath of an opposition victory or in the longer term, as a new postwar order was established.

**Prevent the Use of Syrian Chemical Weapons.** In spite of often casual rhetoric about “taking out” Syria’s chemical weapon capability, the practical options for doing so have serious limitations, and attempting it could actually make things worse. Locating all Syrian chemical weapon facilities (e.g., storage sites, production facilities) and defining them well enough to design effective conventional air strikes against them would require very precise and detailed intelligence. And depending on the weapons employed in the strikes and the exact nature of the chemical weapons to be destroyed, collateral damage from the attacks could be substantial.

Prospects for eliminating Syria’s extensive chemical weapon capabilities through air attack do not appear promising. At the very least, accomplishing this objective would require ground forces, and even then it may not be possible to neutralize the regime’s entire arsenal. Airpower could be used, however, for retaliatory threats or attacks to deter further chemical weapon use. Airpower could also be used to target the regime’s most-efficient ways of delivering chemical weapons, thereby decreasing the regime’s capacity to inflict mass casualties through their use.

Above all, it is essential to note that each of these aerial intervention measures could lead to further, more-extensive U.S. military involvement in Syria, particularly if it did not achieve its initial strategic objectives. Also, it could trigger serious escalatory responses from other parties such as Russia. Therefore, anticipating and assessing potential next steps beyond an initial intervention effort should be central to any strategic planning for using airpower in Syria.

## INTRODUCTION

More than two years after the onset of conflict in Syria, which is estimated to have killed more than 100,000 and generated nearly two million refugees,<sup>1</sup> the United States and its partners have yet to intervene in a decisive way. This hesitancy is based on numerous factors, including general war weariness, reservations about elements of the Syrian opposition, questions about the potential efficacy of intervention, and fears of escalation. Summarizing the lack of appealing options, President Barack Obama remarked in May 2013, “There’s no magic formula for dealing with an extraordinarily violent and difficult situation like Syria’s. If there was ... I would have already acted on it and it would already be finished.”<sup>2</sup>

Despite the complexity and risks associated with an intervention, humanitarian and strategic considerations are fueling a policy debate about what the West could do to improve the situation in Syria short of deploying soldiers on the ground. The United States and its European and Middle Eastern allies have already taken a series of measures that include sanctioning Bashar al-Assad’s regime, recognizing the Syrian opposition, bolstering regional defense, establishing buffer zones on Syria’s border to receive refugees and provide humanitarian assistance, and sending nonlethal and lethal aid to the Free Syrian Army (FSA). With those parts of the toolkit largely tapped but no end of the conflict in sight, there are growing calls to use airpower for direct military intervention. The large-scale use of chemical weapons has made the calls for military intervention more urgent.

The terms of the debate are evolving quickly, but three proposals for aerial intervention have emerged as particularly prominent. The first is to establish safe zones inside Syria with the aim of shielding civilians from the regime’s indiscriminate use of force. The second is to establish a no-fly zone (NFZ) over parts or all of Syria, which its advocates argue would have the dual benefit of protecting civilians and aiding opposition forces. The third and most assertive proposal is to strike both the Assad regime’s air and ground forces in an effort to turn the tide of the conflict in favor of the rebels.

These proposals are contentious. Proponents of intervention are quick to cite recent developments that include Israeli air strikes in Syria, Hezbollah fighting alongside Assad’s forces, and the Assad regime’s use of chemical weapons as evidence of the need for military action. In response, voices of caution warn of a quagmire, international fallout from intervening in the face of opposition from Russia and China, the increasingly promi-

nent presence of al Qaeda–affiliated fighters within the rebels’ ranks, and the general disunity of the opposition as reasons to stay out.

This analysis does not argue for or against intervention in Syria. Rather, it seeks to inform policy decisions by outlining the possibilities, requirements, and risks of various airpower options so that decisions about intervention in Syria are assessed based on realistic operational and strategic considerations. However, this analysis is not intended to take the place of detailed operational assessments based on accurate intelligence data that, in the case of Syria, are largely unavailable outside of the classified domain.

## Strategic Objectives

An aerial intervention in Syria might seek to achieve one or more of a variety of goals. Some of these would be purely political—states often act in large part to send messages, to express concern or umbrage about events, or to improve their standing with domestic constituencies or the international community. However, three potential concrete military objectives for such a campaign stand out:

- **Protect Civilians.** The most obvious motivation for intervening in the Syrian civil war would be to reduce the suffering of its innocent victims. The Syrian Observatory for Human Rights estimates civilian deaths at more than one-third of total fatalities, some 35,000 to date,<sup>3</sup> while the UN calculates that the conflict has driven from their homes 4.25 million internally displaced persons (IDPs) and 1.9 million international refugees, more than one-quarter of the Syrian population.<sup>4</sup>
- **Limit or Contain the Conflict.** Overlapping with the pursuit of civilian protection, an intervention could be driven

With no end of the conflict in sight, there are growing calls to use airpower for direct military intervention.

by the desire to prevent the war in Syria from spreading into adjacent countries as a result of refugee flows or cross-border attacks by Syrian forces<sup>5</sup> or to contain the escalation of fighting, particularly by preventing or halting the use of chemical weapons.

- **Change the Course of the War.** The most maximalist objective would be to change the trajectory of the civil war either by bringing about a military victory for the rebels or, less ambitiously, by preventing a Syrian regime victory with the hope that a stalemate might provide the political space in which a settlement of the conflict could be negotiated. However, making an opposition victory possible would leave open the question of what type of the regime would succeed that of Assad, and it could set the stage for massive retaliation against Alawites and other “strategic minorities” that many of Syria’s Sunni Arabs perceive as Assad’s political base.

This classification simplifies a very complex problem set. In reality, an intervention might pursue several objectives at once. For example, a no-fly zone would likely make some contribution both to protecting civilians and to changing the course of the war. Conversely, certain objectives could be pursued through a number of alternative military actions. If the priority is to change the course of the war in the opposition’s favor, policymakers could either neutralize the regime’s use of airpower or establish safe zones inside Syria that provide the opposition with some breathing room and areas from which to stage operations. Similarly, the goal of reducing civilian suffering could be pursued either by trying to bring the war to a swift conclusion through victory by one side or by creating a situation in which a settlement of the conflict could be negotiated. Thus, the reason why an intervention is occurring does not indicate what it would, or should, entail. It is to this question that we now turn.

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## THE STRATEGIC LANDSCAPE

Geography and demography are central to thinking about intervention in Syria. The Syrian population of some 22.5 million is concentrated in the western portion of the country, with 35 percent living in the four largest cities: Aleppo, Damascus, Homs, and Hama.<sup>6</sup> The Alawi sect, with which the regime is strongly associated, has its roots in the northwest portion of the country, near the Mediterranean Coast, while the Sunni-Arab majority, from which the opposition draws heavily, can be found through-

out Syria (see Figure 1). Although overreliance on the lens of ethnic and sectarian composition risks creating a caricature of Syria, a country that is much more than just a collection of competing primordial identities, the conflict has an important sectarian dynamic and the character of the fight has further sharpened those divisions.

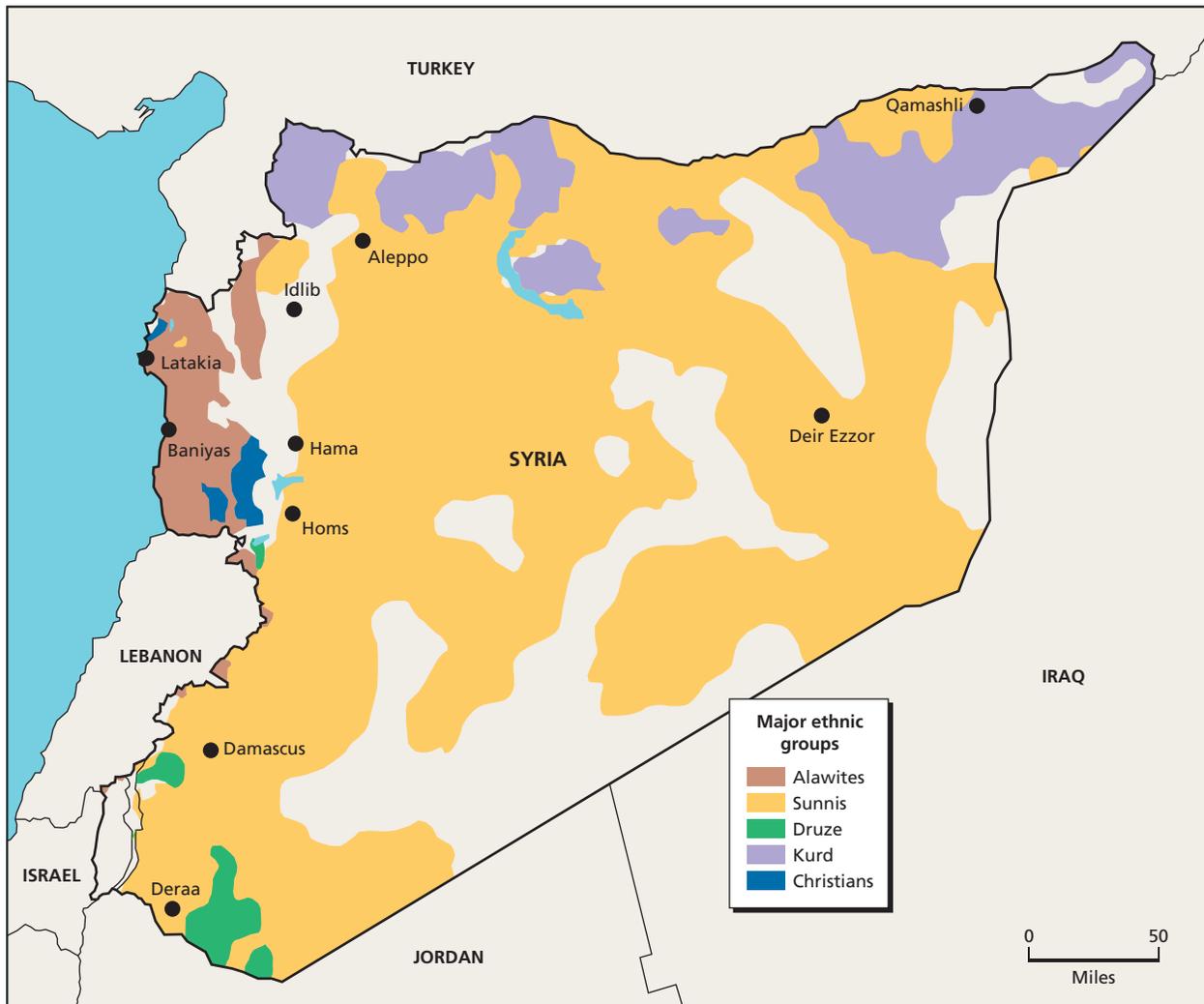
The conflict comprises numerous fronts that now extend across most of the country.<sup>7</sup> However, the fiercest fighting has taken place along the north-south corridor that links Damascus with Homs, Hama, Idlib, and Aleppo. Beyond encompassing the main population centers, this corridor has particular strategic value since it links the Assad regime’s seat of power (Damascus) with its political base in the northwest. It also contains important supply routes that both the regime and the opposition use to move equipment and fighters to the fronts.

## Syrian Airpower and Air Defenses

The Syrian Arab Air Force (SAAF) and Syria’s air defense forces are both large in number but of uneven modernity and sophistication, and both have unimpressive performance records of long standing. The SAAF’s inventory nominally includes more than 350 fixed-wing combat aircraft, but many are antiquated and serviceability is uncertain. Also, these aircraft are based at a relatively small number of bases that are vulnerable to attack, several of which have been seized by opposition forces. Maintenance, pilot training, and spare parts availability are far inferior to that of the United States and its allies. In the civil war, SAAF fighters and helicopter gunships have been used since 2012 for attacking civilian populations in areas opposed to the regime and for striking opposition forces (although the fighters’ lack of precision limits their effectiveness against military targets), and SAAF helicopters and transport aircraft play an important role in providing mobility for Syrian ground forces.

The capabilities of the Syrian integrated air defense system (IADS) have become the subject of much recent public debate.<sup>8</sup> The primary components of the Syrian IADS are radar and surface-to-air missile (SAM) systems that were manufactured in the Soviet Union during the Cold War and supplied to Syria in the 1970s. Some Syrian SAMs have subsequently been upgraded, but neither Russia nor China has chosen to supply Syria with the most modern systems they use themselves. The United States is very familiar with the types of equipment the Syrians operate, having fought against similarly armed opponents in Iraq and Serbia, and U.S. pilots regularly train against simulations of threats from these weapons. Israel has penetrated

**Figure 1. Distribution of Syrian Ethnic Groups**



SOURCE: Data from M. Izady, "Gulf/2000 Project," web page, 2003. As of February 15, 2013: <http://gulf2000.columbia.edu/maps.shtml>

NOTE: Map does not reflect complex ethnic divisions in main population centers.

these systems both in its 2007 strike on a Syrian reactor and in its January and May 2013 strikes on weapons bound for Hezbollah. The Israeli strikes were isolated attacks, easier missions than sustaining an air superiority campaign, but they do underscore the penetrability of Syria's air defense systems.

The Syrian IADS can be thought of as having two components: large, essentially fixed systems and smaller mobile SAM systems such as the SA-6 and its successors, the SA-11 and SA-17. The fixed components of the IADS would be readily destroyed early in a campaign against them, largely by air- and sea-launched cruise missiles. If the Syrians are canny, like the Serbian air defenders during the Kosovo war, they would be

able to hide some of their mobile SAMs, posing a latent threat to aircraft operating over Syria for weeks or months until they were hunted down or they revealed themselves in order to attack, inviting strikes by U.S. aircraft and missiles. Consequently, defense suppression assets would need to remain in place long after an initial wave of attacks on the IADS.

This mission would fall most heavily on the U.S. Air Force (USAF). While some U.S. allies have limited capabilities for suppression of enemy air defenses (SEAD), the most modern U.S. systems are superior, and U.S. pilots are well trained in their use. This means that U.S. SEAD capability would have to be employed continuously throughout any conflict. A SEAD

mission of this type could be performed and sustained by the USAF and U.S. Navy within the current force structure; in Libya in 2011, the SEAD mission initially involved several hundred cruise missiles and approximately 175 strike aircraft but was subsequently sustained with very few aircraft, albeit against a considerably weaker air defense threat.<sup>9</sup>

There have been recent reports that Russia will begin transferring modern, long-range S-300 (SA-10) missile systems to Syria. These are highly capable SAM systems that could destroy aircraft deep within Turkish or Israeli airspace. Consequently, they would be a top priority for elimination in an air campaign against the Syrian IADS, and they could come under attack even sooner if Israel decided to strike them before they could be integrated into Syria's air defenses.<sup>10</sup> However, attacking an IADS that includes mobile SA-10s is a potentially daunting task even for a very capable attacking force. Depending on how the campaign is designed, it can involve a very large commitment of weapons, not only initially but also over the course of an extended campaign, as both attackers and defenders adapt their tactics. Much depends on the competence of the combatants. In the past, Syrian air defense operators have been strikingly incompetent and might continue to be in the future, but there is an inherent element of risk that needs to be considered in U.S. calculations.

Russia appears to be using the threat of delivery as a means of deterring a Western military intervention in Syria. In the past, it has made similar threats to transfer S-300s to Iran without following through. Thus far, Moscow has calibrated its support to Damascus based on the levels of assistance Western countries are providing the opposition. Should the pro-opposition camp ratchet up its support for the FSA, it could find itself in a tit-for-tat dynamic in which Russia responds by escalating the levels of assistance it provides the Assad regime.

## Western Airpower and Bases

The question of which countries would participate in an aerial intervention in Syria is, of course, uncertain. Even without U.S. involvement, a coalition of several of the other larger air forces in the North Atlantic Treaty Organization (NATO) would greatly overmatch the Syrian air force. However, because NATO depends heavily on the United States for a number of “enabling” capabilities, including SEAD platforms, long-range cruise missiles, and combat search-and-rescue (CSAR) forces, U.S. participation in the coalition would be essential for most intervention strategies. If the United States did decide to

intervene using airpower, beyond launching limited punitive air strikes, it appears likely that it would act in concert with several allies, some of which, including Turkey, have already expressed support for such an effort. Perhaps the most likely intervention force would comprise large contingents from the U.S. and Turkish air forces, along with smaller contributions from U.S. naval aviation, the French air force, and possibly the French navy; some Arab states, such as Qatar, might also participate. A UN mandate for intervention would almost certainly increase the number of states interested in contributing forces, but such a mandate appears very unlikely at present, given the opposition it would face from Russia and China in the Security Council.

The most-attractive bases for U.S. land-based airpower in such an operation would be Incirlik Air Base in southern Turkey and RAF Akrotiri, a sovereign British base on the southern coast of Cyprus. The USAF has operated out of both bases for many years, and each has modern facilities, a runway suitable for operating even the largest aircraft, and large ramp areas capable of hosting hundreds of aircraft if needed.<sup>11</sup> Notably, both bases are close to areas of particular interest in Syria (see Figure 2), enabling relatively short durations for strike sorties and reducing the requirement for tanker support compared with operations at longer ranges. During the 2011 intervention in Libya, even the closest NATO bases, in Sicily and Crete, were well over 300 miles from the nearest targets in Libya; Incirlik and Akrotiri are considerably closer to Damascus, and closer still to the regime's power base in northwestern Syria, as would be carrier-based naval airpower operating in the eastern Mediterranean. If additional bases were needed, Turkey could provide a number of major air bases that are conveniently close to Syria, as might Jordan, while long-range aircraft would likely operate from NATO bases in Europe or bases in Qatar or elsewhere on the Arabian Peninsula.<sup>12</sup>

In the past, Syrian air defense operators have been strikingly incompetent and might continue to be in the future.

## MISSIONS FOR AIRPOWER

The strategy of a campaign should be derived first and foremost from its objectives, both military and nonmilitary. However, expectations about what will and will not be achievable, as well as potential costs, also shape choices about which objectives are worth pursuing. Therefore, the balance of this report focuses on assessing the potential rewards and risks of five military missions that U.S. and allied air forces might be called on to undertake in a Syrian intervention. These military missions differ slightly from those outlined by the Chairman of the Joint Chiefs of Staff, Gen. Martin Dempsey, in his July 19, 2013 letter to Senator Carl Levin outlining options for military intervention in Syria.<sup>13</sup> Notably, this report does not address the train, advise, and assist mission outlined in the letter, given its focus on the use of airpower. However, this report does consider an additional option that the Dempsey letter does not: striking Assad's ground forces. Finally, while both General Dempsey's letter and this report attempt to capture the risks involved in executing the missions, this report takes the analysis a step further by linking each mission to the broader strategic

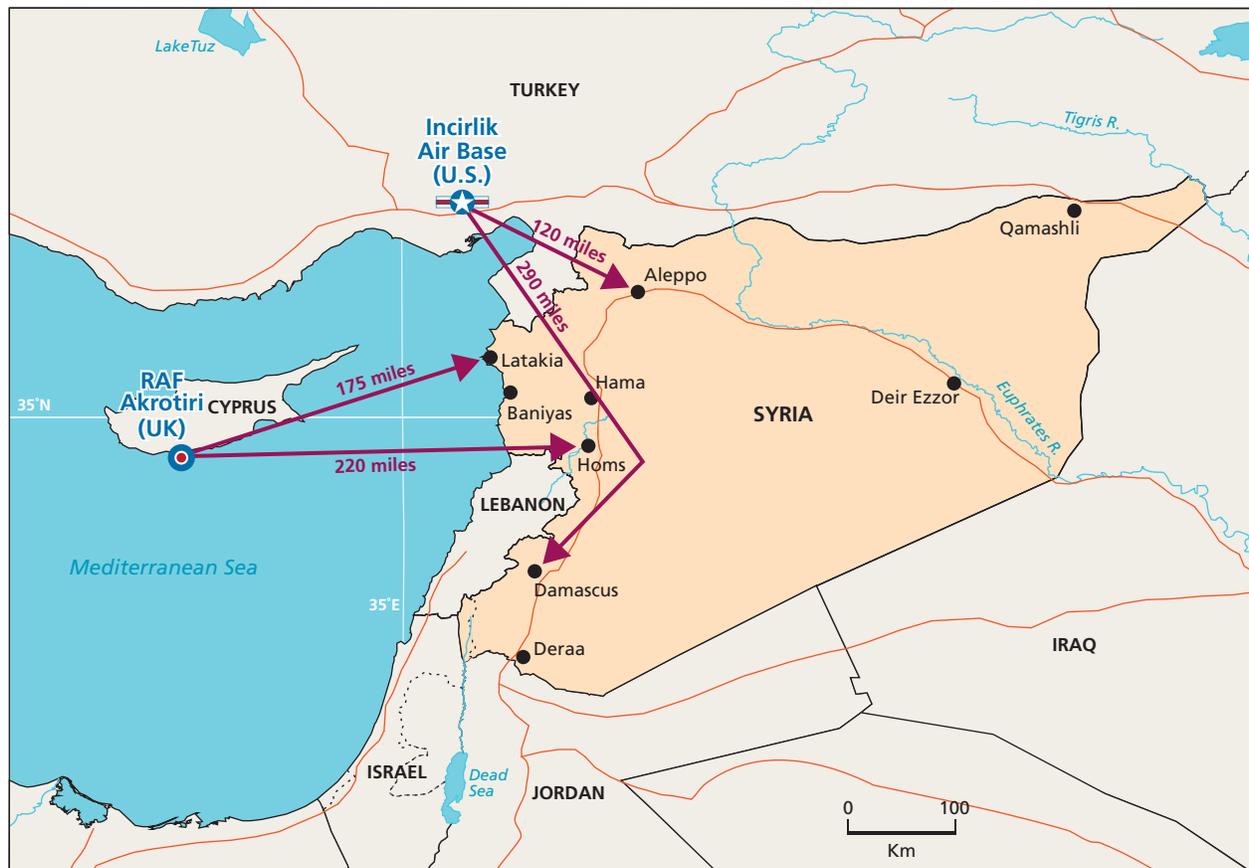
objectives of protecting civilians, containing the conflict, and changing the course of the war (see Table 1, page 14).

### Negate Syrian Airpower

The mission most often proposed for Western airpower in discussions of intervention in Syria is to deny the Assad regime the use of airpower as a means of attacking Syrian civilians and as a tool to support and facilitate military operations against opposition forces. This mission could be accomplished in two ways.

The first option would be to establish and maintain an NFZ to keep the Syrian air force from flying, or at least from approaching areas where it might attack rebel forces or their supporters, by threatening to shoot down aircraft that violate a specified exclusion zone (which, if it did not encompass the entire country, would likely include the airspace above and around the SAAF's bases, thus proscribing its aircraft from taking off). The United States and its allies have some experience conducting such missions in the Balkans and Iraq in the

Figure 2. Syria and Its Vicinity



1990s. The second option would be to simply destroy the Syrian air force or render its bases inoperative, thereby grounding its aircraft without having to rely on intimidation to achieve the result. This was the approach used in Libya in 2011, where the so-called NFZ actually amounted to destroying the Libyan air force on the ground at the outset of the operation. In Syria, the latter approach would be more decisive and, in many ways, could be less challenging than the former, although it might be harder to enlist international support for such an unconditionally destructive strategy.

### **What Would Be Required?**

The resources needed for an NFZ would depend on the extent of the exclusion zone (here we will assume an NFZ over all of Syria)<sup>14</sup> and, more importantly, on whether the SAAF decided to defy or submit to it. In any event, the required forces would include the following five principal elements in addition to the command and control, intelligence, communications, and other resources that underpin any air campaign:<sup>15</sup>

- fighter aircraft to intercept and, if necessary, shoot down aircraft violating the NFZ
- defense suppression aircraft to attack Syrian air defenses kinetically or electronically if they shot at the NFZ patrols (some fighters can perform both missions)
- airborne early warning and control aircraft such as E-3 AWACS (Airborne Warning and Control System) aircraft to monitor Syrian airspace (along with ground-based radars in adjacent countries) and manage the patrols
- tankers to refuel patrolling and orbiting aircraft
- CSAR forces to retrieve downed aircrew from hostile territory.

The size of the fighter/SEAD force needed for such an operation would depend on how intense the NFZ was to be. To have high confidence that any aircraft violating the NFZ (including helicopters making short flights) would be intercepted could require multiple orbits of combat aircraft on patrol at a time, but simply making flying a risky proposition through more-intermittent presence might be enough to deter the SAAF from taking off.<sup>16</sup> Monitoring fixed-wing activity in all of the relevant Syrian airspace could be accomplished by one AWACS-type aircraft orbiting offshore, along with ground-based radars in Turkey and Jordan (though maintaining several AWACS orbits over Jordan and Turkey would be better for detecting helicopter flights), but the participating nations would likely insist that there be packages of CSAR helicopters and personnel

on alert in Turkey, Jordan, and the eastern Mediterranean during missions over Syria.

Although recent discussion of NFZs typically includes assertions that an NFZ would have to begin with an all-out attack against Syria's air defense system, this is not strictly true, as the example of the Bosnian NFZ illustrates. However, the need to launch such an attack if patrolling aircraft come under fire by Syrian air defenses to a greater extent than could be dealt with through more-limited reprisals ought to be incorporated into NFZ planning. Moreover, missions such as NFZ enforcement and protecting safe areas would be much more straightforward and less dangerous if Syrian air defenses had already been neutralized. (We address such a SEAD campaign as a separate mission below.)

The longer-term force requirements to maintain an NFZ would be highly dependent on the character of the Syrian response. When targeted air forces mostly stay on the ground to avoid being attacked, NFZs can drag on for years, demanding prolonged and expensive rotational deployments of aircraft<sup>17</sup> during which the aircrews involved have little opportunity for training in other, more challenging missions. Counterintuitively, an NFZ over Syria might be least burdensome if the SAAF refused to be deterred by it, provoking the intervening powers to instead eliminate Syria's airpower outright.

Destroying or incapacitating the Syrian air force would entail attacking a relatively small number of bases by striking runways and refueling capabilities, as well as aircraft parked in shelters or in the open.<sup>18</sup> Using cruise missiles and other stand-off weapons, this could be done from outside Syrian airspace, avoiding the need to suppress the Syrian IADS on a large scale.<sup>19</sup> Because repairing damage to runways and other operating surfaces is reasonably straightforward, restrikes would be necessary to guarantee that surviving Syrian warplanes remain grounded, while helicopters would be inviting targets for direct attack. Nevertheless, the overall level of effort required would not be great.

### **What Might Be Accomplished?**

Keeping Syrian airpower from flying, whether by deterrence or destruction, would of course protect Syrian civilians from aerial attack. However, air strikes account for only some 10 percent of civilian casualties in Syria,<sup>20</sup> so it is reasonable to expect that greatly reducing the civilian death rate would depend also on impeding or preventing the use of artillery and other ground

forces against the Syrian populace (as discussed in subsequent sections).

An effective NFZ would also prevent SAAF air attacks against opposition forces, deny the benefits of tactical airlift to the Syrian army, and prevent aerial resupply of the regime from external sources. This would certainly benefit the FSA in its fight against regime forces; less clear, however, is whether it would fundamentally change the trajectory of the conflict, since the regime's combat power lies overwhelmingly in its ground forces. Prior to the wave of regime battlefield successes that began in April 2013, it appeared that the marginal effects of removing Syrian airpower from the conflict might be sufficient to tip the balance decisively in favor of the opposition. However, as the tide appears to have shifted against the FSA, reversing the Syrian army's ascendancy would likely require attacks against its forces, as well as those of the Syrian air force.

### ***What Are the Risks?***

If undertaken with enough protection to deter surface-to-air attacks against patrolling aircraft, maintaining an NFZ over Syria would be a relatively low-risk proposition in military terms. In more than two years of patrols in Operation Deny Flight, only two U.S. aircraft were shot down (both pilots were rescued), and no U.S. aircraft were lost to enemy action in the Iraqi NFZs (although Iraq's IADS had been demolished during the preceding war). Imposing an NFZ in Syria would certainly entail greater physical risk, but there is little reason to expect that Syrian air defenses would be able to inflict heavy losses on patrolling aircraft—and even fairly modest levels of resistance might well provoke a widespread attack against Syrian air defenses.

Instead, the risks of intervening against Syrian airpower would reside at the strategic level. Establishing an NFZ could lead to prolonged and thus expensive involvement in Syria if the results were indecisive and patrols had to be maintained for months or years as the conflict dragged on. Alternatively, if the

United States and its allies embarked on a measure to negate Syrian airpower, but the regime was able to carry on successfully with the war, it could lead to great pressure to intensify the intervention rather than appear ineffective. A final risk would be that third-party states such as Russia and Iran might increase their support to the Assad regime in response to such an operation, for example, by sending more-advanced weapons to bolster the regime's position and prospects. Such an escalation in response to increased Western involvement in Syria would be quite consistent with Russian behavior in the past.

### **Neutralize Syrian Air Defenses**

A second potential mission would be a major effort to neutralize Syrian air defenses (which would also presumably include destroying the Syrian air force on the ground, as discussed previously). This would almost certainly be performed in conjunction with some other mission; for example, it could be a response to major Syrian resistance to an NFZ, or it could be the opening stage in a campaign to provide air support to Syrian opposition forces or defend safe areas.

### ***What Would Be Required?***

A campaign against Syrian air defenses would begin with an intense air operation attacking SAAF air bases and targets associated with the Syrian IADS. This would involve several hundred strike and defense suppression aircraft and hundreds of sea- and air-launched cruise missiles supported by manned and unmanned surveillance and reconnaissance aircraft; long-range bombers; substantial CSAR forces; and a large contingent of intelligence analysts, targeteers, and other personnel involved in campaign planning and management at the air operations center and other locations. "Non-kinetic" electronic attacks and cyberwarfare might also play a major role in facilitating the campaign depending on the details of the capabilities on both sides. Following the attacks on air bases and the fixed elements of the IADS during the initial days of the campaign, which

As the tide appears to have shifted against the FSA, reversing the Syrian army's ascendancy would likely require attacks against its forces.

ought to meet with a high degree of success, the focus would shift to the more-gradual process of hunting down mobile air defense systems and protecting aircraft conducting other missions against the residual threat posed by these weapons. General Dempsey estimated that neutralizing the Syrian IADS could require 700 sorties or more,<sup>21</sup> a number which a force of a few hundred aircraft could accomplish in a matter of days, along with striking a dozen or so Syrian air bases. In practice, however, the effort to suppress and destroy mobile SAM systems would be much more prolonged, assuming that their operators took steps to keep them as inconspicuous as possible. More important, the need to be ready to deal with threats from residual air defense capabilities could place significant limits on U.S. air operations over the duration of the campaign, as in a number of past conflicts.

Whereas imposing an NFZ over Syria would be a task that U.S. partners could take on with little or no American participation, U.S. forces would be essential to make success at a low cost likely in a major campaign against Syrian air defenses.

### ***What Might Be Accomplished?***

While suppressing Syria's air defenses is feasible and should be possible with relatively few losses, it would be naïve to assume that it would be as bloodless for the United States and its allies as was the corresponding campaign in Libya. Syria has an IADS that is much more considerable than Qaddafi's feeble air defenses in 2011, but it is still a far cry from the sort of threat environment that U.S. airpower faced over North Vietnam or that Israel confronted in the October War of 1973. (In fact, the majority of Syria's major air defense weapons date from that era, while U.S. SEAD capabilities have advanced greatly over the past four decades.) However, defeating the Syrian IADS would not be an objective in and of itself, its value would lie in what it enabled the intervening powers to do after having established air supremacy over Syria.

### ***What Are the Risks?***

While a campaign against Syrian air defenses would of course be personally risky for the aircrew flying into harm's way, attrition rates should not be high, given the imbalance in capabilities between the combatants. Even with low loss rates, the United States could run the risk of a high-value aircraft (such as a B-2) being shot down by either a "lucky shot" or clever tactics. That possibility could have a disproportionate impact on

The value of defeating the Syrian IADS would lie in what it enabled the intervening powers to do after establishing air supremacy.

the overall conduct and general perception of the success and effectiveness of the campaign, as did the shooting down of a USAF F-117 over Serbia in 1999. At the strategic level, the risks would parallel those involved in conducting an NFZ: greater entanglement in the conflict (assuming that were not already part of the intervention plan) and escalation. Being rendered essentially defenseless against air attack and facing the prospect of this condition being exploited by their enemies could provoke the Assad regime and its allies to take more-extreme measures than if it had merely been denied the freedom to fly—for example, missile or terrorist attacks against bases being used in the campaign or other Western targets might appear worthwhile. Finally, strikes against air defense targets located in populated areas entail the inherent risk of causing civilian casualties. Although U.S. and NATO air forces tend to be quite effective at minimizing such casualties, the intensity of an initial SEAD campaign, along with the widespread use of anti-radiation missiles, would limit the extent to which every strike could be carefully vetted for collateral damage risks beforehand. Moreover, given that the Assad regime has already employed Scud missiles, chemical weapons, and plain-clothed shabiha militias against the Syrian people, it is reasonable to assume that the regime would attempt to increase the incidence of civilian casualties by locating military systems near populated areas.

### ***Defend Safe Areas***

A seemingly natural course of action to provide protection to Syrian civilians, who have been killed by the tens of thousands and displaced from their homes by the millions, would be to create safe areas where they could be substantially (though not completely) protected both from air attack and from artillery

and other ground forces, which have inflicted the most harm on them to date. Such safe areas could take the form of zones along the Turkish and/or Jordanian borders or enclaves more extensively distributed across Syria. One of the challenges of protecting Syrian civilians is that population centers subjected to attack by the Assad regime can be found throughout most of the country; therefore, safe zones set up as enclaves on Syria's northern or southern border could only protect a small proportion of Syria's population and would presumably increase the number of IDPs as Syrians fled to them. The people taking refuge in these areas would also need access to supplies, so any safe areas not adjacent to Syria's borders would require connecting logistics corridors to be protected as well. The more scattered the safe areas, and the longer their borders, the more difficult the task of protecting them would be.

The most important consideration for this mission is that protecting people from artillery or missile bombardment, or from direct attacks by army or paramilitary forces on the ground, is much more difficult than intercepting aircraft attempting to bomb them. Western airpower could play an important role in accomplishing this, but unless regime forces acquiesced to demands to leave the safe areas alone, effectively protecting them against predation would require forces on the ground. If these forces were not provided by the United States and its allies (as we are assuming here), they would need to be provided by the Syrian opposition, in which case safe areas for civilians would presumably become indistinguishable from havens for the FSA. In this case, intervening with airpower to protect them would be tantamount to outright military intervention on the side of the rebels, except that the air support would technically be limited to defensive battles.

### ***What Would Be Required?***

The size of the air forces needed for this mission would depend on the extent and locations of the safe areas, the severity of the threat from regime attacks, and the size and capabilities of the ground forces defending them. The types of forces needed would include those required to maintain an NFZ over the areas (assuming Syrian airpower was still functioning), in addition to the air-to-surface capabilities to attack ground forces threatening or shelling the safe areas. For defending areas along a friendly border, strike aircraft might be usefully augmented by long-range artillery, such as Guided Multiple-Launch Rocket Systems, firing into Syria. The intelligence, surveillance, and reconnaissance (ISR) challenges associated with defending

against ground attacks—including bombardment from long-range artillery or even longer-range missiles—would be considerable, calling for the extensive use of manned and unmanned ISR platforms.

A final requirement, likely the least visible but arguably the most important, would be effective liaison between the air forces providing cover for the safe areas and the forces defending them on the ground. This could range from deploying tactical air controllers to call in air strikes to more ad hoc mechanisms of coordination and intelligence sharing; the advisors that several Western nations deployed to Libya in very small numbers in 2011 are an example of an option between these two extremes. Such collaboration and coordination with opposition forces would entail significant political challenges, given that a substantial and growing proportion of the anti-regime forces are militants whom the United States considers unsavory at best and dangerous at worst. Although it is possible to be selective when choosing with whom to work, denying al Qaeda-associated fighters access to safe areas would be out of the control of the air forces protecting them.

### ***What Might Be Accomplished?***

While establishing safe areas would increase the physical security of the Syrian civilians within them, the extent of this security improvement would depend on a host of factors, including the safe areas' size, location, and other features; the size, capabilities, and behavior of the ground forces defending them; the level of resources devoted to the aerial protection effort; the inclination of regime forces to attack the areas despite this protection; and the conditions the civilians would face in the absence of the safe areas. In any event, lest expectations be unrealistically inflated, it would be essential to recognize from the outset of any such mission in Syria that the protection provided to contested safe areas would always be partial, not complete.

The challenge of protecting civilians is illustrated by past U.S. experience with similar missions in Bosnia, northern and southern Iraq, and Libya, the outcomes of which varied considerably. While these precedents do not demonstrate that protecting civilians with airpower is impossible, they do show that it is difficult at best, and potentially hopeless, if friendly forces on the ground are weak or unreliable and the terrain where enemy units need to be monitored and targeted is complex. In that case, even regime forces compelled to operate in a dispersed, irregular mode to reduce their vulnerability to air strikes would

be sufficiently strong to mount highly destructive attacks against civilian populations. In Syria's case, the challenge is exacerbated by the fact that the beneficiary of the intervention, the FSA, is also implicated in civilian deaths. Thus, there is a risk that safe zones could be used as a launching point for FSA reprisals against communities perceived to be aligned with the Assad regime.

### **What Are the Risks?**

As with maintaining an NFZ, but to an even greater extent, extending a ground exclusion zone over and around safe areas in Syria could become a prolonged and demanding commitment if the war were to drag on for a long time, as it currently appears poised to do, and it might well lead to even deeper involvement in the war. Conversely, having taken on the responsibility of protecting civilians in the conflict, there is the political risk of failure should the safe areas not live up to their name, like Srebrenica in 1995. There is also an inherent risk of causing significant unintended casualties among civilians or opposition forces in the normal course of such an operation, which the Assad regime might seek to initiate and would certainly work to exploit. Countries leading such an intervention would be well served to make this fact clear to their citizens and to the international community before its truth is demonstrated by events.

There are two other issues associated with this mission worth noting. First, protecting safe areas from the air without controlling them on the ground would give the United States and its partners little ability to shape which elements within the Syrian opposition most benefit from the intervention. Second, the Syrian regime's (or its allies') response to the establishment of safe areas might include retaliatory terrorist, missile, or other attacks against air bases and other targets outside Syria with the hope of impeding the operation or demotivating its partici-

pants. Overt attacks against the United States or its partners would be a risky act of desperation, but if the creation of safe areas appeared to be the first step on the road to regime change in Damascus—as indeed it could be—the regime might consider this its best option. On a milder level, establishing safe areas to the benefit of the FSA could encourage the Assad regime's external supporters to provide greater assistance to shore up their ally's position.

### **Enable Opposition Forces to Defeat the Regime**

Most assertively, airpower could be given the job of tipping the military balance in favor of the Syrian opposition, enabling it to succeed on the battlefield where it previously could not, either to bring about the fall of the Assad regime or to create a stalemate that might lead toward a negotiated resolution of the conflict.<sup>22</sup> This was how airpower was employed by the United States in Afghanistan in 2001 and, in effect though not in declaratory policy, by NATO in Bosnia in September 1995 and by the NATO-led coalition in Libya in 2011.

### **What Would Be Required?**

A full-scope aerial intervention on the side of the Syrian opposition would presumably include the destruction of the Syrian air force and an extensive campaign against Syrian air defenses. Beyond this, it would call for the use of fighters, bombers, and remotely piloted aircraft to strike Syrian army and other regime targets, and these forces would be heavily supported by ISR platforms and infrastructure, tankers, and CSAR assets. In general, the types of forces required for such an effort would resemble those needed to defend safe areas, although in this case it could be assumed that the Syrian regime would fight back with all the means at its disposal.

Extending a ground exclusion zone over and around safe areas in Syria could become a prolonged and demanding commitment.

The size of such an effort would be scalable, depending on how many forces the United States and its partners wanted to commit. Operation Unified Protector in Libya typically comprised around 50 strike sorties per day during the summer and fall of 2011, although the Libyan rebels would have benefited from a larger number of air attacks had additional strike aircraft, tankers, and ISR capacity been available to the NATO operation. How large an intervention would need to be to enable the Syrian opposition to win, or at least not lose, within a particular length of time would depend on the military balance on the ground, as well as on the terrain and the nature of the fighting, since these greatly affect opportunities for effective air-to-ground attacks. The more beleaguered the opposition's position relative to that of the regime, the more intensive the intervention would need to be to make a profound difference.

The question of who has the upper hand in the war and by what margin is uncertain, even before taking into account the assistance that might yet be provided to both sides in the conflict by their external sponsors, allies, and sympathizers. But the current trajectory of the conflict—the FSA has been losing ground to the regime in recent months following a long period during which their ultimate victory had appeared likely—suggests that the opposition would need substantial outside support in attriting Syrian ground forces to seize the upper hand.

### ***What Might Be Accomplished?***

A sufficiently large U.S.-led aerial intervention in Syria, along with a concerted effort by the United States and its European and Arab partners to enhance the opposition's military capabilities by providing equipment and training—it is hard to imagine the former being pursued without the latter—could presumably shift the balance of power in the war fundamentally, provided the opposition does not implode and the regime does not receive an offsetting infusion of assistance from its patrons. Ultimately, Syria is a relatively small country with limited resources facing an array of opposition forces that it has been unable to crush in two years of effort, and, recent budgetary problems notwithstanding, the United States and its allies have great capability they can contribute to the fight if they decide to do so. In general, if the defeat of the Assad regime were the goal of an intervention, a straightforward effort to support the FSA would be a more efficient way of applying airpower than protecting safe areas, since the latter would presumably allow for less flexibility in targeting regime forces.

An energetic aerial intervention on the side of the opposition—or those elements of the opposition that are palatable partners—could drastically reduce the regime's ability to employ armor and artillery, given the vulnerability of such forces to air attack. This was the general pattern in the Libyan intervention, although a comparable operation in Syria would call for considerably greater effort, given its larger and more-disciplined regime forces. However, it is important to recognize when drawing analogies to Libya that the ultimate defeat of Qaddafi depended not only on the direct effects of airpower but also—indeed foremost—on the transformation of the Libyan rebels into an effective fighting force, a process that took months and was not conducted from the air (although airpower created the breathing room required for the effort).

Three additional questions are salient in considering such an intervention strategy. The first, which is largely beyond the scope of this discussion, is whether an outright opposition victory would be desirable. Second, can U.S. bombing and other assistance enable the opposition to win (or not lose) with a modest investment of resources commensurate with the limited U.S. national interest in seeing that result come to pass? By way of comparison, aerial intervention enabled a rebel victory in seven months of fighting in Libya—a much less populous country, where the regime and the rebels were both weaker than those in Syria—at a sustained level of effort on the order of 50 strike and 50 other sorties per day and at a total cost of about two billion dollars. It is likely that achieving comparable results in Syria would be considerably more difficult and expensive.

Finally, in the event of an operationally successful U.S. intervention, would the conflict remain largely confined to Syria, or would it spread throughout the region to a degree that would make a successful outcome look like a Pyrrhic victory? The potential for instability to spill over Syria's borders into Turkey, Lebanon, Iraq, and beyond appears significant. However, such instability might be less contagious in the event of an intervention leading to a quicker resolution than if the civil war is allowed to run its seemingly indefinite course with Iran, Saudi Arabia, and other regional powers sponsoring or supporting the belligerents. While this question cannot be resolved in the present discussion, its answer is of potentially enormous import.

### ***What Are the Risks?***

In addition to the dangers identified for other missions—escalation, involvement in a prolonged conflict, causing civilian

casualties, and suffering losses of aircrew and aircraft—such a maximalist intervention would entail several more. Clearly siding with the opposition in its offensive, as well as its defensive operations could make the United States complicit in any unsavory actions it might take during the war or its aftermath. Also, intervening from the air with little presence on the ground would likely lead to a situation in which the United States could congratulate itself for helping to subdue or bring down the Syrian regime, but it would have comparatively little influence over subsequent political events in the country. However, the more deeply involved the United States became with the opposition movement, the more likely it would need to remain involved after the fall of the Assad regime, potentially leading to entanglement in continued interfacional or sectarian conflict in Syria after this phase of the civil war.

## Prevent the Use of Syrian Chemical Weapons

Now that several Western nations, international organizations, and the United States have concluded that nerve gas has been used by the Assad regime, the possibility of using air strikes to attack the regime's considerable chemical weapon stockpiles or the delivery systems associated with them has become a subject of much discussion. As the U.S. confirmation of chemical weapons use in June 2013 emphasized, "While the lethality of these attacks make up only a small portion of the catastrophic loss of life in Syria . . . the use of chemical weapons violates international norms and crosses clear red lines that have existed within the international community for decades."<sup>23</sup>

### What Would Be Required?

There are two possible approaches to using airpower against the chemical weapon threat. The first option would be to bomb the

**Table 1. Summary of Mission Assessments**

Mission	Approach	Effort Required	Effectiveness	Value	Notes*
No-Fly Zone	Overhead	low to moderate, depending on intensity	high	marginal for civilians; could be substantial for FSA	potentially prolonged commitment
	Stand-off	low	limited	limited	
Destroy SAAF		moderate	high	(see NFZ)	
Neutralize IADS		initially high, then modest	high vs. fixed sites; mobile SAMs more resilient	facilitates other missions	
Protect Safe Areas	Limited	low to moderate, sustained	depends on degree of threat and cooperation with ground forces	helps protect some civilians	requires effective security on the ground
	Extensive	moderate to high, sustained		helps protect more civilians	
Attack Syrian Ground Forces		depends on conditions, levels of effort, balance between regime and opposition		depends on opposition merits	combined with aid and assistance
Prevent Chemical Weapon Use	Disarm	high	marginal	low	ground forces needed for WMD elimination
	Deter	depends on targets	uncertain	high if successful	

\* All options entail escalation risks.

weapons or their delivery systems. Above all, this would require exquisite intelligence about target locations. However, sufficient intelligence to support a genuinely disarming set of strikes is unlikely to be available.<sup>24</sup> This is not only due to the sensitive nature of the weapons but also because the Assad regime is believed to have extensive chemical weapon stockpiles and multiple means for delivering them, including aircraft, missile forces, and artillery; thus, eliminating the entire suite of delivery mechanisms would be tantamount to disarming the regime entirely. That being said, airpower could be used to selectively target the regime's most-efficient delivery methods in order to reduce the potential lethality of the regime's use of chemical weapons. Among the regime's various delivery mechanisms, air and missile forces would be the highest-priority targets.

The alternative approach, which is arguably more promising but far from assured of success, is to seek to deter future chemical weapon use by striking or threatening to strike targets the Assad regime values highly in retaliation for chemical attacks. While these could be facilities or units associated with chemical warfare, they need not be. Indeed, it is likely that other targets are more valuable to the regime, and threatening assets other than Syria's chemical weapon arsenal might help to avoid creating "use-it-or-lose-it" incentives for additional chemical attacks. Because the Assad regime is involved in an existential fight for survival, history suggests that merely punishing it for using chemical weapons is not likely to be an effective deterrent if it perceives the chemical attacks as having great benefit. However, in the present situation, in which the regime appears to have the upper hand even without using chemical weapons, creating the impression that its prospects will be better if it refrains from further chemical weapon attacks is not an implausible objective.

### **What Might Be Accomplished?**

Coercive threats or attacks might succeed in deterring the Syrian regime from further use of chemical weapons, but they would not eliminate the possibility of this deterrence failing in the future. However, prospects for actually disarming the regime's chemical weapon capabilities using airpower appear dim, since highly accurate information about the location of chemical munitions is likely to be scarce and, even if their location is known, bombing them would entail the serious risk of releasing the agents and thereby causing potentially extensive (and politically costly) casualties among nearby civilian populations. (Attacking Syrian chemical weapon capabilities with the

## History suggests that merely punishing the Assad regime for using chemical weapons is not likely to be an effective deterrent.

goal of reducing rather than eliminating the threat they pose would be likely to feature within a broader intervention on the side of the opposition forces, however.)

Contingency planning for neutralizing Syria's chemical weapon stockpiles has usually focused on using ground forces rather than airpower to secure the weapons rather than simply destroy them. Former USAF General Charles Wald has estimated that such a mission would require 50,000 troops on the ground in Syria, while General Dempsey noted that "thousands of special operations forces and other ground forces would be needed to assault and secure critical sites."<sup>25</sup> Since this report focuses on airpower options in the absence of substantial deployments of ground forces, such a "weapons of mass destruction–elimination" mission falls beyond the scope of this discussion.

### **What Are the Risks?**

Aside from the risk that bombing chemical weapons might cause chemical agents to be released or that attacking aircraft might be lost, the principal risk associated with such attacks is that gradually gnawing away at the Assad regime's chemical weapon stockpiles would create a powerful "use-it-or-lose-it" incentive to relocate chemical munitions to places where they could not be bombed or, worse, employ them while it still had the opportunity to do so. In addition, attacks that damaged chemical weapon storage sites without destroying the weapons would increase the chances of unsecured chemical weapons falling into more-dangerous hands than those of the Syrian regime.

Table 1 summarizes the demands, likely effectiveness, and some of the risks of the various airpower missions outlined above.

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## CONCLUSIONS

This paper does not recommend a particular course or courses of action for the United States and its allies to pursue toward Syria. Choices about whether and how to intervene depend on more than military considerations alone. At the same time, failing to take military strategic and operational realities into account is a recipe for policy disaster. With this in mind, we reiterate the following key points in closing:

- Destroying the Syrian air force or grounding it through intimidation is operationally feasible but would have only marginal benefits for protecting Syrian civilians. Its military impact on the Syrian army's combat power could be more significant.
  - An all-out attack against air defenses is not necessarily a prerequisite for establishing an NFZ, although air operations over Syria would be easier and would entail considerably lower risk if Syria's IADS were neutralized at the outset.
  - Neutralizing the Syrian air defense system would be challenging but manageable; it would not be an end in itself, its value would lie in facilitating other missions.
  - Making "safe areas" in Syria reasonably secure would depend primarily on protection against ground attacks. Airpower can do much to contribute to such protection, but it would also depend on the presence of ground forces able and willing to fend off attacks against those taking refuge in the safe areas.
  - Defending safe areas not along Syria's borders would approximate intervention on the side of the opposition, since establishing them would require attriting regime forces and opposition forces would likely use them as havens and bases for their operations.
- Air strikes against the Syrian army, along with providing lethal military assistance to the opposition, could shift the balance of power in the conflict, provided the opposition is coherent and capable enough to take advantage of such support. Whether the effort and its risks are worthwhile depends on the desirability of opposition success and the acceptability of partnering with opposition forces whose conduct could not be dictated.
  - In an aerial intervention against the Syrian government and armed forces, coalition members could do more to help ensure that the Syrian regime would fall than to determine what would replace it.
  - Airpower could be used to reduce the Assad regime's ability to launch large-scale chemical attacks and potentially to make such attacks appear excessively costly or dangerous. However, eliminating Syria's extensive chemical weapon arsenal would require a large ground operation.
  - Each of these aerial intervention options has the potential to escalate or expand the conflict, to lead to escalatory responses from Assad's allies, or to widen or deepen U.S. military involvement. Therefore, anticipating potential next steps after an initial intervention effort should be central to any strategic planning for using airpower in Syria.

## NOTES

<sup>1</sup> The last official United Nations (UN) report at the time of this writing placed fatalities at 93,000. See Megan Price et al., “Updated Statistical Analysis of Documentation of Killings in the Syrian Arab Republic,” Office of the United Nations High Commissioner for Human Rights, June 13, 2013. Subsequently, the UN Secretary General stated that the toll had surpassed 100,000. See BBC News, “Syria death toll now above 100,000, says UN chief Ban,” July 25, 2013. For refugee figures, see United Nations Office for the Coordination of Humanitarian Affairs, “Syria: Humanitarian Bulletin,” Issue 31, Jul 30–August 12, 2013.

<sup>2</sup> Joint Press Conference by President Obama and Prime Minister Erdogan of Turkey, Washington D.C., May 16, 2013.

<sup>3</sup> CBS News, “U.N. report, new death toll breakdown highlight potential complexities of arming Syria rebels,” June 4, 2013.

<sup>4</sup> United Nations Office for the Coordination of Humanitarian Affairs, 2013.

<sup>5</sup> Patriot batteries have already been stationed in southern Turkey to deter Syrian air and missile attacks on Turkish territory, and the United States has deployed missile defense and fighter forces to Jordan, presumably as a deterrent to any cross-border attacks, as well as to respond to contingencies such as a large-scale chemical weapon attack.

<sup>6</sup> Central Intelligence Agency, *The World Fact Book*, Syria Profile (as of June 10, 2013: <https://www.cia.gov/library/publications/the-world-factbook/geos/sy.html>).

<sup>7</sup> Elizabeth O’Bagy, “The Free Syrian Army,” Middle East Security Report #9, Institute for the Study of War, March 2013.

<sup>8</sup> Anthony Cordesman, “Syria’s Uncertain Air Defense Capabilities,” May 6, 2013.

<sup>9</sup> Planners of Operation Odyssey Dawn considerably overestimated the capabilities of the Libyan IADS when intelligence information was limited, conservatively assuming a higher degree of training and operability than actually existed.

<sup>10</sup> Indeed, Israel’s current defense minister has said Israel would “know what to do” if Syria acquired the system, and Israel already struck a cache of Russian-made Yakhont anti-ship missiles in July 2013, although Israel’s success in eliminating that threat remains a matter of some debate. See Michael Gordon, “Some Syria Missiles Eluded Israeli Strike, Officials Say,” *New York Times*, July 31, 2013.

<sup>11</sup> Between them, Incirlik and Akrotiri have enough ramp space to accommodate more than 1,000 fighter or equivalent aircraft according to standard USAF planning factors.

<sup>12</sup> This discussion assumes that Israel would not participate in a coalition intervening in Syria.

<sup>13</sup> Martin Dempsey, letter to Carl Levin, Washington, D.C., July 19, 2013 (as of August 29, 2013: <http://www.levin.senate.gov/newsroom/press/release/gen-dempsey-responds-to-levins-request-for-assessment-of-options-for-use-of-us-military-force-in-syria>).

<sup>14</sup> An important issue in past wars and NFZs has been the existence of sanctuaries from which enemy aircraft can freely operate or where they can flee to avoid attack. Syria has no obvious neighboring ally to use as such a sanctuary. However, rules of engagement (ROE) can create sanctuaries, for example, by restricting NFZ enforcement to only certain parts of the country (as in Iraq) or by declaring aircraft immune to attack after landing (as in Bosnia).

<sup>15</sup> In June 2013, there was a flurry of interest in the possibility of creating NFZs in border areas of Syria without flying U.S. aircraft over Syria by shooting down violators with SAMs or air-to-air missiles launched from Jordanian or Turkish territory. It is hard to see any operational advantage to this proposal, since attacking into Syrian airspace would still be an act of war, interceptions and target identification would be more difficult, and Syria could fire SAMs against U.S. aircraft over Jordan or Turkey.

<sup>16</sup> Operation Southern Watch, which took place in Iraq during the 1990s, typically involved a wing of fighters (some 72 aircraft) deployed to the Gulf, flying an average of 35 sorties per day. However, it should be noted that the deployment and activity of aircraft in past NFZs in the Balkans and Iraq were shaped by political, as well as operational considerations.

<sup>17</sup> Between 1993 and 1995, NATO aircraft flew some 50,000 patrol sorties during Operation Deny Flight (including both NFZ enforcement and providing close air support for UN peacekeepers), while NFZs over Iraq between 1991 and 2003 consumed more than 225,000 sorties of all types.

<sup>18</sup> Because many of Syria’s hundreds of warplanes are non-operational, it would not be necessary to target them all to effectively eliminate the SAAF.

<sup>19</sup> For one description of how a very limited attack could at least temporarily close all of the major operational Syrian airbases, see Christopher Harmer, “Required Sorties and Weapons to Degrade Syrian Air Force Excluding Integrated Air Defense System (IADS),” Institute for the Study of War, July 31, 2013 (as of August 28, 2013: <http://understandingwar.org/sites/default/files/RequiredSorties-to-DegradeSyrianAirPower.pdf>).

<sup>20</sup> Jeremy Herb, "Gen. Dempsey: US military action might not solve Syrian conflict," *The Hill*, April 30, 2013.

<sup>21</sup> Jeffrey Goldberg, "Pentagon Shoots Down Kerry's Syria Airstrike Plan," *Bloomberg.com*, June 18, 2013.

<sup>22</sup> Whether there is a realistic prospect of a battlefield stalemate paving the way for a negotiated settlement is very uncertain, since the civil war appears to represent an existential fight for survival for both sides.

<sup>23</sup> Statement by Deputy National Security Advisor for Strategic Communications Ben Rhodes on Syrian Chemical Weapons Use, June 13, 2013.

<sup>24</sup> James Quinlivan, "Chemical Weapons in Syria: What Could the U.S. Do About Them?" *RAND Blog*, May 21, 2013.

<sup>25</sup> "Troops needed to secure Syria's chemical weapons, some experts say," *Stars and Stripes*, May 29, 2013.

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## About This Report and the RAND Center for Middle East Public Policy

As the Syrian civil war drags on into its third year with mounting casualties and misery among the civilian population, and now large-scale chemical weapon use, interest in the possibility of military intervention by the United States and its allies is growing in spite of U.S. wariness of becoming involved in a prolonged sectarian quagmire. To many, intervening using airpower appears to offer a way to act at low cost and with limited risk. Without presuming that military intervention is the right course, this report considers the goals an intervention relying on airpower alone might pursue and examines the requirements, military potential, and risks of five principal missions that intervening air forces might be called on to carry out. It should be of interest to policymakers, defense planners, and the broader community of people concerned with U.S. intervention policy in general and with the future of the Syrian conflict in particular.

This research was supported through philanthropic contributions and conducted within the RAND Center for Middle East Public Policy (CMEPP), part of International Programs at the RAND Corporation. CMEPP brings together analytic excellence and regional expertise from across the RAND Corporation to address the most critical political, social, and economic challenges facing the Middle East today. For more information about the RAND Center for Middle East Public Policy, visit [www.rand.org/cmeppp](http://www.rand.org/cmeppp) or contact the director (contact information is provided on the web page).

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