## Appendix A: Discursive Notes

### 1. The A-10's History of Service

The A-10 Thunderbolt II "Warthog" entered service in 1975 and has seen action in numerous operations, including the 1990–91 Gulf War (Operation Desert Storm), the southern and northern no-fly zones enforced against Saddam Hussein's regime following that conflict (Operation Southern Watch and Operation Provide Comfort, respectively), a strike on Iraq in December 1998 (Operation Desert Fox), the North Atlantic Treaty Organization (NATO) enforcement of a no-fly zone over Bosnia and Herzegovina from 1993–95 (Operation Deny Flight) and 1996–98 (Operation Deliberate Guard), the 1999 NATO air campaign in Yugoslavia (Operation Noble Anvil, Operation Allied Force), the Afghan War (Operation Enduring Freedom), the second Iraq War (Operation Iraqi Freedom), and operations against the Islamic State in Iraq and Syria (ISIS) (Operation Inherent Resolve).[1] The A-10's primary role in these operations has been CAS.[2]

The Warthog's CAS performance has been noted throughout its many years of service. A-10s contributed significantly to the air campaign to defend Kosovo, given their ability to pinpoint dispersed and concealed Serbian forces.[3] Allied commanders, indeed President Bill Clinton himself, preferred the A-10s to AH-64 Apache helicopters for close-in targeting, because helicopters were unacceptably vulnerable to anti-aircraft fire.[4] During this conflict two A-10s were in fact hit by anti-aircraft artillery, but neither was brought down.[5] A-10s performed similarly in the early stages of the Afghan War. During Operation Anaconda, in the Tora Bora region of Afghanistan in early 2002, AH-64 Apache helicopters again proved excessively vulnerable to rocket-propelled grenades (RPGs) and small arms fire. In response, A-10s were

deployed to Afghanistan to capitalize on their unique survivability while providing highly precise CAS.[6] A-10s have been an important element of the CAS fleet in Afghanistan ever since. During the 2003 invasion of Iraq, A-10s were a cornerstone of CAS and were strongly preferred by ground commanders for this mission.[7] They performed the vast majority of precision strafing runs, using their cannons to support ground forces.[8] Following a disastrous attempt to use AH-64 Apache helicopters against Iraq's Republican Guard, commanders routinely requested A-10s to suppress enemy ground fire prior to employing attack helicopters.[9] A-10s continue to be a preferred CAS platform, and in late 2014 a small number of them were transferred from Afghanistan to support Iraqi forces battling ISIS.[10] The A-10s contribution to this campaign has been so significant that it has apparently pushed back plans to fully retire the fleet by at least a few years.[11]

**2. Why the Air Force Manages the A-10 Within Its Budget**

The structure of the U.S. defense enterprise looms large in the background of this story. The U.S. military is structured to fight as a joint force while managing programs within the four military services: Army, Navy, Air Force, and Marine Corps.[12] Ideally, program decisions would be made with due consideration for their impacts on joint forces, and single-service priorities would never be a trump card. The A-10 is a complex case, because it supports soldiers, Marines, and special operations forces, but is managed as an Air Force program. Unlike a multi-role fighter, which is an archetypical air weapon, the A-10's operational function is distant from the service that manages it. There are good reasons for the A-10 to remain the responsibility of the Air Force, which manages thousands of jet aircraft with similar organizational, logistical, training, and operational requirements. At least one former U.S. defense official has proposed

aligning the A-10 with its function by moving it to the Army, but this would both involve significant start-up costs and violate a fundamental inter-service agreement.[13] The 1948 Joint Chiefs of Staff Memorandum, or "Key West Agreement," explicitly defines the requirement that the Air Force provide air support, including CAS, for Army troops.[14] If the A-10 is to remain in service, it should continue to be managed as part of the Air Force.

**3. Low-Intensity Conflict Exceptions**

The authors' position that the U.S. has not engaged in a major conventional war since Korea bears some exceptions and qualification. Although the Vietnam War involved a huge deployment of conventional forces and many high-intensity battles, the United States' failure to recognize that it was predominantly engaged in a counterinsurgency campaign was arguably a fundamental cause of its failure.[15] The 1991 Gulf War against Saddam Hussein, a small-scale conventional war, was probably an anomaly. Other regional powers are unlikely to challenge the United States to a pointless contest of direct military force.

Low-intensity conflicts[16] include counterterrorist operations, irregular warfare, and hybrid wars that blend conventional and unconventional elements.[17] As in the cases of the Vietnam War and the 2003 Iraq War, these conflicts may include high-intensity engagements and battles fought by regular forces, but cannot be won by these means.

The United States may conduct low-intensity conflicts against established regimes that enter the conflict with some degree of regular forces, including air defenses. In 2001, the Taliban possessed rudimentary air defenses that were easily swept aside by the United States.[18] The Afghan war that ensued has been predominantly a counterinsurgency in which modern air defenses are not a factor. The 2003 Iraq war began as a conventional conflict in which the United

States crushed Saddam Hussein's regular forces and swiftly gained air supremacy. What followed was the mire of a protracted insurgency. At the outset of the 2011 intervention in Libya, Muammar Qaddafi's regime possessed substantial conventional forces. Nonetheless NATO achieved air supremacy in a matter of hours,[19] and subsequently provided CAS and special operations advisors to irregular rebel forces that defeated the Libyan regime.[20] While each of these cases included conventional engagements to varying degrees, the predominant character of the conflict was low-intensity and the decisive battles were fought on these terms.

**4. U.S. Airpower Supporting Foreign Partners**

There are many examples of U.S. airpower providing CAS to foreign partners in recent decades, both with and without special operations advisors assisting them on the ground.

During the NATO air campaign against Yugoslavia in 1999, allied aircraft provided CAS to Kosovo Liberation Army (KLA) guerillas engaging Serbian forces.[21] Although NATO officially denied aiding the KLA, units in the field used cellphones to contact their base commanders, who then relayed targeting information to NATO officers.[22] This ad-hoc coordination allowed for accurate CAS despite the close proximity of friendly and enemy forces, and despite having no NATO troops on the ground to directly control the strikes.[23]

Following the September 11 attacks, U.S. aircraft pounded Taliban positions in Afghanistan.[24] Initially, U.S. forces coordinated with Northern Alliance resistance fighters but did not place advisors on the ground. This approach proved ineffective, because Taliban forces were well concealed and operated in close proximity to Northern Alliance positions.[25] Subsequently the United States sent special operations teams to assist the Northern Alliance and direct precision airstrikes.[26] Northern Alliance guerillas, with special operations advisors

directing CAS to cover their advance, seized control of the national capital, Kabul, in a matter of weeks.[27] Special operations teams also assisted Pashtun resistance fighters in the south, directing airstrikes in support of the siege and subsequent capture of the Taliban stronghold of Kandahar, which signaled the defeat of their regime.[28] As the war moved into a protracted counterinsurgency, special operations units continued to partner with Afghan tribal irregulars as well as Afghan Army regulars, often directing CAS to protect these partners and defeat insurgent forces.[29]

During the NATO intervention in Libya, allied CAS initially supported opposition forces fighting the regime, with no allied advisors on the ground. When these opposition groups lost momentum and the ground campaign stalled, France and the United Kingdom sent a small number of advisors to assist the rebels.[30] With increased allied air support and NATO advisors coordinating ground operations, these rebel groups were able to defeat loyalist forces and drive Qaddafi from power, ultimately capturing and killing him.[31]

**5. Differences in Terminology Between the Survey and the Paper**

The wording in the survey differed slightly from the terms used in this paper. Plain language was used in the survey to avoid having to define specific terms as we have done in this text. The survey uses "detailed sense of the ground environment" to indicate "ground sense"; "low audible noise signature" for "low noise signature"; "survivability against small arms fire from the ground" for "survivability against direct fire"; and "accuracy of gun/cannon; able to safely engage targets close to friendlies/civilians with low risk of friendly fire/collateral damage" for "gun effectiveness." The terms "loiter time," "radar stealth," "speed," and "range" appear in the survey exactly as they do in this paper. We consider the phrases used in the survey to convey

the same meaning as the terms used in this paper and the differences in wording between the two to be insignificant.

## 6. Comparing the A-10 and F-35 Across the Five Dimensions of CAS and SSR

Ground sense is the capacity to correctly interpret the ground environment. Although sensors can augment situational awareness to some degree, a nuanced sense of the ground generally requires a naked-eye view. The A-10's rounded cockpit and tall canopy sacrifice aerodynamic performance, but provide maximum visibility of the ground, allowing the pilot simply to look with his or her eyes to see what is happening there.[32] When Warthog pilots do use sensors, such as night vision goggles, these devices work better because they are closer to what needs to be seen. In contrast, supersonic fighters, such as the F-35, are designed to fly high and fast. Their distinctive streamlined shape and short wings render them unable to orbit at low speed and altitude where they could secure the best view of the ground, and their pilots depend heavily on sensors. The A-10's flight characteristics, and the specialization of the pilot-aircraft system, generate a superior sense of the ground environment, comparable to that of attack helicopters such as the AH-64 Apache.

Loiter time is the ability to remain on station, in orbit above the ground force, for a period of time without having to depart to refuel. An extended loiter time is essential for CAS effectiveness, because each time an aircraft departs the area where an operation is occurring, a significant amount of accumulated knowledge about the ground environment is lost. To be sure, when a new aircraft arrives, it receives a verbal check-in brief that conveys critical facts about the ongoing mission. The intuitive, nuanced sense of the ground that comes from direct observation, however, has to be rebuilt from scratch each time.[33]

The A-10's loiter time is superior because it carries more fuel and enjoys better fuel economy than the F-15 or F-16. All supersonic aircraft guzzle fuel, and the F-35 is not likely to significantly improve upon its predecessors in this area. Notably, the A-10 can loiter for roughly twice as long as multi-role fighters, including the F-35, and also for about twice as long as helicopters.

The human ear is the primary instrument insurgents employ to detect approaching aircraft. Quieter aircraft can loiter closer to the ground force and at lower altitudes while remaining undetected, thereby accumulating ground sense. Quiet aircraft have particular value for special operations forces, because their missions often require undetected infiltration of an area to preserve the element of surprise. Many situational factors affect the noise signature of an aircraft, but in general the A-10 is a relatively quiet intruder, roughly half as loud as a multi-role fighter such as the F-15, F-16, or F-35. The A-10's low noise signature means that it can arrive on station without being detected and remain clandestine while orbiting at a lower altitude. (Of course, the ability to evade detection by the naked eye is also important, and depends upon time of day, cloud cover, and other factors.) The radar stealth of the F-35 offers no advantage against detection by unaided eyesight and hearing, and thus offers no benefit against insurgents lacking radar.

Gun effectiveness requires accuracy, ammunition capacity, and power. For precision CAS, the gun must deliver a tight grouping of rounds with minimal spillover and must safely engage ground-based targets within 10m of friendly forces.[34] To deliver this tight grouping, the gun must be canted downward toward the ground. The guns on multi-role fighters are typically canted upward and optimized for air-to-air engagements; they are less effective at ground attack. In contrast, the A-10's gun is canted downward and optimized to fire on ground targets. During

gun runs, the A-10 approaches more slowly than a fighter and uses a steeper dive angle. This profile, combined with the orientation of the gun, facilitates a much tighter grouping of rounds with less spillover.

Gun effectiveness also requires sufficient ammunition capacity for multiple engagements before having to rearm.[35] The A-10 carries significantly more ammunition than any fighter. A standard load of 1,100 rounds enables it to make ten to twelve firing passes.[36] In stark contrast, the F-35 carries only 180–220 rounds, a fifth as many. Its gun is primarily a back up to air-to-air missiles and bombs, and is a marginal weapon for CAS.[37]

The A-10's unique 30mm cannon is both more accurate and more powerful than the 20mm cannons of multi-role fighters, such as the F-15[38] and F-16,[39] and the 25mm cannon of the F-35.[40] Although this added power is not needed against human targets in the open, it is useful when irregular forces bunker down in dugouts, caves, or other hardened positions.

In addition to gun effectiveness, a CAS aircraft's bomb-carrying capacity affects its ability to conduct multiple strikes before rearming.[41] The A-10 has eleven stations for carrying a variety of ordnance under its wings and fuselage.[42] In comparison, the F-15 has eight stations and the F-16 has six stations.[43] The F-35 has two internal and six external stations.[44] These stations are generally equivalent in capacity, carrying a variety of ordnance ranging from small missiles to 2000-pound bombs. Thus the A-10 has 84% more bomb-carrying capacity than the F-16 and 38% more than the F-15 and F-35.

Survivability is critical to CAS aircraft, which are subject to direct fire from the ground. The A-10 is protected by titanium armor that surrounds the pilot and flight controls.[45] This armor can withstand an astounding amount of fire, even direct hits from a 23mm cannon.[46] No other aircraft—and particularly not helicopters, the A-10's only rivals for ground sense—come close

to this level of survivability against direct fire. Multi-role fighters can't afford the penalties on maneuverability and speed that such protection would impose, and are unarmored.

In terms of stealth and speed, the A-10 cannot compete with multi-role fighters, particularly the F-35. The F-35's radar stealth and speed would be decisive attributes against an advanced adversary in a high-intensity conflict. The A-10, with no protection against radar, is a subsonic jet with a top speed of 0.75 Mach.[47] Current-generation multi-role fighters are two to three times faster.[48] Fifth generation fighters such as the F-35 are faster still.[49] As emphasized above, however, speed and stealth offer little value for CAS. By contrast, in the important category of range, the A-10 Warthog's fuel capacity and economy make it superior to fighters. The A-10 has slightly more range than the F-15,[50] 29% more range than the F-16,[51] and 91% more range than the F-35.[52]

**7. Information-Exchange Loss**

The problem of information-exchange loss can be mitigated—but not overcome—by a standard check-in brief. If two aircraft are swapping roles, the outgoing pilot briefs the incoming pilot on the mission in progress. The pilots have a limited time to complete the switch, however, so the outgoing pilot must prioritize the information considered critical and leave out the rest. Vast amounts of potentially relevant information are lost. Indeed, much would be lost even if the two pilots had hours for the transition. For example, there may be qualities of the physical environment that are hard to describe but easy to see, such as a latticework pattern of irrigation canals that limits foot traffic. Ideally, one would want platforms that could hover overhead indefinitely, but no such technology exists. The exchange-loss problem cannot be overcome by pilot skill or anything that the ground force might do; it is inherent to air support, which is

inevitably time-limited. Information-exchange loss is characteristic of situations where individuals address complex problems and work in shifts. The problem is likely worse when confronting an adversary who is deliberately hiding information.

**8. Comparing Types of CAS Aircraft**

Other aircraft in the SOTF-XX CAS Data 2011 data set include attack helicopters, gunships, and unmanned aerial vehicles (UAVs). These aircraft have characteristics and capabilities significantly different from those of A-10s and multi-role fighters. Attack helicopters have excellent ground sense, but are lightly armed and vulnerable to direct fire. Gunships are large propeller-driven aircraft that lack speed and maneuverability and that carry different weapons systems from those of A-10s and multi-role fighters. UAVs can orbit at low altitude but currently lack the degree of ground sense of manned aircraft. Thus, none of these platforms can replace the CAS capability of the A-10. The closest comparison and best replacement for the A-10, if it is to be replaced, is the one that the Air Force has proposed: a multi-role fighter. Consequently a one-to-one comparison of the A-10 and multi-role fighters is the focus of this analysis.

**9. Cost Per Unit of Effective Time on Station**

Taking the effectiveness analysis in Table 1 one step further, we can compare the "cost per unit of effective time on station" for each aircraft, given a low-intensity conflict. Using the results from figure 1, the A-10 provides 5.34 units of LIC capability per thousand dollars per hour, whereas the F-35 provides 0.912 units. Thus, the A-10 is 167% as capable as the F-35 at

CAS in low-intensity conflict missions when costs are held equal, but 579% as capable on a cost-effectiveness basis, that is per unit of actual operating cost.

**10. Scoring and Weighting CAS Effectiveness.**

There is no generally accepted methodology for assessing the overall CAS effectiveness of different aircraft. The authors conducted an effectiveness analysis using 0-3 step function to measure the value of different levels of performance on each of eight attributes: loiter time, radar stealth, ground sense, low noise signature, survivability against direct fire, speed, gun effectiveness, and range. The use of a step function is arbitrary; for example an exponential cumulative value function could have been used. So is the scaling; a 0-10 or 0-1 scale could have been used. We believe neither of these changes would have substantially changed the results.[53]

The 0-3 scores convert a variety of incommensurable attributes into utility for CAS. Some of these are natural measures such as speed and range, which are given in Air Force fact sheets in multiples of the speed of sound, and miles, respectively. Since these are cardinal utilities, a difference from 1 to 2 is as great as a difference from 2 to 3. The authors used Air Force fact sheets and a body of publicly available information to score the A-10 and F-35 from 0-3 on each of the eight dimensions (see Note 6 above).

To check our work, we had a highly experienced JTAC independently score the A-10 and F-35. The scores are:

| | F-35 | A-10 |
|---|---|---|
| Loiter Time | 3 | 2 |
| Radar Stealth | 3 | 1 |
| Detailed sense of the ground environment | 0 | 3 |
| Low audible noise signature | 3 | 1 |

| | | |
|---|---|---|
| Survivability against small arms fire from the ground | 3 | 2 |
| Speed | 3 | 2 |
| Accuracy of gun/cannon; low risk of collateral damage | 0 | 3 |
| Range | 3 | 2 |

Using these scores and the weights from the original survey yields the following overall effectiveness results for each aircraft:

| Attribute | Weight | A-10 | F-35 | A-10 Utility Score | F-35 Utility Score |
|---|---|---|---|---|---|
| Ground Sense | 6.21 | 3 | 0 | 18.63 | 0 |
| Loiter Time | 5.67 | 2 | 3 | 11.34 | 17.01 |
| Noise Sig. | 4.57 | 1 | 3 | 4.57 | 13.71 |
| Gun Eff. | 6.64 | 3 | 0 | 19.92 | 0 |
| Survivability | 5.43 | 2 | 3 | 10.86 | 16.29 |
| Stealth | 2.17 | 2 | 3 | 4.34 | 6.51 |
| Speed | 3.86 | 2 | 3 | 7.72 | 11.58 |
| Range | 4.98 | 2 | 3 | 9.96 | 14.94 |
| | | | | 87.34 | 80.04 |

These scores are much more favorable to the F-35 than the ones we used in our analysis. The F-35 is ranked superior in six of the eight attributes. In the cases of loiter time and range giving the advantage to the F-35 is simply incorrect, as the Air Force has acknowledged the superior performance of the A-10 in these areas. Nonetheless this JTAC favors the A-10 3-0 on the two most important according to our survey: ground sense and gun effectiveness. As a result the A-10 remains by a significant margin, though a smaller one than in our original analysis. It is important to note that this JTAC was not aware of those weights and was asked to score pure performance on each of the eight attributes. This example suggests that our results are robust to different performance scores that are more favorable to the F-35.

The authors used the mean of responses to Question 1 of the survey as weights to assign relative importance to each of the eight attributes. This approach treated the 42 surveyed JTACs as decision makers according to the direct assessment method, judging importance on a 1-7

scale. Had the authors used a 0-10 scale and/or normalized the results to sum to one as Wall and MacKenzie recommend, it would not change our results substantially.[54] Using our original performance scores and normalizing the weights to sum to one produces the following result:

| Attribute | Weight | A-10 | F-35 | A-10 Utility Score | F-35 Utility Score |
|---|---|---|---|---|---|
| Ground Sense | 0.16 | 3 | 1 | 0.47 | 0.16 |
| Loiter Time | 0.14 | 3 | 2 | 0.43 | 0.29 |
| Noise Sig. | 0.12 | 3 | 1 | 0.35 | 0.12 |
| Gun Eff. | 0.17 | 3 | 1 | 0.50 | 0.17 |
| Survivability | 0.14 | 3 | 1 | 0.41 | 0.14 |
| Stealth | 0.05 | 0 | 3 | 0.00 | 0.16 |
| Speed | 0.10 | 1 | 3 | 0.10 | 0.29 |
| Range | 0.13 | 3 | 2 | 0.38 | 0.25 |
| Total | 1 | | | 2.64 | 1.57 |

Naturally an extreme weighting of the attributes in favor of stealth and speed will necessarily favor the F-35. If a hypothetical decision maker weighted stealth a 0.90, speed at 0.04, and each other attribute at 0.01, we find the following result:

| Attribute | Weight | A-10 | F-35 | A-10 Utility Score | F-35 Utility Score |
|---|---|---|---|---|---|
| Ground Sense | 0.01 | 3 | 1 | 0.03 | 0.01 |
| Loiter Time | 0.01 | 3 | 2 | 0.03 | 0.02 |
| Noise Sig. | 0.01 | 3 | 1 | 0.03 | 0.01 |
| Gun Eff. | 0.01 | 3 | 1 | 0.03 | 0.01 |
| Survivability | 0.01 | 3 | 1 | 0.03 | 0.01 |
| Stealth | 0.90 | 0 | 3 | 0.00 | 2.70 |
| Speed | 0.04 | 1 | 3 | 0.04 | 0.12 |
| Range | 0.01 | 3 | 2 | 0.03 | 0.02 |
| Total | 1 | | | 0.22 | 2.90 |

This decision maker places overwhelming importance on stealth that swamps all other concerns. This would in turn suggest a near-lexicographic preference for F-35s, so that divesting the entire A-10 fleet in order to purchase a small number of additional F-35s would be rational. This weighting does not plausibly reflect the military reality facing the U.S. in the coming decades, and does not plausibly answer the need for effective CAS within the air fleet. It does

plausibly reflect the importance of stealth in a pure high intensity conflict scenario where SSR would be paramount. These weights may also approximate the preferences and thinking of decision makers who have argued for a fleet of 1763 F-35s and zero A-10s.

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[22] Ibid., 54.

[23] Ibid., 55.

[24] Lambeth, *Air Power Against Terror*, 78–94.

[25] Ibid., 106–108.

[26] Ibid., 109–110.

[27] Ibid., 129–132.

[28] Ibid., 148.

[29] Lohaus, "A Precarious Balance," 37–38.

[30] Chivvis, "Libya and the Future of Liberal Intervention," 77.

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[32] U.S. Air Force, "A-10 Thunderbolt II."

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[34] Wheeler, "The A-10 Warthog."

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# Appendix B: CAS Survey 2014

## Introductory Note

One of your teammates, a career military officer, is conducting a study of the performance of various aircraft providing close air support. The goal is to identify qualities relevant to this mission that may not be captured in fact sheets that list factors such as fuel capacity, payload, ceiling, etc. Some critical qualities may be hard to measure numerically.

This survey is designed to seek your input as a subject-matter expert with experience in the field. The survey seeks to identify your views on the capabilities most important for close air support under specific conditions, and on how various aircraft meet those capabilities.

It should take you no more than 10 minutes to complete this survey. Please carefully consider your answers, and try to answer as you would if faced with the scenarios described under conditions of actual combat. Your answers will remain anonymous and confidential.

## Scenario

You are a JTAC assigned to a special operations unit. Your unit is supporting a joint task force engaged in a low-intensity conflict, which has both counterterrorism and counterinsurgency elements. Specific conditions of the conflict are:

1. Friendly forces have air supremacy.
2. Enemy personnel blend into the civilian population making them hard to identify and target.
3. Collateral damage to innocent parties would have high adverse consequences, and has to be avoided even at significant cost.
4. Enemy forces are motivated and skilled, often engaging your unit in intense firefights that carry a significant risk of injury or death.

**Consider this scenario while answering Questions 1 though Question 4. For these questions assume that you have a choice between different close air support aircraft and can select the best one to support your mission.**

Question 1

How important are the following qualities in close air support aircraft on a 1-7 scale (least important to most important)?

| | Completely Irrelevant [1] | Minimally Relevant [2] | Slightly Important [3] | Somewhat Important [4] | Very Important [5] | Critical [6] | Extremely Critical [7] |
|---|---|---|---|---|---|---|---|
| Loiter Time | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Radar Stealth | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Detailed sense of the ground environment | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Low audible noise signature | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Survivability against small arms fire from the ground | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Speed | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Accuracy of gun/cannon; low risk of collateral damage | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Range | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

## Question 2

Would you prefer to receive support from an F-15E or F-16C?

- ○ Strongly prefer F-15E.
- ○ Somewhat prefer F-15E
- ○ Slightly prefer F-15E.
- ○ Makes no difference.
- ○ Slightly prefer F-16C
- ○ Somewhat prefer F-16C.
- ○ Strongly prefer F-16C.

## Question 3

Would you prefer to receive support from an F-16C or A-10?

- ○ Strongly prefer F-16C.
- ○ Somewhat prefer F-16C.
- ○ Slightly prefer F-16C.
- ○ Makes no difference.
- ○ Slightly prefer A-10.
- ○ Somewhat prefer A-10.
- ○ Strongly prefer A-10.

## Question 4

Would you prefer to receive support from an F-15E or A-10?

- Strongly prefer F-15E.
- Somewhat prefer F-15E.
- Slightly prefer F-15E.
- Makes no difference.
- Slightly prefer A-10.
- Somewhat prefer A-10.
- Strongly prefer A-10.

**For Question 5 through Question 7, consider the scenario described above. For these questions the F-35 Joint Strike Fighter is one of the close air support aircraft available. Compare the F-35 to other aircraft based on whatever you know about the F-35 and your best professional judgment.**

Question 5

Would you prefer to receive support from an F-35 or F-16C?

- Strongly prefer F-35.
- Somewhat prefer F-35.
- Slightly prefer F-35.
- Makes no difference.
- Slightly prefer F-16C.
- Somewhat prefer F-16C.
- Strongly prefer F-16C.

Question 6

Would you prefer to receive support from an F-35 or A-10?

- Strongly prefer F-35.
- Somewhat prefer F-35.
- Slightly prefer F-35.
- Makes no difference.
- Slightly prefer A-10.
- Somewhat prefer A-10.
- Strongly prefer A-10.

Question 7

Would you prefer to receive support from an F-35 or F-15E?

- Strongly prefer F-35.
- Somewhat prefer F-35.
- Slightly prefer F-35.
- Makes no difference.
- Slightly prefer F-15E.
- Somewhat prefer F-15E.
- Strongly prefer F-15E.

**For Question 8 through Question 15, consider the range of possible future conflicts that United States forces are likely to encounter, including both low-intensity conflict and high-intensity conventional warfare. These questions compare single purpose fixed- wing attack aircraft to multi-role fighters. Single purpose fixed-wing attack aircraft are a class of aircraft designed specifically to attack ground targets, such as the A-10. Multi-role fighters are a class of aircraft that are primarily designed for air-to-air combat but also designed for ground attack; these include the F-16C, F-15E, and F-35.**

Question 8

Looking to our nation's future security, how important is it that its arsenal include single purpose fixed-wing aircraft specifically designed to conduct ground strikes in addition to multi-role fighters?

- Extremely important.
- Very important.
- Somewhat important.
- Slightly important.
- Not important.

**Compare the capabilities of the A-10, as a single purpose attack aircraft, to multi-role fighters to perform these specific tasks:**

Question 9

Which is better at bomb-on-coordinate strikes?

- A multi-role fighter is much more capable.
- A multi-role fighter is somewhat more capable.
- A multi-role fighter is slightly more capable.
- About the same.
- An A-10 is slightly more capable.
- An A-10 is somewhat more capable.
- An A-10 is much more capable.

Question 10

Which is better at bomb-on-target strikes?

- A multi-role fighter is much more capable.
- A multi-role fighter is somewhat more capable.
- A multi-role fighter is slightly more capable.
- About the same.
- An A-10 is slightly more capable.
- An A-10 is somewhat more capable.
- An A-10 is much more capable.

Question 11

Which is better at destroying area targets such as buildings, bunkers, and vehicles?

- A multi-role fighter is much more capable.
- A multi-role fighter is somewhat more capable.
- A multi-role fighter is slightly more capable.
- About the same.
- An A-10 is slightly more capable.
- An A-10 is somewhat more capable.
- An A-10 is much more capable.

Question 12

Which is better at destroying point targets, most importantly individual human enemies?

- A multi-role fighter is much more capable.
- A multi-role fighter is somewhat more capable.

- A multi-role fighter is slightly more capable.
- About the same.
- An A-10 is slightly more capable.
- An A-10 is somewhat more capable.
- An A-10 is much more capable.

## Question 13
Which is better at destroying fleeting targets and targets of opportunity?

- A multi-role fighter is much more capable.
- A multi-role fighter is somewhat more capable.
- A multi-role fighter is slightly more capable.
- About the same.
- An A-10 is slightly more capable.
- An A-10 is somewhat more capable.
- An A-10 is much more capable.

## Question 14
Which is better at avoiding collateral damage to innocent or uninvolved civilians?

- A multi-role fighter is much more capable.
- A multi-role fighter is somewhat more capable.
- A multi-role fighter is slightly more capable.
- About the same.
- An A-10 is slightly more capable.
- An A-10 is somewhat more capable.
- An A-10 is much more capable.

## Question 15
Which has a better feel for what is happening on the ground?

- A multi-role fighter is much more capable.
- A multi-role fighter is somewhat more capable.
- A multi-role fighter is slightly more capable.

- About the same.
- An A-10 is slightly more capable.
- An A-10 is somewhat more capable.
- An A-10 is much more capable.

**Questions 16 through 20 ask about your experience as a special operations joint terminal attack controller (JTAC):**

Question 16
Years active duty service.

- 1-5.
- 6-10.
- 11-15.
- 16+.

Question 17
Years as a qualified JTAC.

- 1-5.
- 6-10.
- 11-15.
- 16+.
- 0.

Question 18
Number of deployments where you worked as a JTAC in Iraq or Afghanistan.

- 1.
- 2.
- 3.
- 4.

- 5.
- 6.
- 7.
- 8.
- 9.
- 10+.
- 0.

Question 19
Number of times you have controlled aircraft of any kind in Iraq or Afghanistan.

- 1-5.
- 6-10.
- 11-15.
- 16-20.
- 21+.
- 0.

Question 20
Number of airstrikes you have controlled in Iraq or Afghanistan.

- 1-5.
- 6-10.
- 11-15.
- 16-20.
- 21+.
- 0.

Question 21
Considering [the] subject of close air support and its application to future United States conflicts, are there any general comments you would like to include?

Appendix C: CAS Survey 2014 Results

## Introductory Note

One of your teammates, a career military officer, is conducting a study of the performance of various aircraft providing close air support. The goal is to identify qualities relevant to this mission that may not be captured in fact sheets that list factors such as fuel capacity, payload, ceiling, etc. Some critical qualities may be hard to measure numerically.

This survey is designed to seek your input as a subject-matter expert with experience in the field. The survey seeks to identify your views on the capabilities most important for close air support under specific conditions, and on how various aircraft meet those capabilities.

It should take you no more than 10 minutes to complete this survey. Please carefully consider your answers, and try to answer as you would if faced with the scenarios described under conditions of actual combat. Your answers will remain anonymous and confidential.

## Scenario

You are a JTAC assigned to a special operations unit. Your unit is supporting a joint task force engaged in a low-intensity conflict, which has both counterterrorism and counterinsurgency elements. Specific conditions of the conflict are:
1. Friendly forces have air supremacy.

2. Enemy personnel blend into the civilian population making them hard to identify and target.
3. Collateral damage to innocent parties would have high adverse consequences, and has to be avoided even at significant cost.
4. Enemy forces are motivated and skilled, often engaging your unit in intense firefights that carry a significant risk of injury or death.

**Consider this scenario while answering Questions 1 though Question 4. For these questions assume that you have a choice between different close air support aircraft and can select the best one to support your mission.**

## Question 1

**How important are the following qualities in close air support aircraft on a 1-7 scale (least important to most important)?**

| # | Question | Completely Irrelevant [1] | Minimally Relevant [2] | Slightly Important [3] | Somewhat Important [4] | Very Important [5] | Critical [6] | Extremely Critical [7] | Response |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Loiter Time | - | - | 1 | 3 | 18 | 7 | 13 | 42 |
| 2 | Radar Stealth | 14 | 17 | 5 | 4 | 1 | - | 1 | 42 |
| 3 | Detailed sense of the ground environment | - | - | - | 3 | 6 | 12 | 21 | 42 |
| 4 | Low audible noise signature | 1 | 2 | 4 | 11 | 16 | 5 | 3 | 42 |
| 5 | Survivability against small arms fire from the ground | - | - | 4 | 5 | 13 | 9 | 11 | 42 |
| 6 | Speed | - | 6 | 11 | 11 | 12 | 1 | 1 | 42 |
| 7 | Accuracy of gun/cannon; low risk of collateral damage | - | - | - | 1 | 3 | 6 | 32 | 42 |
| 8 | Range | - | - | 7 | 7 | 11 | 14 | 3 | 42 |

| Statistic | Loiter Time | Radar Stealth | Detailed sense of the ground environment | Low audible noise signature | Survivability against small arms fire from the ground | Speed | Accuracy of gun/cannon; low risk of collateral damage | Range |
|---|---|---|---|---|---|---|---|---|
| Min Value | 3 | 1 | 4 | 1 | 3 | 2 | 4 | 3 |
| Max Value | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| Mean | 5.67 | 2.17 | 6.21 | 4.57 | 5.43 | 3.86 | 6.64 | 4.98 |
| Variance | 1.15 | 1.65 | 0.9 | 1.71 | 1.62 | 1.44 | 0.53 | 1.49 |
| Standard Deviation | 1.07 | 1.29 | 0.95 | 1.31 | 1.27 | 1.2 | 0.73 | 1.22 |
| Total Responses | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 |
| Total Respondents | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 |

## Question 2

**Would you prefer to receive support from an F-15E or F-16C?**

| # | Answer | Bar | Response | % |
|---|---|---|---|---|
| 1 | Strongly prefer F-15E. | | 8 | 19.05% |
| 2 | Somewhat prefer F-15E. | | 5 | 11.90% |
| 3 | Slightly prefer F-15E. | | 4 | 9.52% |
| 4 | Makes no difference. | | 11 | 26.19% |
| 5 | Slightly prefer F-16C. | | 5 | 11.90% |
| 6 | Somewhat prefer F-16C. | | 6 | 14.29% |
| 7 | Strongly prefer F-16C. | | 3 | 7.14% |
| | Total | | 42 | 100.00% |

| Min Value | Max Value | Average Value | Variance | Standard Deviation | Total Responses | Total Respondents |
|---|---|---|---|---|---|---|
| 1 | 7 | 3.71 | 3.62 | 1.90 | 42 | 42 |

## Question 3

**Would you prefer to receive support from an F-16C or A-10?**

| # | Answer | Bar | Response | % |
|---|---|---|---|---|
| 1 | Strongly prefer F-16C. | | 0 | 0.00% |
| 2 | Somewhat prefer F-16C. | | 0 | 0.00% |
| 3 | Slightly prefer F-16C. | | 0 | 0.00% |
| 4 | Makes no difference. | | 1 | 2.38% |
| 5 | Slightly prefer A-10. | | 1 | 2.38% |
| 6 | Somewhat prefer A-10. | | 4 | 9.52% |
| 7 | Strongly prefer A-10. | | 36 | 85.71% |
| | Total | | 42 | 100.00% |

| Min Value | Max Value | Average Value | Variance | Standard Deviation | Total Responses | Total Respondents |
|---|---|---|---|---|---|---|
| 4 | 7 | 6.79 | 0.37 | 0.61 | 42 | 42 |

## Question 4

**Would you prefer to receive support from an F-15E or A-10?**

| # | Answer | Bar | Response | % |
|---|---|---|---|---|
| 1 | Strongly prefer F-15E. | | 0 | 0.00% |
| 2 | Somewhat prefer F-15E. | | 0 | 0.00% |
| 3 | Slightly prefer F-15E. | | 0 | 0.00% |
| 4 | Makes no difference. | | 3 | 7.14% |
| 5 | Slightly prefer A-10. | | 2 | 4.76% |
| 6 | Somewhat prefer A-10. | | 4 | 9.52% |
| 7 | Strongly prefer A-10. | | 33 | 78.57% |
| | Total | | 42 | 100.00% |

| Min Value | Max Value | Average Value | Variance | Standard Deviation | Total Responses | Total Respondents |
|---|---|---|---|---|---|---|
| 4 | 7 | 6.60 | 0.78 | 0.89 | 42 | 42 |

## Question 5

**Would you prefer to receive support from an F-35 or F-16C?**

| # | Answer | Bar | Response | % |
|---|---|---|---|---|
| 1 | Strongly prefer F-35. | | 2 | 4.76% |
| 2 | Somewhat prefer F-35. | | 2 | 4.76% |
| 3 | Slightly prefer F-35. | | 6 | 14.29% |
| 4 | Makes no difference. | | 11 | 26.19% |
| 5 | Slightly prefer F-16C. | | 7 | 16.67% |
| 6 | Somewhat prefer F-16C. | | 7 | 16.67% |
| 7 | Strongly prefer F-16C. | | 7 | 16.67% |
| | Total | | 42 | 100.00% |

| Min Value | Max Value | Average Value | Variance | Standard Deviation | Total Responses | Total Respondents |
|---|---|---|---|---|---|---|
| 1 | 7 | 4.62 | 2.78 | 1.67 | 42 | 42 |

## Question 6

**Would you prefer to receive support from an F-35 or A-10?**

| # | Answer | Bar | Response | % |
|---|---|---|---|---|
| 1 | Strongly prefer F-35. | | 0 | 0.00% |
| 2 | Somewhat prefer F-35. | | 0 | 0.00% |
| 3 | Slightly prefer F-35. | | 0 | 0.00% |
| 4 | Makes no difference. | | 1 | 2.38% |
| 5 | Slightly prefer A-10. | | 3 | 7.14% |
| 6 | Somewhat prefer A-10. | | 4 | 9.52% |
| 7 | Strongly prefer A-10. | | 34 | 80.95% |
| | Total | | 42 | 100.00% |

| Min Value | Max Value | Average Value | Variance | Standard Deviation | Total Responses | Total Respondents |
|---|---|---|---|---|---|---|
| 4 | 7 | 6.69 | 0.51 | 0.72 | 42 | 42 |

## Question 7

**Would you prefer to receive support from an F-35 or F-15E?**

| # | Answer | Bar | Response | % |
|---|---|---|---|---|
| 1 | Strongly prefer F-35. | | 1 | 2.38% |
| 2 | Somewhat prefer F-35. | | 2 | 4.76% |
| 3 | Slightly prefer F-35. | | 5 | 11.90% |
| 4 | Makes no difference. | | 15 | 35.71% |
| 5 | Slightly prefer F-15E. | | 6 | 14.29% |
| 6 | Somewhat prefer F-15E. | | 6 | 14.29% |
| 7 | Strongly prefer F-15E. | | 7 | 16.67% |
| | Total | | 42 | 100.00% |

| Min Value | Max Value | Average Value | Variance | Standard Deviation | Total Responses | Total Respondents |
|---|---|---|---|---|---|---|
| 1 | 7 | 4.64 | 2.38 | 1.54 | 42 | 42 |

## Question 8

**Looking to our nation's future security, how important is it that its arsenal include single purpose fixed-wing aircraft specifically designed to conduct ground strikes *in addition to* multi-role fighters?**

| # | Answer | Bar | Response | % |
|---|---|---|---|---|
| 1 | Extremely important. | | 23 | 54.76% |
| 2 | Very important. | | 12 | 28.57% |
| 3 | Somewhat important. | | 5 | 11.90% |
| 4 | Slightly important. | | 1 | 2.38% |
| 5 | Not important. | | 1 | 2.38% |
| | Total | | 42 | 100.00% |

| Min Value | Max Value | Average Value | Variance | Standard Deviation | Total Responses | Total Respondents |
|---|---|---|---|---|---|---|
| 1 | 5 | 1.69 | 0.90 | 0.95 | 42 | 42 |

## Question 9

**Which is better at bomb-on-coordinate strikes?**

| # | Answer | Bar | Response | % |
|---|---|---|---|---|
| 1 | A multi-role fighter is much more capable. | | 1 | 2.38% |
| 2 | A multi-role fighter is somewhat more capable. | | 5 | 11.90% |
| 3 | A multi-role fighter is slightly more capable. | | 4 | 9.52% |
| 4 | About the same. | | 14 | 33.33% |
| 5 | An A-10 is slightly more capable. | | 4 | 9.52% |
| 6 | An A-10 is somewhat more capable. | | 6 | 14.29% |
| 7 | An A-10 is much more capable. | | 8 | 19.05% |
| | Total | | 42 | 100.00% |

| Min Value | Max Value | Average Value | Variance | Standard Deviation | Total Responses | Total Respondents |
|---|---|---|---|---|---|---|
| 1 | 7 | 4.55 | 2.94 | 1.71 | 42 | 42 |

## Question 10

**Which is better at bomb-on-target strikes?**

| # | Answer | Bar | Response | % |
|---|---|---|---|---|
| 1 | A multi-role fighter is much more capable. | | 0 | 0.00% |
| 2 | A multi-role fighter is somewhat more capable. | | 1 | 2.38% |
| 3 | A multi-role fighter is slightly more capable. | | 1 | 2.38% |
| 4 | About the same. | | 4 | 9.52% |
| 5 | An A-10 is slightly more capable. | | 3 | 7.14% |
| 6 | An A-10 is somewhat more capable. | | 9 | 21.43% |
| 7 | An A-10 is much more capable. | | 24 | 57.14% |
| | Total | | 42 | 100.00% |

| Min Value | Max Value | Average Value | Variance | Standard Deviation | Total Responses | Total Respondents |
|---|---|---|---|---|---|---|
| 2 | 7 | 6.14 | 1.64 | 1.28 | 42 | 42 |

## Question 11

**Which is better at destroying area targets such as buildings, bunkers, and vehicles?**

| # | Answer | Bar | Response | % |
|---|---|---|---|---|
| 1 | A multi-role fighter is much more capable. | | 0 | 0.00% |
| 2 | A multi-role fighter is somewhat more capable. | | 2 | 4.76% |
| 3 | A multi-role fighter is slightly more capable. | | 3 | 7.14% |
| 4 | About the same. | | 11 | 26.19% |
| 5 | An A-10 is slightly more capable. | | 3 | 7.14% |
| 6 | An A-10 is somewhat more capable. | | 7 | 16.67% |
| 7 | An A-10 is much more capable. | | 16 | 38.10% |
| | Total | | 42 | 100.00% |

| Min Value | Max Value | Average Value | Variance | Standard Deviation | Total Responses | Total Respondents |
|---|---|---|---|---|---|---|
| 2 | 7 | 5.38 | 2.58 | 1.61 | 42 | 42 |

## Question 12

**Which is better at destroying point targets, most importantly individual human enemies?**

| # | Answer | Bar | Response | % |
|---|---|---|---|---|
| 1 | A multi-role fighter is much more capable. | | 0 | 0.00% |
| 2 | A multi-role fighter is somewhat more capable. | | 0 | 0.00% |
| 3 | A multi-role fighter is slightly more capable. | | 0 | 0.00% |
| 4 | About the same. | | 2 | 4.76% |
| 5 | An A-10 is slightly more capable. | | 6 | 14.29% |
| 6 | An A-10 is somewhat more capable. | | 7 | 16.67% |
| 7 | An A-10 is much more capable. | | 27 | 64.29% |
| | Total | | 42 | 100.00% |

| Min Value | Max Value | Average Value | Variance | Standard Deviation | Total Responses | Total Respondents |
|---|---|---|---|---|---|---|
| 4 | 7 | 6.40 | 0.83 | 0.91 | 42 | 42 |

## Question 13

**Which is better at destroying fleeting targets and targets of opportunity?**

| # | Answer | Bar | Response | % |
|---|---|---|---|---|
| 1 | A multi-role fighter is much more capable. | | 0 | 0.00% |
| 2 | A multi-role fighter is somewhat more capable. | | 2 | 4.76% |
| 3 | A multi-role fighter is slightly more capable. | | 0 | 0.00% |
| 4 | About the same. | | 5 | 11.90% |
| 5 | An A-10 is slightly more capable. | | 3 | 7.14% |
| 6 | An A-10 is somewhat more capable. | | 9 | 21.43% |
| 7 | An A-10 is much more capable. | | 23 | 54.76% |
| | Total | | 42 | 100.00% |

| Min Value | Max Value | Average Value | Variance | Standard Deviation | Total Responses | Total Respondents |
|---|---|---|---|---|---|---|
| 2 | 7 | 6.05 | 1.90 | 1.38 | 42 | 42 |

## Question 14

**Which is better at avoiding collateral damage to innocent or uninvolved civilians?**

| # | Answer | Bar | Response | % |
|---|---|---|---|---|
| 1 | A multi-role fighter is much more capable. | | 0 | 0.00% |
| 2 | A multi-role fighter is somewhat more capable. | | 0 | 0.00% |
| 3 | A multi-role fighter is slightly more capable. | | 0 | 0.00% |
| 4 | About the same. | | 8 | 19.05% |
| 5 | An A-10 is slightly more capable. | | 5 | 11.90% |
| 6 | An A-10 is somewhat more capable. | | 10 | 23.81% |
| 7 | An A-10 is much more capable. | | 19 | 45.24% |
| | Total | | 42 | 100.00% |

| Min Value | Max Value | Average Value | Variance | Standard Deviation | Total Responses | Total Respondents |
|---|---|---|---|---|---|---|
| 4 | 7 | 5.95 | 1.36 | 1.17 | 42 | 42 |

## Question 15

**Which has a better feel for what is happening on the ground?**

| # | Answer | Bar | Response | % |
|---|---|---|---|---|
| 1 | A multi-role fighter is much more capable. | | 0 | 0.00% |
| 2 | A multi-role fighter is somewhat more capable. | | 0 | 0.00% |
| 3 | A multi-role fighter is slightly more capable. | | 0 | 0.00% |
| 4 | About the same. | | 2 | 4.76% |
| 5 | An A-10 is slightly more capable. | | 4 | 9.52% |
| 6 | An A-10 is somewhat more capable. | | 10 | 23.81% |
| 7 | An A-10 is much more capable. | | 26 | 61.90% |
| | Total | | 42 | 100.00% |

| Min Value | Max Value | Average Value | Variance | Standard Deviation | Total Responses | Total Respondents |
|---|---|---|---|---|---|---|
| 4 | 7 | 6.43 | 0.74 | 0.86 | 42 | 42 |

## Question 16

**Years active duty service.**

| # | Answer | Bar | Response | % |
|---|---|---|---|---|
| 1 | 1-5. | | 6 | 14.29% |
| 2 | 6-10. | | 23 | 54.76% |
| 3 | 11-15. | | 12 | 28.57% |
| 4 | 16+. | | 1 | 2.38% |
| | Total | | 42 | 100.00% |

| Min Value | Max Value | Average Value | Variance | Standard Deviation | Total Responses | Total Respondents |
|---|---|---|---|---|---|---|
| 1 | 4 | 2.19 | 0.50 | 0.71 | 42 | 42 |

## Question 17

**Years as a qualified JTAC.**

| # | Answer | Bar | Response | % |
|---|---|---|---|---|
| 1 | 1-5. |  | 24 | 57.14% |
| 2 | 6-10. |  | 17 | 40.48% |
| 3 | 11-15. |  | 1 | 2.38% |
| 4 | 16+. | | 0 | 0.00% |
| 5 | 0. | | 0 | 0.00% |
| | Total | | 42 | 100.00% |

| Min Value | Max Value | Average Value | Variance | Standard Deviation | Total Responses | Total Respondents |
|---|---|---|---|---|---|---|
| 1 | 3 | 1.45 | 0.30 | 0.55 | 42 | 42 |

## Question 18

**Number of deployments where you worked as a JTAC in Iraq or Afghanistan.**

| # | Answer | Bar | Response | % |
|---|---|---|---|---|
| 1 | 1. | | 9 | 21.43% |
| 2 | 2. | | 10 | 23.81% |
| 3 | 3. | | 4 | 9.52% |
| 4 | 4. | | 6 | 14.29% |
| 5 | 5. | | 0 | 0.00% |
| 6 | 6. | | 0 | 0.00% |
| 7 | 7. | | 0 | 0.00% |
| 8 | 8. | | 0 | 0.00% |
| 9 | 9. | | 0 | 0.00% |
| 10 | 10+. | | 1 | 2.38% |
| 11 | 0. | | 12 | 28.57% |
| | Total | | 42 | 100.00% |

| Min Value | Max Value | Average Value | Variance | Standard Deviation | Total Responses | Total Respondents |
|---|---|---|---|---|---|---|
| 1 | 11 | 4.93 | 17.39 | 4.17 | 42 | 42 |

## Question 19

**Number of times you have controlled aircraft of any kind in Iraq or Afghanistan.**

| # | Answer | Bar | Response | % |
|---|---|---|---|---|
| 1 | 1-5. | | 4 | 9.52% |
| 2 | 6-10. | | 2 | 4.76% |
| 3 | 11-15. | | 3 | 7.14% |
| 4 | 16-20. | | 3 | 7.14% |
| 5 | 21+. | | 19 | 45.24% |
| 6 | 0. | | 11 | 26.19% |
| | Total | | 42 | 100.00% |

| Min Value | Max Value | Average Value | Variance | Standard Deviation | Total Responses | Total Respondents |
|---|---|---|---|---|---|---|
| 1 | 6 | 4.52 | 2.40 | 1.55 | 42 | 42 |

## Question 20

**Number of airstrikes you have controlled in Iraq or Afghanistan.**

| # | Answer | Bar | Response | % |
|---|---|---|---|---|
| 1 | 1-5. | | 5 | 11.90% |
| 2 | 6-10. | | 4 | 9.52% |
| 3 | 11-15. | | 2 | 4.76% |
| 4 | 16-20. | | 3 | 7.14% |
| 5 | 21+. | | 8 | 19.05% |
| 6 | 0. | | 20 | 47.62% |
| | Total | | 42 | 100.00% |

| Min Value | Max Value | Average Value | Variance | Standard Deviation | Total Responses | Total Respondents |
|---|---|---|---|---|---|---|
| 1 | 6 | 4.55 | 3.38 | 1.84 | 42 | 42 |

## Question 21

**Considering subject of close air support and its application to future United States conflicts, are there any general comments you would like to include?**

| Text Entry |
| --- |
| Scrapping the A-10 is a terrible strategic decision by the US Military. The A-10 is the best fixed wing CAS platform available and its single role nature allows pilots to focus on being the best providers of CAS. The A-10 has saved my life and the lives of my fellow operators in combat multiple times. |
| THe need for a low slow flying single purpose aircraft will always exist. You need a platform such as the A-10 that is reliable , can take a beating, loiter, and have SA on what is going on on the ground to properly support the ground troops. Other multi- Role Aircraft are too fast and too high to quickly develop their SA. Weapons are weapons but its the platform of the A-10 that can get low and have increase SA all while deliver munitions in a combat envrioment. |
| My experience has been as a F/A-18F FAC(A) in Afghanistan. I have only been a JTAC/Fires Officer in NSW for 6 months with experience with AF assets in training only. I have some experience working AF strike fighters in OEF. In my opinion, the A-10 is too slow which down grades its ability to quickly get on station, quickly release ordnance in a BOT or BOC scenario, and quickly get to the tanker and refuel. As a matter of fact, I have witnessed numerous times an A-10 "stealing" a tanker away from the tanker track because of the amount of time it takes the strike platform to climb and transit to the tanker track. |
| It is extremely important that our arsenal include single purpose fixed-wing aircraft specifically designed to conduct ground strikes in addition to multi-role fighters. We must have a/c that are capable of specific mission sets. We cannot assume that one a/c is able to cover down on all mission sets. |
| My experience with A-10s is far better than any other CAS platform that I have worked with. Their priority was CAS and that is what they're good at. Working on the radio with them makes my life and the GFC's life so much easier because they know what they are doing. Most of the A-10 Pilots that I worked with were FAC-A qualified which allowed me to share the load of managing an entire stack of different Aircrafts, and doing coordinated attacks. The war that we have been fighting for the last 12 years has needed aircrafts that can provide the best close air support for troops on the ground. There hasn't been a need for aircrafts that can do air to air combat, and if we continue the same type of warfare that we have been doing then we are going to need the A-10 there to support us. |
| The whole concept of a multi-role fighter is a flawed concept. The idea that one aircraft can cover down on a variety of missions looks great on paper, however the truth of the matter is that by having the aircrew and aircraft tailored to a variety of mission sets, they have neither the time nor capability to master any of them. The saying “Jack of all trades but a master of none” really does hold true here. The fact that the A-10 has a single mission set is where the A-10 distances itself by being far and away the best aircraft and aircrew at CAS. Just to give some perspective; F-16's and F-15's are moving at twice the speed of an A-10 and above 10,000 feet. Their perspective of the ground is nothing but a blur or a small dot to them from that high up. The A-10 flies low and slow, providing the pilot ground SA that is so critical in a fight. Great example is the B-1 bomber that just killed 5 Americans in Afghanistan. Those aircraft fly at 25,000 feet and prior to their attacks they push out 15+ miles meaning that on their way back in they have to re-acquire targets. One valley looks similar to another valley at 15 miles away...makes a situation where bombs can be dropped on the wrong target a real possibility. Unfortunately this was re-iterated recently with the friendly fire incident. A-10's can be IN the fight and roll in for attacks without ever losing visual acquisition of a target. NO OTHER PLATFORM CAN GUARENTEE THAT. Coupled with their 30mm gun, which is hands down the best weapon we have available to guys on the ground, it |

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| makes the guys on the ground wonder who is pushing this agenda of getting rid of the A-10. Something more personal to me is that I am here writing this to you today because my life was saved by an A-10. My fighting position was taking fire and the enemy was closing in quickly when one of the platoon JTACs called in several repeated airstrikes utilizing A-10's. The speed in which those attacks happened was almost instantaneous. We were straddling the line of being overrun and the A-10's saved the day. I wasn't a JTAC at the time, however following that operation I promised myself I would become a JTAC as soon as I got back into the US, and that is exactly what I did. |
| I strongly suggest keeping A-10 in the inventory. Having a aircraft specifically dedicated to CAS is paramount to SOF operations where we are as VSO sites |
| The JSF munition payload amount, both guns and bombs, are not suitable for sustained Close Air Support over an objective area or Troops in contact. The JSF will not have a Video Down Link (VDL) feature/option to the Ground Force Commander /JTAC using a VDL device (L3 Rover, Coastal Defense MVR-6, Harris 7800) until 2024 (projected arrival into service) in the Block-4 upgrade. |
| The A-10 is the most capable FW CAS platform available for ground forces. CAS is not something that a pilot can do part time and retain a high level of competency making it impossible for a mulit-role fighter to perform as well as single-role platforms. Seconds count on the battlefield and the training and profeciency of A-10 pilots coupled with a very capable airframe get rounds on target safely in a more effective manner than any other AC in the US inventory. This plane has saved my life and to scrap it for high tech multi-roll fighters may save money, but will cost American lives. |
| Instead of pushing the issue of bringing back the A-10 and arguing the difference between a single role and multi-role fighter, accept the fact that the F-35 is here to stay and is being implemented as a national strategic asset due to its highly proliferated numbers and the overall streamlining it will have to the national airborne capabilities. I think it is time to once again address the feasibility of UCAS (Super Tacano, AT-6, OV-10) type platforms. These are the types of assets that would be cheaper to procure, train, maintain, and employ in future low intensity conflicts. This argument is continually shelved, but with the streamlining of the fighter community to a single tactical jet platform, there is once again a need to re-attack for the UCAS platform. - Brian Walinski, ST-10 Fires Officer, 757-763-2919 |
| I have not controlled in either Afghanistan nor Iraq, but I have controlled in other countries augmenting with TF out of VA Beach. Utilizing sensor control and coordinating multi layered stacks providing direct air support for critical operations supporting the global war on terror. In my opinion the A-10 is the best A/C for personnel on the ground. Its CAS capabilities and understanding of Blue/Red force picture is without a doubt better than all multi purpose platform. |
| N/A |
| I am a FAC(A). I have never been on the ground as a JTAC in either theater. I will say, however, that the A-10 is the most capable CAS platform available to our soldiers. Eliminating that aircraft will result in a loss of CAS capability for the US and our forces. The F-35 is an absolute joke, The program has been botched from the beginning, and it cannot even come close to replacing the A-10. I'm saying all this as Hornet guy. As a JTAC/FAC(A), I love the A-10. It is, and always will be the best at CAS. |
| I chose the A-10 because it is what I have the most experience with, I have no experience with an F-35 but would like the oppportunity. Also, with the A-10's primary mission being ground to air, it's my opinion that they are much more proficient then the multi purpose aircraft that have to split their time with air to air. |
| I would only like to add that in my experience the A-10 is the only FW platform that performs well during friendly centric CAS. their blue force picture is on par with what the JTAC has briefed down to the building # on a GRG, where as, with the other fixed wing assets, all they want to know before engaging is some sort of FLOT. this gives the A-10 the capability to engage in a shorter timeframe in tighter (closer proximity) more dynamic contact with blue forces on three to four sides |

of the contact. In addition, the A-10 platforms are more apt to assist the JTAC and recommend tactically advantageous COAs that would assist in executing the GFCs intent in significantly less time.

The A-10 Thunderbolt II as a modern CAS platform As a JTAC in the modern theater of war close air support plays a vital role, this role is often filled with multiple A/C (aircraft) in the U.S. inventory. Many multi-role fighters have stepped in to fill this all too important position, but no aircraft in the history of military aviation has accomplished the mission as well as the mighty Fairchild Republic A-10 Thunderbolt II. Many opponents of the A-10 have stated that the role of the single use attack aircraft is a thing of the past, these opponents claim the future of military aviation and the future of CAS (close air support) lie with the multi-role fighter aircraft such as the Joint Strike Fighter program of the F-35. While the F-35 as a generation 5 fighter A/C has many strong suites in its mission to destroy enemy radar/air defenses, it is not suited for CAS. As a “stealth” fighter the F-35 is limited in its ability to carry large enough payloads to suite the CAS mission set, this is due to the F-35s need to carry most if not all of its weapons internal to the A/C fuselage to maintain its stealth characteristics. Lockheed Martin has also set out to design the F-35 with external hard points for weapons, these have yet to be tested to the best of my knowledge. Moving onto arguably one of the most important capabilities of a CAS A/C which is the cannon there are some extreme disadvantages in the F-35 program. The cannon on the F-35A is slated to only carry 182 rounds, while the F-35B/C can carry 220 rounds respectively, this is dwarfed by the A-10 Thunderbolt II’s ability to carry 1,350 rounds of either HE (high explosive), AP (armor piercing), mix (HE/AP) or depleted uranium “tank killing” sabot rounds. The F-35’s cannon is also to the best of my knowledge offset up like all current fighters for aerial dogfighting, this is not a conducive configuration for a ground attack mission such as that filled by the A-10. The previous point is very evident when looking into the most recent RED (Risk Estimate Distance) for danger close CAS in the J-Fire, the RED for the 30mm cannon of the A-10 Thunderbolt II is 95m while the 20mm from is also 95m with less effective results on target. Fairchild Republic also claims “The gun is accurate enough to place 80% of its shots within a 40-foot (12.4 m) diameter circle from 4,000 feet (1,220 m) while in flight.” As a JTAC on the ground I can attest to the devastating accuracy of the GAU-8/A Avenger cannon and the first class pilots of the A-10. It is also the skill and technical prowess of these A-10 pilots that brings the A-10 to the forefront of CAS. In the world of CAS there is much more to a real world CAS mission than just getting weapons effects on the ground. During TIC (troops in contact) situations in Iraq and Afghanistan it is not uncommon for all air assets in the immediate vicinity of the TIC to be tasked to the JTAC on the ground actively engaged in the fight, this has many pro’s and also many con’s for the ground JTAC who at times is only experienced in handling one to two sections of A/C (a section consist of an A/C and wingman A/C). This saturation of assets overhead in the “stack” can often lead to much confusion for the JTAC or ground party, it is in these situations that the A-10 really comes to the forefront of close air support with its FAC/A (forward air controller/airborne) capability. The A-10 community as a whole possess the best FAC/As that I or any JTAC I have ever worked with, this is due in large part to the commitment of the A-10 community’s continuing devotion to remaining the best CAS A/C in the world. The A-10 FAC/a helps to alleviate the strain placed on the on the ground JTAC by managing the “stack” and DE conflicting A/C for safety of flight while still maintaining the ability to employ extremely effective CAS in support of the ground force. The A-10 community’s weapons school the 66th weapons squadron located at Nellis AFB, Nevada is a testament to this fact. The weapons school teaches its graduates to become the subject matter experts over the course of 8 months culminating in a 2-week battle problem over the Nevada Test and Training Range. This final battle problem involves working closely with on the ground JTACs in a variety of high threat/non permissive environments in which the A/C must maneuver through tight terrain in order to survive against air defenses such as those we would face in a conflict with a first world army. In terms of survivability in a modern conflict many opponents of the A-10 feel that it is too slow to compete against modern jet fighters, and or the air defenses that may be present in a new

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| modern conflict. Against enemy fighters the A-10’s speed does pose a significant disadvantage in open flat terrain, but it is also this speed that allows the A-10 to maneuver much tighter and much lower to the ground than any fighter in the world. The ability to maneuver is the greatest advantage the A-10 holds over any enemy A/C, pulling tight turns in terrain that do not allow enemy A/C to accurately gain an accurate targeting solution allow the A-10 to evade enemy A/C until threat A/C is forced to end the fight due to fuel, or time constraints thus increasing survivability. As far as enemy air defenses are concerned the A-10 has a proven track record of evading shoot downs from the ground as well as returning to base after sustaining what would for any other A/C be catastrophic damage to the A/C and flight systems. There are reports from the first gulf war of A-10s safely returning to base missing basketball size holes in the wings and even complete control surfaces shot off the A/C. It is this ability to survive that also allows the A-10 to provide much more effective CAS, by maintaining tighter orbits of the target area the pilots and FAC/as are never forced to lose situational awareness, this may be due to the fact that the pilots are less worried about losing their A/C and their A/C are much more maneuverable. In the end the ability to employ the most devastating cannon ever to be fitted to an A/C, coupled with the professionalism and maneuvering abilities of the A-10 make it the most capable CAS platform the world has ever known. No multi-role fighter community can ever compete with the professionalism of those who train to a specific mission set, you wouldn’t wear a jacket in the summer just because it stops a sunburn. |
| Untill the time comes when a multi role attack aircraft can perform CAS equally to a CAS specific (single role) platform, which arguably may never happen do to the amount of training and specialization difference between the two, it is very important to keep those CAS only platforms present in the military and actively working. |
| The A-10, though it is low and loud, has the best ground SA and shortest time to kill. |
| Having a single-role fixed wing aircraft like the A-10 is critical to troops on the ground! Their main job CAS and they're the go to platform of most JTAC's. This aircraft can get low to the ground with less threat to small arms and gain a better picture of what's happening. Should a JTAC get injured or wounded they have higher confidence and capabilites working with non-qualified JTACs in order to drop CAS. The pilots are typically FAQ/A qualified and can assist in high stress scenarios. Thier 30mm cannon can punch through targets other platforms cannot, and they are remarkably accurate. |
| Having a multi-role fighter is important in many aspects and its capabilities do meet the requirements for a good CAS platform. However, the proficiency and effectiveness will never compare to an A-10 or any other aircraft designed strictly for CAS. We don’t use one type of vehicle or one caliber bullet for every mission set. Why should the aircraft we use be any different? The support a strict CAS only platform provides the troops on the ground is irreplaceable and unless the A-10 is adequately replaced by a single role aircraft, its loss would be devastating to future ground operations. |
| The A-10 has always been the better CAS platform because of its high level of situational awareness of the ground elements and its wide variety of weaponry. |

# Appendix C: SOTF-XX CAS Data 2011

Sheet 1: "Drops"

## SOTF-XX* CAS Data 2011

| Date | Operation | Unit | JTAC | Platform | Munition | Number of bombs, rounds or passes | BDA |
|---|---|---|---|---|---|---|---|
| 3/16/11 | TIC | XX* | | MC-130W | Griffon | 3 | 3x EKIA |
| 5/14/11 | TIC | II* | | F/A-18F | GBU-38 | 2 | 4x EKIA |
| 5/17/11 | OP11* | Z* | | AWT | 30mm | 2 | 4x EKIA |
| 5/17/11 | OP11* | Z* | | AC-130 | 40mm | 2 | 2x EKIA |
| 5/23/11 | OP13* | Z* | | A-10 | 30mm | 2 | 4x EKIA |
| 6/6/11 | OP17* | Z* | | MC-130W | Griffon | 1 | 2x EKIA |
| 6/6/11 | OP17* | Z* | | F-16C | GBU-54 | 2 | 2x buildings reduced |
| 6/6/11 | OP17* | Z* | | A-10 | 30mm | 3 | 3x EKIA |
| 6/12/11 | TIC | II* | η* | A-10 | 30mm | 2 | 4x EKIA |
| 6/14/11 | TIC | II* (Obj KA*) | η* | A-10 | 30mm | 2 | 2x EKIA |
| 6/22/11 | OP5* | Z* | ζ* | MQ-9 Reaper | GBU-12 | 1 | 3x EKIA |
| 6/28/11 | OP20* | AA* | γ* | MQ-1 Predator | AGM-114P | 1 | 2x EKIA |
| 6/28/11 | OP20* | AA* | γ* | MC-130W | Griffon | 2 | 3x EKIA |
| 6/28/11 | OP20* | AA* | ι* | AWT | 30mm | 2 | 3x EKIA |
| 6/29/11 | OP20* | AA* | κ* | F/A-18F | 20mm | 2 | Effective enemy suppression |
| 6/29/11 | OP20* | AA* | κ* | A-10 | GBU-38 | 2 | 4x EKIA |
| 6/29/11 | OP20* | AA* | κ* | A-10 | 30mm | 4 | Effective enemy suppression |
| 7/13/11 | TIC | QQ* | δ* | AWT | 30mm | 4 | 3x EKIA |
| 7/19/11 | TIC | QQ* | ζ* | MQ-1 Predator | GBU-12 | 1 | Cave opening destroyed |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 7/19/11 | TIC | QQ* | ζ* | MQ-1 Predator | AGM-114P | 2 | 2x EKIA |
| 7/24/11 | TIC | JJ* | ζ* | MQ-9 Reaper | AGM-114P | 1 | 7x EKIA |
| 7/24/11 | TIC | JJ* | | SWT | .50 cal | 1 | None |
| 7/26/11 | TIC | QQ* | δ* | AWT | 30mm | 4 | 1x EKIA |
| 7/26/11 | TIC | QQ* | δ* | AWT | 2.75" rockets | 4 | 3x EKIA |
| 7/27/11 | TIC | PP* | α* | AWT | 30mm | 3 | 1x EKIA |
| 7/27/11 | TIC | PP* | α* | AWT | 2.75" rockets | 15 | 1x fighting position destroyed |
| 7/28/11 | TIC | LL*, AUS | γ* | A-10 | WP | 2 | Effective enemy suppression |
| 7/31/11 | OP25* | Z* | | AWT | 30mm | 2 | 1x EKIA |
| 8/8/11 | TIC | OO* IED VIC BIP | ζ* | F/A-18F | GBU-38 | 1 | 1x vehicle destroyed |
| 8/13/11 | TIC | NN* | ε* | AWT | 30mm | 2 | contribute to destroying fighting position |
| 8/13/11 | TIC | NN* | ε* | AWT | AGM-114K2 | 3 | 7x EKIA, 2x enemy fighting positions destroyed |
| 8/13/11 | TIC | NN* | ε* | AWT | 2.75" rockets | 2 | 1x enemy fighting position destroyed |
| 8/23/11 | TIC | II* | ζ* | MQ-1 Predator | AGM-114P | 1 | 1x EKIA |
| 9/4/11 | TIC | JJ* | θ* | A-10 | 30mm | 2 | None |
| 9/4/11 | TIC | JJ* | θ* | A-10 | GBU-38 | 4 | 4x EKIA |
| 9/13/11 | TIC | MM* | ζ* | AC-130 | 40mm | 10 | Containment Fires |
| 9/17/11 | TIC | KK* | ε* | AWT | 30mm | 1 | 1x EKIA |
| 9/17/11 | 5W | KK* | ε* | A-10 | 30mm | 2 | 2x EKIA |
| 9/17/11 | 5W | KK* | ε* | AWT | 2.75" rockets | 2 | 5x EKIA, PKM |
| 9/19/11 | OP34* | Z* | λ* | AWT | AGM-114K2A | 1 | 8x EKIA |
| 9/19/11 | OP34* | Z* | λ* | AWT | 2.75" rockets | 5 | 4x EKIA |
| 9/19/11 | OP34* | Z* | λ* | AWT | 30mm | 8 | 6x EKIA |
| 9/21/11 | DT | II* | μ*/ζ* | Dutch F-16 | GBU-12 | 2 | HME cache destroyed |
| 9/22/11 | DT | II* | μ*/ζ* | B-1B | GBU31 | 2 | HME Cache destroyed |
| 9/22/11 | TIC | QQ* | δ* | AWT | 30mm | 2 | ICOM indicate good effects |
| 9/27/11 | TIC | W*/FOB Viper Romanians | None | AWT | 30mm | 2 | Unknown |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 9/29/11 | DT | HH* | ν*/06 | B-1B | GBU-31 | 2 | MATV destroyed |
| 9/29/11 | DT | HH* | ν*/06 | B-1B | GBU-38 | 3 | MATV destroyed |
| 10/3/11 | OP37 | Z* | ξ* | AC-130 | 40mm | 5 | Containment Fires on Infil |
| 10/3/11 | OP37/DT | Z* | ζ* | F/A-18 | GBU-31 | 2 | HME destroyed |
| 10/3/11 | OP37/DT | Z* | ζ* | F/A-18 | GBU-38 | 2 | HME destroyed |
| 10/3/11 | OP37/DT | Z* | ζ* | F/A-18 | GBU-12 | 2 | HME destroyed |
| 10/3/11 | TIC | QQ* | δ* | F/A-18 | 25mm | 4 | 6x EKIA |
| 10/4/11 | OP37 | Z* | κ* | B-1B | GBU-31 | 2 | HME destroyed |
| 10/4/11 | OP37 | Z* | κ* | B-1B | GBU-38 | 4 | HME destroyed |
| 10/4/11 | TIC | RR* | β* | AWT | 30mm | 4 | 4x EKIA |
| 10/16/11 | OP38* | AA* | κ* | AC-130 | 40mm | 4 | Containment fires |
| 10/17/11 | OP38* | AA* | κ* | AWT | 30mm | 1 | 1x EKIA |
| 10/28/11 | OP39* | Z* | ξ* | AWT | 30mm/2.75" | 6 | Containment fires |
| 10/29/11 | TIC | X* | ε* | A-10 | 30mm | 2 | Good effects |
| 10/29/11 | TIC | X* | ε* | AWT | 2.75" rockets | 2 | Good effects |
| 11/19/11 | TIC | X* | ε* | AWT | AGM-114 | 6 | Mortar / fighting position destroyed |

**This data set is courtesy of Bale Dalton.**

***Note: Names of operations, units, and call signs have been changed for security and privacy purposes.**

**Legend**

| | |
|---|---|
| AGM | Air-to-ground missile |
| ALP | Afghan local police |
| ANASF | Afghan national army special forces |
| ARP | Armed reconnaissance patrol |
| AUS | Australia |
| AWT | Air weapons team |
| BDA | Battle damage assessment |
| BIP | Blow in place |
| CANX | Cancelled |
| CAS | Close air support |
| CDO | Afghan commando |

| | |
|---|---|
| CONOP | Concept of operations |
| CP | Check point |
| CRP | Combat reconnaissance patrol |
| DT | Dynamic targeting |
| EKIA | Enemy killed in action |
| EW | Electronic warfare |
| FOB | Forward operating base |
| GBU | Guided bomb unit |
| HME | Home made explosives |
| IED | Improvised explosive device |
| INS | Insurgent |
| KAU | Uruzgan Security Battalion |
| M/C | Motorcycle |
| OBJ | Objective |
| OP | Operation |
| OW | Overwatch |
| PID | Positive identification |
| SOF | Special operations forces |
| SWT | Scout weapons team |
| TIC | Troops in contact |
| VIC | Vicinity |
| VSP | Village stability platform |
| 5W | Who, what, when, where, why |

Sheet 2: "Mar 11"

| Date | CONOP | Op | Platform | Mission | Drop (Y/N) |
|---|---|---|---|---|---|
| 3/16/11 | TIC | XX* | MC-130W | Fires | Y |
| 3/27/11 | TIC | C* | AWT | Fires | SOF |
| 3/29/11 | 0 | OP1* | AC-130 | Fires | |
| 3/29/11 | 0 | OP1* | EC-130 | EW | N |
| 3/30/11 | 0 | OP1* | MC-130W | Cancelled | N |
| 3/30/11 | 0 | OP1* | AC-130 | Fires | |
| 3/30/11 | 0 | OP1* | MC-130W | Fires | |
| 3/30/11 | 0 | OP1* | AC-130 | Fires | |
| 3/30/11 | 0 | OP1* | EA-6B | EW | N |
| 3/30/11 | 0 | OP1* | EA-6B | EW | N |

Sheet 3: "Apr 11"

| Date | CONOP | Op | Platform | Mission | Drop (Y/N) |
|---|---|---|---|---|---|
| 4/5/11 | 1 | OP2* | AC-130 | Fires | |
| 4/5/11 | 1 | OP2* | EC-130 | EW | N |
| 4/6/11 | 1 | OP2* | AC-130 | Fires | |
| 4/6/11 | 1 | OP2* | AC-130 | Unsupported | N |
| 4/6/11 | 1 | OP2* | MC-130W | Fires | |
| 4/6/11 | 1 | OP2* | EC-130 | EW | N |
| 4/6/11 | 1 | OP2* | EW | Unsupported | N |
| 4/10/11 | 1 | OP2* | AC-130 | Fires | |
| 4/10/11 | 1 | OP2* | EC-130 | EW | N |
| 4/11/11 | 1 | OP2* | AC-130 | Fires | |
| 4/11/11 | 1 | OP2* | MC-130W | Fires | |
| 4/11/11 | 1 | OP2* | EC-130 | EW | N |
| 4/12/11 | 1 | OP2* | MC-130W | Unsupported | N |
| 4/13/11 | 1 | OP2* | AC-130 | Fires | |
| 4/13/11 | 1 | OP2* | MC-130W | Unsupported | N |
| 4/13/11 | 1 | OP2* | EW | Unsupported | N |
| 4/15/11 | 1 | OP3* | MC-130W | Fires | |
| 4/15/11 | 1 | OP3* | A-10 | Fires | |
| 4/15/11 | 1 | OP3* | EA-6B | EW | N |
| 4/16/11 | 1 | OP3* | MC-130W | Fires | |
| 4/16/11 | 1 | OP3* | EW | Unsupported | N |
| 4/18/11 | 0 | OP4* | MC-130W | Cancelled | N |
| 4/18/11 | 0 | OP4* | MC-130W | Cancelled | N |
| 4/18/11 | 0 | OP4* | CAS | Cancelled | N |
| 4/19/11 | 0 | OP4* | EW | Cancelled | N |
| 4/19/11 | 0 | OP4* | MC-130W | Cancelled | N |
| 4/19/11 | 0 | OP4* | CAS | Cancelled | N |
| 4/20/11 | 0 | OP4* | CAS | Unsupported | N |
| 4/20/11 | 0 | OP4* | MC-130W | Unsupported | N |
| 4/20/11 | 0 | OP4* | EA-6B | EW | N |
| 4/21/11 | 0 | OP4* | F/A-18E | Fires | |
| 4/21/11 | 0 | OP4* | MC-130W | Fires | |
| 4/21/11 | 0 | OP4* | EA-6B | EW | N |
| 4/22/11 | 0 | OP5* | EW | Cancelled | N |
| 4/22/11 | 0 | OP5* | MC-130W | Cancelled | N |
| 4/25/11 | 5W | K*-5W-002 | EW | Unsupported | N |
| 4/25/11 | 5W | K*-5W-002 | AC-130 | Fires | |
| 4/28/11 | 0 | OP6* | EW | Unsupported | N |
| 4/29/11 | 0 | OP6* | EC-130 | EW | N |
| 4/29/11 | 0 | OP6* | AC-130 | Fires | |
| 4/29/11 | 0 | OP6* | MC-130W | Cancelled | N |
| 4/29/11 | TIC | G*, ALP CP | AWT | Fires | SOF |
| 4/30/11 | 0 | OP6* | MC-130W | Fires | |
| 4/30/11 | 0 | OP6* | AC-130 | Fires | |
| 4/30/11 | 0 | OP6* | EC-130 | EW | N |

| | | | | | |
|---|---|---|---|---|---|
| 4/30/11 | 0 | OP6* | EW | Unsupported | N |
| 4/30/11 | 0 | OP6* | EC-130 | EW | N |

Sheet 4: "May 11"

| Date | CONOP | Op | Platform | Mission | Drop (Y/N) |
|---|---|---|---|---|---|
| 5/6/11 | TIC | TT* | AWT | SOF | N |
| 5/7/11 | 0 | OP7* | F/A-18E | Fires | |
| 5/7/11 | 0 | OP7* | F/A-18E | Fires | |
| 5/7/11 | 0 | OP7* | MC-130W | Unsupported | N |
| 5/7/11 | 0 | OP7* | EA-6B | EW | N |
| 5/8/11 | 0 | OP7* | EA-6B | EW | N |
| 5/8/11 | 0 | OP7* | F/A-18F | Fires | |
| 5/8/11 | 0 | OP7* | MC-130W | Fires | |
| 5/8/11 | 0 | OP7* | CAS | Unsupported | N |
| 5/10/11 | 0 | OP8* | CAS | Cancelled | N |
| 5/10/11 | 0 | OP8* | EA-6B | Cancelled | N |
| 5/10/11 | 0 | OP8* | CAS | Cancelled | N |
| 5/10/11 | 0 | OP8* | MC-130W | Cancelled | N |
| 5/11/11 | 0 | OP9* | EC-130 | EW | N |
| 5/11/11 | 0 | OP9* | EC-130 | EW | N |
| 5/11/11 | 0 | OP9* | AC-130 | Fires | |
| 5/11/11 | 0 | OP8* | CAS | Cancelled | N |
| 5/11/11 | 0 | OP8* | CAS | Cancelled | N |
| 5/11/11 | 0 | OP8* | EW | Cancelled | N |
| 5/11/11 | 0 | OP8* | AC-130 | Cancelled | N |
| 5/11/11 | 0 | OP8* | MC-130W | Cancelled | N |
| 5/11/11 | TIC | BB*, ALP CP | AWT | Fires | SOF |
| 5/12/11 | 0 | OP10* | AC-130 | Fires | |
| 5/12/11 | 0 | OP10* | AC-130 | Cancelled | N |
| 5/12/11 | 0 | OP9* | AC-130 | Fires | |
| 5/12/11 | 0 | OP9* | EC-130 | EW | N |
| 5/12/11 | 0 | OP9* | MC-130W | Fires | |
| 5/14/11 | 0 | OP10* | AC-130 | Fires | |
| 5/14/11 | TIC | UU* | AWT | SOF/PID/BDA | N |
| 5/14/11 | TIC | UU* | F/A-18F | Fires | Y |
| 5/14/11 | TIC | UU* | AWT | SOF | N |
| 5/15/11 | 0 | OP10* | AC-130 | Cancelled | N |
| 5/16/11 | 0 | OP11* | EA-6B | EW | N |
| 5/16/11 | 0 | OP11* | EW | Unsupported | N |
| 5/16/11 | 0 | OP11* | AC-130 | Fires | Y |
| 5/17/11 | 0 | OP11* | MC-130W | Fires | N |
| 5/17/11 | 0 | OP11* | AWT | Fires | Y |

| | | | | | |
|---|---|---|---|---|---|
| 5/18/11 | 0 | OP11* | MC-130W | Fires | N |
| 5/18/11 | 0 | OP11* | EW | Unsupported | N |
| 5/18/11 | 0 | OP11* | AC-130 | Fires | N |
| 5/21/11 | 0 | OP12* | MC-130W | Fires | N |
| 5/21/11 | 0 | OP12* | AWT | Fires | N |
| 5/22/11 | 1 | OP13* | EC-130 | EW | N |
| 5/22/11 | 1 | OP13* | AC-130 | Fires | N |
| 5/23/11 | 1 | OP13* | CAS | Unsupported | N |
| 5/23/11 | 1 | OP13* | MC-130W | Fires | N |
| 5/23/11 | 1 | OP13* | EA-6B | EW | N |
| 5/23/11 | 1 | OP13* | AC-130 | Fires | N |
| 5/23/11 | TIC | OP13* | A-10 | Fires | Y |
| 5/25/11 | TIC | UU* | AWT | SOF | N |
| 5/25/11 | TIC | G*, ALP CP | AWT | SOF | N |
| 5/26/11 | 1 | OP14* | EC-130 | Cancelled | N |
| 5/26/11 | 1 | OP14* | AC-130 | Cancelled | N |
| 5/27/11 | 1 | OP14* | EA-6B | EW | N |
| 5/27/11 | 1 | OP14* | EW | Cancelled | N |
| 5/27/11 | 1 | OP14* | AC-130 | Cancelled | N |
| 5/27/11 | 1 | OP14* | AC-130 | Fires | N |
| 5/28/11 | 1 | OP14* | MC-130W | Fires | N |
| 5/28/11 | 1 | OP14* | AC-130 | Fires | N |
| 5/28/11 | 1 | OP14* | EC-130 | EW | N |
| 5/30/11 | TIC | UU* | AWT | Armed OW | N |

Sheet 5: “Jun 11”

| Date | CONOP | Op | Platform | Mission | Drop (Y/N) | Notes |
|---|---|---|---|---|---|---|
| 6/1/11 | 1 | OP15* | EC-130 | EW | N | |
| 6/1/11 | 1 | OP15* | AC-130 | Fires | N | |
| 6/2/11 | 0 | OP16* | B-1B | Fires | N | |
| 6/2/11 | 0 | OP16* | EW | Unsupported | N | |
| 6/2/11 | 1 | OP15* | MC-130W | Fires | N | |
| 6/2/11 | 1 | OP15* | F/A-18E | Fires | N | |
| 6/2/11 | 1 | OP15* | EA-6B | EW | N | |
| 6/2/11 | 1 | OP15* | AC-130 | Fires | N | |
| 6/3/11 | 0 | OP16* | A-10 | Fires | N | |
| 6/3/11 | 0 | OP16* | EW | Unsupported | N | |
| 6/3/11 | 0 | OP16* | A-10 | Fires | N | |
| 6/3/11 | 0 | OP16* | EC-130 | EW | N | |
| 6/3/11 | 0 | OP16* | EC-130 | EW | N | |
| 6/4/11 | * | BASE DEFENSE (Sinan) | AC-130 | Fires | N | |
| 6/5/11 | 0 | OP17* | EA-6B | EW | N | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 6/5/11 | 0 | OP17* | AC-130 | Fires | N | |
| 6/5/11 | 0 | OP8* | MC-130W | Fires | | |
| 6/5/11 | 0 | OP8* | AC-130 | Fires | | |
| 6/5/11 | 0 | OP8* | EA-6B | EW | | |
| 6/5/11 | 0 | OP8* | EA-6B | EW | | |
| 6/5/11 | 0 | OP8* | F/A-18F | Fires | | |
| 6/5/11 | 0 | OP8* | A-10 | Fires | | |
| 6/6/11 | 0 | OP17* | AC-130 | Fires | N | |
| 6/6/11 | 0 | OP17* | EC-130 | EW | N | |
| 6/6/11 | 0 | OP17* | MC-130W | Fires | Y | |
| 6/6/11 | TIC | OP17* | A-10 | Fires | Y | |
| 6/6/11 | TIC | OP17* | F-16C | Fires | Y | |
| 6/8/11 | TIC | TT* | AWT | SOF | N | PID, Route Recon |
| 6/8/11 | 5W | T*-5W-035 | MC-130W | Unsupported | N | |
| 6/12/11 | 0 | OP18* | AC-130 | Cancelled | N | |
| 6/12/11 | TIC | GG* | AWT | SOF | N | |
| 6/12/11 | TIC | VV* | A-10 | Fires | Y | |
| 6/12/11 | TIC | GG* | AWT | SOF | N | |
| 6/12/11 | TIC | GG* | AWT | Fires | SOF | |
| 6/13/11 | TIC | GG* | SWT | SOF | N | |
| 6/14/11 | TIC | VV* (OBJ KA*) | A-10 | SOF | N | |
| 6/14/11 | TIC | VV* (OBJ KA*) | A-10 | Fires | Y | |
| 6/14/11 | TIC | GG* | ISR | Armed OW | N | |
| 6/14/11 | TIC | GG* | AWT | Unsupported | N | |
| 6/16/11 | 0 | OP19* | EW | Cancelled | N | |
| 6/16/11 | 0 | OP19* | EW | Cancelled | N | |
| 6/16/11 | 0 | OP19* | AC-130 | Cancelled | N | |
| 6/16/11 | 0 | OP19* | CAS | Cancelled | N | |
| 6/17/11 | 0 | OP19* | MC-130W | Cancelled | N | |
| 6/18/11 | 0 | OP19* | MC-130W | Cancelled | N | |
| 6/18/11 | 0 | OP19* | AC-130 | Cancelled | N | |
| 6/18/11 | 0 | OP19* | EW | Cancelled | N | |
| 6/19/11 | TIC | SS* | AWT | SOF | N | |
| 6/19/11 | TIC | SS* | MC-130W | Armed OW | N | |
| 6/20/11 | TIC | UU* | MQ-1 | Armed OW | N | |
| 6/20/11 | TIC | UU* | AWT | Unsupported | N | |
| 6/21/11 | 1 | OP5* | EC-130 | EW | N | |
| 6/21/11 | 1 | OP5* | AC-130 | Fires | N | |
| 6/21/11 | TIC | EE* | ISR | Unsupported | N | |
| 6/21/11 | TIC | SS* | FW | Unsupported | N | |
| 6/21/11 | TIC | UU* | AWT | SOF | N | |
| 6/22/11 | TIC | EE* | AWT | Unsupported | N | |
| 6/22/11 | TIC | EE* | ISR | Unsupported | N | |
| 6/22/11 | TIC | OP5* | MQ-9 Reaper | Fires | Y | |
| 6/23/11 | 5W | J*-5W-051 | AC-130 | Fires | | |
| 6/23/11 | 1 | OP5* | EA-6B | EW | N | |

| | | | | | |
|---|---|---|---|---|---|
| 6/23/11 | 1 | OP5* | AC-130 | Fires | N |
| 6/23/11 | 1 | OP5* | MC-130W | Fires | N |
| 6/24/11 | TIC | SS* | F-15 | SOF | N |
| 6/26/11 | 0 | OP20* | AC-130 | Fires | N |
| 6/26/11 | 0 | OP20* | EC-130 | EW | N |
| 6/27/11 | 0 | OP20* | F-16C | Fires | N |
| 6/27/11 | 0 | OP20* | MC-130W | Fires | Y |
| 6/27/11 | 1 | OP21* | EC-130 | EW | N |
| 6/27/11 | 1 | OP21* | AC-130 | Fires | N |
| 6/28/11 | 0 | OP20* | F/A-18F | Fires | N |
| 6/28/11 | 5W | M*-5W-KL* | AC-130 | Unsupported | N |
| 6/28/11 | 1 | OP21* | MC-130W | Unsupported | N |
| 6/28/11 | TIC | SS* | AWT | SOF | N |
| 6/28/11 | TIC | SS* | MC-130W | Armed OW | N |
| 6/28/11 | TIC | SS* | SWT | SOF | N |
| 6/28/11 | TIC | OP20* | MQ-1 Predator | Fires | Y |
| 6/28/11 | TIC | OP20* | AWT | Fires | Y |
| 6/29/11 | 0 | OP20* | AC-130 | Fires | N |
| 6/29/11 | 0 | OP20* | A-10 | Fires | Y |
| 6/29/11 | 0 | OP20* | F/A-18F | Fires | Y |
| 6/29/11 | 5W | M*-5W-KL* | B-1B | Cancelled | N |
| 6/29/11 | 5W | M*-5W-KL* | MC-130W | Unsupported | N |
| 6/29/11 | 1 | OP21* | MC-130W | Fires | N |
| 6/29/11 | 1 | OP21* | EC-130 | EW | N |
| 6/29/11 | 1 | OP21* | AC-130 | Fires | N |
| 6/30/11 | 0 | OP20* | MC-130W | Fires | N |

Sheet 6: “Jul 11”

| Date | CONOP | Op | Platform | Mission | Drop (Y/N) |
|---|---|---|---|---|---|
| 7/1/11 | 5W | M*-5W-FAIZABAD | AC-130 | Cancelled | N |
| 7/1/11 | 0 | OP20* | EA-6B | Cancelled | N |
| 7/1/11 | 0 | OP20* | AC-130 | Cancelled | N |
| 7/2/11 | 5W | M*-5W-087 | MC-130W | Cancelled | N |
| 7/2/11 | 5W | M*-5W-087 | CAS | Cancelled | N |
| 7/3/11 | 5W | M*-5W-087 | MC-130W | Unsupported | N |
| 7/4/11 | 5W | M*-5W-087 | MC-130W | Cancelled | N |
| 7/4/11 | 5W | M*-5W-087 | CAS | Cancelled | N |
| 7/4/11 | TIC | UU* | AWT | Fires | Armed OW |
| 7/7/11 | 5W | M*-5W-087 | AC-130 | Fires | N |
| 7/8/11 | 5W | M*-5W-087 | B-1 | Fires | N |
| 7/8/11 | 5W | M*-5W-087 | A-10 | Fires | N |
| 7/8/11 | 5W | M*-5W-087 | MC-130W | Fires | N |

| | | | | | |
|---|---|---|---|---|---|
| 7/9/11 | TIC | Y*, ALP CP | AWT | Fires | SOF |
| 7/10/11 | 0 | OP22* | EW | Unsupported | N |
| 7/11/11 | 0 | OP22* | EC-130 | EW | N |
| 7/11/11 | 0 | OP22* | MC-130W | Fires | N |
| 7/11/11 | 0 | OP22* | EW | Unsupported | N |
| 7/11/11 | 5W | T*-5W-045 | SWT | Fires | N |
| 7/12/11 | 0 | OP22* | EA-6B | EW | N |
| 7/12/11 | 0 | OP22* | AC-130 | Fires | N |
| 7/13/11 | 5W | T*-5W-045 | SWT | Fires | N |
| 7/13/11 | TIC | G* | AWT | Fires | y |
| 7/19/11 | TIC | G* | MQ-9 | Fires | Y |
| 7/20/11 | TIC | AA* | AWT | Fires | Armed OW |
| 7/22/11 | 0 | OP23* | AC-130 | Fires | N |
| 7/22/11 | 0 | OP23* | EC-130 | EW | N |
| 7/23/11 | 5W | M*-5W-110 | MC-130W | Unsupported | N |
| 7/23/11 | 0 | OP23* | AC-130 | Fires | N |
| 7/23/11 | 0 | OP23* | MC-130W | Fires | N |
| 7/23/11 | TIC | OP23* | SWT | Fires | SOF |
| 7/24/11 | TIC | VV* | SWT | Fires | Y |
| 7/24/11 | TIC | VV* | MQ-9 Reaper | Fires | Y |
| 7/24/11 | TIC | WW* | SWT | Fires | SOF |
| 7/24/11 | 5W | M*-5W-110 | MC-130W | Unsupported | N |
| 7/24/11 | 0 | OP23* | CAS | Cancelled | N |
| 7/24/11 | 0 | OP23* | EW | Cancelled | N |
| 7/24/11 | 0 | OP23* | AC-130 | Cancelled | N |
| 7/24/11 | 0 | OP23* | MC-130W | Cancelled | N |
| 7/24/11 | TIC | UU* | MQ-9 | Fires/OW | Y |
| 7/24/11 | TIC | UU* | A-10 | Fires | SOF |
| 7/24/11 | TIC | UU* | SWT | Fires | SOF |
| 7/24/11 | TIC | FF* | AWT | Fires | SOF |
| 7/24/11 | TIC | G*, ALP CP | AWT | Fires | SOF |
| 7/25/11 | TIC | G*, ALP CP | B-1B | Fires | SOF |
| 7/26/11 | 1 | OP24* | EC-130 | EW | N |
| 7/26/11 | TIC | G* | AWT | Fires | Y |
| 7/27/11 | 1 | OP25* | EW | Cancelled | N |
| 7/27/11 | 1 | OP25* | AC-130 | Cancelled | N |
| 7/27/11 | 1 | OP24* | GR-4 Tornado | Fires | N |
| 7/27/11 | 1 | OP24* | EC-130 | EW | N |
| 7/27/11 | 1 | OP24* | MC-130W | Fires | N |
| 7/27/11 | 5W | M*-5W-110 | MC-130W | Cancelled | N |
| 7/27/11 | TIC | D* | AWT | Fires | Y |
| 7/28/11 | 1 | OP25* | MC-130W | Cancelled | N |
| 7/28/11 | 1 | OP24* | EA-6B | EW | N |
| 7/28/11 | 1 | OP24* | AC-130 | Fires | N |
| 7/28/11 | 1 | OP24* | MC-130W | Fires | N |
| 7/28/11 | TIC | B*, AUS | A-10 | Fires | Y |

| | | | | | |
|---|---|---|---|---|---|
| 7/30/11 | 1 | OP25* | EC-130 | EW | N |
| 7/30/11 | 1 | OP25* | AC-130 | Fires | N |
| 7/30/11 | 1 | OP25* | MC-130W | Cancelled | N |
| 7/30/11 | 1 | OP25* | EC-130 | Cancelled | N |
| 7/30/11 | 1 | OP25* | AC-130 | Cancelled | N |
| 7/30/11 | 1 | OP25* | MC-130W | Cancelled | N |
| 7/30/11 | 1 | OP25* | AC-130 | Cancelled | N |
| 7/30/11 | 1 | OP25* | EW | Cancelled | N |
| 7/31/11 | 1 | OP25* | A-10 | Fires | N |
| 7/31/11 | 1 | OP25* | EC-130 | EW | N |
| 7/31/11 | 1 | OP25* | AC-130 | Fires | N |
| 7/31/11 | 1 | OP25* | MC-130W | Fires | N |
| 7/31/11 | TIC | OP25* | AWT | Fires | Y |

Sheet 7: "Aug 11"

| Date | CONOP | Op | Platform | Mission | Drop (Y/N) | Notes |
|---|---|---|---|---|---|---|
| 8/1/11 | TIC | U* | AWT | Fires | SOF | |
| 8/1/11 | 5W | J*-5W-072C | MC-130W | Fires | N | |
| 8/1/11 | 5W | M*-5W-110 | MC-130W | Cancelled | N | |
| 8/2/11 | 5W | M*-5W-110 | MC-130W | Unsupported | N | |
| 8/3/11 | TIC | EE* | AWT | Fires | SOF | Helos stopped 4x INS on m/c. |
| 8/3/11 | 5W | M*-5W-110 | MC-130W | Fires | N | |
| 8/3/11 | 5W | M*-5W-110 | A-10 | Fires | N | |
| 8/4/11 | 1 | OP26* | AC-130 | Fires | N | |
| 8/4/11 | 1 | OP26* | EC-130 | EW | N | |
| 8/4/11 | 5W | G*-5W-105 | MC-130W | Fires | N | |
| 8/5/11 | 1 | OP26* | EC-130 | EW | N | |
| 8/5/11 | TIC | CC* | AWT | SOF | N | |
| 8/7/11 | 1 | OP27* | AC-130 | Cancelled | N | |
| 8/7/11 | 1 | OP27* | EC-130 | Cancelled | N | |
| 8/7/11 | 1 | OP27* | EC-130 | Cancelled | N | |
| 8/7/11 | 5W | J*-5W-076 | MC-130W | Fires | N | |
| 8/7/11 | TIC | BB* | AWT | Armed OW | N | |
| 8/7/11 | TIC | U* | AWT | SOF | N | |
| 8/8/11 | TIC | BB* | F/A-18 | Fires | Y | |
| 8/8/11 | TIC | Q* | AWT | Armed OW | N | |
| 8/9/11 | 1 | OP28* | EC-130 | Cancelled | N | |
| 8/9/11 | 1 | OP28* | EC-130 | Cancelled | N | |
| 8/9/11 | 1 | OP28* | AC-130 | Cancelled | N | |
| 8/10/11 | TIC | SS* | AWT | Armed OW | N | |
| 8/12/11 | 1 | OP29* | EA-6B | EW | N | |
| 8/12/11 | 1 | OP29* | AC-130 | Armed OW | N | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 8/12/11 | 1 | OP29* | AWT | Armed OW | N | |
| 8/12/11 | 1 | OP29* | EW | Unsupported | N | |
| 8/13/11 | TIC | C*-5W-089 | AWT | Fires | Y | |
| 8/13/11 | TIC | C*-5W-089 | MC-130W | Fires | N | Scan Eagle interfered w/Griffon shot. |
| 8/14/11 | TIC | V* | AWT | SOF | N | |
| 8/14/11 | 1 | OP30* | AC-130 | Fires | N | |
| 8/14/11 | 1 | OP30* | EW | Unsupported | N | |
| 8/14/11 | 1 | OP30* | EW | Unsupported | N | |
| 8/14/11 | 1 | OP30* | AWT | Fires | N | |
| 8/17/11 | 5W | M*-5W-118-CRP | AC-130 | Unsupported | N | |
| 8/17/11 | 5W | M*-5W-118-CRP | MC-130W | Fires | N | |
| 8/17/11 | 5W | M*-5W-118-CRP | A-10s | Fires | N | |
| 8/17/11 | TIC | D* | AWT | Fires | N | |
| 8/17/11 | 5W | D*-5W-068-ARP | AWT | Armed OW | N | |
| 8/18/11 | 1 | OP31* | EW | Unsupported | N | |
| 8/18/11 | 1 | OP31* | AC-130 | Fires | N | |
| 8/18/11 | 1 | OP31* | B-1B | Fires | N | |
| 8/18/11 | 1 | OP31* | EC-130 | EW | N | |
| 8/18/11 | 1 | OP31* | MQ-1 | Armed OW | N | |
| 8/18/11 | 1 | OP31* | MQ-9 | Armed OW | N | |
| 8/18/11 | TIC | N*-5W-169 | AWT | Armed OW | N | |
| 8/18/11 | TIC | P*-5W-169 | A-10 | Fires | N | |
| 8/19/11 | TIC | A*-5W-066 | AWT | Fires | N | |
| 8/19/11 | TIC | A*-5W-066 | A-10 | Fires | N | |
| 8/19/11 | TIC | CC* | AWT | Fires | N | |
| 8/20/11 | TIC | J* ALP CP | AWT | SOF | N | |
| 8/21/11 | 5W | Q*-5W-014 | MC-130W | Armed OW | N | |
| 8/22/11 | TIC | G*-5W-116 | AWT | Armed OW | N | |
| 8/22/11 | TIC | G*-5W-116 | F-15E | Armed OW | N | |
| 8/22/11 | TIC | N*-5W-170 | F/A-18E | Armed OW | N | |
| 8/22/11 | TIC | N*-5W-170 | A-10 | Armed OW | N | |
| 8/22/11 | TIC | N*-5W-170 | SWT | Armed OW | N | |
| 8/22/11 | TIC | N*-5W-170 | F-15E | Armed OW | N | |
| 8/23/11 | TIC | N*-5W-170 | F/A-18F | Fires | N | |
| 8/23/11 | TIC | N*-5W-170 | F-15E | Fires | N | |
| 8/23/11 | TIC | N*-5W-170 | MQ-1 | Fires | Y | |
| 8/25/11 | 5W | B*-5W-131 | MC-130W | Armed OW | N | |
| 8/25/11 | TIC | B*-5W-131 | AWT | Fires | N | |
| 8/25/11 | TIC | B*-5W-131 | MC-130W | Armed OW | N | |
| 8/26/11 | TIC | II* | AWT | Fires | N | |
| 8/27/11 | 5W | N*-5W-172 | MC-130W | Armed OW | N | |
| 8/27/11 | 5W | N*-5W-172 | AWT | Armed OW | N | |
| 8/28/11 | 5W | M*-5W-127 | MC-130W | Fires | N | |
| 8/28/11 | 5W | M*-5W-127 | SWT | Armed OW | N | |
| 8/28/11 | 1 | OP32* | AWT | Cancelled | N | |
| 8/28/11 | 1 | OP32* | AC-130 | Cancelled | N | |

| | | | | | |
|---|---|---|---|---|---|
| 8/28/11 | 1 | OP32* | F-15E | Cancelled | N |
| 8/28/11 | 1 | OP32* | EA-6B | Cancelled | N |
| 8/28/11 | 1 | OP32* | EW | Unsupported | N |
| 8/29/11 | 1 | OP32* | AWT | Armed OW | N |
| 8/29/11 | 1 | OP32* | AC-130 | Fires | N |
| 8/29/11 | 1 | OP32* | F-15E | Fires | N |
| 8/29/11 | 1 | OP32* | EW | Unsupported | N |
| 8/29/11 | 1 | OP32* | EW | Unsupported | N |
| 8/31/11 | TIC | B* | AWT | Fires | N |

Sheet 8: "Sep 11"

| Date | CONOP | Op | Platform | Mission | Drop (Y/N) |
|---|---|---|---|---|---|
| 9/1/11 | 5W | N*-5W-173 | AWT | Armed OW | N |
| 9/2/11 | 5W | B*-5W-138 | AWT | Fires | N |
| 9/2/11 | 5W | B*-5W-138 | MC-130W | Armed OW | N |
| 9/2/11 | IDF | VV* | AWT | Armed OW | N |
| 9/3/11 | TIC | Q*-5W-023 | AWT | Fires | N |
| 9/3/11 | TIC | Q*-5W-023 | AWT | Fires | N |
| 9/4/11 | TIC | O*-5W-191 | A-10 | Fires | Y |
| 9/5/11 | TIC | Q*-5W-024 | AWT | Fires | N |
| 9/5/11 | TIC | Q*-5W-024 | A-10 | Fires | N |
| 9/5/11 | TIC | Q*-5W-024 | MC-12 | Overwatch | N |
| 9/5/11 | TIC | Q*-5W-024 | EA-6B | EW | N |
| 9/5/11 | TIC | Q*-5W-024 | AWT | Armed OW | N |
| 9/5/11 | 1 | OP33* | AC-130 | Fires | N |
| 9/5/11 | 1 | OP33* | EW | Unsupported | N |
| 9/5/11 | 1 | OP33* | EA-6B | EW | N |
| 9/5/11 | 1 | OP33* | CAS | Unsupported | N |
| 9/5/11 | 1 | OP33* | A-10 | Fires | N |
| 9/5/11 | 1 | OP33* | AWT | Armed OW | N |
| 9/6/11 | 1 | OP33* | MC-130W | Armed OW | N |
| 9/6/11 | TIC | Q* QRF | AWT | Armed OW | N |
| 9/6/11 | 1 | OP33* | CAS | Unsupported | N |
| 9/6/11 | 1 | OP33* | MQ-9 | Armed OW | N |
| 9/7/11 | 1 | OP33* | EA-6B | EW | N |
| 9/7/11 | 1 | OP33* | AC-130 | Fires | N |
| 9/7/11 | 1 | OP33* | AWT | Armed OW | N |
| 9/9/11 | TIC | I* KAU CP | AWT | Fires | N |
| 9/10/11 | TIC | N*, VSP Sinan | SWT | Fires | N |
| 9/10/11 | TIC | N*, VSP Sinan | F/A-18E | Fires | N |
| 9/13/11 | TIC | F* | F-16 | Fires | N |
| 9/13/11 | TIC | F* | AWT | Fires | N |

| | | | | | |
|---|---|---|---|---|---|
| 9/13/11 | TIC | F* | MC-130W | Fires | N |
| 9/13/11 | TIC | F* | AWT | Fires | N |
| 9/13/11 | TIC | F* | CAS | Unsupported | N |
| 9/13/11 | TIC | F* | AWT | Fires | N |
| 9/13/11 | TIC | L*, F* QRF | Assault | Unsupported | N |
| 9/13/11 | TIC | L*, F* QRF | MH-47 | Assault | N |
| 9/13/11 | TIC | F* | AC-130 | Fires | Y |
| 9/14/11 | TIC | N*, VSP Sinan | F-15 | Fires | N |
| 9/14/11 | TIC | N*, VSP Sinan | AWT | Fires | N |
| 9/16/11 | TIC | E*, ALP CP | AWT | Fires | N |
| 9/16/11 | 1 | OP34* | AC-130 | Cancelled | N |
| 9/16/11 | 1 | OP34* | EW | Cancelled | N |
| 9/16/11 | 1 | OP34* | EW | Cancelled | N |
| 9/16/11 | 1 | OP34* | AWT | Cancelled | N |
| 9/17/11 | 1 | OP34* | MC-130W | Cancelled | N |
| 9/17/11 | 1 | OP34* | CAS | Cancelled | N |
| 9/17/11 | 5W | OP35*/B*-5W-149 | AWT | Fires | N |
| 9/17/11 | 5W | OP35*/B*-5W-149 | MC-130W | Fires | N |
| 9/17/11 | TIC | OP35*/B*-5W-149 | B-1B | Fires | N |
| 9/17/11 | TIC | OP35*/B*-5W-149 | F/A-18C | Fires | N |
| 9/17/11 | TIC | OP35*/B*-5W-149 | AWT | Fires | N |
| 9/17/11 | TIC | OP35*/B*-5W-149 | F/A-18C | Fires | N |
| 9/17/11 | TIC | OP35*/B*-5W-149 | AWT | Fires | N |
| 9/17/11 | TIC | OP35*/B*-5W-149 | A-10 | Fires | Y |
| 9/17/11 | TIC | OP35*/B*-5W-149 | AWT | Fires | N |
| 9/17/11 | 5W | OP35*/B*-5W-149 | AWT | Fires | Y |
| 9/18/11 | 1 | OP34* | MC-130W | Cancelled | N |
| 9/18/11 | 1 | OP34* | CAS | Cancelled | N |
| 9/18/11 | 1 | OP34* | AC-130 | Cancelled | N |
| 9/18/11 | 1 | OP34* | EW | Cancelled | N |
| 9/18/11 | 1 | OP35*/KHOD L* | AC-130 | Fires | N |
| 9/18/11 | 1 | OP35*/KHOD L* | EA-6B | EW | N |
| 9/18/11 | 1 | OP35*/KHOD L* | EA-6B | EW | N |
| 9/18/11 | 1 | OP35*/KHOD L* | MC-130W | Fires | N |
| 9/18/11 | 1 | OP35*/KHOD L* | F/A-18C | Fires | N |
| 9/18/11 | 1 | OP35* / RESUPPLY ESCORT | AWT | Armed OW | N |
| 9/19/11 | 1 | OP35*/KHOD L* | MC-130W | Fires | N |
| 9/19/11 | 1 | OP35*/KHOD L* | F/A-18E | Fires | N |
| 9/19/11 | 1 | OP35* /KHOD L* | F/A-18E | Fires | N |
| 9/19/11 | 1 | OP34* | MQ-9 | Fires | N |
| 9/19/11 | 1 | OP34* | AWT | Fires | Y |
| 9/19/11 | 1 | OP34* | AC-130 | Fires | N |
| 9/19/11 | 1 | OP34* | FW CAS | Unsupported | N |
| 9/19/11 | 1 | OP34* | EW | EW | N |
| 9/19/11 | 1 | OP34* | EW | EW | N |

| | | | | | |
|---|---|---|---|---|---|
| 9/20/11 | 1 | OP34* | MC-130W | Fires | N |
| 9/21/11 | 1 | OP34* | MC-130W | Fires | N |
| 9/21/11 | 1 | OP34* | AC-130 | Fires | N |
| 9/21/11 | 1 | OP34* | EW | EW | N |
| 9/21/11 | DT | SINAN HME DT | F-16 | Fires | Y |
| 9/21/11 | TIC | U* | SWT | Fires | N |
| 9/21/11 | TIC | U* | SWT | Fires | N |
| 9/21/11 | DT | SINAN HME DT | B-1B | Fires | Y |
| 9/22/11 | TIC | JJ* | AWT | Fires | N |
| 9/22/11 | TIC | JJ* | F/A-18 | Fires | N |
| 9/22/11 | TIC | G*-5W-135 | F-15 | Fires | N |
| 9/22/11 | TIC | G*-5W-135 | AWT | Fires | Y |
| 9/23/11 | 1 | OP35* | AC-130 | Fires | N |
| 9/23/11 | 1 | OP35* | EW | EW | N |
| 9/24/11 | 5W | N*-5W-186 | AWT | Fires | N |
| 9/24/11 | 5W | N*-5W-186 | MC-130W | Fires | N |
| 9/24/11 | 5W | N*-5W-186 | EA-6B | EW | N |
| 9/25/11 | 1 | OP36* | EW | EW | N |
| 9/25/11 | 1 | OP36* | AC-130 | Fires | N |
| 9/26/11 | 1 | OP36* | MC-130W | Fires | N |
| 9/26/11 | 1 | OP36* | FW CAS | Fires | N |
| 9/27/11 | 1 | OP36* | AC-130 | Fires | N |
| 9/27/11 | 1 | OP36* | MC-130W | Fires | N |
| 9/27/11 | 1 | OP36* | FW CAS | Fires | N |
| 9/27/11 | TIC | U* FOB Viper Defense | AWT | Fires | Y |
| 9/28/11 | 1 | OP36* | MC-130W | Fires | N |
| 9/28/11 | 1 | OP36* | AWT | Armed OW | N |
| 9/28/11 | 1 | OP36* | EW | EW | N |
| 9/28/11 | 1 | OP36* | AC-130 | Fires | N |
| 9/29/11 | 1 | OP36* | B-1B | Fires | Y |

Sheet 9: “Oct 11”

| Date | CONOP | Op | Platform | Mission | Drop (Y/N) | Notes |
|---|---|---|---|---|---|---|
| 10/1/11 | TIC | U* | AWT | Fires | N | |
| 10/1/11 | 5W | N*-5W-187 | AWT | Armed OW | N | |
| 10/1/11 | IED | O*-5W-229 | B-1B | Armed OW | N | |
| 10/1/11 | IED | O*-5W-229 | AWT | Armed OW | N | |
| 10/3/11 | 1 | OP37 | AWT | Armed Escort | N | |
| 10/3/11 | 1 | OP37 | EA-6B | EW | N | |
| 10/3/11 | 1 | OP37 | EC-130 | EW | N | |
| 10/3/11 | TIC | G* / ANASF CP | F/A-18 | Fires | N | |
| 10/3/11 | TIC | G* / ANASF CP | AWT | Fires | N | |

| | | | | | |
|---|---|---|---|---|---|
| 10/3/11 | 1 | OP37 | AC-130 | Fires | Y |
| 10/3/11 | TIC | G* / ANASF CP | F/A-18 | Fires | Y |
| 10/4/11 | 1 | OP37 | MC-130W | Armed OW | N |
| 10/4/11 | 1 | OP37 | MQ-9 | Armed OW | N |
| 10/4/11 | TIC | I* | AWT | Fires | N |
| 10/4/11 | 1 | OP37 | F/A-18 | Fires | Y |
| 10/5/11 | 1 | OP37 | MC-130W | Armed OW | N |
| 10/5/11 | 1 | OP37 | AWT | Armed Escort | N |
| 10/5/11 | 1 | OP37 | AC-130 | Fires | N |
| 10/5/11 | 1 | OP37 | B-1B | Fires | Y |
| 10/5/11 | TIC | I* | AWT | Fires | Y |
| 10/6/11 | TIC | U* | SWT | Fires | N |
| 10/7/11 | TIC | SS* | AWT | Fires | N |
| 10/7/11 | TIC | UU* | AWT | Fires | N |
| 10/8/11 | TIC | VV* | AWT | Fires | N |
| 10/8/11 | TIC | VV* | F-15 | Fires | N |
| 10/9/11 | TIC | U* | AWT | Fires | N |
| 10/10/11 | DT | C* | CAS | Denied | N |
| 10/10/11 | 5W | C*-5W-116 | F/A-18 | Fires | N |
| 10/10/11 | 5W | C*-5W-116 | MQ-1 | Unsupported | N |
| 10/10/11 | TIC | U* | AWT | Fires | N |
| 10/13/11 | TIC | S* | AWT | Fires | N |
| 10/13/11 | TIC | H* | AWT | Fires | N |
| 10/14/11 | 5W | M*-5W-147 | MC-130W | Armed OW | N |
| 10/16/11 | 1 | OP38* | EW | Unsupported | N |
| 10/16/11 | 1 | OP38* | AWT | Fires | Y |
| 10/16/11 | 1 | OP38* | AC-130 | Fires | N |
| 10/16/11 | 1 | OP38* | MC-130W | Armed OW | N |
| 10/16/11 | 1 | OP38* | F/A-18 | Fires | N |
| 10/17/11 | 1 | OP39* | EW | Unsupported | N |
| 10/17/11 | 1 | OP39* | AC-130 | Cancelled | N |
| 10/17/11 | 1 | OP39* | MC-130W | Cancelled | N |
| 10/17/11 | 1 | OP39* | FW CAS | Cancelled | N |
| 10/17/11 | 1 | OP38* | MC-130W | Fires | N |
| 10/17/11 | 1 | OP38* | AWT | Fires | Y |
| 10/17/11 | 1 | OP38* | FW CAS | Fires | N |
| 10/17/11 | 1 | OP38* | EA-6B | EW | N |
| 10/17/11 | 1 | OP38* | AC-130 | Fires | N |
| 10/18/11 | 1 | OP39* | MC-130W | Cancelled | N |
| 10/18/11 | 1 | OP39* | FW CAS | Cancelled | N |
| 10/18/11 | 1 | OP39* | EW | Cancelled | N |
| 10/18/11 | 1 | OP39* | AC-130 | Cancelled | N |
| 10/21/11 | TIC | U* | A-10 | Fires | N |
| 10/22/11 | TIC | E* | A-10 | Fires | N |
| 10/22/11 | 5W | R*-5W-030 | AWT | Armed OW | N |
| 10/22/11 | 5W | R*-5W-030 | MC-130W | Fires | N |

| | | | | | |
|---|---|---|---|---|---|
| 10/23/11 | TIC | U* | A-10 | Unsupported | N |
| 10/23/11 | 5W | M*-5W-154 | MC-130W | Unsupported | N |
| 10/23/11 | 5W | M*-5W-154 | AWT | Armed OW | N |
| 10/24/11 | 1 | OP40* (8th CDO LMAR 002) | AC-130 | Fires | N |
| 10/24/11 | 1 | OP40* (8th CDO LMAR 002) | EC-130 | EW | N |
| 10/24/11 | 1 | OP40* (8th CDO LMAR 002) | B-1B | Fires | N |
| 10/25/11 | 1 | OP40* (8th CDO LMAR 002) | MC-130W | Fires | N |
| 10/25/11 | 1 | OP40* (8th CDO LMAR 002) | A-10 | Fires | N |
| 10/25/11 | 1 | OP40* (8th CDO LMAR 002) | F/A-18 | Fires | N |
| 10/25/11 | TIC | O* VSP Defense | AWT | Unsupported | N |
| 10/25/11 | TIC | O* VSP Defense | F/A-18 | Fires | N |
| 10/25/11 | TIC | U*-5W-075 | F/A-18 | Fires | N |
| 10/25/11 | TIC | U*-5W-075 | B-1B | Fires | N |
| 10/25/11 | TIC | U*-5W-075 | AWT | Fires | N |
| 10/25/11 | TIC | DD* VSP Defense | AWT | Fires | N |
| 10/26/11 | TIC | U*-5W-076 | A-10 | Fires | N |
| 10/26/11 | 1 | OP40* (8th CDO LMAR 002) | AWT | Unsupported | N |
| 10/26/11 | 1 | OP40* (8th CDO LMAR 002) | F/A-18 | Fires | N |
| 10/26/11 | TIC | N* Base Defense | AWT | Fires | N |
| 10/26/11 | 1 | OP40* (8th CDO LMAR 002) | AWT | Armed OW | N |
| 10/26/11 | 1 | OP40* (8th CDO LMAR 002) | CAS | Cancelled | N |
| 10/26/11 | 1 | OP40* (8th CDO LMAR 002) | EA-6B | EW | N |
| 10/26/11 | 1 | OP40* (8th CDO LMAR 002) | AC-130 | Fires | N |
| 10/28/11 | 1 | OP39* (8th CDO LMAR 001) | AC-130 | Fires | N |
| 10/28/11 | 1 | OP39* (8th CDO LMAR 001) | B-1B | Fires | N |
| 10/28/11 | 1 | OP39* (8th CDO LMAR 001) | EC-130 | EW | N |
| 10/28/11 | 1 | OP39* (8th CDO LMAR 001) | AWT | Fires | N |
| 10/28/11 | 1 | OP39* (8th CDO LMAR 001) | MC-130W | Fires | N |
| 10/28/11 | TIC | OP39* (8th CDO LMAR 001) | AWT | Fires | N |
| 10/28/11 | TIC | OP39* (8th CDO LMAR 001) | A-10 | Fires | N |
| 10/28/11 | 1 | OP39* (8th CDO LMAR 001) | A-10 | Unsupported | N |
| 10/28/11 | TIC | OP39* (8th CDO LMAR 001) | F-15E | Fires | Y |
| 10/28/11 | TIC | OP39* (8th CDO LMAR 001) | AWT | Fires | N |
| 10/28/11 | 1 | OP39* (8th CDO LMAR 001) | AC-130 | Fires | N |
| 10/28/11 | 1 | OP39* (8th CDO LMAR 001) | EA-6B | EW | N |

| | | | | | | |
|---|---|---|---|---|---|---|
| 10/28/11 | 1 | OP39* (8th CDO LMAR 001) | A-10 | Fires | N | |
| 10/28/11 | 1 | OP39* (8th CDO LMAR 001) | AWT | Fires | Y | |
| 10/29/11 | TIC | Q*-5W-057 | AWT | Fires | N | |
| 10/29/11 | TIC | Q*-5W-057 | A-10 | Fires | Y | |
| 10/31/11 | 1 | OP41* (8th CDO LMAR 003) | AC-130 | Cancelled | N | Canx by CJSOTF |
| 10/31/11 | TIC | R*-5W-037 | A-10 | Fires | N | |
| 10/31/11 | 1 | OP41* (8th CDO LMAR 003) | EW | Cancelled | N | |
| 10/31/11 | 1 | OP41* (8th CDO LMAR 003) | EW | Cancelled | N | |
| 10/31/11 | 1 | OP41* (8th CDO LMAR 003) | CAS | Cancelled | N | |
| 10/31/11 | 1 | OP41* (8th CDO LMAR 003) | CAS | Cancelled | N | |

Sheet 10: "Nov 11"

| Date | CONOP | Op | Platform | Mission | Drop (Y/N) | Notes |
|---|---|---|---|---|---|---|
| 11/2/11 | 1 | OP42* (8th CDO LMAR 004) | AC-130 | Cancelled | N | Canx by CJSOTF |
| 11/2/11 | 1 | OP42* (8th CDO LMAR 004) | EW | Cancelled | N | |
| 11/2/11 | 1 | OP42* (8th CDO LMAR 004) | CAS | Cancelled | N | |
| 11/3/11 | 5W | M*-5W-168 | MC-130W | Armed OW | N | |
| 11/3/11 | 5W | M*-5W-168 | AWT | Armed OW | N | |
| 11/3/11 | 1 | OP42* (8th CDO LMAR 004) | MC-130W | Cancelled | N | |
| 11/3/11 | 1 | OP42* (8th CDO LMAR 004) | EW | Cancelled | N | |
| 11/3/11 | 1 | OP42* (8th CDO LMAR 004) | CAS | Cancelled | N | |
| 11/3/11 | 1 | OP42* (8th CDO LMAR 004) | CAS | Cancelled | N | |
| 11/3/11 | 1 | OP42* (8th CDO LMAR 004) | AC-130 | Cancelled | N | |
| 11/3/11 | 1 | OP42* (8th CDO LMAR 004) | CAS | Cancelled | N | |
| 11/3/11 | 1 | OP42* (8th CDO LMAR 004) | EW | Cancelled | N | |
| 11/6/11 | IED | J* IED STRIKE | AWT | Armed OW | N | |
| 11/6/11 | -- | R* VSP Defense | AC-130 | Unsupported | N | |
| 11/9/11 | 5W | R*-5W-045 | MC-130W | Fires | N | |

| | | | | | |
|---|---|---|---|---|---|
| 11/11/11 | 5W | M*-5W-162 | MC-130W | Fires | N |
| 11/11/11 | 5W | M*-5W-162 | AWT | Fires | N |
| 11/13/11 | 1 | 8th CDO LMAR 005 | AC-130 | Unsupported | N |
| 11/13/11 | 1 | 8th CDO LMAR 005 | B-1B | Fires | N |
| 11/13/11 | 1 | 8th CDO LMAR 005 | EW | Unsupported | N |
| 11/13/11 | 1 | 8th CDO LMAR 005 | MC-130W | Fires | N |
| 11/13/11 | 1 | 8th CDO LMAR 005 | A-10 | Fires | N |
| 11/13/11 | 1 | 8th CDO LMAR 005 | AC-130 | Fires | N |
| 11/13/11 | 1 | 8th CDO LMAR 005 | A-10 | Fires | N |
| 11/13/11 | 1 | 8th CDO LMAR 005 | EW | EW | N |
| 11/13/11 | 5W | M*-5W-163 | AWT | Fires | N |
| 11/13/11 | 5W | M*-5W-163 | MC-130W | Unsupported | N |
| 11/14/11 | 5W | M*-5W-164 | AWT | Fires | N |
| 11/14/11 | 5W | M*-5W-164 | MC-130W | Fires | N |
| 11/16/11 | 5W | M*-5W-165 | AWT | Fires | N |
| 11/16/11 | 0 | 8th CDO LMAR 006 | AC-130 | Fires | N |
| 11/16/11 | 0 | 8th CDO LMAR 006 | B-1B | Fires | N |
| 11/16/11 | 0 | 8th CDO LMAR 006 | EC-130 | EW | N |
| 11/16/11 | 0 | 8th CDO LMAR 006 | MC-130W | Fires | N |
| 11/16/11 | 0 | 8th CDO LMAR 006 | A-10 | Fires | N |
| 11/16/11 | 0 | 8th CDO LMAR 006 | AC-130 | Fires | N |
| 11/16/11 | 0 | 8th CDO LMAR 006 | A-10 | Fires | N |
| 11/16/11 | 0 | 8th CDO LMAR 006 | EC-130 | EW | N |
| 11/19/11 | 0 | G*-001 Obj SO* | MC-130W | Unsupported | N |
| 11/19/11 | 0 | G*-001 Obj SO* | EA-6B | EW | N |
| 11/19/11 | 0 | G*-001 Obj SO* | EW | Unsupported | N |
| 11/19/11 | 0 | G*-001 Obj SO* | A-10 | Fires | N |
| 11/19/11 | 0 | G*-001 Obj SO* | A-10 | Cancelled | N |
| 11/19/11 | 5W | R*-5W-053 | MC-130W | Unsupported | N |
| 11/19/11 | 5W | R*-5W-053 | AWT | Unsupported | N |
| 11/19/11 | 5W | Q*-5W-075 | B-1B | Fires | N |
| 11/19/11 | 5W | Q*-5W-075 | AWT | Fires | Y |
| 11/20/11 | 5W | M*-5W-166 | AWT | Fires | N |
| 11/21/11 | 5W | M*-5W-167 | AWT | Fires | N |
| 11/22/11 | 5W | R*-5W-056 | MC-130W | Fires | N |
| 11/22/11 | 5W | R*-5W-056 | DEFY | Fires | N |
| 11/25/11 | VSP | VSP KHOD | F-16 | Fires | N |
| 11/25/11 | VSP | VSP KHOD | A-10 | Fires | N |
| 11/25/11 | VSP | VSP KHOD | AWT | Fires | N |
| 11/28/11 | 5W | R*-5W-059 | MC-130W | Cancelled | N |
| 11/28/11 | 0 | 8th CDO LMAR 007 | AC-130 | Cancelled | N |
| 11/28/11 | 0 | 8th CDO LMAR 007 | CAS | Cancelled | N |
| 11/28/11 | 0 | 8th CDO LMAR 007 | EW | Cancelled | N |
| 11/28/11 | 0 | 8th CDO LMAR 007 | CAS | Cancelled | N |
| 11/28/11 | 0 | 8th CDO LMAR 007 | EW | Cancelled | N |
| 11/28/11 | 0 | 8th CDO LMAR 007 | MC-130W | Cancelled | N |

| | | | | | |
|---|---|---|---|---|---|
| 11/28/11 | 0 | 8th CDO LMAR 007 | AC-130 | Cancelled | N |
| 11/28/11 | 0 | 8th CDO LMAR 007 | CAS | Cancelled | N |
| 11/28/11 | 0 | 8th CDO LMAR 007 | EW | Cancelled | N |
| 11/30/11 | 5W | B*-5W-198 | B-1B | Fires | N |
| 11/30/11 | 5W | B*-5W-198 | F-16 | Fires | N |
| 11/30/11 | 5W | B*-5W-2198 | MC-130W | Unsupported | N |
| 12/1/11 | 0 | 8th CDO LMAR 007 | AC-130 | Fires | N |
| 12/1/11 | 0 | 8th CDO LMAR 007 | B-1B | Fires | N |
| 12/1/11 | 0 | 8th CDO LMAR 007 | EC-12 | EW | N |
| 12/1/11 | 0 | 8th CDO LMAR 007 | B-1B | Fires | N |
| 12/1/11 | 0 | 8th CDO LMAR 007 | EC-12 | EW | N |
| 12/1/11 | 0 | 8th CDO LMAR 007 | MC-130W | Fires | N |
| 12/1/11 | 0 | 8th CDO LMAR 007 | AC-130 | Fires | N |
| 12/1/11 | 0 | 8th CDO LMAR 007 | A-10 | Fires | N |
| 12/1/11 | 0 | 8th CDO LMAR 007 | EW | Unsupported | N |
| 12/2/11 | VSP | VSP TAGAW | AWT | Fires | N |

## Appendix E: JTAC Alternate Utility Scores

**1. JTAC Alternate Utility Scoring Questionnaire.** Three experienced JTACs completed a questionnaire asking them to provide utility scores for the A-10 and F-35 on the eight dimensions of performance used for this cost effectiveness analysis. The results of these questionnaires tested whether the analysis is robust to plausible alternate scores for the levels of capability of these two aircraft. This is important because only speed and range can be determined directly from U.S. Air Force fact sheets, so that assessments of performance levels on the other dimensions require interpretation of publicly available information and/or expert knowledge. For example there is ample evidence, cited in this paper, that the A-10's gun is highly accurate and the F-35's gun is not. However selecting specific A-10 and F-35 scores for "gun accuracy" of 3 and 1, as the authors did, still requires a degree of subjective interpretation.

One JTAC (JTAC #1 Questionnaire Results, below) provided scores that were relatively more favorable to the F-35 than the authors' scores were. The other two JTACs provided scores that were similar to those the authors used.

**2. Questionnaire Format.** Each questionnaire began with the text below, followed by six questions. The first five questions were demographic and checked the

experience level of the JTAC. The sixth question asked the JTAC to provide his utility scores for each aircraft.

## CAS Scoring Questionnaire

### Introductory Note

This questionnaire is designed to seek your input as a subject-matter expert on close air support. The questionnaire asks you to compare and score the levels of capabilities of the F-35 and A-10 in eight areas. Note that you are not asked to evaluate the relative importance of these areas of capability, but rather to identify which aircraft is better in each area and by how much. For example, the questionnaire does not ask whether speed is important for close air support, rather it asks which aircraft is faster and by how much.

Please carefully consider your answers, and answer based on your experience. If capability differences are hard to quantify, use your best judgment. If you do not have direct experience with the F-35 due to its limited operational use at the time of this questionnaire, use your best judgment based on what you know about the F-35 and similar aircraft.

### Scoring Method

Determine which aircraft is superior in a given area. Score the better aircraft as a "3." Score the lesser aircraft as a "2" if the difference in capability is small and a "1" if the difference in capability is large. If the lesser aircraft has no capability whatsoever in a given area, score it as a "0."

It should take you no more than 5 minutes to complete this questionnaire.

## 3. JTAC #1 Questionnaire Results

1. Name (Optional)_____

2. Years active duty service.

- ○ 1-5.
- ○ 6-10.
- x 11-15.
- ○ 16+.

3. Years as a qualified JTAC.

- ○ 1-5.
- ○ 6-10.
- x 11-15.
- ○ 16+.
- ○ 0.

4. Number of deployments where you worked as a JTAC in Iraq or Afghanistan.

- ○ 1.
- ○ 2.
- ○ 3.
- ○ 4.
- x 5.
- ○ 6.
- ○ 7.
- ○ 8.
- ○ 9.
- ○ 10+.
- ○ 0.

5. Number of times you have controlled aircraft of any kind in Iraq or Afghanistan.

- ○ 1-5.
- ○ 6-10.
- ○ 11-15.
- ○ 16-20.
- x 21+.
- ○ 0.

5. Scores (0-3)

| | F-35 | A-10 |
|---|---|---|
| Loiter Time | 3 | 2 |
| Radar Stealth | 3 | 1 |
| Detailed sense of the ground environment | 0 | 3 |
| Low audible noise signature | 3 | 1 |
| Survivability against small arms fire from the ground | 3 | 2 |
| Speed | 3 | 2 |
| Accuracy of gun/cannon; low risk of collateral damage | 0 | 3 |
| Range | 3 | 2 |

## 4. JTAC #2 Questionnaire Results

1. Name (Optional)_____Capt Ryan Higgins_____

2. Years active duty service.

- ○ 1-5.
- O 6-10.
- ○ 11-15.
- ○ 16+.

3. Years as a qualified JTAC.

- [x] 1-5.
- [ ] 6-10.
- [ ] 11-15.
- [ ] 16+.
- [ ] 0.

4. Number of deployments where you worked as a JTAC in Iraq or Afghanistan.

- [x] 1.
- [ ] 2.
- [ ] 3.
- [ ] 4.
- [ ] 5.
- [ ] 6.
- [ ] 7.
- [ ] 8.
- [ ] 9.
- [ ] 10+.
- [ ] 0.

5. Number of times you have controlled aircraft of any kind in Iraq or Afghanistan.

- [ ] 1-5.
- [ ] 6-10.
- [ ] 11-15.
- [ ] 16-20.
- [x] 21+.
- [ ] 0.

5. Scores (0-3)

| | F-35 | A-10 |
|---|---|---|
| Loiter Time | 2 | 3 |
| Radar Stealth | 3 | 1 |
| Detailed sense of the ground environment | 2 | 3 |

| | | |
|---|---|---|
| Low audible noise signature | 3 | 2 |
| Survivability against small arms fire from the ground | 2 | 3 |
| Speed | 3 | 2 |
| Accuracy of gun/cannon; low risk of collateral damage | 2 | 3 |
| Range | 1 | 3 |

## 5. JTAC #3 Questionnaire Results

1. Name (Optional)____MSgt Staggs_____

2. Years active duty service.

- ○ 1-5.
- ○ 6-10.
- ● 11-15.
- ○ 16+.

3. Years as a qualified JTAC.

- ○ 1-5.
- ● 6-10.
- ○ 11-15.
- ○ 16+.
- ○ 0.

4. Number of deployments where you worked as a JTAC in Iraq or Afghanistan.

- ○ 1.
- ○ 2.
- ○ 3.
- ○ 4.
- ● 5.
- ○ 6.
- ○ 7.

- 8.
- 9.
- 10+.
- 0.

5. Number of times you have controlled aircraft of any kind in Iraq or Afghanistan.

- 1-5.
- 6-10.
- 11-15.
- 16-20.
- 21+.
- 0.

5. Scores (0-3)

| | F-35 | A-10 |
|---|---|---|
| Loiter Time | 1 | 3 |
| Radar Stealth | 3 | 1 |
| Detailed sense of the ground environment | 1 | 3 |
| Low audible noise signature | 1 | 3 |
| Survivability against small arms fire from the ground | 2 | 3 |
| Speed | 3 | 1 |
| Accuracy of gun/cannon; low risk of collateral damage | 1 | 3 |
| Range | 2 | 3 |