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Barrel Bombs in the Syrian Civil War:

A Game Changer?

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Introduction

In February 2014, Aleppo saw deaths of hundreds of civilians as a result of an intensive barrel-bombing campaign by the Baathist regime of Syria. The catastrophic results of Assad's forces' strikes and the conduct of indiscriminate bombing drew hash reaction from the West. Leaked video coverage of the civil war has proved that the regime has been conducting barrel bomb salvos in urban areas[1]. US Secretary of State John Kerry condemned the brutality of the regime[2] while the UK Foreign Minister William Hague harshly criticized the use of barrel bombs in his address before the parliament in January 2014 stating that *"the use of this deliberately indiscriminate weapon is yet another war crime, and is clearly designed to sow terror and weaken the will of the civilian population"*[3].

In fact, since the beginning of the Syrian Civil War, the Syrian battleground has served as an observation laboratory in which global strategic community was able to see different aspects of warfare, military strategy, and the law of armed conflict. As the international community has long been focused on the employment of chemical weapons by the Baathist regime, a conventional weapon, barrel bombs, is dominating the air bombardment campaign of Assad's forces. While barrel bombs were predominantly used over Aleppo, at the time of writing, the strikes have spread to other key geostrategic positions, such as the Damascus' suburbs. The regime's barrel bomb strikes deserve attention due to three important angles. First, it serves as a key tactical asset in the regime's brutal crackdown offensives. Second, the weapon itself has been under a gradual improvement by the regime in terms of military technical features, tactical approach, and widespread usage. And third, barrel bombs' indiscriminant character, and some versions' incendiary functions, could initiate a new round of legal troubles to Assad regime in their efforts due to possible war crime allegations. Unless the conduct of barrel bombs and other unguided and poor-guided missiles come to an end, civilian casualties of the civil war will continue to augment[4].

This work, as the 6th paper of EDAM's Syrian Civil War series, focuses on barrel bombs within the framework of the overall record and possible trajectory of the prolonged civil war at Turkey's southeastern doorstep.

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[1] **http://www.youtube.com/watch?v=bfaII_sSn-w**, Accessed on: 02 March 2014.
[2] **http://www.aljazeera.com/news/middleeast/2014/02/kerry-condemns-use-barrel-bombs-syria-2014257336597576.html**, Accessed on 24 February 2014.
[3] **http://www.reuters.com/article/2014/01/13/us-syria-crisis-barrel-bombs-idUSBREA0C19F20140113**, Accessed on: 2 March 2014.
[4] Anthony, Cordesman. *U.S. Strategy in Syria: Having Lost Sight of the Objective,* CSIS, September 2013.

Getting the Military Context Right: Assessing Barrel Bombs and Assad's Forces' Strategic and Tactical Use

In military terms, a barrel bomb is an improvised explosive device (IED) employed in air-ground missions, mainly by rotary-winged assets. These weapons are cheaper and easy to produce, even "home-made", and pose an important threat to civilians because of their indiscriminate character. Barrel bombs are filled with explosives, shrapnel, or incendiary material, and dropped by personnel from a helicopter flying at lower altitudes depending on air defense threats. Thus, employment over urban and sub-urban areas are dangerous due to the "dumb" character of this totally unguided weapon, possible errors by flying pilots and dropping personnel in the bombardment missions, as well as the contents of the bomb. Moreover for the regime, an increase in civilian casualties may possibly be an intended objective.

The Syrian Air Force lacks precision-guided munitions (PGM)[5]. Therefore, barrel bomb strikes onto active zones of clash can cause friendly-fire situations. This may be rationale behind the systematic bombardment of opposition positions and urban areas before incursions. In parallel, a quick survey of the Syrian Civil War would suggest that the regime has developed a pattern of intensive shelling phase before initiating decisive ground operations. Thus, the barrel bomb strikes are used in conjunction with the regime's military perspective of laying siege, forcing to starvation, shelling, and incursion respectively.

EDAM's military assessment of the Syrian Civil War suggests that the Baathist regime mainly uses barrel bombs in certain patterns listed below:

- ➔ Anti-personnel missions against rebel forces' concentrations in geostrategically important locations,
- ➔ Punishment operations against civilian population that are sympathetic or neutral to the opposition forces,
- ➔ As a part of depopulation and intentional displacement campaign of the Baathist regime,
- ➔ For tactical purposes such as destroying buildings in critical areas in order to open ground for ground incursions, and to deny urban-warfare advantages to the operating opposition groups,
- ➔ As a part of psychological operations for intimidating civilian population and opposition elements.

Barrel bomb strikes' destructive trend is not something new for the close monitors of the Syrian Civil War. According to a March 2013 report of the Amnesty International, the regime's choice of munitions, especially barrel bombs, was reported as a key reason for high civilian casualties[6]. Military

[5] Joseph, Holliday. *The Assad Regime: From Counterinsurgency to Civil War,* Washington D.C., 2013, p.24.
[6] Amnesty International Briefing, *Syria: Government Bombs Rain on Civillians,* March 2013.

assessment of the Syrian battleground in the later stages confirmed the accuracy of the report. For instance, during the Baathist regime's campaign towards opposition-held areas of Aleppo in late 2013, Assad's forces initiated major barrel bomb salvos in December 2013 which claimed 517 civilian lives in only two weeks[7].

Apart from the tragic numbers in civilian casualties, tactical approach of the regime in the barrel bomb strikes deserves attention. The regime conducted intensive use of barrel bombs in both city center of Aleppo and surrounding towns in order to compensate for its inability of committing large number of troops in problematic areas in the north. Furthermore, barrel bombing has served as an instrument of softening enemy defenses, as seen during the late 2013 operations for pushing into Aleppo[8]. When the operations stalled due to the opposition resistance, still, barrel bombs served as a tool keeping the pressure by air-ground bombardment[9].

The regime's helicopters have been playing an important role in barrel bombing. According to the IISS' annual military survey, Military Balance 2014, the Syrian Baathist regime possesses some 30 Mi-8 Hip and 30 Mi-17 Hip helicopters that can be used in barrel bombing missions[10]. Moreover, the Mi-25 Hind D gunships, which are also reported to be available (some 25) in the Syrian inventory by the Military Balance 2014, can be used for incendiary-submunitions ZAB bomb dropping[11]. The YouTube coverage of the Syrian Civil War also confirms the use of these helicopters in the barrel bombing strikes[12], as well as the use of ZAB incendiary submunitions[13].

Why Barrel Bomb Strikes could not be prevented so far?

In addition to the lack of reaction and viable enforcement from the international community, EDAM's military research assesses that there are three main reasons behind the regime's ability to conduct barrel bomb strikes in a notorious uptrend. The first two reasons are emanating from sustainability in rotary-winged platforms of the Syrian Air Force despite heavy attrition factors, while the third factor is about the munitions, barrel bombs, in terms of manufacturing and conduct of operations.

- ➔ **Endurance of the Syrian Air Force:** One of the most important parameters in military assessment of an air force is its readiness level. Although no air force of the world cannot operate under %100 readiness level, still, at least more than %50 would be expected to run a

[7] Isabel, Nassief. *The Campaign for Homs and Aleppo: The Assad Regime's Strategy in 2013,* ISW, Washington D.C. p.36.
[8] Ibid. p.34.
[9] Ibid. pp. 32-35
[10] IISS, Military Balance 2014, Routledge, London, 2014, p.345.
[11] Ibid.
[12] http://www.youtube.com/watch?v=wAc_VcnksIQ, Accessed on: 25 Feb. 2014.
[13] http://www.youtube.com/watch?v=BAj4j8amUD0, Accessed on 25 February 2014.

prolonged military campaign. By March 2013, and ISW report estimated %30 readiness rate for the Syrian Air Force which referred to some 50 rotary winged assets that could be used against opposition forces (excluding assets that are not suitable for the required missions)[14]. Since the beginning of the civil war, the Syrian Air Force has been a key asset for the regime due to its role in supporting besieged or remote outposts, and conduct air-ground missions against the opposition forces[15]. The regime's helicopters have played an important role in supporting the Baathist ground elements' mobility and close air-support[16]. Normally, an air force with %30 readiness would be expected to become non-operational in a prolonged conflict. However, the Baathist Regime's air wing has been diligently supported by Iran and Russia, and thereby, it has been able to carry on combat missions, including barrel bomb strikes, up until now.

➔ **Lack of Adequate Air Defenses by the Opposition Groups:** Since the beginning of the Syrian Civil War, supplying the opposition by Man Portable Air Defense Systems (MANPADS) has been a key dilemma among the Western and Gulf friends of the Syrian opposition. The concern of whether these systems could end up at the hands of unfavorable groups, Al Qaeda affiliates –or PKK-related groups in the Turkish threat calculations–, prevented mass MANPADs transfers to the opposition. Despite the downing of some Syrian fixed and rotary winged assets by several opposition groups so far, we don't see a real denial of lower altitudes to the Syrian air force, let alone mid-altitudes. In fact, the opposition tried to reach and operate more advanced systems like 9K33 OSA (or SA-8 Gecko in NATO reporting name). By summer 2013, a YouTube video showed a mobile air defense system *(most likely an SA-8 Gecko)* at the hands of the opposition forces[17]. But systematic air defense operations by the opposition through self-propelled, mobile air defense missile systems have not been part of an usual military pattern. Another direct attrition factor could have been third parties' active involvement to the Syrian conflict or imposing a no-fly zone over Syria. However, the last minute chemical deal also hindered the punitive, limited-cruise missile operation by the U.S. and its allies[18]. Turkey, at its part, downed a Syrian Mi-17 helicopter by an F-16 fighter jet in September 2013[19]. Yet, this was a military response because of the violation of Turkish airspace by the Syrian helicopter, under the shifted rules of engagement by Ankara following the downing of a Turkish warplane in June 2012, not a move to cripple Syria's air-ground

[14] *The Assad Regime: From Counterinsurgency to Civil War,* p. 57.
[15] Strafor, "The Air Force's Importance to the Regime, 19 Feb. 2013.
[16] Karl, P, Mueller et.al., *Air Power Options for Syria: Assessing Objectives and Missions for Aerial Intervention,* RAND Corporation, 2013, p. 4.
[17] **http://www.youtube.com/watch?v=EyL9eDfo9xY**, Accessed on: 25 Feb. 2014.
[18] For a comprehensive assessment see: *Crossing the Red Line: The United States and its allies Prepare to Strike Syria,* available at http://www.edam.org.tr/en/AnaKonu/latest-publications
[19] **http://www.nytimes.com/2013/09/17/world/europe/turkey-syria.html?_r=1&**, Accessed on: 26 Feb. 2014.

capabilities against the opposition. In sum, although the Baathist regime lost some of its fixed and rotary-wing aircraft, neither the opposition nor the third parties were able or willing to conduct a massive anti-air operations effort so far. This situation keeps the door open for barrel bombing missions by the regime.

➔ **Barrel Bombs' Relatively Easy Production and Conduct:** In terms of required material and container, barrel bombs are very easy to produce. No specific military industrial infrastructure or expensive investment is needed to keep the Baathist barrel bomb production line sustainable. Besides, they are also easy to operate, as barrel bombs do not require any specific military skill, apart from dropping the bomb from a flying Mi-8 or Mi-17 helicopter. More importantly, throughout the civil war, Syrian barrel bomb technology has also evolved which made the recent barrel bombs more dangerous than ever. First, the current barrel bombs are heavier compared to the earlier designs. While the barrel bombs weighed some 100-300 lbs at the outset of the civil war, current barrel bombs can exceed 2000lbs which is tantamount to more destructive power against buildings and troop concentrations, as well as notorious impact in terms of psychological effects. Second, while the earlier versions were using a fuse wick, which caused unexploded and early-exploded barrel bombs, the new versions are using impact fuses that fostered efficiency of barrel bomb strikes[20].

Conclusion

Barrel bombs have started to acquire increased visibility in the Syrian Civil War. From a military perspective, conduct of these relatively inferior but effective munitions has brought about an important advantage to the Baathist forces in terms of closing the personnel gap in land forces, using indiscriminant shelling without endangering ground artillery, avoiding the risk of using weapons of mass destruction at tactical levels, and promoting the regime's depopulation and displacement strategy. International community's focus on chemical weapons shifted the attention away from the barrel bomb problem and war crimes emanating from the indiscriminant shelling and the conduct of incendiary munitions.

EDAM's military research estimates that in the absence of adequate and viable international enforcement, and given the outstretched position of the regime's land forces, the utilization of barrel bomb strikes is set to increase. In return, the opposition needs to capture air force facilities with helipads, and deny at least lower altitudes to the regime's air wing in order to mitigate the barrel bomb

[20] Richard, M, Llyod, "Syria's Barrel Bomb Technology Relative to Aleppo Syria Attacks – The Good, the Bad, and the Ugly", http://brown-moses.blogspot.com/2013/12/syrias-barrel-bomb-technology-relative.html, 22 December 2013.

threat. However, as long as the opposition's foreign supporters remain hesitant to transfer enough number of MANPADS, and under the threat of al-Qaeda affiliates' presences on the Syrian battleground, a drastic improvement in the opposition air defense capabilities in short term is not expected. Yet, with respect to war crimes, intentional bombardment of urban areas, systematic use of incendiary and cluster munitions, along with the mass displacement and depopulation strategies could put Assad, the Baathist circles, and their allies under the spots regardless of the trajectory and possible outcome of the ongoing civil war.