The Myth of the Remote-Controlled Car Bomb

Hugo Kaaman

Report n.15, September 2019
The Myth of the Remote-Controlled Car Bomb

European Eye on Radicalization

Hugo Kaaman
The car bomb is an incredibly powerful and versatile weapon. Depending on how it’s designed, it can be used to cause unfathomable destruction in all sorts of environments, against targets of varying nature. Car bombs, also known as Vehicle-Borne Improvised Explosive Devices (VBIEDs), are some of the most popular weapons employed by non-state actors. Traditionally speaking, the most commonly used type of car bomb has been the parked VBIED.

With this method, civilian vehicles are usually rigged with explosives, and then parked at their targets before being detonated. The driver ferrying the vehicle to its intended location thus has ample time to slip away, leaving behind what is basically a larger, concealed IED. Alternatively, the VBIED can be driven to the target and detonated by a driver. During the latter half of the past decade, the use of such Suicide Vehicle-Borne Improvised Explosive Devices (SVBIEDs) has skyrocketed, with the Islamic State (IS) as the main culprit. In 2016 and 2017 alone, IS claimed to have used a total of 1,383 SVBIEDs, most of them up-armored, as part of their prolonged military campaigns in Syria and Iraq.[1]

We live in technological societies where the innovations are multiplying rapidly. Non-state actors routinely take advantage of this. In the wars of Syria and Iraq, this has become more apparent than ever before. The commercialization of hobby drones led to their appearance on the battlefield in “Syraq” in the hands of most non-state actors. Most commonly, these tools have been used for reconnaissance, providing a greater surveillance and targeting capacity to actors that lack an air force. IS some went further, turning the drones themselves into weapons by mounting bomblets on the drones that could then be dropped straight down onto unsuspecting forces.[2] But the more usual pattern was that seen during the battle of Mosul, where IS’s SVBIEED drivers were often in constant radio contact with an IS drone team to allow the SVBIED to choose the path of least resistance on the way to its intended target, avoiding potential obstacles along the way.[3] These are prime examples of how certain new and commercialized technology can be used for ill deeds by non-state actors. And that’s exactly why some people are warning of the potential for misuse with regard to the emerging technology of self-driving autonomous vehicles.[4] Most of the focus has been on the alleged ability to hijack and direct driverless vehicles toward crowds a people, but converting a self-driving vehicle into a driverless car bomb should worry people a lot more.

What most people seem to forget is that driverless car bombs are already a thing. Non-state actors have been manufacturing remotely piloted VBIEDs on a small scale for years. Unfortunately, the few times that this phenomenon has been highlighted in media, the reports have been both misleading and factually incorrect.
In early January 2016, the British television channel *Sky News* aired a startling report, featuring leaked internal footage from an IS “research and development wing” in Raqqa in eastern Syria, the “capital” of the group’s “caliphate”. In the footage, fighters could be seen assembling and experimenting with a remotely driven car bomb — a so-called Remote-Controlled Vehicle-Borne Improvised Explosive Device, or RC-VBIED.

The steering wheel had been coupled with multiple gears and the pedals connected to a linear actuator, allowing both speed and direction to be controlled remotely.[5] In place of a driver, a mannequin had been coated in wire, wrapped in foil, and subsequently connected to a self-regulating thermostat that would bring it to the same temperature as the human body. Finally, lasers were attached to the eyes in an effort to complete the heat signature.[6]

The almost absurd level of attention to detail was quite impressive. Using the modified mannequin as a fake driver clearly implied that the vehicle was meant for use against targets in environments removed from the front lines of active war zones. In those areas, some level of stealth would be required in order to successfully execute such an attack.

The *Sky News* report, though, diverged from reality in a crucial respect. The narrator claimed that the purpose was for IS sleeper cells in Europe and other Western countries to replicate this design.[7] In these countries, “where suicide bombers are scarce”, using RC-VBIEDs would apparently be the go-to approach when planning and executing a terror attack.[8] Later on in the
report, an IS defector claimed that “the training program is meant for Europe to cause huge damage […] of course it wasn’t meant for either Syria or Iraq”.[9]

This line of reasoning makes little sense. IS sleeper cells abroad rarely lack people willing to die for the cause, which defeats the whole point of building a technologically more advanced RC-VBIED to begin with. Most terror attacks executed in Europe around this time actually went in the opposite direction, with “low-tech terror” methods such as truck rammings and knife attacks being the most common tactics.[10] The few times when actual sleeper cells sent from Syria and Iraq were involved, the attackers typically employed suicide vests and assault rifles. The archetypal case of IS sleeper cells or returnees was the network that carried out the atrocities in Paris in November 2015 and subsequently carried out the attacks at the airport and against the metro in Brussels in March 2016.[11, 12]

The one possible exception to this rule relates to a recent court case in Britain, where an individual sympathetic to IS was allegedly planning to construct an RC-VBIED.[13] Upon inspection, however, his ability to do so appears questionable. The police raid on his home captured air rifles, a couple of samurai swords, and a minor collection of homemade fireworks.[14] These are not the building blocks for an RC-VBIED.

No terror attacks in Europe or elsewhere in the West have so far been conducted using an RC-VBIED. So, where are they actually being used?

As it turned out, Raqqa wasn’t the only city under IS control with a prolific research and development (R&D) department. In December 2016, the Arabic-language channel Al-Aan TV aired a report by journalist Jenan Moussa based on official IS documents seized near the northern Syrian city of Manbij.[15]

The IS documents recovered by Moussa appeared to have been prepared as a memo for higher ups, and showcased some of the work of the local R&D wing. Out of all of the innovations included in the memo, the successful manufacturing and testing of an RC-VBIED was celebrated as the most important development.
On one of the pages of the captured IS documents from Manbij, the interior of the RC-VBIED was pictured along with a description of the vehicle's capabilities.

According to the memo, the design meant the remote operator could control the gas and break pedals, the steering wheel, and whether to put the gear in forward or reverse.[16] A camera mounted on the front of the vehicle allowed the operator to see where they were going, and record the operation for a later propaganda video.[17] The vehicle was said to have an operational range of at least three kilometers (two miles), or up to twenty kilometers (twelve miles) if the terrain was flat.[18]

With multiple R&D units in different Syrian cities, one would expect IS to have widely publicized its use of these driverless car bombs. But they haven’t. If you discount the two prototypes discovered in Raqqa and Manbij, there have only been two recorded cases of IS actually using or preparing to use RC-VBIEDs — both of them outside of Syria.

In December 2015, an official IS video from the Mosul area in northern Iraq briefly showed an up-armored pick-up truck RC-VBIED being driven by a fighter standing in the rear bed of the vehicle. That was the only time a driverless car bomb would feature in official IS media.
The second example was captured from IS by Khalifa Haftar’s Libyan National Army (LNA) militia outside Benghazi in eastern Libya in late April 2016. As evidenced by the incomplete cabin setup, the up-armedored IVECO heavy truck was in the process of being converted into an RC-VBIED when it was seized.

In all these cases, the RC-VBIEDs got wide play in the media. Yet it appears IS hasn’t been particularly fond of using RC-VBIEDs in large numbers anywhere at all. IS had control of terrain — in Syria, Iraq, and Libya — for many years, and with it vast resources, industrial equipment and much else besides. It produced two RC-VBIED prototypes and two recorded cases of driverless car bombs. As against the thousands of SVBIEDs employed, this is an infinitesimally small number. So why is that?

The main reason IS has largely eschewed driverless car bombs is ideological. IS took its radicalism beyond even Al-Qaeda and other extremists; the SVBIEDs were one manifestation of this. They have a great abundance of people who are willing — indeed, eager — to strap on a suicide belt and jump into a car to attack an assigned target. As such, there is no real need to invest in the production of RC-VBIEDs.

Still, it must be asked: Why wouldn’t IS replace some of their SVBIEDs with a fleet of RC-VBIEDs? As mentioned above, it is not as if they were limited by resources. In order to answer that question, it is useful to contrast IS’s use of RC-VBIEDs with that of other non-state actors during the same time period.

Given the way IS’s tentative efforts to develop RC-VBIEDs was reported on, it would be easy to believe that they were the first group to develop such a weapon. That is not the case. On the contrary, the creation and use of driverless car bombs stretches back decades, and IS were not even the first non-state actor to develop RC-VBIEDs during the war in Syria.
In mid-April 2012, the ‘Arabian Gulf Battalion’ — a Free Syrian Army (FSA) faction active in the Hama countryside — published a video showing the first recorded instance of an RC-VBIED during the Syrian war.[19] The overhauled civilian vehicle could be seen driving down the road with a few propane canisters visible in the passenger and back seats. In the driver’s seat, a rough mock-up doll barely resembling a person was strapped in place in an attempt to avoid arousing suspicion.

Despite being the first of its kind in the Syrian conflict, the April 2012 device was of relatively high quality. It has been followed by at least thirty-six other RC-VBIEDs during the course of the war. That count is based on extensive research.

To ensure consistency, only cases where there were photographs or video depicting the RC-VBIED and/or its use were counted into the total. It must be acknowledged that a large number of videos showing the use of RC-VBIEDs have disappeared from the Internet due to the various waves of deletions, either by group’s themselves or states cracking down on online extremism. This makes it difficult to get a precise number. Nonetheless, the figure of thirty-seven is as close as one could get to the true figure, and the breakdown of this data provides further representative information, such as the primary creators of these weapons.

There are three groups responsible for the manufacture and use of RC-VBIEDs in all cases: Jabhat al-Nusra (now Hayat Tahrir al-Sham), Ahrar al-Sham, and various FSA factions.
Nusra/HTS has been responsible for at least twelve, or just under one-third, of all recorded cases of RC-VBIED use during the Syrian war. Nusra initially intruded into Syria as a division of IS, then-called the Islamic State of Iraq.[20] Nusra split with its parent organization, IS, in 2013, and joined Al-Qaeda, though it has since allegedly broken these ties, too.[21] Regardless, Nusra/HTS remains a Salafi-jihadist actor on the Syrian battlefield.[22] This ideological extremism gave Nusra the ability to provide men willing to die to break hard targets, and the beleaguered armed opposition had little choice but to rely on this capacity from relatively early in the war.[23] Since 2011, Nusra and its auxiliaries have claimed over-250 SVBIED attacks across the country.[24] Despite their heavy use of suicide bombers, they, too, began experimenting with driverless car bombs early on in the conflict.

In mid-March 2013, Nusra released pictures showing a fairly standard setup of an RC-VBIED that was used against Syrian loyalist forces garrisoned in Damascus.

Later in the same month, Syrian state TV aired a brief report about a car bomb that had been seized in Hama province. This would also prove to be an RC-VBIED manufactured by Nusra, but it appeared much more complex in its design.[25] As can be seen in the picture on the next page, a mannequin wearing a shirt was seated in front of the steering wheel. The shell vehicle itself belonged to the Public Establishment for Distribution and Exploitation of Electrical Energy (PEDEEE), the Syrian state electricity maintenance service. Though not as advanced as the mannequin displayed in the Sky News report, this was still a uniquely advanced design for the time.
In late May 2014, Nusra used multiple up-armored RC-VBIEDs against Syrian loyalist targets in the Idlib countryside. The vehicles, an SUV and a captured Syrian army truck, had been fitted with frontal-facing cameras to facilitate navigation. In a rare video released by the group, the operators could be seen viewing the live video feed while piloting the vehicles toward their targets.

Nusra/HTS used 75% of their documented RC-VBIEDs between 2012 and 2014. After 2014, their use of driverless car bombs disappeared almost completely, with two more used in 2016 and a single case in 2018.
Compared to IS, Nusra has been much more cautious when it comes to using SVBIEDs in general. For example, the overall number of SVBIEDs they’ve claimed throughout the Syrian civil war is less than a third of what IS claimed in 2016 alone.[26, 27] They have maintained an output of SVBIEDs that’s relative to their size, manpower, and resource availability, it is true. But their lesser use of this tactic can be traced, as outlined above, to ideology. Virulent sectarian radicals they might be, Nusra is less extreme than IS. It therefore makes complete sense that Nusra/HTS can and has utilized less SVBIEDs and has supplemented its output of suicide car bombs with RC-VBIEDs. With twelve recorded cases of RC-VBIED use, that is roughly 5% of their total output of VBIEDs, which is a sizable figure.

Ahrar al-Sham has been the most prolific user of driverless car bombs, responsible for at least twenty of them, more than half of all documented cases in Syria. One of the most powerful insurgent forces in Syria, Ahrar’s ideology is a mix of Salafi-jihadism, traditional Salafism, and political Islamism.[28] As a general rule, the group doesn’t use suicide car bombs. However, there have been individual cases where suicide bombers are suspected of having been employed.[29] Ahrar’s use of RC-VBIEDs was particularly intense in the first few years of the conflict, with the group employing a fleet of overhauled vehicles, mostly flatbed trucks. Just like Nusra/HTS, Ahrar used approximately 75% of their RC-VBIEDs between 2012 and 2014, with a whopping eight (fully a fifth of the total used in the entire Syrian war) used in 2012 alone.

By comparing the steering wheel modifications of three early examples used by Ahrar in different areas, it becomes obvious that they were mounting identical setups at the time. By standardizing
the design of this modification, the overall manufacturing of driverless car bombs would be substantially facilitated.

Ahrar’s use of RC-VBIEDs stagnated after 2014 in a similar manner to that of Nusra/HTS, with a single use in 2015 and their final three used in 2016. All of these remaining examples were up-armored. For example, an overhauled Soviet BMP-1 armored personnel carrier was employed against a Syrian loyalist position near the besieged Shi‘i towns of Fua and Kafraya in Idlib province in July 2015. Similarly, an RC-VBIED based on a BVP-1 AMB-S armored personnel carrier was employed by Ahrar more than a year later, in September 2016, during the final stages of the battle for Aleppo city.
In mid-August 2016, Ahrar used an RC-VBIED based on an up-armored pick-up truck against a Syrian loyalist position in Aleppo city. This specific attack was very revealing, explaining a lot in terms of the strategic reasoning behind why some groups choose to use or not use RC-VBIEDs.

As the vehicle approached its target, it became evident that it had caught some of the Syrian loyalist troops stationed there off guard. Pictures from a hobby drone that followed the entire sequence of events showed half-a-dozen hostile troops sprinting off in different directions as the RC-VBIED neared within a stone’s throw of them.
The next picture showed the fireball resulting from the detonation of the vehicle’s explosive payload, indicating that the attack had resulted in at least some casualties on the other side.

However, pictures only tell you so much. The full video from the drone told a different story. As the hostile fighters sprinted off, the RC-VBIED came to a halt. One would expect an instant detonation, but it took more than 15 seconds before that happened. This delay likely allowed some of the hostile fighters to escape intact, decreasing the efficacy and impact of the attack itself.

This lack of reflexive action is the main argument against using RC-VBIEDs, and also answers the question of why IS wouldn’t replace parts of its SVBIED output with a fleet of RC-VBIEDs, despite some of their R&D units developing prototypes and the group as a whole having enough resources to do so. Piloting a driverless car bomb remotely means that the operator has a significantly decreased situational awareness compared to when a person is physically there steering the vehicle. By choosing to employ a less efficient RC-VBIED, a group might save a fighter that can be reinserted as infantry, but the increased potential for success when using an SVBIED weighs higher most of the time.
That’s not to say that a group is doomed to fail every time it uses an RC-VBIED, but driverless car bombs are almost certainly less effective than their suicidal counterparts. The explanation for Ahrar al-Sham’s decision to follow the path it did is, as with IS and Nusra, an ideological one. Ahrar doesn’t officially use suicide car bombs, so it makes sense for them to use RC-VBIEDs *en masse* instead.

The FSA is an umbrella term or brand for the mainstream Syrian armed opposition.[30] The FSA does not have an efficient nationwide chain of command,[31] and is better thought of in structural terms as akin to the French resistance during the Nazi occupation. That caveat in place: out of all RC-VBIEDs used during the course of the Syrian war, FSA units have only been responsible for a mere five out of thirty-seven, or 13.5%.

In mid-December 2012, an FSA unit in the Damascus suburb of Harasta published a video that showed them using a driverless car bomb. In the beginning of the video, the operator could be seen steering the vehicle using a controller typically reserved for use with small-scale remote-controlled cars. The RC-VBIED appeared difficult to maneuver, with the vehicle stopping every once and again before disappearing around a corner.

Between mid-2013 and mid-2017 there were no recorded cases of FSA units using RC-VBIEDs at all. This absence might partly be the result online videos being deleted, but it is still a strange lacuna. The remaining examples were the result of inter-opposition cooperation in Syria’s south.
The rebels’ Bunyan al-Marsus (BaM) joint operations room used an overhauled car and armored personnel carrier against Syrian loyalist positions in Deraa province in June 2017. It’s likely that the general absence of RC-VBIED use among the various FSA factions over the years has been a result of a lack of coordination and good leadership.

There are multiple lessons to be learned after having looked at the different actors in the Syrian war that have employed RC-VBIEDs. First and foremost, whether such vehicles are used is linked to the degree of radicalization within a given group. The more extreme the ideology a group possesses, the less likely they are to use RC-VBIEDs.

IS, the group with the most extreme ideology out of all groups discussed, and the biggest users of suicide car bombs in the latter half of the past decade, is employs RC-VBIEDs the most infrequently. Some of their research and development wings manufactured prototypes of RC-VBIEDs, but the group as a whole refrained from replacing a notable part of their SVBIED output with RC-VBIEDs, likely due to the decreased efficiency of using the latter compared to the former.

Jabhat al-Nusra, one step down on the list of groups with extreme ideologies, managed to churn out twelve RC-VBIEDs compared to their approximately 250 claimed suicide car bombs, which is a relatively large figure. Still, their output of driverless car bombs most likely served as a complementary addition to their use of SVBIEDs.

Ahrar al-Sham, on the other hand, has used at least twenty RC-VBIEDs, representing approximately 55% of the total use of such vehicles over the course of the conflict.

The focal point of the radicalization aspect relates to whether a group’s ideology allows for the use of suicide bombers. Another way to summarize it is that groups that allow for and mandate the use of suicide car bombs (such as IS and Nusra/HTS) will always prioritize using those over driverless car bombs, as the latter is less efficient and reliable. Conversely, groups that don’t allow for the use of suicide bombers, such as Ahrar al-Sham and FSA, will resort to using RC-VBIEDs as the advantages of using them compared to not using them are tremendous.

The anomaly with the FSA’s minimal use of RC-VBIEDs is explained in more material terms: it lacked resources and an effective, unified command and organizational structure that the more zealous insurgent formations in Syria possessed, which meant it could not create the infrastructure for the production of RC-VBIEDs at a scale that could assist its war effort.
When looking at the overall use of driverless car bombs during the war in Syria, 75% were used in the 2012-14 period. The explanation for this is related to the inefficiency and unreliability of RC-VBIEDs. Most of the attacks during this timeframe were stealthy in nature and launched against static targets, such as hostile bases and checkpoints, away from active frontlines. When clear frontlines solidified on the Syrian battlefield after 2014, employing RC-VBIEDs successfully became a lot more difficult.

Looking back on the Sky News report, it becomes overwhelmingly clear how misleading it was, intentionally or not. That report alone manufactured the myth of the remote-controlled car bomb as a serious menace. This is wrong from every angle. IS’s RC-VBIED prototype was barely ever put into action; there was never mass-production of RC-VBIEDs even locally in Syria and Iraq. And it’s unlikely that IS ever meant for RC-VBIEDs to be used in terror attacks in the West.
REFERENCES


[7] Ibid.

[8] Ibid.

[9] Ibid.


[13] “Isil-supporters’ accused of plotting terror attack using driverless car bomb to spare their own lives”, The Telegraph, 4 September 2018,
19


[16] Ibid.

[17] Ibid.

[18] Ibid.


[22] Lister, “Profiling Jabhat al-Nusra”.


[24] Ibid.

[25] The IEDs daisy-chained as the explosive payload are relatively unique and standardized components employed in the majority of early SVBIEDs used by Jabhat al-Nusra. Nusra was also one of very few groups with enough resources to pull something like this off at the time.

[26] Kaaman, “Islamic State statistics on its SVBIED use from late 2015 through 2017, including the battle of Mosul”.


19
[28] Lister, “Profiling Jabhat al-Nusra”.

