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General and complete disarmament: Implementation of the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction

Security Council
Seventy-third year

Letter dated 9 November 2017 from the Chargé d'affaires a.i. of the Permanent Mission of the Russian Federation to the United Nations addressed to the Secretary-General

I have the honour to transmit herewith the additional assessment by the Russian Federation of the seventh report of the Organisation for the Prohibition of Chemical Weapons-United Nations Joint Investigative Mechanism to investigate cases of use of chemical weapons in the Syrian Arab Republic (see annex).

I should be grateful if you would have this letter and its annex circulated as a document of the General Assembly under agenda item 99 (l), and of the Security Council.

(*Signed*) P. **Iliichev**
Chargé d'affaires a.i.

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Annex to the letter dated 9 November 2017 from the Chargé d'affaires a.i. of the Permanent Mission of the Russian Federation to the United Nations addressed to the Secretary-General

Additional assessment by the Russian Federation of the seventh report of the Organisation for the Prohibition of Chemical Weapons-United Nations Joint Investigative Mechanism

The Russian Federation strongly condemns any use of chemical weapons by anyone, anywhere, and considers it important to identify the perpetrators and bring them to justice. This is why Russia not only supported Security Council resolution 2235 (2015), which established the Joint Investigative Mechanism over two years ago, but also became one of its sponsors. However, the expectation had been that the Mechanism, acting in coordination with the Organisation for the Prohibition of Chemical Weapons (OPCW) Fact-Finding Mission, would carry out absolutely impartial and highly professional investigations in order to confidently and conclusively identify those responsible for crimes involving chemical weapons. Unfortunately, that expectation has not been fulfilled.

A very disturbing signal was sent just over a year ago, when the Joint Investigative Mechanism issued a report that held the Syrian Government responsible for three instances of chemical weapon use. One of these incidents involved a scenario of pure fiction. Purportedly a chlorine barrel bomb, dropped from a military helicopter flying at high altitude at night, fell right through the ventilation shaft of a residential house. Moreover, the barrel and the ventilation shaft were almost identical in diameter. In the same report, it was recognized that this sounded "improbable". The former Head of the Mechanism, introducing the report to the Security Council, called such a scenario far-fetched. Nevertheless, responsibility was attributed to Damascus. And now, at every available opportunity, many reiterate that the "impartial and highly professional" Mechanism unequivocally found the Syrian authorities guilty on three occasions, including in the aforementioned incident. We have repeatedly asked our Western colleagues and the Mechanism leadership what the mathematical likelihood of such a scenario is: one in a million or one in ten million? Each time they have refused to answer this question, citing a poor knowledge of mathematics. The fact that the verdict handed down by the Joint Investigative Mechanism contradicts the laws of physics and ballistics does not concern them in the least.

Systemic flaws in the Joint Investigative Mechanism's work became fully apparent during the investigation into the events at Khan Shaykhun. In April 2017, immediately following that tragic event, Russia submitted a draft decision to the OPCW Executive Council providing for the immediate dispatch of international experts to Khan Shaykhun and the Syrian Sha'irat airbase, where, several countries asserted, the sarin used at Khan Shaykhun was being stored. However, the draft was unanimously blocked by the Group of Western States on false pretexts. As later became evident, both the Fact-Finding Mission and the Joint Investigative Mechanism had clearly "got the message" from the Western States members of the Executive Council and flatly refused to visit the site of the incident and the airbase. The Fact-Finding Mission cited a lack of the necessary security conditions to carry out such a visit. Subsequently, however, it was found that this was not true. On 4 October 2017 the Director of the Department of Safety and Security of the United Nations Secretariat, speaking before the United Nations Security Council, said that security guarantees had in fact been received from local commanders. However, the OPCW Mission had declined to take advantage of them and had instead favoured a remote investigation. The attempt to mislead the international community is clear. The Fact-Finding Mission also declined to visit the airbase, claiming that it was ostensibly not part of its mandate but rather a matter for the Joint Investigative Mechanism.

Something similar then occurred with the Mechanism, which, in response to our persistent calls to verify the presence or absence of traces of sarin at Sha'irat, claimed that the task was not within its mandate but rather a matter for the Fact-Finding Mission. In other words, both entities responsible for conducting the investigation passed the buck and shirked their responsibilities. Ultimately, the Joint Investigative Mechanism did visit the airbase but categorically refused to take samples. This is despite the fact that the team of experts visiting the airbase included experienced chemists from OPCW and that the necessary equipment was also available. All of this looks very much like blatant sabotage.

Russia has not demanded from these two entities anything that goes beyond their mandates or the provisions of the Chemical Weapons Convention. In particular, we insisted that the investigation should use the full range of methods and means provided for in the Convention, which involves, first and foremost, collecting samples, interviewing witnesses and gathering evidence directly at the scene of incidents. These elements would appear to be absolutely rudimentary, especially when it comes to such an important and delicate matter as identifying those responsible for the offence of chemical weapons use. However, all our appeals and calls were ignored and, in accordance with the flawed practice established, the investigation was conducted remotely, predominantly at offices in New York and the Hague, and also in territory of a country neighbouring Syria.

All of this inevitably affected the quality of the investigation, which, it transpires, was devastatingly low. Suffice it to say that the Fact-Finding Mission violated a basic principle, known in English as "the chain of custody", which may be translated into Russian as a strictly defined sequence of actions for the preservation of evidence. As set out in the Chemical Weapons Convention and in OPCW documents, this principle presupposes that OPCW representatives must take the samples themselves and ensure their integrity throughout their journey until they reach the organization's certified chemical laboratory, where the analysis is to be carried out. In reality, however, the Fact-Finding Mission received these samples from the hands of the Syrian opposition in the territory of a neighbouring country. The same goes for the witnesses interviewed first by the Fact-Finding Mission and then by the Joint Investigative Mechanism: there is no evidence that these persons were in fact at Khan Shaykhun on the morning of 4 April 2017. Accordingly, reliance on their testimony is extremely problematic. The approach taken by the Fact-Finding Mission and the Joint Investigative Mechanism can in no way be called professional. As a consequence, the so-called evidence collected by them is highly unconvincing. It is no coincidence that almost every page of the report contains words such as "possibly", "likely", "appeared to be" and so forth. Such language is totally unacceptable for a report claiming to be sound and carefully vetted. It would have been more honest to report to the Security Council that, in the current context, the Joint Investigative Mechanism was simply not able to carry out a full investigation.

And there were other wonders during the investigation. For example, it emerged that the OPCW Mission somehow believed that its task was solely to determine whether or not chemical weapons had been used. The Mission said that everything else was not its concern. This interpretation of the mandate is fundamentally at odds with relevant decisions of the OPCW Executive Council, which were also fully endorsed by the Security Council in paragraph 5 of its resolution 2209 (2015). Indeed, the mandate of the Fact-Finding Mission, in accordance with these decisions, is to "study all available information relating to allegations of use of chemical weapons in Syria". The Mission has effectively refused to do so: hence its refusal to visit the Sha'irat airbase and its failure to collect, while the trail was still hot, all the necessary and reliable information. And all this because the Fact-Finding Mission considers itself entitled to independently calibrate its mandate, which is contrary to the decisions of policymaking organs.

Here is another example. In accordance with the Chemical Weapons Convention, the Syrian side has every right to request and receive a portion of the samples collected on its territory at the site of the alleged use of chemical weapons. However, the OPCW Technical Secretariat has still not actually responded to that request from Damascus — for now it has only promised to do so, and then not fully. That is a direct violation of the provisions of the Convention. Many more such examples could be given.

Moving on to an assessment of the seventh report of the Joint Investigative Mechanism, we are forced to acknowledge that this has turned out to be very superficial, unprofessional and amateurish. We shall provide an illustrative example. One of the episodes investigated by the Mechanism concerned the incident in Umm Hawsh, where sulfur mustard was used. This investigation was initiated by Syria and Russia, which had brought it to the attention of OPCW. The Russian military visited the site of the incident and found an unexploded improvised shell with sulfur mustard, which was handed over to OPCW for study and analysis. Based on this analysis, the Joint Investigative Mechanism concluded that sulfur mustard was used during the hostilities between Islamic State in Iraq and the Levant (ISIL) and the other armed groups opposing it. The Mechanism decided to hold ISIL responsible for this crime on the sole grounds that the other groups had not been observed to use sulfur mustard in the past. This line of reasoning is simply astonishing and does not reflect well on the Joint Investigative Mechanism's level of professionalism.

Evidence for the alleged responsibility of Damascus in Khan Shaykhun is contained in three main sections of the report: first, information related to the scenario that a sarin-filled aerial bomb was dropped from a Syrian military aircraft flying near Khan Shaykhun; second, analysis of photo and video materials from the site of the incident, mainly relating to the impact crater; and third, analysis of the chemical composition of the sarin traces remaining at the scene of the crime. Having reviewed each of these sections, Russian experts from the Ministry of Defence and the Ministry of Industry and Trade — the Russian national body responsible for implementing the Chemical Weapons Convention — have come to the following conclusions.

1. A Soviet-manufactured Syrian Arab Air Force Su-22 aircraft can carry out bomb drops provided the target may be visually identified, that is, from an altitude of no more than 4,000 metres. In addition, to aim unguided aerial munitions, the aircraft must follow a course that passes directly over the target.

2. The actual flight paths of Syrian Arab Air Force aircraft on 4 April 2017, from 0637 hours to 0646 local time, were monitored by the air space tracking system of the anti-ISIL coalition forces. It is stated in paragraph 30 of the Joint Investigative Mechanism's report that, having reviewed the materials submitted and having studied the witness testimonies, the Mechanism concluded that the aircraft had not come closer than a distance of 5 kilometres from Khan Shaykhun.

3. In the case of a bomb delivered from a horizontal flight at speeds of 800 to 1,000 kilometres per hour and altitudes of up to 4,000 metres, the distance from the release point to the target ranges from 1,000 metres up to a maximum of 5,800 metres. At a speed of 800 kilometres per hour and an altitude of 3,500 metres, the release point is a distance of 5,400 metres away from the target. However, following the release, the plane would continue its movement in the air and, even if turning away, would cross the target line or significantly close to it, the turning radius in that case being 3 to 9 kilometres. However, that is contradicted by the fact that the plane was not observed closer than 5 kilometres from Khan Shaykhun. Furthermore,

manoeuvring with large bank angles and gaining altitude require a thrust margin and, consequently, the engine to be operating at full power, which may also include afterburning. Such engine operating modes are accompanied by a loud sound and do not go unnoticed. When dive bombing at an angle of up to 60 degrees, the aircraft needs to dive towards the target and cross the target line when exiting the dive. This also contradicts the foregoing.

4. At no point does the report mention the presence of a bomb stabilizing fin that would clearly prove the crater was the result of an aerial bomb. It is common knowledge, however, that the stabilizing fin can always be found at or near the impact location, even following the denotation of a high-explosive or powerful fragmentation aerial bomb.

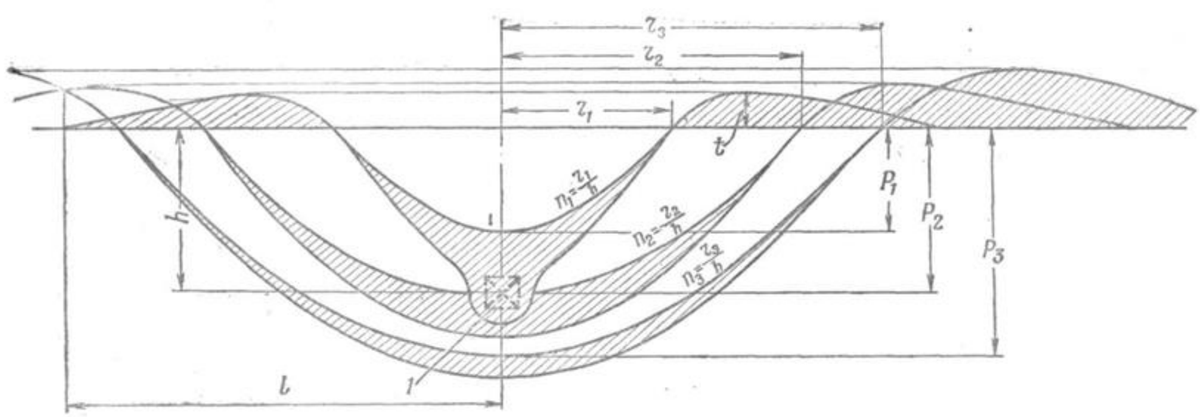
Thus, there is no evidence that a chemical aerial bomb was dropped on Khan Shaykhun from a Syrian Arab Air Force Su-22 aircraft flying no closer than 5 kilometres away between 6.30 a.m. and 7.00 a.m. on 4 April 2017. It is not technically possible that there was a bomb attack on Khan Shaykhun. Graphics that support this conclusion are included in the appendix to the present document.

The guilty verdict handed down so confidently by the Joint Investigative Mechanism against Damascus has therefore proved to be without merit. It would seem that this blunder occurred because, from the very start, the staff and leadership of the Joint Investigative Mechanism were biased in favour of the "aerial" version of events. At the same time, the scenario whereby the incident in Khan Shaykhun was staged has, to all intents and purposes, been completely ignored, once again on ridiculous grounds — allegedly no witnesses reported seeing fighters from local terrorist groups preparing or carrying out a ground explosion. Can such reasoning be taken seriously? After all, clearly no one would carry out such an act of provocation in the presence of witnesses. It would be done in secret.

An analysis of photographs and video footage by Russian experts showed that the Joint Investigative Mechanism was wrong to give so little weight to the scenario according to which Khan Shaykhun had been the site of yet another staged event with tragic consequences.

The destructive impact of an explosive charge placed in soil or rock is defined by explosion factor *n*, which is the ratio of radius *r* (half of the width) of the crater to the line of least resistance *h* (see figure I).

Figure I
Ejection crater for different explosive charges



Note: *l* is the location of the charge.

When a steel munition explodes, it produces three fragment sprays from the nose, the walls of the body and the tail, accounting for about 20 per cent, 70 per cent and 10 per cent of the fragments, respectively. When the munition is detonated under static conditions, the fragment dispersion pattern resembles that shown in figure II.

Figure II
Fragment dispersion pattern for a static explosion

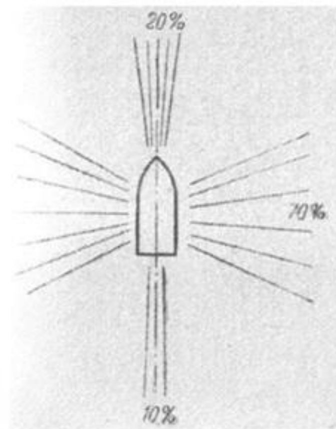
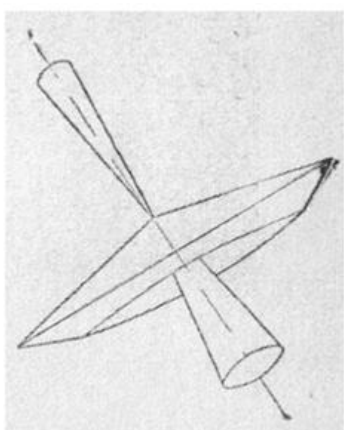


Figure III
Fragment dispersion pattern for an in-flight explosion



When the munition explodes as it travels along a trajectory, the velocity that the fragments gain from the explosive charge combines with that of the munition at the moment of the explosion, causing the side fragment spray to deviate somewhat in the direction of the munition flight path (see figure III). The deviation of the side spray and, consequently, the associated fragment dispersal angle depend greatly on the velocity of the munition at the time of the explosion, since the initial velocity of the fragments from the explosive charge is approximately constant, ranging from 500 to 1000 m/s depending on the munition.

An aerial bomb on impact has great kinetic energy equal to:

$$E = \frac{QV_{BC}^2}{2g}\ ,—$$

Where: E is kinetic energy in kgm;

V_{BC} is the velocity of the aerial bomb on impact in m/s;

Q is the weight of the aerial bomb in kg;

g is gravitational acceleration equal to 9.81 m/s^2.

Example: The kinetic energy on impact of an M4000 aerial bomb weighing 350 kg given velocity on impact V_{BC} of 277 m/s is equal to:

$$\mathrm{E} = \frac{350 \times 277^2}{2 \times 9{,}81} = 1\ 368\ 764{,}016\ \text{кГм}.$$

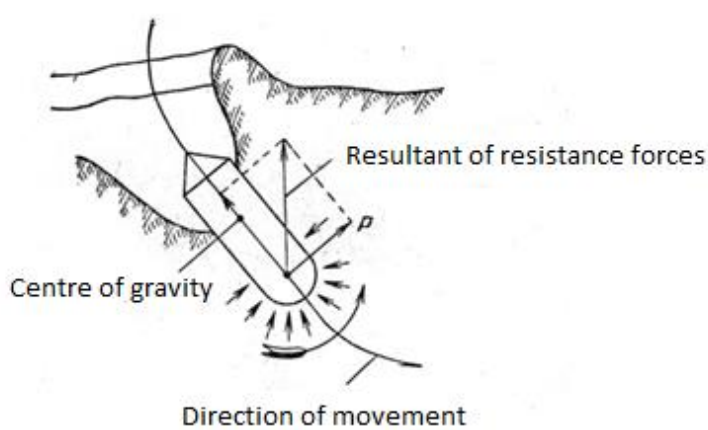
Upon impact, the energy accumulated by the aerial bomb during its fall is distributed as follows: some of the energy is spent on the impact and some on the deformation of the bomb.

The minor amount of energy expended on the impact and to heat the obstacle and the body of the aerial bomb can be dismissed as negligible, so all of the bomb's kinetic energy can be considered as being expended to deform the obstacle and the body of the aerial bomb.

The correlation between the energy spent to deform the obstacle and the energy spent to deform the body of the aerial bomb largely depends on the strength of the casing. Given a casing strong enough to withstand the forces generated by the impact without residual deformation, the energy necessary to deform it is close to zero and almost all of the bomb's kinetic energy is spent on deforming the obstacle. High-grade steel and thicker walls are used to make a stronger casing.

An aerial bomb follows a distinctive trajectory in the soil that depends on many factors that do not lend themselves to preliminary calculations. As an aerial bomb moves through soil it usually deviates from the line tangent to the trajectory at the point of impact. Even when the axis of the moving bomb coincides with the direction of its movement underground, the resistance of the soil affecting the bottom half of the bomb would be slightly greater than the resistance affecting its top part, giving rise to force P, a component of the total resistance force, which acts in a direction perpendicular to the bomb's penetration trajectory (see figure IV).

Figure IV
Change in the trajectory of the aerial bomb underground

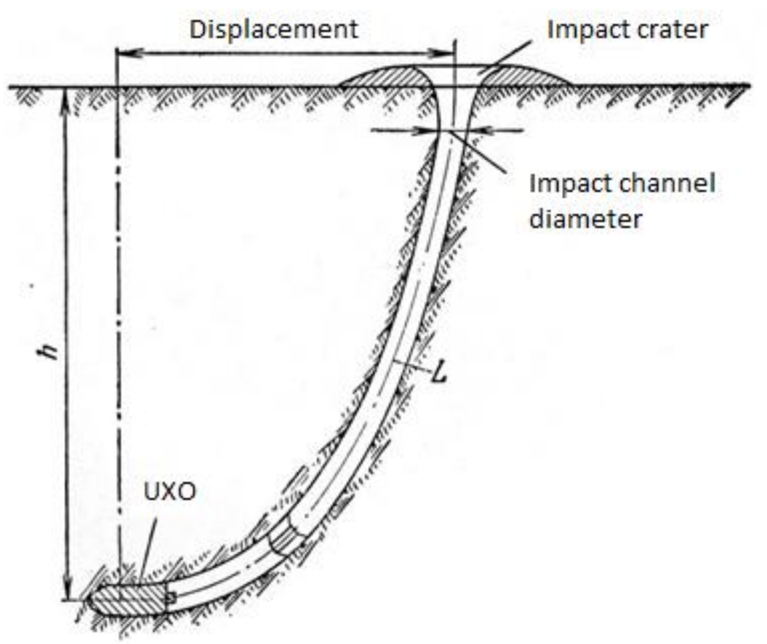


As this force acts on a point ahead of the centre of gravity, the bomb's axis lifts away from its direction of travel.

Practice shows that a bomb's trajectory is less affected by solid homogeneous soil than by soft soil. An unexploded aerial bomb enters the ground travelling along a nearly straight line at a slight angle to the vertical plane. The bomb generally makes a sharp turn at the end of its path and comes to rest in a horizontal position or with its nose turned slightly upwards. Cases where aerial bombs come to rest underground in a vertical position with the nose pointing down are very rare. Upon running into obstacles or stratification in the soil, an aerial bomb often sharply changes course.

For practical purposes, the bomb's penetration depth h (see figure V), equivalent to the vertical projection of trajectory L, is of particular importance.

Figure V
Aerial bomb penetration depth into the ground

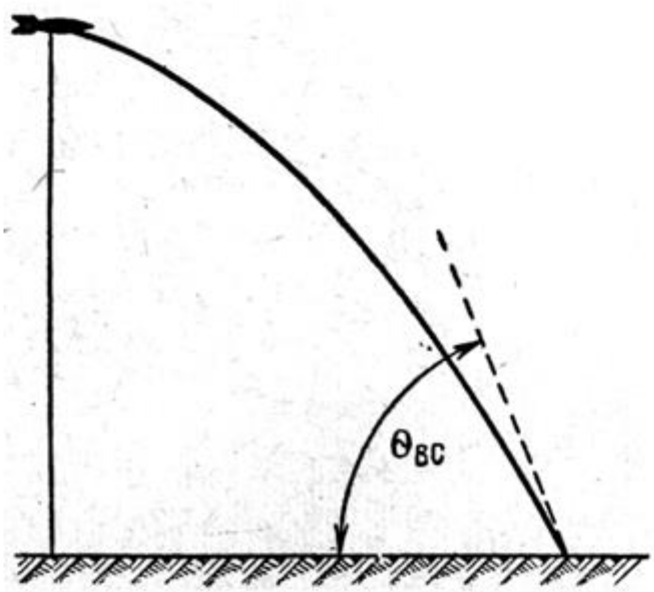


The weight, maximum diameter, shape and casing strength of the bomb, as well as its velocity on impact, angle of impact and the properties of the surrounding material being destroyed, all determine the bomb's penetration depth. The greater the weight and the smaller the bomb's diameter, the greater the penetration depth will be, all other factors being equal.

Kinetic energy is proportional to velocity squared. An aerial bomb with greater kinetic energy would naturally have greater destructive power and would penetrate further into the obstacle.

The angle between the aerial bomb and the obstacle on impact Θ_{BC} (see figure 6) determines the vertical projection of the penetration path, that is, penetration depth h. The greater the angle Θ_{BC}, the larger the h value will be. The penetration depth is greatest for a vertical drop (Θ_{BC} = 90°).

Figure VI
Angle between the aerial bomb and the obstacle on impact



In practice, an aerial bomb’s obstacle penetration depth can usually be determined by applying the so-called Engineer or Berezan formula, developed based on experiments conducted on Berezan Island in 1908:

$$\mathbf{h_{пр} = A_1 K_п \frac{\mathit{Q}}{\mathit{D}^2} V_{BC} \sin \Theta_{BC}}$$

Where: h_{np} is the penetration depth in metres;

A_1 is the coefficient dependent on the shape of the aerial bomb;

K_n is the coefficient dependent on the properties of the obstacle;

Q is the weight of the bomb in kg;

D is the diameter of the bomb’s cross-section in metres;

V_{BC} is the velocity of the bomb on impact in m/s;

Θ_{BC} is the angle between the bomb and the obstacle on impact.

Coefficient A_1 for all aerial bombs is equal to 1.3.

The values of K_n depending on the obstacle are given in table 1.

Table 1

Obstacle	*Coefficient depending on obstacle properties (K_n)*
Loose soil	$13.0*10^{-6}$
Sand mound	$9.0*10^{-6}$
Dense clay	$7.0*10^{-6}$
Regular soil	$6.5*10^{-6}$
Loam soil	$6.0*10^{-6}$
Pine wood	$5.0*10^{-6}$
Loose sand	$4.5*10^{-6}$
Brickwork	$2.5*10^{-6}$
Granite	$1.6*10^{-6}$
Concrete	$0.7*10^{-6}$

An unexploded aerial bomb can be identified by the impact channel. The bomb's weight can be estimated based on the diameter of the channel.

Table 2 lists average impact channel diameters and the likely weight and penetration depths of an unexploded aerial bomb.

Table 2

		Penetration depth, m		
Average impact channel diameter, cm	*Likely weight of aerial bomb, kg*	*Sand*	*Clay*	*Displacement, m*
25–30	50	1.5–2	3–4.5	1.1
30–35	100	1.5–2	3–4.5	1.2
40–45	250	2.5–3.5	5–7	1.4
50–60	500	3.5–4	6–8	2.0
80–100	1000	5–6	7–9	2.3
80–100	1500	7–8	10–12	4.1
90–100	2000	8–9	12–15	4.9

In rare cases, an aerial bomb may be found at a significantly greater or lesser depth than the value given in table 2.

The impact channels can also be created by something other than unexploded aerial bombs. For example, an incendiary aerial bomb weighing 50 kg or more can become embedded in the ground, detonate with a blast insufficient to leave a crater but still leave the same kind of impact channel as an unexploded aerial bomb.

Based on the foregoing:

– The crater formed by the explosion of the munition at Khan Shaykhun is almost rectangular in shape; therefore, the munition was motionless at the time of detonation (the residue pattern on the road surface supports this);

– The edges of the crater are not turned outwards (there are no traces of displaced soil), which indicates that the munition was situated on the road surface at the time of its detonation;

– There are no tell-tale signs that an aerial bomb had penetrated the road surface.

Conclusion: The photograph shows a crater with a regular rectangular shape created by some type of munition (an improvised explosive device), containing an equivalent of 10 to 12 kg of TNT, that had been placed on the road surface, was motionless, and had been detonated.

Consequently, the Mechanism's conclusion that an aerial bomb had been used at Khan Shaykhun is without merit.

Also, the Mechanism bases its report on the results of a chemical analysis carried out by unnamed laboratories accredited by OPCW. The report does not provide the actual expert conclusions and chemical analysis data, however.

In addition, while the fact that sarin and its precursors were present in the samples taken at Khan Shaykhun is not in question, some of the circumstances surrounding that fact are puzzling and deserve an explanation.

The Mechanism states that the sarin identified in the samples taken from Khan Shaykhun most likely had been made using the precursor methylphosphonic acid difluoroanhydride (DF) from the original stockpile of the Syrian Arab Republic (para. 93(h)).

Russian experts believe that this conclusion is untenable. It relies on the results of an analysis of DF samples obtained by OPCW in 2014 from Syria's former stockpiles. According to the findings of the unnamed laboratory engaged by the Mechanism to perform the analysis (para. 83), the samples were found to contain impurities (PF_6^-) and isopropyl phosphates (paras. 85 to 88). According to the Fact-Finding Mission (see OPCW document S/1510/2017), one of the four laboratories that performed the analysis had previously identified these same impurities in two environmental samples taken from the crater. According to Russian experts, that is not sufficient to qualify these markers as unique (para. 90) or associate them exclusively with the Syrian technology for the production of binary sarin.

Phosphorous hexafluoride (PF_6^-) is a compound that cannot exist on its own, existing instead as an acid or an acid salt that it forms with metals or tertiary amines. The report does not contain data regarding the form in which it was discovered, the method used to identify it or its percentage in the samples. It is pointed out in paragraphs 85 to 87 that PF_6^- can be formed using hydrogen fluoride but cannot be formed using a different commonly used fluorinating agent, not specified in the report. It is well established that phosphorus hexafluoride is produced by fluorinating phosphoric acid chlorides using alkali metal fluorides and hydrogen fluoride complexes containing tertiary amines which could also be used to produce DF. The associated technology does not require a high level of skill or a sophisticated production process.

The presence of other markers (isopropyl phosphorofluoridates and isopropyl phosphates), the amount of which is also left unspecified, has been tied to the presence of phosphorous oxychloride in samples of Syrian DF, although phosphorous oxychloride could be a by-product of sarin production using other methods.

There is therefore no reason to categorize phosphorous hexafluoride, isopropyl phosphorofluoridates and isopropyl phosphates as unique markers that are exclusively characteristic of the Syrian binary sarin production method.

Paragraph 84 contains the assertion that the results of the analysis of environmental samples taken at Khan Shaykhun confirm that sarin was produced by the binary route, citing the materials of the Fact-Finding Mission. Those materials do not provide any such information.

In addition, there is a real possibility that DF and sarin had been intentionally produced according to ostensibly Syrian formulations, which are well known both to OPCW and outside of this specialized international agency, in order to use it later for purposes of provocation and to compromise the Syrian authorities.

Russian experts believe that the Mechanism's conclusion regarding the presence of sarin in the crater ten days after the incident, which it tied to the release of that toxic agent through a chemical aerial bomb, is without merit. These conclusions also do not rule out the likelihood of other scenarios, for example, that a certain amount of sarin was released by detonating a vessel containing sarin on the ground. It is perplexing that, despite including a discussion of the type of explosive that would have been needed to release the sarin (para. 61), the investigation did not perform a chemical analysis of the samples taken from the crater and provided to the Fact-Finding Mission to check for traces of an explosive and to identify it.

Furthermore, it is remarkable that videos and images taken within hours of the chemical incident show people who are wearing no special respiratory or skin protection. That would indicate that there was no sarin in the crater, since when a chemical weapon explodes, up to 30 per cent of the toxic agent stays in the ground, generating a lethal concentration of the agent around the crater, whereas miosis can be triggered with concentrations of just 0.0005 mg/l.

In view of the above, there is no evidence to support the Mechanism's conclusion that the Syrian authorities were involved in the production and deployment of sarin in Khan Shaykhun.

Ultimately, the report has not succeeded in presenting convincing evidence regarding the means of delivery, type of munition or the means of sarin dispersion, although it had specifically set out to confirm the deployment of binary sarin using conventional munitions.

In this instance, the final product, that is, sarin, is formed directly inside the munition, for which the latter must have a special device to mix the components (a mixer-equipped motor). There are no indications and no witness accounts of such a device having been found (the standard design of a Syrian chemical aerial munition includes a device for mixing components consisting of a motor with a mixer, which would necessarily have to be present at the site of the incident).

The second related issue concerns the origin of the sarin that was dispersed at Khan Shaykhun. The report dedicates ten paragraphs to this matter (paras. 81 to 91).

Here the Mechanism makes its first attempt at a so-called attribution analysis.

Once Syria had transmitted information on Syrian sarin production methods to OPCW, the latter had stored the samples taken from Syrian stockpiles slated for destruction on-board the United States specialized ship MV Cape Ray, where there was a plethora of opportunities to conduct laboratory tests to identify all of the particular admixtures, the so-called chemical markers associated with the Syrian stockpiles.

This is exactly what the Mechanism did, requesting a special laboratory study as part of the ongoing investigation into the use of sarin at Khan Shaykhun. The study, which was conducted with the utmost professionalism, had identified an admixture that remains following the synthesis of Syrian binary sarin from DF.

Unfortunately, the report does not specify the stages at which the admixture is present or its concentrations. However, there are reasons to believe that the micro-admixture, namely, phosphorous hexafluoride (PF_6^-), which had been discovered owing to the extreme sensitivity of the instruments, was seen as a certain marker and the missing link connecting initial and final products (DF and the Syrian binary sarin), prompting a connection to be drawn between the chemical substance used and the declared Syrian DF stockpiles.

However, beyond the scope of that study, it still needed to be established whether this admixture would have also been present in DF if a different process that employs DF as an initial component in sarin production had been used. What if this admixture had always been there but had gone unnoticed? Is this marker present or preserved in traditional sarin production methods or is it unique to the Syrian DF stockpile?

Unfortunately, these questions will likely remain unanswered since States that once stockpiled DF as a component for the production of binary sarin have already destroyed it, leaving no samples that could be used to conduct such research.

The report did not even consider the possibility that the sarin used had been made using an improvised production method. The report also leaves unclear which sample analysis results were used as the basis for its conclusions. Did the Mechanism receive sample analysis results from the Fact-Finding Mission and the Syrian Arab

Republic as well as from France, the United Kingdom, the United States of America and Turkey?

Having examined the results of the sample analysis performed by France, Russian experts have concluded that the possibility that the sarin used at Khan Shaykhun had been made using an improvised method could not be ruled out. France had analysed four environmental samples and two biomedical samples (blood plasma). In three instances, an environmental sample analysis confirmed the presence of a chemical substance (sodium hexafluorophosphate) that could be indicative of small-scale sarin production.

Thus, the conclusions and reasoning of the Joint Investigative Mechanism do not stand up to scrutiny. Moreover, the report shows that the Mechanism has done nothing at all to implement the counter-terrorism tasks assigned to it by the Security Council at the time when its mandate was extended by resolution 2319 (2016) in November 2016. It appears that the Joint Investigative Mechanism simply did not find the time to help combat chemical terrorism: all its efforts were spent confirming the scenario of a sarin aerial bomb used by the Syrians.

However, we would nevertheless like to note one positive development in the report. The Joint Investigative Mechanism dared to acknowledge, for the first time, that the photos and videos taken by the notorious "White Helmets" at the site of the incident, and designed to provoke a wave of outrage from the international community towards Damascus, had been concocted in the most primitive manner. The rescue workers from this supposedly humanitarian organization, which is in fact is closely linked to the Nusrah Front terrorist group, evidently overplayed their hand by bringing to light the staged nature of their actions to purportedly ease the plight of victims and decontaminate the scene.

At the same time, the report completely sidesteps one extremely important fact. We recall that, at a Security Council meeting held in April this year, the Permanent Representative of the United States of America to the United Nations showed the entire world harrowing photographs of Syrian children allegedly killed by sarin poisoning. If United States media reports are to be believed, it was these photographs that played a key role in the decision by Washington to launch a missile strike on the Sha'irat airbase. However, the pupils of the children in those photos can be seen to be significantly dilated, whereas if they had been suffering from the effects of sarin, their pupils would have shrunk to the size of a dot. We have urged the Fact-Finding Mission and the Joint Investigative Mechanism to explain this contradiction, but again they have declined to do so.

We would like to draw attention to something else in the report. The report also notes that, in 57 of 247 cases, casualties admitted for medical assistance arrived at hospitals before the incident had occurred. Furthermore, those cases were documented. The Mechanism preferred to brush aside this glaring fact, explaining it as owing to the prevailing chaos in Khan Shaykhun and the surrounding area on the day of the chemical incident. However, mistakes in record-keeping could have happened in one, two or a few cases, but not in every fourth case. These occurred in 57 of 247 cases. The scale of these irregularities appears to demonstrate the staged nature of events in which, owing to poor preparation, massive discrepancies emerged when the act of provocation was carried out. Medical documents indicate that some of the victims managed to be admitted to a hospital situated 125 km away from Khan Shaykhun even before the incident. Commenting on this seems superfluous.

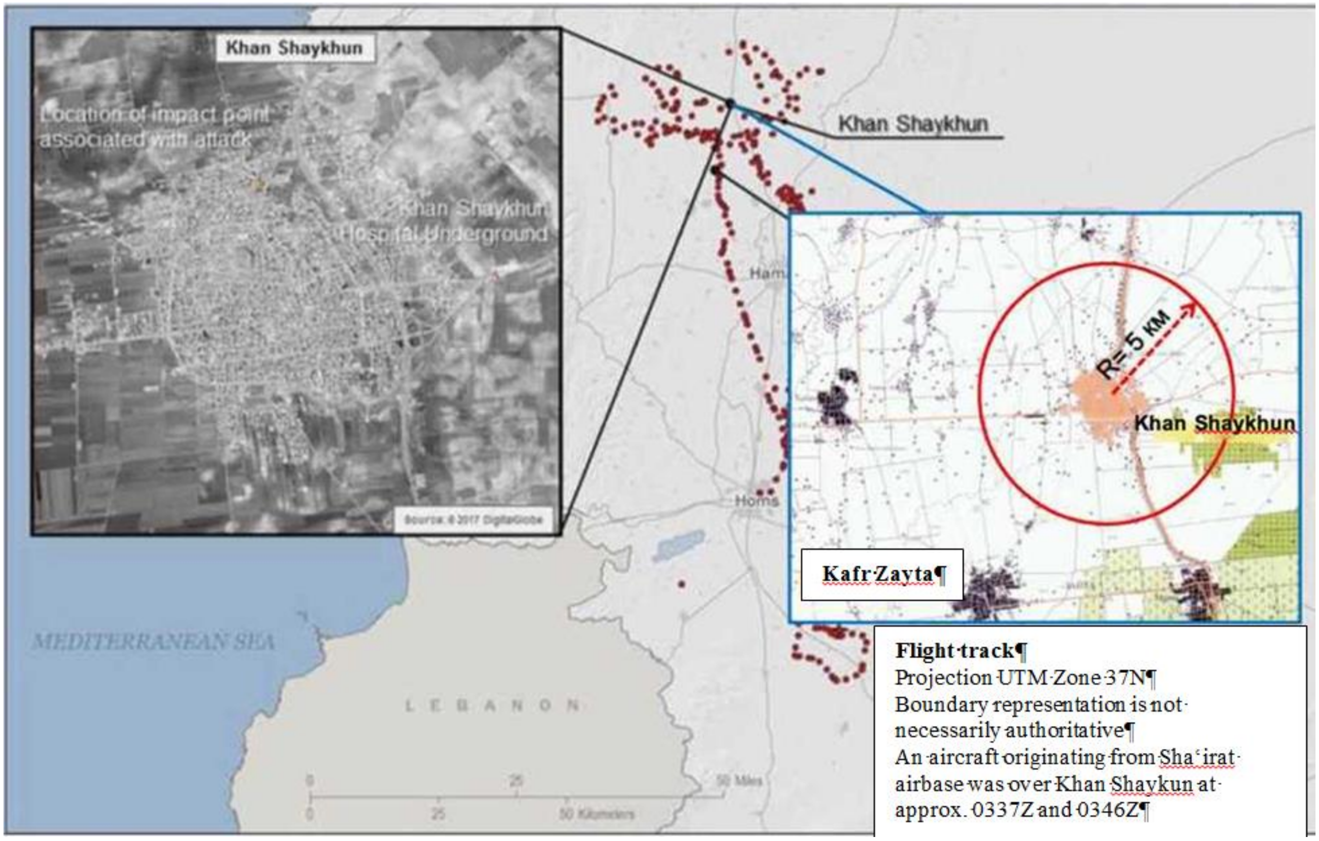
And one final detail. According to the report, the "White Helmets" reported the possible use of chemical weapons even before the Syrian planes took off from Sha'irat airbase. A pertinent question is where such astounding knowledge would come from. This is something worth considering.

In conclusion, we would like to emphasize that Russian experts are seeking to operate in terms of concrete facts and arguments, whereas their opponents usually avoid a substantive dialogue and respond with slogans, blaming Russia for allegedly undermining the authority and reputation of the Joint Investigative Mechanism and the Fact-Finding Mission. Russia has but one response: indeed, it does care about the reputation of these entities and is seeking to help them overcome the systemic flaws and shortcomings that prevent their findings from being respected and trusted. These entities are engaged in extremely important work and must rise to the challenges assigned to them. Their conclusions must be beyond reproach. However, so far that cannot be said to be the case.

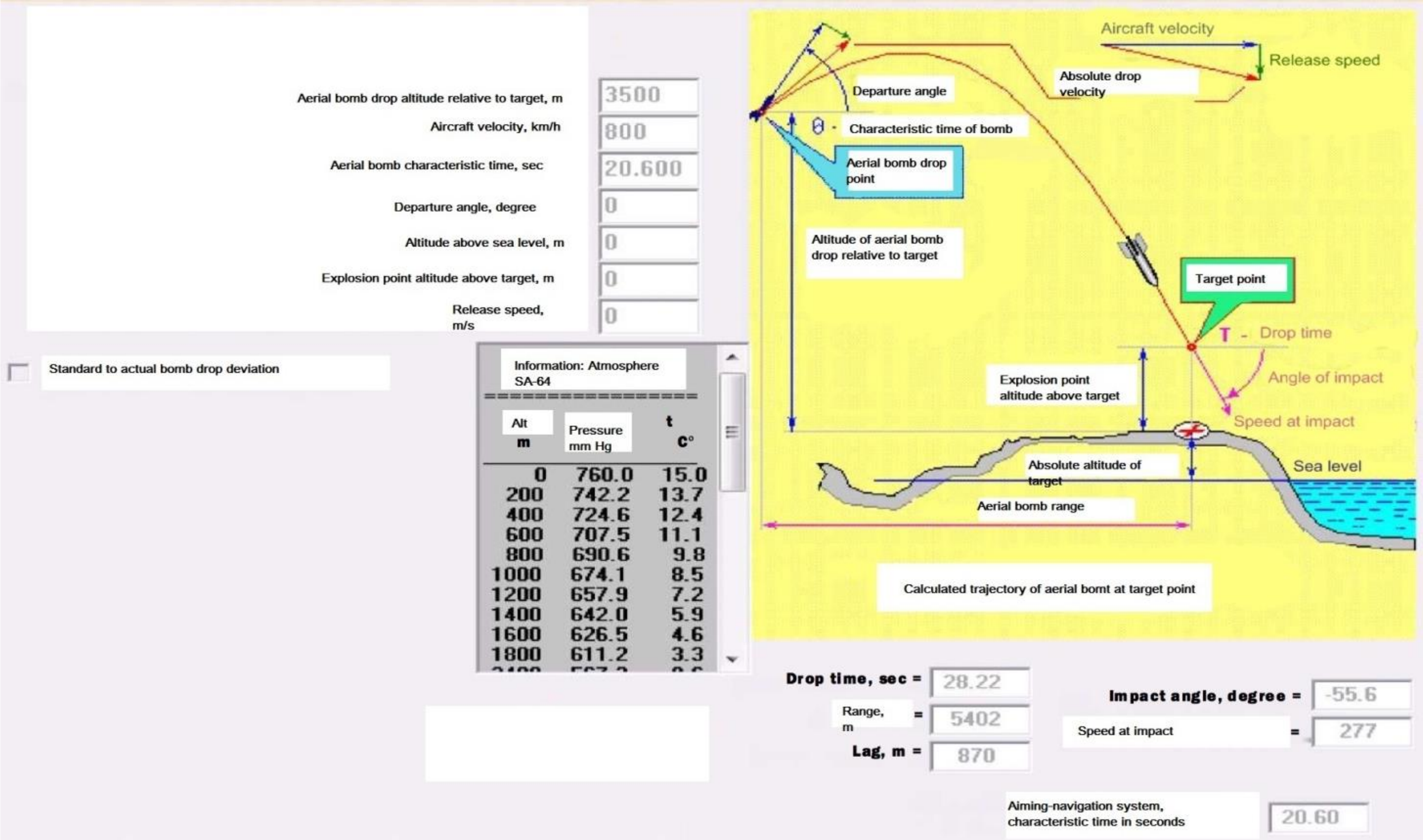
Appendix

A. Syrian Air Force aircraft movement trajectories

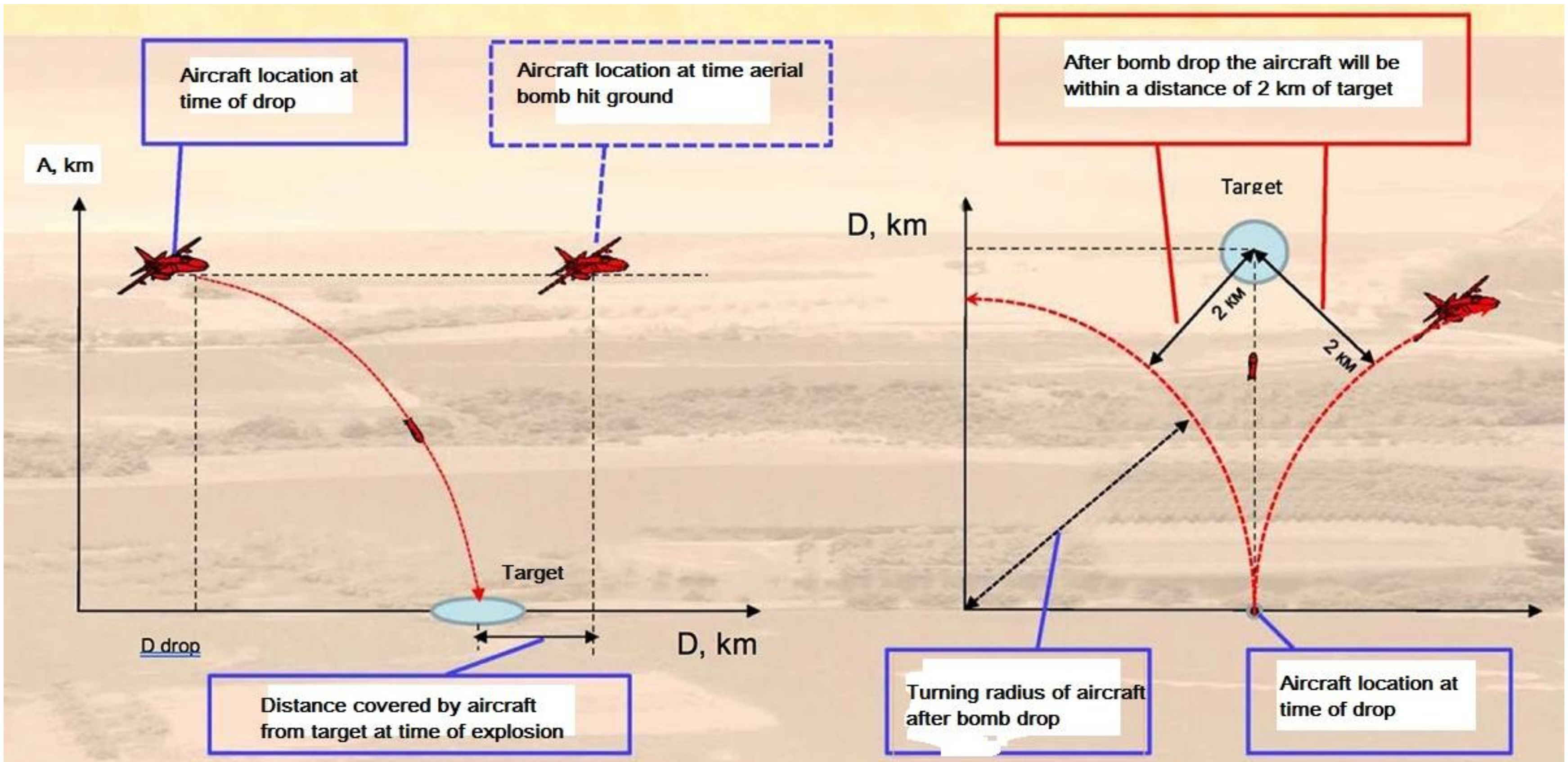
(4 April 2017, 0637 hours–0646 hours)



B. Drop range calculation



C. Bomb Run Chart



Aircraft turning radius at different speeds and bank angles (km)

		Speed of the aircraft (km/h)		
		800	900	1000
Bank angle (degrees)	30	8.6	**11**	13.5
	45	**5**	6.3	**8**
	60	2.9	3.6	4.5