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**FIRST REPORT BY THE OPCW INVESTIGATION AND IDENTIFICATION TEAM
PURSUANT TO PARAGRAPH 10 OF DECISION C-SS-4/DEC.3
“ADDRESSING THE THREAT FROM CHEMICAL WEAPONS USE”
LTAMENAH (SYRIAN ARAB REPUBLIC)
24, 25, AND 30 MARCH 2017**



EXECUTIVE SUMMARY

1. The Director-General of the OPCW Technical Secretariat established the Investigation and Identification Team (IIT) pursuant to the Decision by the Conference of the States Parties entitled “Addressing the Threat from Chemical Weapons Use” (C-SS-4/DEC.3, dated 27 June 2018). The IIT began its work in June 2019, focusing on certain incidents for which the OPCW Fact-Finding Mission (FFM) had determined that use or likely use of chemical weapons on the territory of the Syrian Arab Republic occurred and for which the OPCW-United Nations Joint Investigative Mechanism had not reached a final conclusion.
2. This first report of the IIT sets out its mandate, the legal and practical challenges of its work, and the findings of the investigations conducted in the period between June 2019 and March 2020, focusing on the incidents in Ltamenah, the Syrian Arab Republic, on 24, 25, and 30 March 2017. The IIT is not a judicial body with the authority to assign individual criminal responsibility, nor does the IIT have the authority to make final findings of non-compliance with the Convention. The mandate of the IIT is to establish the facts.
3. On the basis of all the information obtained and its analysis, the IIT concludes that there are reasonable grounds to believe that:
 - (a) At approximately 6:00 on 24 March 2017, an Su-22 military airplane belonging to the 50th Brigade of the 22nd Air Division of the Syrian Arab Air Force, departing from Shayrat airbase, dropped an M4000 aerial bomb containing sarin in southern Ltamenah, affecting at least 16 persons.
 - (b) At approximately 15:00 on 25 March 2017, a helicopter of the Syrian Arab Air Force, departing from Hama airbase, dropped a cylinder on the Ltamenah hospital; the cylinder broke into the hospital through its roof, ruptured, and released chlorine, affecting at least 30 persons.
 - (c) At approximately 6:00 on 30 March 2017, an Su-22 military airplane belonging to the 50th Brigade of the 22nd Air Division of the Syrian Arab Air Force, departing from Shayrat airbase, dropped an M4000 aerial bomb containing sarin in southern Ltamenah, affecting at least 60 persons.
4. As the investigation progressed, and various hypotheses were considered, the IIT gradually came to these conclusions as the only ones that could reasonably be reached from the information obtained, taken as a whole. Military operations of such a strategic nature as these three attacks only occur pursuant to orders from the highest levels of the Syrian Arab Armed Forces. The IIT could not however draw definitive conclusions to the requisite degree of certainty as regards the specific chain of command for the orders in these three incidents. The IIT has also not received or obtained information that investigations or criminal prosecutions by the Syrian authorities into these alleged incidents ever took place.
5. The IIT reached its conclusions on the basis of the degree of certainty of “reasonable grounds”. This standard was applied to the assessment of the information obtained by the IIT from the FFM, States Parties, and other entities, coupled with information obtained through interviews directly conducted by the IIT as well as analyses of

samples, review of laboratory results, and analyses of munition remnants, reports and advice from experts, specialists, and forensic institutes, along with other relevant material and sources. The IIT assessed this information holistically, scrutinising carefully its probative value through a widely shared methodology in compliance with best practices of international fact-finding bodies and commissions of inquiry. In so doing, the IIT adhered to applicable OPCW procedures, including with respect to chain of custody, supplemented as appropriate. The conclusions in this report are based on the combination, consistency, and corroboration of all of the information gathered as a whole.

6. The IIT is grateful for the ample support received during its investigation from States Parties, other entities, and individuals.
7. The challenges faced by the IIT included its inability to access the site of the incidents as well as persons and information located in the Syrian Arab Republic. The IIT regrets that this access was not granted despite: (a) various requests addressed by the Technical Secretariat to the authorities of the Syrian Arab Republic; (b) the undertaking by the Syrian Arab Republic to cooperate with the Technical Secretariat under paragraph 7 of Article VII of the Chemical Weapons Convention; and (c) the obligation incumbent on the Syrian Arab Republic, pursuant to United Nations Security Council resolution 2118 (2013), to cooperate fully with the OPCW by providing personnel designated by the OPCW with immediate and unfettered access to any and all sites and individuals that the OPCW has grounds to believe to be of importance for the purpose of its mandate. The IIT has expressed on several occasions its readiness to meet with representatives of the Syrian Arab Republic at their convenience and at a location of their choosing to discuss the progress of its activities and their modalities.
8. The Decision of 27 June 2018 by the Conference of the States Parties requires the Technical Secretariat to provide the reports on the IIT investigations to the OPCW Executive Council and to the United Nations Secretary-General for their consideration, and to preserve and provide information to the mechanism established by the United Nations General Assembly in resolution 71/248 (2016), as well as to any relevant investigatory entities established under the auspices of the United Nations. Accordingly, the IIT has endeavoured to compile this report and its related records and findings in a manner suitable for future use by these bodies.

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I. MANDATE

1. ESTABLISHMENT OF THE INVESTIGATION AND IDENTIFICATION TEAM

- 1.1 This Report is submitted pursuant to paragraph 10 of the decision adopted by the Conference of the States Parties (hereinafter “the Conference”) at its Fourth Special Session entitled “Addressing the Threat from Chemical Weapons Use” (C-SS-4/DEC.3, dated 27 June 2018) (hereinafter “the Decision of 27 June 2018”), and covers investigations conducted by the Investigation and Identification Team (IIT) in the period from the time it began its work in June 2019 through March 2020.
- 1.2 The Conference adopted the Decision of 27 June 2018 which reaffirms “that those responsible for the use of chemical weapons should be held accountable”,¹ and recalls the responsibility of the Conference under paragraph 20 of Article VIII of the Chemical Weapons Convention (hereinafter “the Convention”) to oversee its implementation, to act in order to promote its object and purpose, and to review compliance with it.²
- 1.3 In paragraph 10 of the Decision of 27 June 2018, the Conference specifically decided that the Technical Secretariat (hereinafter “the Secretariat”):
- shall put in place arrangements to identify the perpetrators of the use of chemical weapons in the Syrian Arab Republic by identifying and reporting on all information potentially relevant to the origin of those chemical weapons in those instances in which the OPCW Fact-Finding Mission in Syria [“FFM”] determines or has determined that use or likely use occurred, and cases for which the OPCW-UN Joint Investigative Mechanism [JIM] has not issued a report; and [...] that the Secretariat shall provide regular reports on its investigations to the [Executive] Council [of the OPCW] and to the United Nations Secretary-General for their consideration.
- 1.4 Pursuant to paragraph 37 of Article VIII of the Convention, the Secretariat is bound to implement decisions taken by the Conference.³ These decisions may pertain to any questions, matters, or issues related to the Convention raised by a State Party or brought to its attention by the Executive Council (hereinafter “the Council”).⁴
- 1.5 In March 2019, the Director-General reported that the Secretariat was establishing the IIT (EC-90/DG.14, dated 7 March 2019). In the immediate aftermath of the establishment of the IIT, prior to the Ninety-First Session of the Council, the

¹ See preambular paragraph 5 of C-SS-4/DEC.3.

² See preambular 6 paragraph of C-SS-4/DEC.3.

³ Paragraph 37 of Article VIII of the Convention states, in the relevant part, that: “[...] [the Technical Secretariat] shall carry out [...] those functions delegated to it by the Conference and the Executive Council”. This paragraph is also recalled in preambular paragraph 7 of the Decision of 27 June 2018.

⁴ Paragraph 19 of Article VIII of the Convention states, in the relevant part, that: “[...] [the Conference] may make recommendations and take decisions on any questions, matters or issues related to this Convention raised by a State Party or brought to its attention by the Executive Council”. This paragraph is also recalled in preambular paragraph 6 of the Decision of 27 June 2018.

Secretariat circulated a Note entitled “Work of the Investigation and Identification Team Established by Decision C-SS-4/DEC.3 (dated 27 June 2018)” (EC-91/S/3, dated 28 June 2019). On 3 October 2019, the Secretariat circulated another Note entitled “Work of the Investigation and Identification Team Established by Decision C-SS-4/DEC.3 (dated 27 June 2018)” (EC-92/S/8, dated 3 October 2019).

- 1.6 Notes by the Secretariat EC-91/S/3 and EC-92/S/8, circulated to all States Parties for information purposes, presented the mandate and methods of work of the IIT. Note EC-91/S/3 stressed that the IIT, as an integral part of the Secretariat, would conduct its operations according to the principles of impartiality, objectivity, and independence and that it would ensure the security, integrity, preservation, and chain of custody of the information and material in its possession from the moment of collection or receipt, and analyse and store technical and scientific information meeting the highest technical standards, as well as through the meticulous employment of forensic processes. The Note further elaborated on the composition of the team, the degree of confidence that would be relied upon to make findings, as well as the principles underlying the IIT’s activities in terms of investigative focus and methodologies, information management, and protection of confidentiality. Note EC-92/S/8 added that the IIT welcomes input from States Parties, and relies on their cooperation pursuant to paragraph 7 of Article VII of the Convention, in particular through the provision of relevant information and access to relevant places and persons.⁵
- 1.7 The IIT is not a judicial investigative body. As such, the IIT does not possess the authority to gather evidence in the same manner as prosecutorial offices, courts, and tribunals, nor does it have the authority and jurisdiction to issue judicial determinations or other legally binding verdicts on criminal responsibility. The non-judicial nature of the IIT is comparable to that of international fact-finding bodies or commissions of inquiry.⁶
- 1.8 Paragraph 12 of the Decision of 27 June 2018 specifically requires the Secretariat (and thus the IIT as an integral unit of the Secretariat) to preserve and provide information to the investigation mechanism established by the United Nations General Assembly in resolution 71/248 (2016) (the International, Impartial, and Independent Mechanism–IIIM), as well as to any relevant investigatory entities established under the auspices of the United Nations. The IIT therefore endeavours to compile its records and findings in a manner suitable for future use by the IIIM or other relevant investigation body.

⁵ Paragraph 7 of Article VII of the Convention states that: “[e]ach State Party undertakes to cooperate with the Organization in the exercise of all its functions and in particular to provide assistance to the Technical Secretariat”.

⁶ For further details on the methodologies applied by the IIT in its investigative work, see below, Annexes 1 and 2 to this report.

2. THE MANDATE TO “IDENTIFY THE PERPETRATORS OF THE USE OF CHEMICAL WEAPONS”

Use of chemical weapons

- 2.1 The mandate of the IIT, as decided by the Conference in the Decision of 27 June 2018, is “to identify the perpetrators of the use of chemical weapons” in the incidents under its purview.
- 2.2 On the basis of the ordinary meaning of the terms of paragraph 10 of the Decision of 27 June 2018 in their context (e.g., the Convention), and in light of the Decision’s object and purpose, it is understood that the words “use of chemical weapons” denote any use of such weapons which is determined by the FFM as having occurred or likely occurred.⁷
- 2.3 In accordance with paragraph 1 of Article II of the Convention, “chemical weapons” means the following: (a) toxic chemicals and their precursors,⁸ except where intended for purposes not prohibited under the Convention, as long as the types and quantities are consistent with such purposes; (b) munitions and devices, specifically designed to cause death or other harm through the toxic properties of those toxic chemicals specified in subparagraph (a), which would be released as a result of the employment of such munitions and devices; and (c) any equipment specifically designed for use directly in connection with the employment of munitions and devices specified in subparagraph (b).⁹ This definition implies that each component of a chemical weapon system in itself is regarded as a chemical weapon.¹⁰

⁷ Paragraph 1 of Article I of the Convention, in referring to prohibited activities, employs the expressions “develop, produce, otherwise acquire, stockpile, or retain”, as well as “transfer” of, chemical weapons, and “engage in any military preparations to use chemical weapons” in addition to—and therefore as distinct activities from—the actual “use”. See also paragraph 11 of Article X of the Convention, referring to “victims of use”. Moreover, activities such as “processing” or “consumption” of a toxic chemical within the meaning of paragraph 12 of Article II of the Convention would also be excluded from the meaning of the terms “use of chemical weapons”. Thus, “staging” of chemical attacks (or organising “false flag” chemical attacks, as this is at times described), if done through the use of chemical weapons as defined in this section of the report, would constitute “use” of chemical weapons under the Convention.

⁸ The understanding is that toxicity is not limited to lethality since paragraph 2 of Article II of the Convention defines a “toxic chemical” as “any chemical which through its chemical action on life processes can cause death, temporary incapacitation or permanent harm to humans or animals. [...]” (emphasis added).

⁹ A chemical weapon may even include substances manufactured for purposes not prohibited by the Convention, for example, if these are however used with the intent to harm and/or in types and quantities that are inconsistent with such purposes not prohibited. Furthermore, riot control agents may be inappropriately used as chemical weapons and thus qualify as chemical weapons.

¹⁰ See the decision by the Conference entitled “Understanding of What is Considered a Chemical Weapon in Particular in Relation to Article II, Subparagraphs 1(b) and 1(c) (on the Basis of the Comments Provided in Relation to Section D of the Draft Declaration Handbook) (C-III/DEC.13, dated 20 November 1998) and the Note by the Director-General entitled “A Non-Exhaustive List of Illustrative Examples of Chemical Weapons that Meet the Definitions Contained in Subparagraphs 1(b) and 1(c) of Article II of the Chemical Weapons Convention” (C-8/DG.2, dated 10 April 2003), and its Annex. See also W. Krutzsch, E. Myjer, R. Trapp (eds), *The Chemical Weapons Convention – a Commentary* (Oxford, 2014), at 76-77.

- 2.4 The Decision of 27 June 2018 additionally requires the Secretariat, through the IIT, to identify and report “on all information potentially relevant to the origin” of chemical weapons used in the incidents within the scope of its investigations. The use of the word “origin” alludes to paragraph 26 of Part XI of the Verification Annex to the Convention (hereinafter “the Verification Annex”), which is specifically recalled in the preamble of the Decision of 27 June 2018¹¹ and which requires—in the context of investigations of alleged use of chemical weapons—reporting on “*any* information that might serve to identify the origin of any chemical weapons used”.¹²

Perpetrators

- (a) The term
- 2.5 The term “perpetrator” may be understood as referring to a person guilty of criminal conduct.¹³ However, as mentioned above, the IIT is not a judicial body mandated with establishing criminal responsibility: it would therefore be inappropriate to assign a meaning associated with criminal liability to the term “perpetrator” in the context of paragraph 10 of the Decision of 27 June 2018. Bearing in mind the distinction of roles between the Secretariat, on the one side, and the Conference and the Council (i.e., the OPCW policy-making organs) on the other, the IIT’s mandate is limited to reaching *factual* findings. Matters of State compliance are to be dealt with by the policy-making organs of the OPCW and the United Nations.¹⁴ Moreover, determinations on criminal liability of individuals identified by the IIT remain within the competence of courts or tribunals that have or may, in the future, have jurisdiction over crimes related to the use of chemical weapons for which these individuals may be prosecuted.
- 2.6 In addition, the word “perpetrator” in the context of the IIT’s mandate cannot be limited to a person who commits an act through direct physical execution.

¹¹ See preambular paragraph 8 of C-SS-4/DEC.3.

¹² See also the decision by the Conference entitled “Sampling and Analysis during Investigations of Alleged Use of Chemical Weapons” (C-I/DEC.47, dated 16 May 1997), in particular Section I, paragraph 1 of the Annex.

¹³ This is true for the English version of the Decision of 27 June 2018 and for the versions in Chinese (“肇事者”, i.e., those who perpetrate wrongdoing, or offenders), in French (“auteurs”, the term also used to identify a person committing a crime), in Russian (“виновные”, i.e., perpetrators or guilty), in Spanish (“autores”, the term also used to identify a person committing a crime). In Arabic, the expression used in paragraph 10 of the Decision of 27 June 2018 (“من قاموا باستخدام الأسلحة الكيميائية”, i.e., those who engaged in the use of chemical weapons) does not have the same connotation, and appears to simply refer to those who used chemical weapons.

¹⁴ See paragraph 10 of the Decision of 27 June 2018 stipulating the requirement to submit IIT investigation reports to the Council and the United Nations Secretary General for their consideration. See also paragraph 11 of the Decision of 27 June 2018 which “[n]otes that under paragraph 35 of Article VIII [of the Convention], the Council shall consider any issue or matter within its competence affecting the Convention and its implementation, including concerns regarding compliance, and cases of non-compliance, and, as appropriate, inform States Parties and bring the issue or matter to the attention of the Conference, and further notes that under paragraph 36 of Article VIII of the Convention, in its consideration of doubts or concerns regarding compliance and cases of non-compliance, the Council shall, in cases of particular gravity and urgency, bring the issue or matter directly to the attention of the United Nations General Assembly and the United Nations Security Council”. Paragraph 3 of the Decision of 27 June 2018 further recalls that the United Nations Security Council has the primary responsibility for the maintenance of international peace and security (Article 51 of the United Nations Charter).

A perpetrator can act alone, jointly with others, or through the support of others; the use of chemical weapons is an activity generally involving a complex system of procedures and actions.

- 2.7 The text of the Decision of 27 June 2018 indicates that the IIT is not meant to limit its investigations to direct actors and/or physical perpetrators. In the preamble of the Decision of 27 June 2018, the Conference, “regretting that [the JIM’s] mandate has not been renewed”, “[r]eaffirm[ed] that those responsible for the use of chemical weapons should be held accountable”.¹⁵ In this regard, the Decision of 27 June 2018 is to be read within the context of the universal condemnation of the use of chemical weapons in the Syrian Arab Republic: the international commitment to identify anyone responsible for the use of chemical weapons, with the aim of holding them accountable is expressed, not just by Council Decisions EC-M-48/DEC.1 (dated 4 February 2015), EC-M-50/DEC.1 (dated 23 November 2015), and EC-83/DEC.5 (dated 11 November 2016), but also in resolutions 2118 (2013), 2235 (2015), and 2319 (2016) of the United Nations Security Council (all adopted unanimously), as well as resolution 2209 (2015) (adopted with one abstention). The fact that the IIT’s mandate excludes those instances for which the JIM has reported its conclusions on attribution shows that the Conference intended to avoid an overlap and to rather create continuity between the work of the IIT and that of the JIM.
- 2.8 Therefore, in light of the foregoing, the IIT’s mandate related to the “perpetrators of the use of chemical weapons” is to be considered as including the identification of individuals, entities, groups, or governments who were perpetrators, organisers, sponsors, or otherwise involved in the use of chemicals as weapons (as the mandate of the JIM explicitly required),¹⁶ i.e., all those who are directly or indirectly involved in the use of chemical weapons.
- (b) States and non-state actors as perpetrators
- 2.9 By joining the Convention, each State Party “undertakes never under any circumstances” (i.e., whether in war or in peaceful times) to, inter alia, use chemical weapons.¹⁷ On 14 September 2013, the Syrian Arab Republic deposited its instrument of accession to the Convention, which entered into force for it on 14 October 2013.¹⁸ By 2013 at the latest, the prohibition on the use of chemical weapons had attained the status of a norm of international customary law in relation to both international and

¹⁵ See preambular paragraphs 4 and 5 of the Decision of 27 June 2018.

¹⁶ See paragraph 5 of United Nations Security Council resolution 2235 (2015), stating that the JIM was to “identify to the greatest extent feasible individuals, entities, groups, or governments who were perpetrators, organisers, sponsors or otherwise involved in the use of chemicals as weapons [...]”.

¹⁷ It follows that the prohibition to use chemical weapons in paragraph 1(b) of Article I of the Convention is not limited to “first use”, but rather precludes the use of such weapons even in reprisal or retaliation. In this regard, it is also noted that, pursuant to Article XXII of the Convention, the articles of the Convention are not subject to reservations.

¹⁸ Before 14 October 2013, the Syrian Arab Republic was bound by the prohibition to use chemical weapons under international customary law as well as by the 1925 Protocol, which it had joined on 17 December 1968. By September 2013 at the latest, the reference to “war” in the 1925 Protocol was interpreted as applying to non-international armed conflicts as well. United Nations Security Council resolution 2118 (2013) refers to the 1925 Protocol in the context of a non-international armed conflict in the Syrian Arab Republic.

non-international armed conflicts, a status authoritatively reiterated.¹⁹ The prohibition is also reflected in the legislation of numerous States.

- 2.10 Under the Convention, violations of the prohibition on the use of chemical weapons can engage State responsibility, whether directly (because the State Party used chemical weapons in contravention of paragraph 1(b) of Article I of the Convention) or indirectly (e.g., because the State Party did not investigate or punish the use of chemical weapons by natural or legal persons anywhere on its territory or in places under its jurisdiction in breach of paragraph 1 of Article VII of the Convention;²⁰ or, again, under paragraph 1(d) of Article I of the Convention, if it assisted, encouraged, induced, in any way, anyone to engage in the use of chemical weapons). In either case, State responsibility can be in addition to individual responsibility.
- 2.11 Moreover, international humanitarian law binds in this respect all parties to a conflict, including non-State actors engaged in hostilities against a State.²¹ This means that any non-State actor constituting an autonomous centre of imputation of conduct, since their conduct is not attributable to States,²² that is a party to a conflict may be held accountable for the use of chemical weapons—it is actually an obligation of States Parties to implement measures of accountability.²³

¹⁹ See, e.g.: International Criminal Tribunal for the Former Yugoslavia (ICTY), *Prosecutor v. Tadić*, Decision on Defence Motion for Interlocutory Appeal on Jurisdiction, Case No. IT-94-1 AR72, (2 October 1995), paragraph 124; preambular paragraph 8 and paragraph 2 of United Nations Security Council Resolution 2118 (2013); paragraph 1 of the Decision of 27 June 2018, “[...] emphasising that any use of chemical weapons anywhere, at any time, by anyone, under any circumstances is unacceptable and contravenes international norms and standards”. See also Declaration on the Occasion of the Centennial Commemoration of the First Large-Scale Use of Chemical Weapons at Ieper (“Ieper Declaration”), unanimously adopted by all States Parties to the Convention on 21 April 2015 and available at the following link: https://www.opcw.org/sites/default/files/documents/event_photos/2015/Ieper/Ieper_Declaration.pdf.

²⁰ All United Nations Member States, bound by United Nations Security Council resolution 1540 (2004) adopted under Chapter VII of the United Nations Charter, and all States Parties under paragraph 1 of Article VII of the Convention, are also specifically required to proscribe such use, and to enforce such proscription through enactment of penal legislation and criminal prosecutions (see Note by the Director-General entitled “Compliance with Article VII: Legislation, Cooperation and Legal Assistance” (C-III/DG.1/Rev.1, dated 17 November 1998), in particular paragraphs 2.2, 3.1, and 5.1). As of 26 August 2019, 148 States Parties had implemented specific legislative measures to prohibit the use of chemical weapons, while others consider existing legislation sufficient to punish such use (see Report by the Director-General (EC-92/DG.7 C-24/DG.8, dated 26 August 2019). States themselves would therefore be responsible under international law for any such use, and for use by non-State actors on their territory or in any other place under their jurisdiction, in particular, in case they fail to investigate and prosecute alleged perpetrators in such instances. See also decision by the Council entitled “Addressing the Threat Posed by the Use of Chemical Weapons by Non-State Actors” (EC-86/DEC.9, dated 13 October 2017).

²¹ Non-State actors for this purpose may be understood as an “individual or entity, not acting under the lawful authority of any State [...]” according to the definition used in United Nations Security Council resolution 1540 (2004).

²² International Law Commission, *Report of the International Law Commission on the work of its 53rd session (Draft Articles on Responsibility of States for Internationally Wrongful Acts, with commentaries)*, at 50 (Note 4), available at the following link: https://legal.un.org/ilc/texts/instruments/english/commentaries/9_6_2001.pdf. See also Council Decision EC-86/DEC.9.

²³ See, in particular, paragraph 2 of Article VI of the Convention and paragraphs 4 and 5 of Council Decision EC-86/DEC.9.

2.12 This conclusion is further supported, with specific reference to the conflict(s) in the Syrian Arab Republic, by United Nations Security Council resolutions stating that “no party” in the Syrian Arab Republic should use chemical weapons.²⁴ Therefore, since the prohibition of the use of chemical weapons is applicable to all actors, in both international and non-international armed conflicts, non-State actors can be considered as “perpetrators” under international law as well as within the meaning of this term in paragraph 10 of the Decision of 27 June 2018.

(c) Natural and legal persons as perpetrators

2.13 Under international customary law, the use by natural persons of prohibited weapons –including chemical weapons–entails individual criminal responsibility as a war crime, regardless of the type of armed conflict in which it occurs.²⁵ This individual criminal responsibility is within the scope of the calls for accountability made by the United Nations Security Council in, for instance, resolutions 2118 (2013), 2209 (2015), 2235 (2015), and 2319 (2016) and by the Conference in the Decision of 27 June 2018, with respect to those identified as responsible for the use of chemical weapons in the Syrian conflict.²⁶

2.14 The use of chemical weapons by *legal* persons is also conduct which may be criminalised.²⁷ The reference to “perpetrators” in paragraph 10 of the Decision of 27 June 2018 and, as seen above, in the context of various United Nations Security Council resolutions requiring accountability of “groups” and “entities” in relation to the use of chemical weapons,²⁸ shows that the IIT, in gathering information and reaching factual findings, may also consider legal persons as possible perpetrators. Such legal persons (i.e., entities and groups) may consist of non-natural persons whatever their status under domestic law.

2.15 Although criminal responsibility of either legal or natural persons can be established only through appropriate judicial proceedings at the domestic or international level, the work of the IIT can facilitate and expedite fair and independent criminal investigations and prosecutions, in accordance with international law standards, in

²⁴ See paragraph 5 of resolution 2118 (2013), paragraph 4 of resolution 2209 (2015), paragraph 3 of resolution 2235 (2015), and preambular paragraph 7 as well as paragraph 3 of resolution 2319 (2016) of the United Nations Security Council.

²⁵ See ICTY, *Prosecutor v. Tadić*, Decision on Defence Motion for Interlocutory Appeal on Jurisdiction, Case No. IT-94-1 AR72 (2 October 1995), paragraph 137 and preceding discussion; see also J-M. Henckaerts, L. Doswald-Beck, *Customary International Humanitarian Law*, vol. I (Cambridge, 2005), at 583 and 600. Moreover, the use of chemical weapons may also be characterised, in certain circumstances, as a crime against humanity (murder, extermination, inhumane acts, persecution) in peace or war time. It may even amount in theory to murder, causing serious bodily or mental harm, or inflicting on the relevant groups conditions of life calculated to bring about their physical destruction as *acti rei* of genocide, should the requisite general elements be established.

²⁶ See preambular paragraph 5 of the Decision of 27 June 2018 and discussion above.

²⁷ This is specifically required by paragraph 1 of Article VII of the Convention which refers also to “legal persons”. See also, *mutatis mutandis*, with respect to crimes against humanity, International Law Commission, *Crimes against humanity – Texts and titles of the draft preamble, the draft articles and the draft annex provisionally adopted by the Drafting Committee on second reading*, 15 May 2019, UN Doc. A/CN.4/L.935, Article 6(8), available at https://legal.un.org/ilc/guide/7_7.shtml.

²⁸ See, for example, paragraph 4 of United Nations Security Council resolution 2235 (2015) and preambular paragraph 4 of United Nations Security Council resolution 2319 (2016).

national, regional, or international courts or tribunals that have or may in the future have jurisdiction.²⁹

(d) Meaning of “perpetrator” in the Investigation and Identification Team’s mandate

2.16 In light of the foregoing, the word “perpetrator” in the IIT’s mandate pursuant to paragraph 10 of the Decision of 27 June 2018 covers any person—either natural or legal, including entities, groups, and governments (i.e., non-State and State actors)—directly or indirectly involved in the use of chemical weapons in the incidents under the IIT’s purview. This requires a case-by-case factual assessment by the IIT of the available information related to each alleged use of chemical weapons under investigation, with a view to ascertaining the link between such use and any actor who was involved therein.

Identifying the perpetrators and degree of certainty

2.17 The term “identify” in paragraph 10 of the Decision of 27 June 2018 means that the IIT is mandated to investigate with the aim of establishing the facts regarding the perpetrators of the use of chemical weapons, as described above, and, when feasible, their identity, in the incidents within its purview.

2.18 Following standard practice of international fact-finding bodies and commissions of inquiry,³⁰ the IIT will only reach conclusions on the identification of perpetrators on the basis of a sufficient and reliable body of information which, consistent with other information, would allow an ordinarily prudent person to reasonably believe that an individual or entity was involved in the use of chemical weapons (i.e., “reasonable

²⁹ See preambular paragraph 5 and paragraph 12 of the Decision of 27 June 2018.

³⁰ See, e.g.: Human Rights Council, Report of the Independent International Commission of Inquiry on the Syrian Arab Republic, dated 28 January 2020, UN Doc. A/HRC/43/57, paragraph 3; Human Rights Council, “Annex to the Report of the Special Rapporteur on extrajudicial, summary or arbitrary executions: Investigation into the unlawful death of Mr. Jamal Khashoggi”, dated 19 June 2019, UN Doc. A/HRC/41/CRP.1, paragraphs 43 and 237; Human Rights Council, Report of the Detailed Findings of the Independent International Fact-Finding Mission on Myanmar, dated 17 September 2018, UN Doc. A/HRC/39/CRP.2, paragraph 10; Human Rights Council, Report of the Commission on Human Rights in South Sudan, dated 13 March 2018, UN Doc. A/HRC/37/71, paragraph 11; Human Rights Council, Report of the Commission of Inquiry on Burundi, dated 11 August 2017, UN Doc. A/HRC/36/54, paragraph 7; Human Rights Council, Report of the Commission of Inquiry on Human Rights in Eritrea, dated 9 May 2016, UN Doc. A/HRC/32/47, paragraph 13; Human Rights Council, Investigation by the Office of the United Nations High Commissioner for Human Rights on Libya, dated 15 February 2016, UN Doc. A/HRC/31/47, paragraph 5; Human Rights Council, Report of the OHCHR Investigation on Sri Lanka (OISL), dated 16 September 2015, UN Doc. A/HRC/30/CRP.2, paragraph 33; Human Rights Council, Report of the Commission of Inquiry on Human Rights in the Democratic People’s Republic of Korea, dated 7 February 2014, UN Doc. A/HRC/25/63, paragraph 22; Human Rights Council, Report of the Independent International Commission of Inquiry on the Syrian Arab Republic, dated 22 February 2012, UN Doc. A/HRC/19/69, paragraph 10; Report of the International Commission of Inquiry mandated to Establish the Facts and Circumstances of the Events of 28 September 2009 in Guinea (ICIG), dated 18 September 2009, Annex to UN Doc. S/2009/693, paragraph 215. See also Report of the International Commission of Inquiry on Darfur to the United Nations Secretary-General Pursuant to Security Council Resolution 1564 of 18 September 2004, dated 18 September 2004, at 4.

grounds”).³¹ Thus, under this degree of certainty, an objective observer would reasonably conclude that a violation was committed.

- 2.19 This is a generally accepted approach of fact-finding bodies and commissions of inquiry, in particular when individuals are to be identified in relation to extremely serious allegations (such as the use of chemical weapons) warranting further investigation and prosecution by competent judicial bodies. This degree of certainty is consistent with the standards used in domestic and international criminal prosecutions.³² It would also not be inconsistent with the requirement for the Secretariat to inform the Council of “doubts, ambiguities or uncertainties” about compliance with the Convention by States Parties.³³
- 2.20 Concerning the public identification of perpetrators, the practice of international fact-finding bodies and commissions of inquiry varies, although there is a trend to publicly identify at least a non-exhaustive list of individuals, or of specific positions within a hierarchy.³⁴ Accordingly, the decision to publicly name or not to name individuals identified by the IIT is taken on the basis of the information obtained during its investigations. In any event, any such list of names would be held in the IIT’s archives and may be further shared with the IIIM and other relevant entities.

³¹ The IIT considers this standard akin to “reasonable suspicion” essentially used, e.g., in: Report of the International Commission of Inquiry mandated to establish the facts and circumstances of the events of 28 September 2009 in Guinea (ICIG), dated 18 September 2009, Annex to UN Doc. S/2009/693, paragraph 215; Report of the International Commission of Inquiry on Darfur to the United Nations Secretary-General Pursuant to Security Council Resolution 1564 of 18 September 2004, dated 18 September 2004, page 4; Report of the Independent International Commission of Inquiry in the Syrian Arab Republic, dated 16 August 2012, UN Doc. A/HRC/21/50, paragraph 18. See also paragraph 6 of Secretariat Note EC-91/S/3.

³² See, e.g., Rome Statute of the International Criminal Court, Article 58(1)(a) which refers to “reasonable grounds to believe” that a person has committed a crime within the jurisdiction of the Court as one of the bases for issuing a warrant of arrest or a summons to appear, and as interpreted by the relevant case-law of the Court. See also Article 5(1)(c) of the European Convention on Human Rights which refers to “reasonable suspicion of having committed an offence”, as the basis for a lawful arrest or detention of persons for purpose of bringing them to the competent legal authority and which “presupposes the existence of facts and information which would satisfy an objective observer that the person concerned may have committed [an] offence” – as applied, for instance, by the European Court of Human Rights (ECHR) in *Fox, Campbell and Hartley v. the United Kingdom*, Applications no. 12244/86, 12245/86, 12383/86, Judgment of 30 August 1990, paragraph 32; *Pichugin v. Russia*, Application No. 38623/03, Judgment of 23 October 2012, paragraphs 122-128; *Rashad Hasanov et al. v. Azerbaijan*, Application No. 48653/13, Judgment of 7 June 2018, paragraph 93. The Code of Criminal Procedure of the Syrian Arab Republic provides for the requirement of “sufficient evidence” to arrest and indict a suspect – see in particular Articles 137, 138, 149(3).

³³ See paragraph 40 of Article VIII of the Convention, also recalled in preambular paragraph 8 of the Decision of 27 June 2018.

³⁴ See, e.g.: Human Rights Council, “Annex to the Report of the Special Rapporteur on extrajudicial, summary or arbitrary executions: Investigation into the unlawful death of Mr. Jamal Khashoggi”, dated 19 June 2019, UN Doc. A/HRC/41/CRP.1, paragraph 50; Human Rights Council, Report of the Detailed Findings of the Independent International Fact-Finding Mission on Myanmar, dated 17 September 2018, UN Doc. A/HRC/39/CRP.2, paragraphs 1553–1556; International Commission of Inquiry, Report of the International Commission of Inquiry mandated to establish the facts and circumstances of the events of 28 September 2009 in Guinea, dated 18 December 2009, UN Doc. S/2009/693, paragraphs 215–253; United Nations High Commissioner for Human Rights, Report of the Independent Special Commission of Inquiry for Timor-Leste, dated 2 October 2006, Annex UN Doc. S/2006/822, paragraphs 113–134; Report of the Commission on the Truth for El Salvador (UNCTES), dated 1 April 1993, UN Doc. S/25500, pp. 18 and, e.g., 77.

Conclusions on the mandate of the Investigation and Identification Team

- 2.21 Despite the reference to accountability in the preamble of the Decision of 27 June 2018, the IIT is not a judicial body with the authority to assign individual criminal responsibility, nor does the IIT have the authority to make final findings of non-compliance with the Convention.
- 2.22 The IIT is rather meant to facilitate the work of other mechanisms such as (a) primarily, the OPCW policy-making organs in their determinations of non-compliance and related consequences for a State Party in accordance with the Convention;³⁵ and (b) courts or tribunals, whether at the domestic, regional, or international level, having jurisdiction over the conduct investigated by the IIT. The IIT aims at fulfilling this task by establishing the facts relevant to the identification of perpetrators of the use of chemical weapons in the incidents in the Syrian Arab Republic under its purview.
- 2.23 Specifically, and consistent with the standards applied by international fact-finding missions and commissions of inquiry, the IIT's mandate is to identify—on the basis of a sufficient and reliable body of information (i.e., the “reasonable grounds” standard)—individuals, as well as entities, groups, and governments (i.e., non-State and State actors) involved in the use of chemical weapons in the incidents within the scope of the IIT's investigations.

3. MAPPING OF INCIDENTS, FOCUS, AND PRIORITISATION

- 3.1 Paragraph 10 of the Decision of 27 June 2018 limits the IIT's investigations to incidents within the Syrian Arab Republic for which the FFM has determined that use or likely use of chemical weapons occurred and for which the JIM has not reached a conclusion on attribution.³⁶
- 3.2 Accordingly, the IIT initially considered 39 distinct incidents in which the FFM had made findings of use or likely use of chemical weapons as of June 2019. Since the JIM attributed responsibility for six of these incidents,³⁷ these were excluded from the scope of the IIT's investigations. This resulted in 33 incidents eligible for investigation by the IIT.
- 3.3 Due to this high number of incidents, and in light of the resources at its disposal, the IIT decided to develop a guidance tool consisting of different criteria for prioritising incidents to be investigated on the basis of the findings of the FFM, these being the

³⁵ See further, *mutatis mutandis*, paragraph 62 of Part II (“General Rules on Verification”) of the Verification Annex, which states that the final inspection report on inspection shall contain, as part of the “facts relevant to compliance with [the] Convention”, information as to the manner in which the State Party inspected cooperated with the inspection team.

³⁶ See paragraph 4 of Secretariat Note EC-91/S/3.

³⁷ These are the incidents in Talmenes on 21 April 2014 (see the Third Report of the JIM, S/2016/738, dated 24 August 2016); Sarmin on 16 March 2015 (see the Third Report of the JIM, S/2016/738, dated 24 August 2016); Qmenas on 16 March 2015 (see the Fourth Report of the JIM, S/2016/888, dated 21 October 2016); Marea on 21 August 2015 (see the Third Report of the JIM, S/2016/738, dated 24 August 2016); Umm Hawsh on 15 and 16 September 2016 (see the Seventh Report of the JIM, S/2017/904, dated 26 October 2017); and Khan Shaykhun on 4 April 2017 (see the Seventh Report of the JIM, S/2017/904, dated 26 October 2017).

point of departure for the IIT's work pursuant to the Decision of 27 June 2018. This approach was aimed at objectively guiding the IIT in the determination of the appropriate focus of its activities and at enabling it to use its limited resources in an efficient and effective manner.

- 3.4 Such criteria also provided guidance on the relevance and feasibility of further investigations and included the following: (a) severity of the incident (i.e., number of casualties and fatalities involved); (b) amount and apparent reliability of the information already available and gathered by the FFM, in terms of number and types of interviews (e.g., whether the information was provided by direct eyewitnesses or by others), samples (e.g., biological and/or environmental), as well as open source information available for lead purposes on each specific incident; and (c) the type of chemical substances detected.
- 3.5 Furthermore, the IIT took into account patterns of similar incidents as well as prima facie reliability of persons who allegedly witnessed the events.³⁸ Finally, the IIT considered the likely difficulty—based on a preliminary assessment of the FFM reports—to retrieve information, for instance, for isolated events in relation to which there was scarce reporting.
- 3.6 On this basis, from among the 33 relevant incidents under review, the IIT identified a non-exhaustive provisional list of nine incidents on which to focus its investigative work; this list was made available by the Secretariat to States Parties through Note EC-91/S/3,³⁹ as follows:
1. Al-Tamanah, 12 April 2014;
 2. Kafr-Zita, 18 April 2014;
 3. Al-Tamanah, 18 April 2014;
 4. Marea, 1 September 2015;
 5. Ltamenah, 24 March 2017;
 6. Ltamenah, 25 March 2017;
 7. Ltamenah, 30 March 2017;
 8. Saraqib, 4 February 2018;
 9. Douma, 7 April 2018.

³⁸ Thus, when incidents appeared connected in a cluster, the IIT decided to start focusing on the incidents with higher casualties within that cluster, or on the cluster as a whole.

³⁹ See Annex 2 to Secretariat Note EC-91/S/3.

3.7 On the basis of the criteria contained in the guidance tool elaborated by the IIT to focus its investigations, as described above, the IIT further prioritised three incidents among the ones specifically noted with concern in the Decision of 27 June 2018 itself,⁴⁰ and which were also relatively concentrated in terms of geographical and temporal scope. The IIT therefore started its investigations in relation to these three incidents, which are the object of the present report:

5. Ltamenah, 24 March 2017;
6. Ltamenah, 25 March 2017;
7. Ltamenah, 30 March 2017.

⁴⁰ See paragraph 9 of the Decision of 27 June 2018 in which the Conference “[n]ote[d] with concern that the Fact-Finding Mission has identified further uses of chemical weapons in the Syrian Arab Republic at Ltamenah on 24, 25 and 30 March 2017 and at Saraqib on 4 February 2018, and that the perpetrators of these attacks have still to be identified [...]”.

II. INVESTIGATIVE ACTIVITIES

4. APPROACH AND CHALLENGES OF THE INVESTIGATION

- 4.1 Referring to the findings of the FFM as a point of departure, the IIT conducted an objective and independent examination of the available information concerning the use of chemical weapons in the incidents in Ltamenah on 24, 25, and 30 March 2017 with a view to collecting, comparing, and analysing further information in order to identify the perpetrators, as described above.
- 4.2 In its investigations into these incidents, the IIT proceeded to collect information as follows: (a) it received information from the FFM; (b) it addressed requests for information to States Parties, including the Syrian Arab Republic;⁴¹ (c) it considered statements previously provided by witnesses, and itself interviewed 20 persons of interest, including witnesses to the events and persons affected; (d) it obtained videos, documents, and other material from various sources; (e) it requested analysis of samples from OPCW designated laboratories, and requested assessments from a number of forensic institutes, experts, and other specialists (for example, in relation to remnants, munitions and delivery methods, medical reports, weather conditions, as well as the military and tactical situation on the ground); (f) it requested satellite imagery and analysis thereof; (g) it collected information from open sources; and (h) it attended expert briefings. The United Nations further provided access to archives of the JIM. Upon obtaining all this information, the IIT scrutinised it and conducted its own independent analysis, including by carefully assessing its probative value and verifying its authenticity and the reliability of the sources. In relation to sources of information, the IIT endeavoured to widen the range of its sources of information, reaching out to diverse entities and individuals.
- 4.3 In pursuing its investigative activities, the IIT encountered several challenges. The first was obtaining access to information, individuals, or locations relevant to the incidents under investigation which are in the possession or under the control of third parties, including some States Parties. As an investigative mechanism without judicial powers, the IIT cannot compel the submission of information or documents, nor, for instance, subpoena witnesses and apply for judicial authorisation to obtain records. It therefore relies on good faith cooperation and assistance, which States Parties have willingly undertaken to extend to the Secretariat under paragraph 7 of Article VII of the Convention, as well as from other entities and individuals. The Syrian Arab Republic is specifically required to cooperate with the Secretariat under resolution 2118 (2013), in which the United Nations Security Council explicitly decided that:

the Syrian Arab Republic shall cooperate fully with the OPCW and the United Nations, including by complying with their relevant recommendations, by accepting personnel designated by the OPCW or the United Nations, by providing for and ensuring the security of activities undertaken by these personnel, by providing these personnel with immediate and unfettered access to and the right to inspect, in discharging their functions, any and all sites, and

⁴¹ The IIT received information, input, and assistance from the authorities of 16 States Parties, as well as other entities. See below, Annex 2.

by allowing immediate and unfettered access to individuals that the OPCW has grounds to believe to be of importance for the purpose of its mandate.⁴²

- 4.4 However, the Syrian Arab Republic—and some other States Parties—expressed on a number of occasions their unwillingness to recognise, and therefore assist, the IIT. A record of communications (English only) from the Secretariat to the Syrian Arab Republic in this respect is reproduced below in Annex 3.
- 4.5 The IIT decided not to draw any inference, for the purpose of its substantive conclusions, from this lack of cooperation and still reiterates its preparedness to consider any information that the Syrian Arab Republic may wish to share with the Secretariat in relation to the incidents under the IIT's purview. While direct access to certain locations and individuals in the Syrian Arab Republic could have been helpful, the IIT was able to proceed in its investigation without such access, based on all the information available (including that obtained by the FFM), as has also been the case for some other international fact-finding bodies and commissions of inquiry when they were unable to conduct their activities on the ground.⁴³ Moreover, the IIT considered, and analysed as appropriate, information provided by the Syrian Arab Republic to the OPCW policy-making organs (i.e., the Conference and the Council).
- 4.6 Another challenge faced by the IIT was the time that had elapsed between the incidents and the actual investigation of the IIT. This presented various difficulties, including as to the availability of information. Moreover, the IIT's work relates to a conflict area, with attendant difficulties and complexities in gathering relevant information.
- 4.7 Despite these constraints, the IIT relied on best practices when collecting information, interviewing individuals, and assessing the credibility of their statements, as well as in terms of ensuring the integrity of the material in its possession. Keeping in mind the degree of certainty for its findings discussed above, the IIT assessed the relevance, sufficiency, and credibility of the information gathered, particularly witness statements, including by corroboration through the use of separate sources.
- 4.8 On the basis of established practices and procedures of the Secretariat, as well as best practices for these types of investigations, the IIT carefully assessed the reliability of the documentation and information relating to the chain of custody for material and samples both (a) before the Secretariat obtained direct custody over them, and (b) from the moment of collection or receipt of such material and samples by the

⁴² See paragraph 7 of United Nations Security Council resolution 2118 (2013).

⁴³ See, e.g., Report of the OHCHR Investigation on Sri Lanka, dated 16 September 2015, UN Doc. A/HRC/30/CRP.2, paragraphs 5, 8, 26–27; Report of the Independent International Commission of Inquiry on the Syrian Arab Republic, dated 15 August 2019, UN Doc. A/HRC/42/51, paragraph 4 (similarly worded as all previous ones); Detailed findings of the Independent International Fact-Finding Mission on Myanmar, dated 16 September 2019, UN Doc. A/HRC/42/CRP.5, paragraph 29; Situation of Human Rights in the Democratic People's Republic of Korea, dated 20 September 2019, UN Doc. A/74/275/Rev.1, paragraphs 5 and 68 (p).

Secretariat including, in the case of samples requiring chemical analyses, their controlled shipment to OPCW designated laboratories.⁴⁴

- 4.9 With regard to the information from other parties, the Secretariat—as mentioned above—made several good faith approaches to the Syrian Arab Republic. It provided authorities of the Syrian Arab Republic with opportunities to present its views and requested information about the domestic investigations in relation to the use of chemical weapons on its territory that the Syrian Arab Republic is required to undertake under Article VII of the Convention. However, the authorities of the Syrian Arab Republic did not avail themselves of these opportunities.
- 4.10 Finally, the IIT received reliable indications from different sources that persons with knowledge of incidents of use of chemical weapons in the Syrian Arab Republic are exposed to threats and other forms of pressure. The IIT notes that fear and pressures of this kind interfere with the flow of information to investigatory bodies such as the IIT. Nonetheless, the IIT did not rely on this circumstance to draw conclusions on the identification of perpetrators of the use of chemical weapons. The IIT employed best practices aimed at ensuring the safety, security, and well-being of the persons with whom it interacted. This included protecting the privacy of individuals and using only information for which informed consent was provided.

5. SCENARIOS

- 5.1 In preparing its investigation plan for the incidents in Ltamenah on 24, 25, and 30 March 2017, the IIT first outlined working hypotheses as to how these incidents might have occurred, and then proceeded to develop concrete scenarios based on all available information. The IIT made an effort to outline these scenarios in a straightforward and comprehensive manner, including by taking into account the narratives presented by representatives of the Syrian Arab Republic and other Governments, considering the challenges mentioned above.⁴⁵
- 5.2 In particular, the IIT was alerted to allegations that certain individuals and States “staged” incidents of chemical weapons use, and that nationals of various other States provided support to different groups, including the Syria Civil Defence (SCD—also known as the “White Helmets”), in their plans to stage chemical weapons attacks or to carry out themselves such attacks with the aim of blaming them on the Government of the Syrian Arab Republic.
- 5.3 The IIT specifically considered allegations that the “staging” of incidents had been carried out by: (a) fabricating videos, including by having foreign media filming staged attacks in areas controlled by the above-mentioned groups; (b) training civilians to pretend that they had suffered symptoms of exposure to chemicals

⁴⁴ The OPCW designates certain laboratories—pursuant to, e.g., the decision of the Conference entitled “Criteria for the Designation of Laboratories by the OPCW” (C-I/DEC. 61, dated 22 May 1997)—offering the necessary assurances to States Parties about chemical analyses. See www.opcw.org/designated-laboratories. The OPCW Laboratory is, instead, part of the OPCW Secretariat. The Convention does not define “chain of custody”—for more details on the approach adopted by the IIT on the chain of custody, see below, Annex 2.

⁴⁵ The term “scenario” is often used, including by the authorities of the Syrian Arab Republic, when describing various alternatives explored—as the terms “hypothesis” or “theory”.

(allegedly some civilians would be abducted while others would be paid for this purpose); (c) training medical crews to fake giving first aid typically provided in cases of use of chemical weapons; and (d) deliberately contaminating sites with chemical substances.⁴⁶ Specific names of individuals suspected of “staging” attacks were brought to the attention of the IIT, but the IIT could not find any supporting evidence that would link these individuals to the specific incidents discussed in this report. The IIT also took into account during its investigation the suggestion made by the Syrian Arab Republic that “it is in the interests of the armed terrorist groups to marshal international public opinion against the Syrian Government by accusing it of using [chemical] weapons and fabricating numerous incidents”.⁴⁷

5.4 In light of the above, the scenarios developed for this investigation can be succinctly summarised as follows (bearing in mind the specific circumstances of each specific incident):⁴⁸

- (a) chemical weapons were prepared elsewhere, brought to—or around—the sites of the incidents identified by the FFM, and used; or
- (b) chemical weapons were air-delivered on—or around—the sites of the incidents identified by the FFM; or
- (c) chemical weapons were launched, spread, or deployed otherwise to—or around—the sites of the incidents identified by the FFM; or
- (d) no chemical weapons attack occurred, but conventional weapon(s) were deployed or brought to—or around—the sites of the incidents identified by the FFM, while chemicals were used at the sites later to “stage” a chemical attack and blame one side of the conflict.⁴⁹

5.5 For each of these scenarios, the IIT took into account that the operation to use chemicals (including by “staging” an incident) could have been organised through the chain of command of a formal or de facto structure, or that “rogue” units or individuals could have taken it upon themselves to use them.

5.6 In pursuing its investigation based on these scenarios, the IIT also took specific note of the categorical denials by the Syrian authorities of allegations that the Government used chemical weapons against the Syrian people and of the condemnations issued by

⁴⁶ The term “staging”, which would point to the use of chemical weapons (though not in the ordinary sense of using weapons to militarily attack the adversary), is also used as a synonym of “false flag” chemical attacks and “fabrication” of chemical weapons use.

⁴⁷ See main conclusions and observations of the Syrian Arab Republic on the Third Report of the JIM in the Letter from the Permanent Representative of the Syrian Arab Republic, dated 10 October 2016 (UN Doc. S/2016/844).

⁴⁸ See S/2016/844, in particular, at 5 (item k) and 6 (item q).

⁴⁹ As mentioned above, “staging” of a chemical attack through the use of chemical weapons, including precursors, is considered a “use” of chemical weapons under the Convention.

the Syrian Arab Republic of the use of chemical weapons by anyone, anywhere, at any time, and under any circumstances.⁵⁰

- 5.7 For each of the three incidents under investigation, the IIT specifically considered information related to six areas of inquiry, as appropriate:
- (i) the context of the military activities in the area during the relevant time period, and the weather conditions;⁵¹
 - (ii) accounts and assessments of the munition found, its delivery, and the impact of the weapon;
 - (iii) other information related to any aircraft that could have delivered the munition and its flight path;
 - (iv) the effects of chemical weapons, i.e., the symptoms of any person affected;⁵²
 - (v) remnants found at the site and their possible origin; and
 - (vi) chemical analyses and their comparison with other relevant analyses of samples collected in the Syrian Arab Republic.

⁵⁰ See, e.g., statement by the Permanent Representative of the Syrian Arab Republic (EC-92/NAT.28, dated 9 October 2019) and various interviews by the President of the Syrian Arab Republic, for instance those retrievable at www.presidentassad.net.

⁵¹ In regard to the permissiveness of use of chemical weapons under different meteorological conditions, the IIT consulted with specialists, but also took into account examples and studies of chemical weapons use during the 20th century—with the required caution as to the type of agents involved. See, e.g.: A. M. Prentiss, *Chemicals in War – a Treatise on Chemical Warfare* (New York and London, 1937), especially at 23-34; M. Sartori, *The War Gases – Chemistry and Analysis* (New York, 1939), especially at 2-15; A. T. Tu, *Chemical Terrorism* (Fort Collins, 2002).

⁵² The IIT notes, however, that the use of chemical weapons falls within its mandate regardless of the number of casualties or fatalities.

III. THE LTAMENAH INCIDENTS IN MARCH 2017

6. BACKGROUND

The findings of the Fact-Finding Mission

- 6.1 As noted above, the IIT is mandated to investigate those instances in which the FFM has determined that use or likely use of chemical weapons occurred, and for which the JIM did not reach findings as to the perpetrators.⁵³
- 6.2 The FFM concluded in its reports that “sarin was very likely used as a chemical weapon in the south of Ltamenah on 24 March 2017”,⁵⁴ that “chlorine was very likely used as a chemical weapon at Ltamenah Hospital and the surrounding area on 25 March 2017”,⁵⁵ and that “sarin was more than likely used as a chemical weapon on 30 March 2017 in the south of Ltamenah”.⁵⁶
- 6.3 The IIT reviewed the information on which the FFM relied in reaching its conclusions in the three incidents and started its investigation on that basis. The IIT’s focus was on identifying the perpetrators of the use of chemical weapons in those specific incidents by identifying and reporting on all information potentially relevant to the origin of those chemical weapons. The findings of the FFM on these incidents are described, as relevant to the IIT’s focus, in the following sections of this report dealing with the specific incidents.
- 6.4 Sarin belongs to a group of organophosphorus chemical warfare agents called nerve agents, which are chemically and structurally related to organophosphorus pesticides. In its purest form, sarin is colourless and odourless, although impurities (and their level) can cause coloration from pale yellow to dark brown. Sarin vapours are denser than air (and therefore tend to accumulate in low-lying areas); sarin has low persistency and has a very rapid onset of action. Exposure to sarin can lead to a variety of symptoms, from sweating and muscle twitching to convulsions, paralysis, respiratory failure, miosis (pinpoint pupils), and to death. Nerve agents are absorbed by inhalation, as well as by ingestion or by dermal contact. They exert their action through the sustained inhibition of the enzyme acetylcholinesterase (AChE). When this enzyme is inhibited, it is unable to break down the neurotransmitter acetylcholine, and this causes a build-up of the neurotransmitter at the nerve synapse, which in turn causes excessive stimulation of the nervous system. Sarin is listed as a toxic chemical in Schedule 1 of the Annex on Chemicals to the Convention.
- 6.5 Chlorine, a toxic industrial chemical with low persistency and a variable rate of action, is absorbed through the lungs. Gaseous chlorine is poisonous and classified as a pulmonary irritant (historically used as a choking agent). Chlorine gas has an odour similar to household bleach. It is not flammable, but can react explosively or form explosive compounds with other chemicals such as turpentine and ammonia.

⁵³ See above, Sections I.1 and I.3.

⁵⁴ “Report of the OPCW Fact-Finding Mission in Syria Regarding Alleged Incidents in Ltamenah, the Syrian Arab Republic 24 and 25 March 2017, (S/1636/2018*, dated 13 June 2018), paragraph 1.8.

⁵⁵ Paragraph 1.10 of S/1636/2018* (FFM Report on the 24 and 25 March 2017 Incidents in Ltamenah).

⁵⁶ “Report of the OPCW Fact-Finding Mission in Syria Regarding an Alleged Incident in Ltamenah, the Syrian Arab Republic, 30 March 2017”, (S/1548/2017, dated 2 November 2017), paragraph 1.5.

Exposure to chlorine gas acts upon multiple body systems: the skin and mucous membranes, the gastrointestinal tract, and the respiratory system. External exposure causes itching and burning while ingestion causes nausea and vomiting. Its primary action is upon the respiratory system where it causes inflammation of the upper and lower airways, which presents as a cough, fluid accumulation in the lungs, difficulty breathing and can lead to death. Chlorine gas is also denser than air. Chlorine, as a toxic chemical, can fall under the definition of a chemical weapon, under the general purpose criterion enshrined in Article 2 of the Convention.⁵⁷ As noted in United Nations Security Council resolutions 2209 (2015) and 2235 (2015), the use of any toxic chemical, such as chlorine, as a chemical weapon in the Syrian Arab Republic is a violation of resolution 2118, and any such use by the Syrian Arab Republic would constitute a violation of the Convention.⁵⁸

General situation in the area

- 6.6 The Idlib Governorate (together with parts of Hama Governorate, north of Hama city) was effectively under the control of a number of rival factions, rather than a single group, since it fell to armed groups in 2015 and throughout 2017. The area was regarded as the front line between the territories controlled by the authorities of the Syrian Arab Republic to the south and the land to the north, and known generally as the “Greater Idlib Region”. The strategically vital M5 highway goes from Aleppo in the north, southwards through Saraqib just outside of Idlib, Khan Shaykhun to Hama city, then onto Homs city, the capital Damascus, and all the way to the border with Jordan.
- 6.7 Specialists in military operations consulted by the IIT concur that controlling the M5 highway is an important objective for military operations in the area as it connects major cities including Damascus, Homs, Hama, and Aleppo. When the Syrian Government recaptured eastern Aleppo city in late 2016, the highway’s strategic value further increased. Since at least 2012, there have been reports that villages and cities along the M5 highway were constant targets for conventional air strikes, as well as (more sporadically) chemical weapon attacks.⁵⁹
- 6.8 Ltamenah is a village in the district of Mahardah within the Hama governorate in the Syrian Arab Republic, about 8 kilometres west of the M5 highway. It is located approximately 24 kilometres northwest of Hama city, 70 kilometres south of the city of Idlib and roughly 15 kilometres south of the town of Khan Shaykhun. Prior to the conflict, based on the 2004 census, the population of Ltamenah and the surrounding area was approximately 16,000. At the time of the incidents in question, Ltamenah was not under the control of the Government of the Syrian Arab Republic.⁶⁰

⁵⁷ See above, Section I.2.1. See also, e.g., preambular paragraph 7 of Council Decision EC-M-50/DEC.1 (dated 23 November 2015).

⁵⁸ See preambular paragraph 3 of resolution 2235 (2015) and preambular paragraph 2 of resolution 2209 (2015) of the United Nations Security Council.

⁵⁹ For the purpose of this report, the IIT uses the term “conventional” to identify non-chemical attacks or weapons.

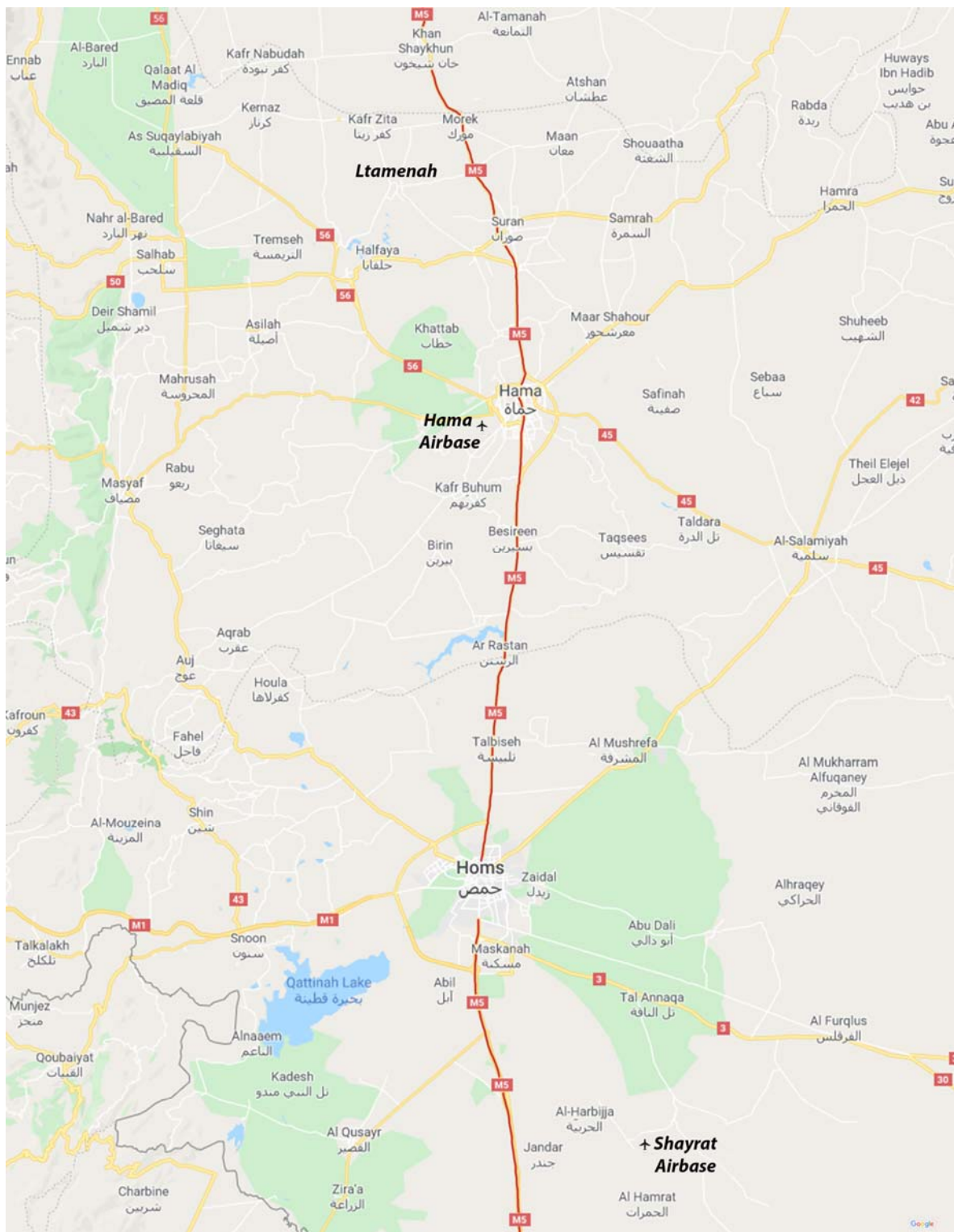
⁶⁰ FFM Report on the 24 and 25 March 2017 Incidents in Ltamenah (S/1636/2018*), paragraph 5.6.

- 6.9 The IIT obtained a large amount of information on the forces active in the area during the first months of 2017. On the one side were the Syrian Arab Armed Forces, including the Syrian Arab Army and the Syrian Arab Air Force, as well as the “Tiger Forces” (Quwwat al-Nimr), commanded by General [REDACTED],⁶¹ an elite unit employed on various fronts of the conflict(s). The national official news agency in Syria (SANA), linked to the Ministry of Information, reported [REDACTED] as being present, together with Chief of Staff of the Army and Armed Forces (i.e., the second highest ranking military officer) General [REDACTED], at the command post for this counter-offensive on 25 March 2017 “upon the directives of President [REDACTED]” for briefings on the campaign against a group denominated “Jabhat al-Nusra”.⁶²

⁶¹ Annex 6, classified as “OPCW Highly Protected” and available to all States Parties (in document ITT/HP/002, dated 8 April 2020) under the conditions provided for by the Convention, contains paragraphs with the names that have been redacted in this public report.

⁶² See for instance article at <https://sana.sy/en/?p=103031>.

Map of the area involved in the offensive and counter-offensive in March-April 2017*



* This map is provided for information and reference purposes only, and does not as such constitute evidence related to the incidents in question.

- 6.10 In the area, the Syrian Arab Air Force had fixed-wing aircraft based both at Hama and Shayrat airbases under the 22nd Air Division commanded by Major-General [REDACTED]. The IIT obtained information that, within this 22nd Air Division, the 50th Brigade was commanded by Brigadier-General [REDACTED] and his Chief of Staff (Deputy Commander of Shayrat airbase) [REDACTED]. The 50th Brigade included the 677th and 685th Squadrons, both of which operated Syrian Sukhoi-22 (Su-22) military airplanes,⁶³ based out of Shayrat.
- 6.11 The Air Force active in the area also included the 253rd and 255th Squadrons, belonging to the 63rd Helicopter Brigade, with elements based at both Hama airbase and Humaymim air base. The IIT obtained information that in March 2017 the commander of the 63rd Helicopter Brigade was Brigadier General [REDACTED], with Brigadier General [REDACTED] serving as Deputy Commander.
- 6.12 The IIT further received information that both the 22nd Air Division and the 63rd Helicopter Brigade were ultimately subordinated to the General Command of the Armed Forces under the authority of the Commander in Chief of the Armed Forces of Syria. The authority of the Commander in Chief of the Armed Forces as lead decision maker fully exercising these powers of command over the armed forces has been repeatedly confirmed to the IIT by information obtained from different sources.
- 6.13 On the other side, starting in January 2017, Jabhat Fatah al-Sham (formerly Al-Nusra Front or Jabhat al-Nusra), designated as a terrorist organisation by the United Nations Security Council back in May 2013 in accordance with its resolution 1267 (1999), absorbed various other armed groups, resulting in the creation of Hay'at Tahrir al-Sham (HTS), and ended up controlling the majority of the Idlib Governorate and the opposition factions of the northern Hama Governorate. During this period, the Army of Glory (Jaysh al-Izza), commanded by [REDACTED], which at the time of the incidents under investigation had its headquarters in Ltamenah, was also coordinating attacks with HTS. As of February 2017, HTS further carried out multiple military operations, as well as suicide bombings (including in Homs and Damascus). In the largest of these bombings, on 11 March 2017, HTS detonated two explosive devices in a Shia pilgrimage site in Damascus, killing 44 civilians.
- 6.14 In March 2017, HTS also conducted a military offensive in the area in and around Ltamenah, under leaders such as [REDACTED] (also known as [REDACTED]), [REDACTED] ([REDACTED]), [REDACTED], and [REDACTED]. This offensive had the objective, attempted in the three previous years, of capturing the strategic city of Hama, which was under the control of the Syrian Arab Republic Government. The Free Idlib Army, a faction participating in the offensive under the affiliation of the Free Syrian Army, claimed on 21 March to have destroyed two Syrian Arab Air Force fighters with heavy artillery fire. The armed groups made rapid gains: at the peak of their advance (on or around 25 March 2017), they had captured as many as a dozen villages, were within 5 kilometres of Hama city, and reached a position enabling them to launch rockets against the Hama airbase. During the initial phases of the offensive, armed groups were also able to close in on the strategic Jabal Zayn al-Abidin

⁶³ The Su-22 aircraft is the export variant of the Soviet- and Russian-made Su-17, reportedly made available to the Syrian Arab Republic and other States. Its production stopped in 1990s and the Russian Federation retired them by 1998.

mountain, an elevated area to the east of Qamhana on the eastern side of the M5 highway, overlooking both the airport and Hama city. Through this offensive, armed groups were pushing towards Hama airbase, a major military strategic asset controlled by the Government of the Syrian Arab Republic, at a time when Syrian forces were also fighting to regain control of Jirah airbase and a pocket of Al-Sin airbases, both of which had been taken over by ISIL/Daesh.

- 6.15 Ltamenah was at the time seen as an important logistical hub for opposition armed groups, and was used to resupply units operating in the area. The nearby town of Khan Shaykhun was used by armed groups as a base to launch some of the initial March 2017 attacks.
- 6.16 Moreover, the IIT obtained information that, in reaction to the initial losses of territory, various forces on the side of the authorities of the Syrian Arab Republic were redeployed from other fronts and areas under their control, including the above-mentioned Tiger Forces from eastern Aleppo city on 24 March. This rapid redeployment indicates that the Syrian military command structure was quickly able to adapt to battlefield situations and effectively order units, including the Tiger Forces, around the various fronts. These forces, supported by heavy air strikes (the majority of which originated from Hama airbase) recaptured at least 17 towns and checkpoints in northern Hama Governorate by the end of March 2017. Not only did these forces recapture recently lost territory, but they also advanced into territory that had been under control of armed groups prior to the March offensive.
- 6.17 The counter-offensive resulted in intense clashes between Syrian Government forces and armed groups. Satellite imagery of Ltamenah and its surroundings taken on 21 February 2017 and then on 30 May 2017 shows hundreds of conventional munition impacts during this period, resulting in the destruction of buildings in the area of, and around, the town. The highest density of munition impacts was observed southwest of the town, consistent with the area of the frontline positions. One of the most affected areas includes revetments, most likely used as trenches, of approximately 1.9 kilometres. The locations of the incidents of 24 and 30 March 2017 are in the vicinity of this area. Also considerably affected by the fighting was an area further north, around the location of the incident of 25 March 2017. An extensive tunnel system of a length of up to 800 metres existed in the area, with the main cluster of entrances covering approximately 230 metres in the area where the Ltamenah hospital was also located. The IIT obtained information confirming that tunnels were used also by civilians, especially in areas close to the front lines, as well as information supporting allegations that military headquarters and operation rooms for armed groups were located in tunnels. These tunnels therefore served, at least in part, a military purpose.
- 6.18 In this context, the IIT considered the military value of the areas threatened by the armed groups' advance: a military expert advising the IIT noted the use of chemical weapons in this area would not be inconsistent with a strategy aimed at inflicting terror on both civilians and combatants, at eliminating infrastructure such as the medical facilities required to continue fighting, and at ensuring that no one felt safe even behind the front lines proper. The IIT however also took into account that armed groups opposing the Government of the Syrian Arab Republic, on the other hand, might have had an incentive in "staging" a chemical attack against civilians and their own fighters, to blame the Syrian Arab Republic's authorities.

- 6.19 In relation to aerial attacks, the IIT obtained information that the armed groups and the civilians in areas not under the control of the Government of the Syrian Arab Republic rely, for instance, on networks of aircraft “spotters” (or “observatories”), identifying communications between pilots and other officers, coordinates of targets, and sighting of aircraft, and sharing such information with other “spotters” and individuals in the areas likely to be targeted. These human-based early warning networks are complemented by intercepted communications, sensors, and data processing to enable predictions on the locations and time of possible air strikes.
- 6.20 Various sources explained that persons working for such early warning networks, not knowing in advance what kind of attack an aircraft or helicopter will be conducting, generally instruct their listeners to get to shelters such as basements—advice that is useful with the frequent conventional attacks, but may not necessarily be effective with the more rare instances of attacks by chemical weapons, which can easily seep underground.
- 6.21 Flight data and witness statements obtained by the IIT show that Syrian and Russian aircraft operated in northern Hama and southern Idlib in March 2017 on a daily basis. In this time frame, units based out of Hama airbase, located about 24 kilometres south-east of Ltamenah, consisted primarily of Syrian Mi-8 helicopters, Yak-130, MiG-23, and MiG-21. Syrian Mi-8 helicopters were used for military operations by the Syrian Arab Republic authorities, rather than for transportation. Units at Shayrat airbase, located south-east of the city of Homs and about 95 kilometres south-east of Ltamenah, consisted primarily of Su-22, MiG-23, and Yak-130 military airplanes. The IIT was able to confirm through multiple sources the presence of Su-22s in Shayrat throughout the first months of 2017, and in particular sorties by aircraft of this kind on 24 and 30 March 2017. In early 2017, the 677th and 685th Squadrons—both of which deploy Su-22 aircraft—were present at Shayrat airbase. Indeed, the JIM also reported that in reviewing the logs of this airbase for early April 2017 and other information, it found that Su-22 aircraft were operating from this base in that period.⁶⁴ The Su-22 is a fixed-wing aircraft designed to strike ground targets and therefore capable of delivering unguided air-delivered munitions.
- 6.22 An international coalition reported to have conducted air strikes throughout March 2017 in four governorates: Raqqa, Deir ez-Zor, Homs, and Aleppo.⁶⁵ Flight data obtained by the IIT during its investigations from other sources confirm that no international coalition aircraft was present in northern Hama or southern Idlib on 24, 25, or 30 March 2017.
- 6.23 The IIT obtained information from multiple sources that, on 21 March 2017, senior officials of the Republican Guard, including Major General [REDACTED], through the head of the Republican Guard artillery branch Brigadier General [REDACTED], transmitted orders to General [REDACTED] and Colonel [REDACTED], former members of the previously designated Branch 450, a component of the Syrian Arab Republic’s chemical weapons’ programme responsible for storage, mixing, and filling of chemical weapons, including sarin, to prepare items for use in the defence of Hama. The IIT further obtained information that in March 2017 precursors for sarin

⁶⁴ Seventh Report of the JIM, S/2017/904, dated 26 October 2017, Annex II, paragraphs 17-30.

⁶⁵ See, for instance, data on www.inherentresolve.mil/Media-Library/Strike-Releases/.

were stored at a facility at Him Shinshar (in Homs Governorate). This is coupled with information about interest in weather conditions by General [REDACTED] and Colonel [REDACTED] throughout March 2017.

- 6.24 Based on information obtained from States Parties and from public documents, Branch 450, originally located in Barzah (Damascus) and officially dissolved in 2013, is considered to have formerly been a component of the Syrian Scientific Studies and Research Centre (SSRC), a Syrian governmental unit, which also included Institute 3000 (subsequently renamed Institute 6000), related to chemical and biological weapons research and development. A presidential palace liaison officer would be assigned to the SSRC. According to this information, in 2017, [REDACTED] and [REDACTED] served as Director and Deputy Director of Institute 6000 based in Barzah, respectively. According to this information, in 2017, [REDACTED] and [REDACTED] served as Director and Deputy Director of Institute 6000 based in Barzah, respectively.
- 6.25 Satellite imagery of Shayrat airbase shows, according to specialists consulted by the IIT, the presence of structures identified as probable munition storage facilities that could have been used to store chemical weapons. Specialists consulted by the IIT assessed that United States air strikes against the airbase on 7 April 2017 were focused on decreasing the munition storage capacity as well as the delivery capacity of the airbase. Similarly, based on satellite imagery of Hama airbase, specialists consulted by the IIT assessed a part of the airbase as a possible barrel bomb storage area, with a number of items visible in the imagery as possible barrel bombs. Separately, the IIT obtained information that chlorine barrel bombs were prepared at a site in Masyaf and subsequently taken to Hama airbase, about forty kilometres away.
- 6.26 The IIT is aware of allegations that various States assisted in fabricating scenarios of use of chemical weapons and toxic chemicals against civilians, including that ISIL/Daesh, the al-Nusra Front, the White Helmets, and other groups in the Syrian Arab Republic and in Iraq used or threatened the use of chemical weapons, and that they prepared logistics and media arrangements for the staging of false-flag chemical attacks against civilians in the countryside of the Aleppo and Idlib Governorates. Other reports from the first half of 2017 allege refrigerator trucks loaded with chlorine travelling towards the towns of Ltamenah and Idlib, and the preparation for use of mustard gas and rockets in Homs Governorate by an individual named [REDACTED].
- 6.27 Moreover, the IIT was informed of reports dated late April 2017 related to the movements of chemicals (including sarin) from militia-controlled areas in Libya, through another State Party, to a plant in the Aleppo countryside specialised in the production of chemical munitions, to prepare them for upcoming battles with the army and against civilians.
- 6.28 The IIT considered that the alleged incidents in Ltamenah on 24 and 30 March 2017, though earlier in time, could potentially be explained through similar scenarios, including the “staging” of an attack with sarin brought from elsewhere. Unlike for the Khan Shaykhun incident of 4 April 2017, however, the OPCW did not receive information about inquiries or criminal investigations initiated by the authorities of the Syrian Arab Republic regarding any of the three incidents in Ltamenah.

- 6.29 The IIT proceeded with inquiries, including to the Syrian Arab Republic,⁶⁶ in respect of these allegations, but did not receive, nor was otherwise able to obtain, any material that would substantiate them. It nonetheless took these hypotheses into account when scrutinising other information.

⁶⁶ See below, Annex 3, and in particular the IIT Note of 19 December 2019, through which the IIT specifically requested from the authorities of the Syrian Arab Republic supporting information in this respect.

7. INCIDENT IN LTAMENAH, 24 MARCH 2017⁶⁷

Analysis

- 7.1 The FFM concluded that sarin was very likely used as a chemical weapon in the south of Ltamenah on 24 March 2017, at approximately 6:00.⁶⁸
- 7.2 In fulfilment of its mandate to identify perpetrators, and taking into account the constraints under which the IIT is working,⁶⁹ the IIT examined various scenarios.⁷⁰ The ones considered when assessing the information for this incident included a scenario according to which chemical weapons were air-delivered; and a scenario in which conventional weapon(s) were deployed or brought to—or around—the sites of the incident, while chemicals were used at the site later to “stage” a chemical attack and blame one side of the conflict.⁷¹ The IIT in any case remained open to other possible explanations on the basis of the information it obtained as the investigation progressed.
- 7.3 The incident of 24 March 2017 in Ltamenah is the earliest one in which the FFM established the use of sarin on the territory of the Syrian Arab Republic after its accession to the Convention and the consequent removal and destruction of its declared chemical weapons stockpile. Before March 2017, three other sarin attacks were alleged to have taken place in Hama Governorate in December 2016, on the eastern front line and in an area controlled by ISIL/Daesh. In any event, it was only during the FFM deployment originally meant to gather facts related to the use of chemical weapons in Khan Shaykhun on 4 April 2017 that the FFM received samples and conducted interviews related to the incident of 25 March 2017 in Ltamenah, and encountered for the first time allegations of use of toxic chemicals in another part of Ltamenah on 24 March 2017.⁷²

(i) The context of the military activities and the weather conditions

- 7.4 With regard to the combat activities in the area of Ltamenah in the first months of 2017, the IIT assessed the information it obtained, comparing it with open source material, and consulted with external entities, as necessary.⁷³
- 7.5 Air strikes have been an essential element throughout military campaigns since August 2012 in the Syrian Arab Republic, and the operations in and around Ltamenah in March and April 2017 proved no exception. Several airports could support air operations in and around Ltamenah, including Shayrat airbase. In March 2017 at least 221 sorties, of mostly SU-22s, were observed from Shayrat. As the Syrian Government re-established control of the area around Hama airbase in April 2017, the

⁶⁷ See map of Ltamenah impact points, below, Annex 4.

⁶⁸ FFM Report on the 24 and 25 March 2017 Incidents in Ltamenah (S/1636/2018*), paragraphs 5.9 and 6.8.

⁶⁹ See above, Section II.4.

⁷⁰ See above, Section II.5.

⁷¹ As mentioned above, “staging” of a chemical attack through the use of chemical weapons, including precursors, is a “use” of chemical weapons under the Convention.

⁷² FFM Report on the 24 and 25 March 2017 Incidents in Ltamenah (S/1636/2018*), paragraph 1.3.

⁷³ See above, Section III.6.2.

number of aircraft sorties from Shayrat airbase significantly decreased. The 677th and 685th Squadrons of the 50th Brigade of the 22nd Air Division of the Syrian Arab Air Force, both of which deploy Su-22 aircraft, were operating out of Shayrat in March and April 2017. The IIT obtained information that, in March 2017, Shayrat airbase was used to store chemical weapons. The IIT further obtained information from States Parties that former members of the previously designated Branch 450, a component of the Syrian Arab Republic's chemical weapons programme responsible for storage, mixing, and filling of chemical weapons, including sarin, were present at Shayrat airbase in late March 2017.

- 7.6 The meteorological conditions in the area in the early morning of 24 March 2017 were established by the IIT official reports received from the World Meteorological Organization (WMO) and its specialised meteorological centres, witness accounts, as well as open source material. These included light winds and clear skies, a temperature at ground level of around 4 to 5° C, with a strong surface temperature inversion. Sunrise was at around 5:30. These conditions are favourable to the use of a non-persistent agent such as sarin. A decision-maker with knowledge of such conditions would be able to plan and use chemical weapons in these circumstances, including “staging” of chemical weapons’ use.

(ii) Accounts and assessments of the munition in question, its delivery, and impact

- 7.7 The IIT obtained flight data and other information from various sources that, on 24 March 2017, an aircraft dropped at least one munition filled with a toxic chemical in the southern outskirts of Ltamenah at approximately 6:00.
- 7.8 Based on their experience in a conflict area, individuals present in Ltamenah on that day described the sound of the impact of the munition dropped from the airplane as being different than that of conventional munitions. Persons affected by the munition explained that, on the basis of the lack of a distinctive odour they had smelled in the past during other chlorine incidents, they also did not consider the attack to have involved the use of chlorine. The munition impacted south of the town, in what was described as “agricultural land”, about 200 metres from the location where a group of men were affected; the attack also caused the death of small livestock and birds present in the area, and also damaged vegetation.
- 7.9 The IIT assessed videos of the area, including their metadata, taken on 26 March 2017, and confirmed their geolocation through two independent verifications by a specialised institute. This video material, supported by other information, shows that the size of the crater created by the impact of the first munition was between 1 to 2 metres deep and approximately 2.5 metres in diameter, with a circular shape. The estimated size of the crater fits the scenario of an aerial bomb with a burster-type explosive charge, impacting the ground. A burster in this context is understood as a small charge of explosives used to open the munition in order to disperse its content, for example a chemical agent. The crater might also be consistent with an event “staged” on the ground, as long as the person(s) “staging” the attack were applying the correct amount of explosive to create similar crater characteristics, and had knowledge of the type of soil in the area.

(iii) The aircraft and its flight path

- 7.10 Flight data, including information from an early warning network, show that between 5:30 and 5:45 a Syrian Su-22 military airplane took off from Shayrat airbase and attacked Ltamenah. The attack was further confirmed by persons who either saw or heard a military airplane—with its distinctive sound—around the location of the site of the incident between 5:30 and 6:00 that morning, with one specifically recognising it as a warplane engaged in a diving manoeuvre described as typical of Syrian military aircraft.
- 7.11 In assessing the information from witnesses to the event, the IIT sought and obtained additional information corroborating the accounts by the victims.
- 7.12 Satellite imagery confirms the presence of Su-22 aircraft at Shayrat airbase in late February 2017. Moreover, flight data from 24, 25, and 30 March 2017 reveal that Su-22s departed from Shayrat airbase at least 19 times.
- 7.13 The IIT also obtained information from various sources, including flight data confirmed by open source material, that the Su-22 is used in that theatre of operations only by the Syrian Arab Air Force.

(iv) Symptoms of affected persons

- 7.14 The IIT received information that at least 16 persons—men, women, and children—affected by this attack were admitted to the local hospital that morning, and that five of them were intubated due to the seriousness of their breathing conditions. The casualties included both armed group fighters and persons not taking active part in the hostilities.
- 7.15 The IIT has made efforts to locate the medical records of the patients allegedly affected by the chemical attack; however, this proved impossible because of the conditions of the hospital and the ongoing conflict in the area at the time. Nonetheless, the information reported by the FFM on the symptoms of the patients is based on statements by medical staff and patients, corroborated by contemporaneous videos. Casualties and medical staff interviewed stated that they had the following symptoms: shortness of breath, miosis (pinpoint pupils), cough, oral hypersecretion, and agitation. There were no reported skin, pulmonary, or vital sign abnormalities; in fact, most cases were considered mild and patients were discharged within 24 hours. However, two casualties were moved to the operation room for resuscitation, while others continued receiving treatment for up to 10 days after the incident. A toxicologist consulted by the IIT to assess the exhibited symptoms and the treatment (including patients' response to this treatment) found it plausible that the patients displayed signs and symptoms consistent with acetylcholinesterase (AChE) inhibition. These symptoms are consistent with sarin poisoning.
- 7.16 Two casualties interviewed by the FFM said that they were asleep in a cave at the time of the attack. Within one to five minutes of leaving the cave, they suffered from shortness of breath, headache, visual impairment, abdominal pain, dizziness, and tightness in the chest. Up to 25 days later, subjects complained of decreased visual acuity, photophobia, tightness in the chest, and shortness of breath.

7.17 The IIT interviewed several individuals with direct knowledge of the events, including persons affected by the attack, which corroborated information related to casualties. Persons present in the area at the time confirm that, later that day, another suspected chemical attack took place in the area, which would explain differing descriptions as to the numbers and symptoms of affected persons.

(v) Remnants and possible origin

7.18 On 19 February 2018,⁷⁴ the FFM received metal fragments retrieved from the crater as remnants of munition parts related to the incident of 24 March 2017 in the southern outskirts of Ltamenah. These were later analysed by OPCW designated laboratories.⁷⁵

7.19 The IIT assessed all six metal pieces retrieved from the crater and listed by the FFM. After consulting with munition specialists, the IIT reached the conclusion that, out of the six fragments, two can be linked to potential chemical weapons use.

7.20 The first of these two fragments, which the FFM identified as SDS28, consists of a very heavy thick metal cone-shaped part, with an attached metal sheet/liner.⁷⁶ Forensic analysis of this fragment also shows traces of paint. According to munition specialists, the form and shapes of the fragment are consistent with the design of the nose part of Syrian chemical air-delivered bombs, namely the MYM6000 and the M4000 models.

7.21 The IIT received information from States Parties and public sources that, in 2013, the Syrian Arab Republic had in its arsenal two types of aerial bombs to be used in military operations, denominated M4000s and MYM6000s—locally made and based on designs of conventional bombs, modified for chemical weapons use. By January 2016, the OPCW confirmed destruction of all chemical weapons declared by the Syrian Arab Republic. Of note, the Syrian Arab Republic stated that 2,000 chemical aerial bombs had been repurposed into conventional ones and used before the accession of the Syrian Arab Republic to the Convention. In the absence of relevant documents and physical evidence, the Secretariat was however unable to verify that those munitions were in fact all repurposed and used.

7.22 According to that information, the M4000 designed by, and manufactured in, the Syrian Arab Republic to deliver chemical agents, including sarin, is an unguided chemical air-delivered munition, weighing 350 kilograms. Its internal design consists of two compartments, each with its own filling plug, separated by a membrane composed of two disks attached to a ring. The filling plug in the front compartment is used to load methylphosphonyl difluoride (DF) into the munition, while the rear plug is used to fill the munition with hexamine and isopropanol. The nose part of the bomb consists of a heavy cone that forces the bomb to drop nose first. A fuze adaptor is present on the nose part to attach the fuze. Inside the front compartment is a burster tube with an explosive charge of about 3 kilograms of trinitrotoluene (TNT). On the rear compartment a tail fin, designed to stabilise the munition during its fall, is

⁷⁴ FFM Report on the 24 and 25 March 2017 Incidents in Ltamenah (S/1636/2018*), paragraph 5.33.

⁷⁵ FFM Report on the 24 and 25 March 2017 Incidents in Ltamenah (S/1636/2018*), Table 3 at pages 13 and 14 (entries 3, 4, 5, 8, 11, and 12).

⁷⁶ FFM Report on the 24 and 25 March 2017 Incidents in Ltamenah (S/1636/2018*), Table 3 at page 13.

attached. The rear compartment houses a mixing paddle that pierces the membrane and mixes the precursors (DF, hexamine, and isopropanol) in preparation for the use of the munition before it is loaded on the aircraft. The bomb has two suspension lugs welded to the bomb body, which are used to attach the munition to aircraft.

- 7.23 The IIT reconstructed the chain of custody for the fragment identified as SDS28 between 24 March 2017 (the date of the alleged incident) and 19 February 2018 (the date when the FFM received it). This was done on the basis of contemporaneous video recordings geolocated by a specialised institute, OPCW documentation, and by interviewing witnesses about the videos themselves, as well as the actual collection and the procedures undertaken between such collection and the transfer to the FFM.
- 7.24 A specialised institute conducted a photogrammetric study on this fragment from the 24 March 2017 Ltamenah incident. The fragment was assessed as originating from the nose part of an air-delivered munition. Its geometry was compared with drawings of parent air-delivered chemical munitions. Based on its geometry and width of its inner wall (inconsistent with those of the MYM6000), the study established that this fragment is likely part of an M4000 air-delivered munition.
- 7.25 The second fragment received by the FFM, SDS29,⁷⁷ consists of a large corroded fragment of sheet metal of approximately 38 cm by 50 cm, with traces of dark green paint. According to munition specialists, the form and shape of this fragment are consistent with a fragment resulting from the explosion of an ordnance with limited explosive quantity, and fragments from the explosion of conventional explosives-filled munitions would be smaller and have sharper edges. Some of its measurements lower the possibility that this is part of a chemical aerial bomb from the stockpile of the Syrian Arab Republic, and further analyses would be required to reach solid conclusions on the origin of this fragment.
- 7.26 The IIT, aware of the importance of the chain of custody in this type of investigation, pursued several lines of inquiry in order to establish it. However, in light of the uncertainty on the origin of this fragment, and as the IIT was unable to fully confirm its chain of custody, it did not pursue this second fragment in this area of inquiry.
- 7.27 Therefore, on the basis of the foregoing, the IIT considered only one remnant received by the FFM (SDS28) for the purpose of its investigation on the identification of perpetrators for this incident. The presence of this fragment in the crater is consistent with an aerial chemical attack.
- 7.28 The IIT further considered three fragments that are visible in a video of a crater taken on 26 March 2017, which the IIT confirmed through witnesses and assessment by a specialised forensic institute as being the crater of the incident of 24 March 2017. Two of these remnants were partly buried. Although these large metal fragments are consistent with those created by an ordnance with limited explosive quantity, not enough details are available to confirm their origin. The third fragment, however, is more visible: it consists of what appears as a flat metal part with holes, some containing bolts, and a folded end. The specialists consulted by the IIT found that the

⁷⁷

FFM Report on the 24 and 25 March 2017 Incidents in Ltamenah (S/1636/2018*), Table 3 at page 13.

visible characteristics of the fragment in the crater are consistent with a ring-shaped component used to attach the membrane of the M4000.

- 7.29 Moreover, the IIT identified through videos and forensic analyses another fragment as originating from the area of the crater of 24 March 2017 (which the FFM marked as 04SDS when the object was handed over to it with samples related to the incident of 30 March 2017).⁷⁸ This object is a thick, heavy metal part with a thinner metal part attached. One side is flat, bearing marks of violent splitting due to impact or explosion. Specialists consulted by the IIT assessed that this object is highly likely to be part of the nose cone of an aerial bomb. Experts further remarked on the high degree of similarity between this fragment and the above-mentioned item SDS28 assessed to be likely part of an M4000 air-delivered munition. A photogrammetric study was also conducted on fragment 04SDS, concluding that it is unlikely that it originates from an MYM6000. Rather, the experts concluded that there is a “realistic possibility” that it is part of an M4000 air-delivered munition. Another specialised institute consulted by the IIT assessed that both SDS28 and 04SDS originate from the same aerial bomb, “based on the similar steel layer assembly, thickness, curvature, and specific linear indentation in the steel liner”.

(vi) Chemical analyses

- 7.30 The IIT further considered the analysis of samples related to the incident of 24 March 2017 requested by the FFM, together with its comparison of the results of the analysis of the samples from the 30 March 2017 incident in Ltamenah (as well as those related to the Khan Shaykhun incident of 4 April 2017). The analysis showed the presence of a collection of chemicals related to the chemical warfare agent sarin on various material and environmental samples both from the crater and in the surrounding area (including both SDS28 and 04SDS), as succinctly summarised in the table of the FFM report.⁷⁹
- 7.31 In relation to this incident, the IIT specifically—though not exclusively—focused on the analysis performed for the FFM by two OPCW designated laboratories of the fragment SDS28, for which the chain of custody was described above. Moreover, the IIT requested two OPCW designated laboratories to carry out analyses for a sub-sample (denominated SLS35) of a sample which had been identified (but not analysed) by the FFM as 01SLS. This environmental sample from the crater was collected on 26 March 2017 and provided to the FFM on 12 August 2017. The IIT verified its chain of custody on the basis of contemporaneous video recordings (geolocated by a specialised institution), OPCW documentation, and by interviewing individuals involved in the actual collection. The IIT further made inquiries about the procedures undertaken between such collection and the transfer of the sample to the FFM. The IIT was able to confirm during its interviews that this sample had been specifically identified just a few hours after the alleged incident by one of the persons present at the location on that day, and again later at the time it was actually taken.
- 7.32 Both the fragment in question (SDS28) and the environmental sample SLS35 showed the presence of sarin. In addition, other environmental samples from the crater itself,

⁷⁸ FFM Report on the 30 March 2017 Incident in Ltamenah (S/1548/2017), Table 2.

⁷⁹ FFM Report on the 24 and 25 March 2017 Incidents in Ltamenah (S/1636/2018*), Table 4.

and at 50 and at 100 metres from it, showed the presence of chemicals relevant to the “signature” of binary sarin consistent with the precursors and the process used by the Syrian Arab Republic. Annex 5 below describes the chemical analysis of the sarin samples of both the incidents of 24 and 30 March 2017 and the investigations undertaken by the IIT in that respect.⁸⁰

- 7.33 As detailed in Annex 5, the IIT concludes that the chemical profile (i.e., a collection of chemicals) of the sarin used in Ltamenah on 24 March 2017 strongly correlates to the chemical profile expected for sarin produced through a binary reaction in which the key binary component (DF) is manufactured via routes, as well as by using precursors and raw materials, pursued by the Syrian Arab Republic in its sarin programme. The findings of Annex 5 and the reasoning behind them are based on the extensive consultations with experts, assistance received from staff of the Secretariat, including the OPCW Laboratory, and the sources referred to therein.

Concluding remarks on the incident

- 7.34 In light of the information obtained, considered in its totality, the IIT concludes that there are reasonable grounds to believe that, at approximately 6:00 on 24 March 2017, an Su-22 military airplane belonging to the 50th Brigade of the 22nd Air Division of the Syrian Arab Air Force, departing from Shayrat airbase, dropped an M4000 aerial bomb containing sarin in southern Ltamenah, affecting at least 16 persons.

⁸⁰ Owing to some of the information presented and discussed therein, Annex 5 has been classified as “OPCW highly protected” and is available to all States Parties (in document ITT/HP/001, dated 8 April 2020) under the conditions provided for by the Convention.

8. INCIDENT IN LTAMENAH, 25 MARCH 2017⁸¹

Analysis

- 8.1 The FFM concluded that chlorine was “very likely used as a chemical weapon at Ltamenah hospital and the surrounding area on 25 March 2017” at approximately 15:00.⁸²
- 8.2 The IIT reviewed the incident of 25 March 2017 on the basis of a careful assessment of the information it has obtained in the course of its investigations. While the FFM reported two raids by helicopters, resulting in four cylindrical barrels hitting the Ltamenah hospital and the surrounding area, the IIT focused on the attack directly hitting the hospital, although it considered the information about other cylinders (or barrels) dropped during the same attack as relevant background information.⁸³
- 8.3 In fulfilment of its mandate to identify perpetrators, and taking into account the constraints under which the IIT is working,⁸⁴ the IIT examined various scenarios.⁸⁵ The ones considered when assessing the information for this incident included all four scenarios originally posited, namely:
- (a) a chemical weapon was prepared elsewhere and brought to—or around—the site of the incident identified by the FFM; or
 - (b) a chemical weapon was air-delivered on the site; or
 - (c) a chemical weapon was otherwise deployed to the site, for instance launched from the ground; or
 - (d) that no chemical weapon attack occurred, but a conventional weapon was deployed or brought to the site, while chlorine was used at the sites later to “stage” a chemical attack and blame one side of the conflict.
- 8.4 The IIT in any case remained open to other possible explanations on the basis of the information it obtained as the investigation progressed.
- (i) The context of the military activities and the weather conditions**
- 8.5 With regard to the combat activities in the area of Ltamenah in the first months of 2017, the IIT assessed the information it obtained, comparing it with open source material, and consulted with external entities as necessary.⁸⁶
- 8.6 During its investigations, the IIT obtained information that medical facilities and medical personnel have often been the object of attack in military operations in the

⁸¹ See map of Ltamenah impact points, below, Annex 4.

⁸² FFM Report on the 24 and 25 March 2017 Incidents in Ltamenah (S/1636/2018*), paragraphs 5.42 and 6.9.

⁸³ FFM Report on the 24 and 25 March 2017 Incidents in Ltamenah (S/1636/2018*), paragraphs 5.43, 5.44, 5.59, and 5.60.

⁸⁴ See above, Section II.4.

⁸⁵ See above, Section II.5.

⁸⁶ See above, Section III.6.2.

Syrian Arab Republic. Following repeated attacks and in an attempt to protect healthcare infrastructure, personnel, and patients (which often include persons hors de combat), hospitals and clinics in areas not under the control of the Government of the Syrian Arab Republic were relocated underground and operated from reinforced basements of buildings and, sometimes, from caves. Such “cave hospitals” are typically located on the outskirts of towns, without any other buildings in their vicinity. The Ltamenah hospital in question was one such facility. The IIT obtained information that between 5 March and 29 April 2017, at least seven medical facilities in areas not under the control of the Syrian Arab Republic authorities in southern Idlib and northern Hama Governorates were hit by air strikes. The Ltamenah hospital itself– the only surgical facility in Ltamenah, and performing about 100 surgeries per month–had been moved from another location in November 2016 after the building where it was previously located had been targeted.

- 8.7 The Ltamenah cave hospital is located about 2 kilometres northwest of the centre of the town,⁸⁷ in the vicinity of a network of tunnels, used in part by armed group fighters.
- 8.8 The IIT was able to obtain the Ltamenah hospital’s floor plan both before the incident of 25 March 2017 as well as after its renovations in 2018, in order to verify the descriptions of the events it had received. The hospital had two entrances—one where the gas was released out of the cylinder and another one which was a door directly linked to the emergency room. Some persons with knowledge of the location described this as the emergency exit survivors used to get out of the cave during the chlorine attack. The door of the emergency room was open during the attack on the hospital on 25 March 2017, and yellow gas could be seen approaching. Even after the door was closed, the gas continued to seep under the door, which required the persons still inside to leave through that “emergency exit”.
- 8.9 The meteorological conditions in the area on 25 March 2017 were established by the IIT using official reports received from the WMO and its specialised meteorological centres, witness accounts, as well as open source material. At around 15:00, these included light winds and clear skies, a temperature at ground level of about 20 to 22° C, with some limited vertical dispersion likely. These conditions are not ideal for the use of chemical weapons in open spaces, but do not prevent the use of chlorine as a weapon in the circumstances described by the relevant FFM report.
- 8.10 While information about the involvement of the Tiger Forces, and of specific individuals, was brought to the attention of the IIT in relation to the use of chlorine as a chemical weapon including with respect to this incident, there is insufficient confirmation or corroboration for the IIT to reach a conclusion on such involvement to the requisite degree of certainty.

(ii) Accounts and assessments of the munition in question, its delivery, and impact

- 8.11 Based on the totality of the information before it, the attack on the hospital occurred at around 15:00 on 25 March 2017.

⁸⁷ See map below, Annex 4.

- 8.12 The IIT obtained information that helicopters dropped up to four barrels (cylinders) on the Ltamenah hospital and the surrounding area in the afternoon of 25 March 2017. As mentioned above, for the purpose of this report, the IIT has focused on the cylinder that, according to the FFM report, hit the hospital, pierced its roof, fell inside it, and released chlorine gas.⁸⁸
- 8.13 The IIT obtained videos and photographs of a hole in the roof as seen from both inside and outside the hospital, a hole which witnesses to the event stated was created by its impact passing through the roof of the hospital on 25 March 2017. The IIT endeavoured to establish whether the hole in the roof of the hospital was consistent with the dimensions of the cylinder. From images of the cylinder confirmed by individuals interviewed by the IIT, a specialised forensic institute consulted by the IIT estimated the cylinder in question as being approximately 38 cm in diameter. This is consistent with other information obtained by the IIT about this type of cylinder.
- 8.14 The IIT did not receive information that the hole was precisely measured at the time of the attack. It therefore requested a specialised forensic institute to estimate the boundaries—and therefore the size—of the hole by setting up a 3D model for the surrounding environment, and creating a perspective of such model similar to the perspective that can be ascertained from the images of the location. The estimate was that the hole was around 60 centimetres, and that in any case it could not have been less than 50 centimetres in diameter.
- 8.15 Witnesses to the event described how the cylinder hit the roof, entered the hospital, and was then brought out of the hospital shortly after the attack, where samples were taken within 24 hours. The sample collection and several details mentioned by the witnesses to the IIT were also documented via photographs and videos, identified as being of the location of the impact. The measurements, calculated by the specialised forensic institute consulted by the IIT, confirm that the hole through which the witnesses stated that the cylinder in question entered the hospital is consistent with the cylinder passing through it.
- 8.16 The IIT commissioned studies to assess whether the cylinder filmed outside was the same as the one described, and filmed, inside the hospital as being the one entering through the roof.⁸⁹ One specialised forensic institute proceeded with three independent comparisons based on the visible details in shape, colour, and texture of the object in question. The experts specifically remarked that most of the observed similarities can be categorised as detailed appearances of damage, and irregularities in colour and/or dirt—generally strong identifiers, since they are typically caused by uncontrolled circumstances of handling the object and environmental factors. The only minor differences observed could easily be explained by differences in recording conditions, such as lighting and positioning, image quality, and handling of the object. The consensus of the three independent examiners from this institute was therefore that it was “extremely more probable” that the barrel filmed outside was the same as the one filmed inside the hospital, rather than a different one.

⁸⁸ FFM Report on the 24 and 25 March 2017 Incidents in Ltamenah (S/1636/2018*), paragraph 5.44.

⁸⁹ For imagery related to these studies, see below, Annex 4.

- 8.17 The second assessment, by two munition specialists, was also based on a comparison of distinctive features, as well as shape, location, and size of damage marks identified on the cylinder. The conclusion by these specialists was that it is “highly likely” that the cylinder identified inside the hospital is the same item as the one filmed outside.

(iii) The aircraft and its flight path

- 8.18 The IIT obtained information from multiple sources describing a helicopter attacking the hospital around 15:00 on 25 March 2017.
- 8.19 Approximately 15 to 20 minutes before the attack took place, the early warning network warned the population that two helicopters had departed Hama airbase some 10 minutes apart and were heading towards Ltamenah. After the warning, persons present at the location said that they saw one helicopter circling around the area, approaching the area of the Ltamenah cave hospital from the west, and dropping the barrel which hit the hospital. One of them drew the detailed flight path of the helicopter for the IIT as he remembered seeing it, a flight path that was confirmed by other witnesses. Another individual described what he saw as yellow smoke rising from the location of the hospital.
- 8.20 Intercepted communications identified the helicopter as flying at slightly less than 4,000 metres altitude, which was also confirmed by some persons present in Ltamenah at the time, who heard it from the early warning network. A video uploaded on the Internet shortly after the incident purporting to show the helicopter attack—which the IIT was however unable to independently confirm—was consistent with this information. The IIT further considered information that the use of helicopters during the day posed risks in terms of the helicopter itself becoming a visible target for ground enemy fire due to its distinct features and lower speed than fixed-wing aircraft. According to a military expert advising the IIT, such risks would be mitigated by an altitude of about 4,000 metres.
- 8.21 According to a military expert advising the IIT, the time of departure from Hama air base and the time at which the attack took place are consistent, based on various factors, including the speed of the helicopters available to the Syrian Arab Air Force at Hama airbase and the distance of about 24 kilometres between this airbase and the hospital, either by direct route or following the circling trajectory as described by witnesses. Along with this scenario, the IIT also considered the possibility that the helicopter seen was actually not related to a chemical attack, but was rather part of a conventional strike on or around the Ltamenah hospital. It therefore considered this possibility when assessing the information obtained as a whole.

(iv) Symptoms of affected persons

- 8.22 The IIT obtained information that up to three persons died and that at least 32 persons were injured following the attack of 25 March 2017. The casualties included both armed group fighters and persons not taking active part in the hostilities, including medical staff.
- 8.23 The IIT obtained detailed information in relation to victims of the incident, including a surgeon who was conducting surgery with the help of an assistant at the time of the release of chlorine. This doctor died a few hours after having been exposed to the gas

from the cylinder. Moreover, within one minute after exposure, up to 30 persons suffered—to varying degrees—from shortness of breath, moderate to severe cough, mucosal membrane irritation, blurred vision, lacrimation, expectoration, and vomiting.

8.24 The IIT also received medical records related to this attack for 33 individuals.⁹⁰ The IIT requested a new medical assessment from an independent expert to ascertain whether the symptoms described in the medical records in its possession, and the images of casualties in open source videos, were consistent with the use of chlorine as a chemical weapon. The expert noted that, according to the information, cases were classified as predominantly moderate (with peripheral oxygen saturation of 80 to 85%), with nine severe (with oxygen saturation of 60%), but that—without considering other factors such as information on the cylinder in question and more complete medical records—it was not possible to conclude with a high degree of confidence that the described symptoms were caused by chlorine gas.

(v) Remnants and possible origin

8.25 No less than seven types of barrel bombs with alleged chlorine fill were reportedly used as a chemical weapon in the Syrian Arab Republic since 2014. Chlorine bombs with a design that includes a steel “strap-in” structure, also referred to as a “frame” or a “cradle”, began to be observed in the Syrian Arab Republic as of November 2016. The IIT considered carrying out analyses of the cylinder identified as the one hitting the hospital in Ltamenah on 25 March 2017, and made attempts to retrieve it, but the circumstances on the ground did not allow the IIT to organise its transfer.

8.26 The cylinders observed from the area of the attack of 25 March 2017 are consistent with the design of chlorine barrel bombs said to be used by the forces of the Syrian Arab Republic in that period. Though there are some similarities between conventional and chlorine barrel bombs, the IIT obtained information that the design of the latter is substantially different than the design of conventional barrel bombs used by the Syrian Arab Republic. Cylinders related to this attack displayed visible markings consistent with having been fitted with a steel strap-in structure—i.e., a steel frame with a weighted nose part, wheels, three tail fins, and two lifting loops—or were actually observed with remnants of this cradle. This design is consistent with the type of munitions that can be delivered from a helicopter.

8.27 This steel strap-in structure serves a number of purposes. The structure allows placing the cylinder on wheels to aid loading it into a helicopter and rolling it out from the helicopter’s cargo bay. Second, the weighted nose and fins orient the munition downwards and stabilise it. Upon impact, the kinetic energy will rupture the cylinder itself or, in instances in which a fusing system is present, explosive charges will rupture the cylinder. The markings on the cylinder of 25 March 2017 which hit and entered the hospital are consistent with a structure fitted around it.

8.28 The “roof” of the entrance to Ltamenah hospital consisted of a concrete structure reinforced with steel and covered with sandy soil, part of the cave mentioned above.

⁹⁰ FFM Report on the 24 and 25 March 2017 Incidents in Ltamenah (S/1636/2018), paragraph 5.49 and Annex 3, table 1.

Witnesses recounted that the cylinder dropped by the helicopter went through this roof and fell on the floor, releasing its contents. This cylinder was later taken outside the hospital, where the majority of the photographs and videos were taken. The cylinder shows damage at the nose end, which is flattened and with a tear, and markings on the sides that indicate scraping or grazing against solid objects. The damage to the cylinder that hit the hospital suggests minimal or no explosives: the conclusion is that cylinder ruptured upon impact on the roof of the hospital. According to munition specialists consulted by the IIT, the way the cylinder ruptured when hitting the roof of the hospital is not consistent with the presence of an explosive charge, which would have caused much more severe damage to the cylinder itself.

- 8.29 The IIT further assessed the likelihood that a cylinder of the type identified in this case was delivered not by helicopter, but rather by surface-to-surface weapons or placed in the hospital. But the IIT found such a conclusion to be incompatible with the information obtained, considered in its totality.

(vi) Chemical analyses

- 8.30 Results of the analysis of samples listed in the FFM report (from soil, metal fragments, water, mud, clothes, and other items) in the vicinity of the cylinder which impacted the roof of the hospital and released the yellow gas described above show elevated levels of chloride (Cl⁻).⁹¹ These samples were received by the FFM on 10 and 12 April 2017, and on 19 February 2018. The IIT conducted interviews to ascertain how the relevant samples were collected and stored prior to their handing over to the OPCW. During its interviews, the IIT referred to specific samples and confirmed the process of collection and storage.
- 8.31 Chlorine has many industrial uses—water purification, disinfectants, bleach, and manufacture of many products, i.e. paper, antiseptic, dye, food, paint, petroleum products, plastics, medicines, textiles, solvents. Gaseous chlorine is poisonous and classified as a pulmonary irritant. It has immediate water solubility with the ability to cause acute damage to upper and lower respiratory tracts. Toxicity depends on the dose and duration of exposure.
- 8.32 The samples from the 25 March 2017 incident were screened using inductively coupled plasma quadrupole mass spectrometry (ICP-MS) and ion chromatography (anion and cation IC) to detect and quantify inorganic species. The concentrations of the inorganic species were determined using certified reference standards.
- 8.33 The IIT noted that the soil and mud samples collected closer to the chlorine cylinders, recovered and identified by the FFM as related to the attack of 25 March 2017, show consistently higher chloride concentrations than the ones collected at 50 metres and 150 metres away from the location where the cylinders were found. This implies the presence of a higher chloride content associated with the release of chlorine gas from those cylinders, otherwise (specialists explained) the higher concentrations would be randomly scattered throughout the area, which was not the case.

⁹¹ FFM Report on the 24 and 25 March 2017 Incidents in Ltamenah (S/1636/2018*), paragraphs 5.61-5.63 and 6.6.

- 8.34 Several chlorine-containing organic chemicals were identified in most of the samples. These chemicals are not generally present naturally in the environment and are generated from a reaction with chlorine gas (Cl₂) or another active chlorine-containing chemical, such as hypochlorous acid (HOCl), sodium hypochlorite (NaOCl), phosgene (COCl₂), cyanogen chloride (CNCl), or thionyl chloride (SOCl₂). However, some of the chlorinated organics that would be expected if sodium hypochlorite, phosgene, cyanogen chloride, or thionyl chloride were used as chlorinating agents were not detected in the samples analysed.⁹²
- 8.35 The IIT notes that there is no single chemical that would unequivocally and directly indicate the use of chlorine gas and its origin. In relation to its mandate of “identifying and reporting on all information potentially relevant to the origin” of the chemical weapons used in this incident, the chemical analysis of the samples unequivocally linked to the cylinder in question does not provide conclusive evidence, beyond the findings of the FFM that chlorine was used as a weapon on 25 March 2017.

Concluding remarks on the incident

- 8.36 In light of the information obtained, considered in its totality, the IIT concludes that there are reasonable grounds to believe that, at approximately 15:00 on 25 March 2017, a helicopter of the Syrian Arab Air Force, departing from Hama airbase, dropped a cylinder on the Ltamenah hospital; the cylinder broke into the hospital through its roof, ruptured, and released chlorine, affecting at least 30 persons.

9. INCIDENT IN LTAMENAH, 30 MARCH 2017⁹³

Analysis

- 9.1 The FFM concluded that sarin was “more than likely used as a chemical weapon” in the south of Ltamenah on 30 March 2017, at approximately 6:00.⁹⁴
- 9.2 In fulfilment of its mandate to identify perpetrators, and taking into account the constraints under which the IIT is working,⁹⁵ the IIT examined various scenarios.⁹⁶ The ones considered when assessing the information for this incident included an air attack using chemical weapons, as well as various ways to “stage” an aerial chemical attack by a party to the conflict who did not have access to the airspace above Ltamenah in March 2017. The IIT in any case remained open to other possible explanations on the basis of the information it obtained as the investigation progressed.

⁹² See, e.g.: Ogata et al., *Orientation in the Chlorination of Phenol and of Anisole with Sodium and T-butyl Hypochlorites in Various Solvents*, in *Journal of Chemical Society, Perkin Transactions 2* (1984), at 451–453; V. A. Pankratov et al., in *Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya*, vol. 6 (June 1974), at 1414 and 1415; G. Tassinari, *Azione del cloruro di tionile sui fenoli*, in *Gazzetta chimica italiana*, vol. 20 (1890), at 362.

⁹³ See map of Ltamenah impact points, below, Annex 4.

⁹⁴ FFM Report on the 30 March 2017 Incident in Ltamenah (S/1548/2017), paragraphs 1.5, 5.12, and 6.9.

⁹⁵ See above, Section II.4.

⁹⁶ See above, Section II.5.

(i) The context of the military activities and the weather conditions

- 9.3 With regard to the combat activities in the area of Ltamenah in the first months of 2017, the IIT assessed the information it obtained, comparing it with open source material, and consulted with external entities as necessary.⁹⁷
- 9.4 As mentioned above,⁹⁸ air strikes have been an essential element of military campaigns since August 2012 in the Syrian Arab Republic, and the operations in and around Ltamenah in March and April 2017 proved no exception. Several airports could support air operations in and around Ltamenah, including Shayrat airbase. In March 2017 at least 221 sorties, mostly of SU-22s, were observed from Shayrat. As the Syrian Government re-established control of the area around Hama airbase in April 2017, the number of aircraft sorties from Shayrat airbase significantly decreased. The 677th and 685th Squadrons of the 50th Brigade of the 22nd Air Division of the Syrian Arab Air Force, both of which deploy Su-22 aircraft, were operating out of Shayrat in March and April 2017. The IIT obtained information that, in March 2017, Shayrat airbase was used to store chemical weapons. The IIT further obtained information that former members of the previously designated Branch 450, a component of the Syrian Arab Republic's chemical weapons programme responsible for storage, mixing, and filling of chemical weapons, including sarin, were present in Shayrat airbase in late March 2017.
- 9.5 During its investigations, the IIT further obtained information from several sources that on 30 March 2017 the town of Ltamenah was also subjected to attacks by chlorine, not just by sarin, and by conventional weapons.
- 9.6 On 30 March 2017, sunrise was at around 5:20. The meteorological conditions in the area at around 6:00 were established by the IIT using official reports received from the WMO and its specialised meteorological centres, witness accounts, as well as open source material. They included light winds and partly cloudy skies as of about one hour before the incident. The temperature at ground level was around 10° C, with a strong surface temperature inversion. Overall, these conditions are favourable to the use of a non-persistent agent such as sarin. A decision maker with knowledge of such conditions would be able to plan and use chemical weapons in these circumstances, including "staging" of chemical weapons use.

(ii) Accounts and assessments of the munition in question, its delivery, and impact

- 9.7 Several persons interviewed by the FFM stated that at approximately 6:00 they heard the sound of an aircraft followed by the sound of the impact of air-delivered munitions.⁹⁹ Witnesses to the event described one of the detonations they heard as having a "different, quieter" sound than the three other impacts they heard, with no odour and causing no visible smoke. Witnesses explained to the IIT that, based on their experience and observations, the description of the impact in question was consistent with a chemical attack with substances other than chlorine. An early warning was heard through the network before the attack, alerting that an aircraft was

⁹⁷ See above, Section III.6.2.

⁹⁸ See above, Section III.7.

heading to the area, and messages were also sent out immediately after the attack reporting that a strike had been carried out. The IIT chose to focus on the specific munition associated with the different kind of detonation, while taking into account the information on a total of up to four munitions during the attack.

- 9.8 The crater caused by the munition in question was described as much smaller in size than that which a comparably sized conventional high-explosive bomb would have caused. However, the soil in the area was described as rocky, which could also account for a smaller crater. Munitions specialists consulted by the IIT concluded that the crater was incompatible with an aerial bomb with a full explosive payload, which would have caused a larger and deeper crater. This is consistent with a separate analysis of the crater that was obtained by the IIT. The IIT obtained video footage of the location confirmed to have been taken a few hours after the attack, matching the description of the area of the crater provided by witnesses as well as the process of sample collection. The IIT further obtained information and images—confirming material considered by the FFM—indicating that vegetation in the area was damaged and discoloured.
- 9.9 The IIT notes, however, that the above-mentioned description of the crater, taken in isolation, would also be consistent with an event staged on the ground, applying the correct amount of explosive, with knowledge of the type of soil.

(iii) The aircraft and its flight path

- 9.10 Flight data and information from early warning networks show that Su-22s operated in and around Ltamenah throughout March 2017.
- 9.11 The IIT obtained video footage of an air strike on Ltamenah at around 6:00. The video, authenticated by the IIT as being from the attack of 30 March 2017, shows a grey smoke plume. Moreover, the Independent International Commission of Inquiry on the Syrian Arab Republic, which investigated the same incident, found that the bomb related to this incident made almost no sound and released a material without any particular smell.¹⁰⁰
- 9.12 The IIT obtained information from an early warning system network that an Su-22 military airplane (code-named “Quds 1”) departed from Shayrat airbase and executed an air strike around 6:00 in the vicinity of the previous Ltamenah attack of 24 March 2017. Other sources indicate that an Su-22 departed Shayrat airbase at 5:36 local time, travelling north around 5:50, and was back at the airbase at 6:03. These times are consistent with the distance travelled between the airbase and the site of the incident, the range of speed of the aircraft, and the time of the incident as reported by witnesses.
- 9.13 Satellite imagery confirms the presence of Su-22 aircraft at Shayrat airbase in late February 2017. Moreover, flight data from 24, 25, and 30 March 2017 reveal that Su-22s departed from Shayrat airbase at least 19 times.

⁹⁹ FFM Report on the 30 March 2017 Incident in Ltamenah (S/1548/2017), paragraphs 5.12 and 5.13.

¹⁰⁰ Human Rights Council, Report of the Independent International Commission of Inquiry on the Syrian Arab Republic, 8 August 2017, UN Doc. A/HRC/36/55, paragraph 69.

9.14 As mentioned above,¹⁰¹ the IIT also obtained information from various sources, including flight data consistent with open source material, that the Su-22 is used in that theatre of operations only by the Syrian Arab Air Force.

(iv) Symptoms of affected persons

9.15 The IIT noted the findings of the FFM on the victims of the incident of 30 March 2017.¹⁰²

9.16 The number of persons affected by the attack on 30 March 2017, according to information obtained by the IIT, was no less than 60, mostly men—including persons taking active part in the hostilities—of which one severe case still requires extensive medical care to this day. There were no reported fatalities.

9.17 Many of the casualties were inside caves when the attack took place. Upon exiting, they were shaking, shivering, displayed excessive oral secretion, and gradually became unresponsive. Some fell unconscious and described symptoms of visual disturbance, insomnia, dizziness, and anxiety, which in some cases persisted for up to 20 days. Two healthcare providers reported victims with pinpoint pupils, suffering from suffocation and nausea. Persons who arrived at the impact location after the attack reported some of the same symptoms, including difficulties breathing, irritated eyes, and loss of consciousness.

9.18 The IIT took note of the information received about the use of another chemical (chlorine) later on the same day, together with the remarks made by the FFM in relation to suspected chlorine intoxication.¹⁰³

(v) Remnants and possible origin

9.19 The IIT obtained coordinates for the impact point of this incident from several sources, which were corroborated by witnesses who had attended the site themselves as well as by videos of the area authenticated by a forensic institute as being from 30 March 2017. Fragments were located in close vicinity to the impact point, up to a distance of approximately 50 metres from the crater. Munition specialists consulted by the IIT advised that dispersion of fragments at such distances is consistent with the impact of an aerial chemical bomb. A specialised institute consulted by the IIT assessed that the resemblance of the fragments retrieved from the incidents of 24 and 30 March 2017 “suggests that the same type of bomb” (i.e., M4000) was used against both locations.

9.20 The IIT specifically considered the scenario that no chemical weapon attack occurred, but rather that an unfilled M4000 air-delivered munition was deployed or brought to the site, while chemicals were used at the sites later to “stage” a chemical attack. Munition specialists consulted by the IIT considered three hypotheses in such a “staging” scenario. None of these scenarios were deemed realistic, specifically because the bomb fuze collected at the site (identified by the FFM as 09SDS)¹⁰⁴ does

¹⁰¹ See above Section III.7 (i).

¹⁰² FFM Report on the 30 March 2017 Incident in Ltamenah (S/1548/2017), paragraphs 5.18 ff.

¹⁰³ FFM Report on the 30 March 2017 Incident in Ltamenah (S/1548/2017), paragraph 5.25.

¹⁰⁴ FFM Report on the 30 March 2017 Incident in Ltamenah (S/1548/2017), Table 2.

not show unusual damage resulting from an external initiation through the use of an additional explosive charge, but actually displays signs of having functioned in a normal way on impact. Other ways to stage such a scenario would result, according to the specialists, in the creation of a different damage pattern. In light of this fact, and considering that an AVU-bomb fuze with the typical fuze adaptor as observed on the chemical aerial munition of the Syrian Arab Republic was collected at the site (and is in a state consistent with having functioned as designed), the initiation through the fuze well by explosive charges was also deemed unlikely.

9.21 With respect to the munition parts obtained by the FFM during its activities related to this incident, specialists consulted by the IIT concluded that it was “more than likely” that some of the remnants in possession of the FFM (01SDS,¹⁰⁵ 01SDS(B),¹⁰⁶ 03SDS(B),¹⁰⁷ 07SDS,¹⁰⁸ 08SDS,¹⁰⁹ 12SDS,¹¹⁰ 09SDS,¹¹¹) originated from an M4000 chemical bomb.¹¹² Fragment 02SDS(B)¹¹³ instead is likely to have originated from a cluster munition and was therefore not considered by the IIT for the purpose of its investigation into the identification of perpetrators. While the Syrian Arab Republic declared converting some of its chemical munitions into conventional bombs, detonation of a converted M4000 (according to the specialists consulted) would result in a different fragmentation and damage pattern, with smaller fragments, sharper edges, and longer distances from the impact point. Videos obtained by the IIT and authenticated by a forensic institute as being footage from 30 March 2017 show two fragments (01SDS and 07SDS)¹¹⁴ as not corroded on that date, while the same items are clearly corroded in later images (taken on 5 July 2017). In this respect, similarly to the tail fin (01SDS(B)),¹¹⁵ the IIT confirmed that both these fragments were collected from the site of the 30 March 2017 attack, based on interviews and geolocation data obtained from digital forensics analysis.

9.22 Moreover, the specialists concluded that the fragments retrieved from the crater related to the incident of 30 March 2017 could not have originated from an

¹⁰⁵ FFM Report on the 30 March 2017 Incident in Ltamenah (S/1548/2017), Table 2. This item is identifiable as the casing of the rear section of an M4000.

¹⁰⁶ FFM Report on the 30 March 2017 Incident in Ltamenah (S/1548/2017), Table 2. This item is identifiable as the tail fin of an M4000.

¹⁰⁷ FFM Report on the 30 March 2017 Incident in Ltamenah (S/1548/2017), Table 2. This item is identifiable as the front of a filling plug of an M4000.

¹⁰⁸ FFM Report on the 30 March 2017 Incident in Ltamenah (S/1548/2017), Table 2. This item is identifiable as the filling hole and plug of an M4000.

¹⁰⁹ FFM Report on the 30 March 2017 Incident in Ltamenah (S/1548/2017), Table 2. This item is identifiable as the mixing paddle/arm of an M4000.

¹¹⁰ FFM Report on the 30 March 2017 Incident in Ltamenah (S/1548/2017), Table 2. This item is identifiable as the ring-shaped holder of the membrane of a binary chemical bomb built by the Syrian Arab Republic.

¹¹¹ FFM Report on the 30 March 2017 Incident in Ltamenah (S/1548/2017), Table 2. This deformed and damaged metal object is identifiable as a Soviet-made universal bomb fuze type AVU-ET, commonly used on a large number of aerial bombs, including chemical aerial bombs used by the Syrian Arab Republic.

¹¹² For a description of the relevant types of munitions, see above, Section III.7 (v).

¹¹³ FFM Report on the 30 March 2017 Incident in Ltamenah (S/1548/2017), Table 2.

¹¹⁴ FFM Report on the 30 March 2017 Incident in Ltamenah (S/1548/2017), Table 2.

¹¹⁵ FFM Report on the 30 March 2017 Incident in Ltamenah (S/1548/2017), Table 2. For imagery, see below, Annex 4.

MYM6000 since an MYM6000 is easily identified by the specific tail fin assembly and the distances between some of its components, key identification features are inconsistent with the observations made on the fragments recovered.

- 9.23 In light of its mandate to identify the origin of chemical weapons in the relevant incidents, and considering the forensic potential of the fragments in question, the IIT further considered whether fingerprints could be retrieved from the two filling plugs marked as 03SDS(B) and 07SDS by the FFM.¹¹⁶ Upon inspection, there was no indication of fingerprints on either. A swab is being preserved for possible DNA testing and reference.

(vi) Chemical analyses

- 9.24 The IIT further considered the analysis of samples related to the incident of 30 March 2017 requested by the FFM, together with its comparison of the results of the analysis of the samples from the 24 March 2017 incident in Ltamenah (as well as those related to the Khan Shaykhun incident of 4 April 2017). The analysis showed the presence of a collection of chemicals related to the chemical warfare agent sarin on various material and environmental samples, both from the crater and in the surrounding area, as summarised in the table of the FFM report.¹¹⁷
- 9.25 The additional analyses of samples related to the 30 March 2017 incident requested by the IIT in relation to certain items retrieved from the site—in particular the analysis of the interior of the two items identifiable as filling plugs of an M4000 and the one identifiable as part of a mixing paddle system of an M4000—showed chemicals relevant to the “signature” of binary sarin consistent with the precursors and the process used by the Syrian Arab Republic.
- 9.26 According to experts consulted by the IIT, two of the metal fragments (samples 03SDS(B) and 07SDS) are consistent with the front and rear filling plug and housing of an M4000 chemical aerial bomb. Due to the fact that both plugs were functionally intact, the IIT and the specialists involved in opening them considered it extremely unlikely that they would have been interfered with by wilfully adding the chemicals analysed. The third metal fragment (08SDS, as referred to in the same FFM report) is consistent with a part of the mixing system that is found inside an M4000 chemical weapon. This fragment was also considered of particular interest, as any substance found inside would have been protected from degradation and cross-contamination. By checking for the presence of chemicals inside those remnants, the IIT concluded that sarin (or sarin precursors) was not added after the fact to remnants of conventional aerial bombs.
- 9.27 In this respect, Annex 5 below describes the chemical analysis of the sarin samples of both the incidents of 24 and 30 March 2017 and the investigations undertaken by the IIT in that respect. On that basis, the IIT concludes that the chemical profile (i.e., a collection of chemicals) of the sarin used in Ltamenah on 30 March 2017 strongly correlates to the chemical profile expected for sarin produced through a binary reaction in which the key binary component (DF) is manufactured via routes, as well

¹¹⁶ FFM Report on the 30 March 2017 Incident in Ltamenah (S/1548/2017), Table 2.

¹¹⁷ FFM Report on the 24 and 25 March 2017 Incidents in Ltamenah (S/1636/2018*), Table 4.

as by using precursors and raw materials, pursued by the Syrian Arab Republic in its sarin programme. The findings of Annex 5 and the reasoning behind them are based on the extensive consultations with experts, assistance received from staff of the Secretariat, including the OPCW Laboratory, and the sources referred to therein.¹¹⁸

Concluding remarks on the incident

- 9.28 In light of the information obtained, considered in its totality, the IIT concludes that there are reasonable grounds to believe that, at approximately 6:00 on 30 March 2017, an Su-22 military airplane belonging to the 50th Brigade of the 22nd Air Division of the Syrian Arab Air Force, departing from Shayrat airbase, dropped an M4000 aerial bomb containing sarin in southern Ltamenah, affecting at least 60 persons.

¹¹⁸ Owing to some of the information presented and discussed therein, Annex 5 has been classified as “OPCW Highly Protected” and is available to all States Parties under the conditions provided for by the Convention.

IV. FACTUAL FINDINGS

10. GENERAL REMARKS

- 10.1 The IIT scrutinised the information obtained and reached its conclusions on the basis of a holistic assessment through a widely shared methodology, in compliance with the relevant provisions of the Convention, as well as international best practices of international fact-finding bodies and commissions of inquiry.¹¹⁹
- 10.2 As the investigation progressed, and various hypotheses were considered, the IIT gradually came to its conclusions as the only ones that could reasonably explain the information obtained from a variety of distinct sources, including experts and witnesses, taken as a whole. Other scenarios became increasingly less likely as not substantiated by the information obtained. As a result of its investigations, the IIT could not identify any other plausible explanation for the concurrence of information before it.

11. FACTUAL FINDINGS ON THE INCIDENTS OF 24 AND 30 MARCH 2017

- 11.1 In relation to the incidents of 24 and 30 March 2017, in light of the information obtained, considered in its totality, the IIT concludes that there are reasonable grounds to believe that, on both days, at approximately 6:00, M4000 aerial bombs containing sarin were dropped in southern Ltamenah by an Su-22 military airplane belonging to the 50th Brigade of the 22nd Air Division of the Syrian Arab Air Force, departing from Shayrat airbase.
- 11.2 The IIT has reached these conclusions by applying a holistic approach to the assessment of the information obtained related to the six areas of inquiry for each of the two incidents.¹²⁰
- 11.3 As more fully discussed below in Annex 5,¹²¹ the sarin in question is consistent with the sarin of the stockpile and the production processes of the Syrian Arab Republic. In particular, the IIT concluded that the chemical profile (i.e., a collection of chemicals) of the sarin used in Ltamenah on 24 and 30 March 2017 strongly correlates to the chemical profile expected for sarin produced through a binary reaction in which the key binary component (DF) is manufactured via routes, as well as by using precursors and raw materials, pursued by the Syrian Arab Republic in its sarin programme. The IIT received no information that the sarin found in Ltamenah could have been developed in this way elsewhere, yet resulting in the “signature” evidenced by that

¹¹⁹ See below, Annex 2.

¹²⁰ The six areas of inquiry are: (i) the context of the military activities in the area during the relevant time period, and the weather conditions; (ii) accounts and assessments of the munition found, its delivery, and the impact of the weapon; (iii) other information related to any aircraft that could have delivered the munition and its flight path; (iv) the effects of chemical weapons, i.e., the symptoms of any person affected; (v) remnants found at the site and their possible origin; and (vi) chemical analyses and their comparison with other relevant analyses of samples collected in the Syrian Arab Republic. See also paragraph 6 of Secretariat Note EC-91/S/3.

¹²¹ Owing to some of the information presented and discussed therein, Annex 5 has been classified as “OPCW highly protected” and is available to all States Parties under the conditions provided for by the Convention.

specific collection of chemicals. On the basis of the investigations of the IIT, this type of sarin is not known to have been developed and manufactured by States or entities other than the authorities of the Syrian Arab Republic.

- 11.4 In order to ascertain the possible origin of the sarin released during the March 2017 Ltamenah incidents, the IIT undertook a number of steps. Internal components of the two filling plugs and the remnant identified as part of the mixing paddle system of a chemical munition used on 30 March 2017 were sampled and analysed at the request of the IIT. Experts described the “intact (unopened) nature” of the two filling plugs, while the outer body of the part of the mixing paddle system was fractured open. All three remnants could be opened only with considerable difficulty. The likelihood that sarin (and/or other compounds suggesting the presence of sarin) of the type that would be consistent with the one developed by the Syrian Arab Republic could have been added to “stage” a chemical attack in all three remnants of munitions is therefore extremely low. In addition, when opening the part of the mixing paddle system, the IIT was able to observe grease, consistent, according to a specialist consulted by the IIT, with what would be required to lubricate the axis of a mixing paddle during the process of mixing the compounds of binary sarin. The IIT was provided with expert advice that the aerial munitions used on both 24 and 30 March 2017 are very likely M4000 aerial bombs, developed and built only by the Syrian Arab Republic. All of these elements, considered together, make any alternative explanation even less likely.
- 11.5 Five DF subsamples from the Syrian Arab Republic stockpiles were analysed by three OPCW designated laboratories by several different techniques. The IIT commissioned an OPCW designated laboratory to conduct distillation experiments with the DF subsamples from the Syrian Arab Republic stockpile.
- 11.6 To further assess the similarity between the DF used for the production of the binary sarin released during the March 2017 Ltamenah incidents and the DF from the Syrian stockpile, the IIT commissioned one OPCW designated laboratory to conduct sarin synthesis experiments using two selected DF subsamples with different compositions, as well as one in-house DF sample.
- 11.7 The chemicals observed in these experiments strongly correlate with those identified in samples from Ltamenah on 24 and 30 March 2017 (as well as those from the Khan Shaykhun incident on 4 April 2017).
- 11.8 The IIT further compared the chemical “signature” identified in the samples of the March 2017 Ltamenah incidents to results of analyses from samples from other sarin incidents. A comparison of the results of analysis of samples collected during the Ltamenah incidents, on the one side, with the analytical results of samples collected in relation to the Khan Shaykhun incident of 4 April 2017, on the other side, shows significant similarities. Indeed, the analytical results from these three incidents are consistent with sarin resulting from a binary process using the DF from the Syrian Arab Republic stockpile. Finding together certain chemicals in samples collected from the incidents suggests the same source of sarin. The finding of the same chemicals associated with sarin in these incidents, and previous ones in the territory of the Syrian Arab Republic to which the IIT had access, strongly indicates that the sarin used in all of them was manufactured through the same process.

- 11.9 The IIT nonetheless explored the possibility that the authorities of the Syrian Arab Republic lost control of sarin (or precursors from its stockpile) or of its aerial bombs, and that other actors took advantage of such loss. In this respect, it is important to recall that the Syrian Arab Republic has repeatedly stated that it has either completely destroyed its M4000 stockpile, or that the weapons were used (as repurposed conventional weapons) by 1 November 2013. The fragments retrieved for both incidents of 24 and 30 March 2017 are consistent with those aerial weapons. Moreover, the authorities of the Syrian Arab Republic have repeatedly asserted that its chemical stockpile was at all times under its full control. Despite several requests and inquiries, the IIT could not find any information supporting the hypothesis that the Syrian Arab Republic lost control of its chemical weapons stockpile, whether aerial bombs or sarin and its precursors.
- 11.10 The IIT further explored the possibility that armed groups could have retrieved used (fragments of) chemical weapons from sites where the authorities of the Syrian Arab Republic had tested chemical weapons prior to accession to the Convention in order to “stage” chemical attacks. Such an act could in theory have enabled them to place contaminated fragments at the locations of the incidents of 24 and 30 March 2017, for example, in order to “stage” a chemical attack there. In pursuing this line of inquiry, the IIT identified through its investigations only one such testing range where some warheads and aerial bombs were tested with sarin prior to and in 2009. The IIT obtained information that armed groups close to ISIL/Daesh reached the vicinity of this testing range in 2016 and early 2017, but was unable to confirm that they ever took over the facility. Moreover, the IIT considered the low likelihood of an armed group deciding to retrieve contaminated fragments from before 2009 or before, keeping them in the appropriate conditions, and then using them in March 2017 to “stage” an attack at the exact time when military airplanes of the Syrian Arab Republic were overflying the area of the incidents. However, such an armed group, even if it had succeeded in achieving all this through careful planning and execution, would not have been organised enough to ensure that the area was sufficiently secured to protect the fragments in question carefully collected and stored, or at least to ensure that an independent third party could sample the fragments shortly after the alleged incident. In other words, the planning and execution would have to have been carried out impeccably for the first part of this complex staging operation, while the group would have missed, or would not have been able to properly plan and carry out, the second–critical–aspect of the same operation (i.e., ensuring the proper chain of custody of the staged fragments and samples so as to promote their propaganda aims).
- 11.11 With specific reference to the incident of 24 March 2017, such an intricate staging exercise is also at odds with an almost complete lack of publicity, not consistent with the complex and lengthy efforts which would have been necessary to retrieve from elsewhere, store, and prepare contaminated fragments for use and collection as samples. Even assuming that this was a case of “staging” an incident that did not fully work out as originally intended (because, for instance, the contaminated sarin was released in the wrong place or at the wrong time), had an armed group gone through the trouble of retrieving, storing safely, and preparing sarin-contaminated fragments of a weapon, it remains unclear why it would have then failed to properly publicise the intended message.
- 11.12 In relation to the incident of 30 March 2017, the IIT further notes that the complex operations required to “stage” an attack by actors other than the Syrian Arab Republic

would have involved even concocting the addition of lubricant within the mixing paddle system akin to those of the M4000 aerial bomb models (which, again, were all declared destroyed or used by the Syrian Arab Republic before 1 November 2013).

- 11.13 Finally, the IIT obtained information that, in any event, none of the aerial munitions tested at the testing range mentioned above contained sarin, and that the M4000 model (which experts assessed as being most likely the model from which the fragments found for both the 24 and 30 March 2017 incidents derived) was not tested by the Syrian Arab Republic with sarin, but rather with sulfur mustard. In light of various factors, including these considerations, the IIT considered this “staging” scenario as implausible.
- 11.14 The considerations above, coupled with the type of crater shown in videos taken shortly after the incident and statements by witnesses to the event, also led the IIT to consider as extremely unlikely the possibility of an explosion staged on the ground with the correct amount of explosive to resemble non-conventional munitions. Such a hypothesis would not account for the overabundance of elements established during the IIT investigation.
- 11.15 In addition to the fragments and other environmental samples in their vicinity being contaminated with sarin, the IIT considered that witnesses, assessments by munitions specialists, and metallurgical analyses—taken together—confirm the findings related to the model of the weapon in question. The craters observed by witnesses and filmed in the hours and days after the two incidents took place are not compatible with conventional explosive aerial weapons. Moreover, the concurring information about the aircraft departing Shayrat airbase and flying in the vicinity and over Ltamenah and other related flight data are consistent with an aerial bombing at those times and locations.
- 11.16 The IIT also took into account that the symptoms exhibited by persons in the vicinity of the locations identified by the FFM for the incidents of 24 and 30 March 2017 are consistent with sarin exposure. Moreover, the IIT considered that the use of chemical weapons by the Syrian Arab Republic in Ltamenah in late March 2017 is compatible with the weather conditions prevailing in the area. Such use was also compatible with a military assessment of strategic considerations in the circumstances.
- 11.17 The IIT further took into account the likelihood that the three incidents in Ltamenah on 24, 25, and 30 March 2017 (as well as in Khan Shaykhun on 4 April 2017) were part of a single military campaign by the forces of the Syrian Arab Republic to recapture territory after the advance of armed groups towards Hama and the surrounding strategic areas.

12. FACTUAL FINDINGS ON THE INCIDENT OF 25 MARCH 2017

- 12.1 In relation to the incident of 25 March 2017, there are reasonable grounds to believe that a helicopter of the Syrian Arab Air Force, departing from Hama airbase, dropped a cylinder on the Ltamenah hospital at around 15:00. The cylinder broke into the hospital through its roof, ruptured, and released chlorine. The IIT has reached this conclusion by applying a holistic approach in assessing the information related to the six areas of inquiry for the incident.

- 12.2 While chlorine has many legitimate uses, gaseous chlorine is poisonous and is classified as a pulmonary irritant—its toxicity being a function of dosage and exposure time. The IIT took into account that the compounds identified in various samples are consistent with the use of chlorine gas as a weapon in the Ltamenah hospital on 25 March 2017, but that this element alone would not be decisive to reach a conclusion. Nonetheless, the IIT also considered the findings of the FFM in this respect, as well as all of the information underlying them, plus the additional expert reports, statements, and documents obtained during its own investigation.
- 12.3 With specific regard to the cylinder that hit the roof and entered into the hospital at its entrance, descriptions by witnesses, contemporaneous videos, and expert assessments all support the conclusion that this cylinder is consistent with chlorine cylinders known from other incidents and with the characteristics of the hole in the roof. The exterior of the cylinder in question is also consistent with a steel structure having been fitted around it to make it easier to deploy from a helicopter. In addition to this information, the IIT evaluated statements by witnesses to the event who described not just the events as they recounted experiencing them, but also the video of a helicopter attacking the hospital, and the flight data. The IIT also took into account information that helicopters based out of Hama airbase, located about 24 kilometres south-east of Ltamenah, and from which early warning systems describe the helicopter in question as originating, consisted primarily of Mi-8 helicopters, and that no entity opposed to the Syrian Arab Republic used aerial assets in that area in March 2017.
- 12.4 The descriptions of how the cylinder impacted and ruptured, releasing gas, further support this conclusion.
- 12.5 The IIT further considered the likelihood that the incident in Ltamenah on 25 March 2017, as mentioned above, was part of the same single military campaign by the forces of the Syrian Arab Republic as the attacks of 24 and 30 March (as well as that on Khan Shaykhun of 4 April 2017). In this context, the IIT considered the military value of the areas threatened by the armed groups' advance, and the assessment made by a military expert advising the IIT in that respect.

13. GENERAL CONCLUDING OBSERVATIONS

- 13.1 The IIT is aware of general information related to internal investigations carried out by Syrian authorities that could be relevant to the use of chemical weapons.¹²² Moreover, information was available about the involvement of a “magistrate” in at least one investigation related to the retrieval of unknown chemicals in the Aleppo Governorate in early 2017. However, the IIT did not obtain or receive any information, though it specifically requested it, as to investigations and criminal prosecutions by the Syrian authorities into the three incidents in Ltamenah of March 2017.
- 13.2 During its investigation, the IIT also did not obtain any information that would indicate that rogue units or individuals used chemical weapons in the manner described above in these three incidents.

¹²² See, e.g., Fourth Report of the JIM, S/2016/888, dated 21 October 2016, paragraph 31 (related to events prior to the incidents of Ltamenah in March 2017).

- 13.3 For chemical weapons to be used in the incidents described above, orders would be required. Orders for chemical attacks were issued directly by the Commander in Chief of the Syrian Arab Armed Forces, though he may have delegated such authority. The IIT did receive some information indicating that the use of strategic weapons, which would have included chemical weapons, could only be approved for use by the Commander in Chief of the Syrian Armed Forces and were used only in instances of elevated (strategic) importance. However, the IIT could not draw definitive conclusions to the requisite degree of certainty as regards the specific chain of command for the orders in these three incidents, although it is recognised that, even if there is delegation, responsibility always rests with the higher authority.

14. SUMMARY OF FACTUAL FINDINGS

In light of its mandate to identify the perpetrators of the use of chemical weapons in the Syrian Arab Republic by identifying and reporting on all information potentially relevant to the origin of those chemical weapons in the three incidents under consideration, the IIT concludes that there are reasonable grounds to believe that the Syrian Arab Republic used chemical weapons. In particular:

- (a) At approximately 6:00 on 24 March 2017, an Su-22 military airplane belonging to the 50th Brigade of the 22nd Air Division of the Syrian Arab Air Force, departing from Shayrat airbase, dropped an M4000 aerial bomb containing sarin in southern Ltamenah, affecting at least 16 persons.
- (b) At approximately 15:00 on 25 March 2017, a helicopter of the Syrian Arab Air Force, departing from Hama airbase, dropped a cylinder on the Ltamenah hospital. The cylinder broke into the hospital through its roof, ruptured, and released chlorine, affecting at least 30 persons.
- (c) At approximately 6:00 on 30 March 2017, an Su-22 military airplane belonging to the 50th Brigade of the 22nd Air Division of the Syrian Arab Air Force, departing from Shayrat airbase, dropped an M4000 aerial bomb containing sarin in southern Ltamenah, affecting at least 60 persons.

ANNEXES

- Annex 1: Information Management and Other Internal Procedures
- Annex 2: Approach to Obtaining and Securing Information
- Annex 3: Summary of Contacts with Representatives of the Syrian Arab Republic Relevant to the Work of the Investigation and Identification Team
- Annex 4: Imagery
- Annex 5: Chemical Analysis (Sarin)
- Annex 6: Redacted Paragraphs

Annex 1

INFORMATION MANAGEMENT AND OTHER INTERNAL PROCEDURES

1. As explained in the Note by the Technical Secretariat entitled “Work of the Investigation and Identification Team Established by Decision C-SS-4/DEC.3 (dated 27 June 2018)” (EC-92/S/8, dated 3 October 2019), since the activities of the Investigation and Identification Team (IIT) require vast amounts of information to be collected and created, seamless and robust procedures are required to allow for the secure, consistent, and transparent management of such information, from the time of its collection or creation through its ultimate preservation, transfer, or destruction. In setting up these procedures, confidentiality and security requirements deemed necessary for the storage and use of the information material provided by other entities were taken into account.
2. Further to consultations within the Technical Secretariat, the IIT therefore developed internal procedures, in particular relating to information management, investigations, documentation, and chain of custody. Starting from the premise that access to information within the IIT is on a need-to-know basis, effective and secure information handling is considered a key factor for the IIT to fulfil its mandate by: (a) ensuring the safety and security of the IIT’s activities, personnel, and third parties; (b) maintaining the integrity of its records and information; (c) ensuring effective and timely search, analysis, and dissemination of information; and (d) increasing the awareness of confidentiality requirements by promoting correct information handling practices.
3. Established internal procedures related to information management cover all kinds of information material created, obtained, and managed by the IIT, which may include both digital and physical material. Provisions are made to ensure the confidentiality of both categories of material in terms of organisational, physical, and information security measures.
4. In particular, and in addition to organisational and physical arrangements, the IIT’s information management systems and its file storage system reside in the IIT Secure Network (ISN), designed and built in compliance with the OPCW Security Critical Network policies and requirements for the protection of OPCW confidential material. The ISN is accessible by designated terminals possessing appropriate security and confidentiality measures, which are “air gapped”, with no network interface.
5. The IIT’s internal procedures provide for the registry procedure, the structure of the central repository for the IIT’s records and information, access permission based on roles, responsibilities, the repository’s contents, as well as the retention schedule of IIT records and information. Such procedures ensure that the chain of custody of information and the audit trail of records are properly captured, in order to maintain their continued integrity and authenticity. The IIT has developed, and continues to monitor, its own workflow in managing information, which includes creating, receiving, transmitting, reproducing, scanning, printing and sharing records by external storage devices, email, shared drives, and team sites. The IIT has further implemented steps to capture and protect results from open source searches directly

related to the identification of perpetrators within the IIT's mandate. A back-up plan was implemented in order to enhance security.

6. The IIT has further designed, within the ISN, an investigation management system to support investigation activities. This investigation management system is also meant to apply to investigation and analysis activities in order to ensure the authenticity and reliability of records. The system, accessible through specific encrypted terminals in the ISN, is designed to allow the IIT to securely and methodically keep the records and information associated with investigation and analysis activities, add relationships among items, and provide feedback on investigation steps. All electronic information collected and generated by the IIT as a result of its investigation activities is to be stored in the evidence management system. The documentary physical records—kept in a safe—are to be scanned and saved in the system, unless a different procedure is required in light of the nature of the record.
7. Access control functions in this customised investigation management system allow IIT personnel to access records only with specific pre-defined permissions (including permissions to create, read, modify, and delete records). To ensure that no records of the IIT are deleted from the system or lost, the design provides that only pre-authorized IIT personnel are able to delete records. The system is further designed to ensure audit trails that cannot be modified or removed. IIT personnel are trained in the use of the system as required and maintain awareness of the necessary security and confidentiality measures taken to protect the information material.
8. The IIT takes specific care to ensure that issues that may arise because of the different languages spoken by the investigators, on the one side, and interviewees, on the other, are properly addressed. Apart from having an interpreter present during interviews, and in addition to summaries of the interviews prepared by the investigators, full transcripts of the interviews are later translated by professionals into English, so as to be able to properly check the original interpretation. A transcript of the interview carried out by the IIT is produced through a process to accurately identify any discrepancy not easily captured when “live” interpretation of an interview is done (consecutively or simultaneously).

Annex 2

APPROACH TO OBTAINING AND SECURING INFORMATION

1. The investigative activities of the Investigation and Identification Team (IIT) on the incidents in Ltamenah on 24, 25, and 30 March 2017 included gathering and assessing information provided to it by individuals, local entities, States Parties, and other international, regional, and local actors as well as, where applicable and relevant, technical and scientific examinations and analyses to identify the origin of the chemicals used, munition markings and physical characteristics, and technical information and/or extrapolations related to delivery means, such as aircraft flight paths and munition trajectories. The activities further included interviews with alleged victims and other persons who might have witnessed the incidents, with experts in the various subjects relevant to the investigation, and evaluation of open source material.¹²³ In fulfilling its mandate, the IIT collected and analysed information and material from any relevant source in addition to the information already obtained from the OPCW Fact-Finding Mission (FFM), also in order to determine the relevance, probative value, and reliability of the information, as well as the credibility of the source.
2. The IIT itself interviewed 20 persons of interest, including alleged victims, during this phase of its work. Since the incidents under investigation took place in the same geographical area and within seven days of each other, most of the persons of interest were able to provide information for more than one incident. These interviews were considered in conjunction with statements previously provided to the FFM and other entities. In relation to other entities that were willing to provide information, or provide leads for the investigation, the general approach of the IIT has been to request access to information that the IIT considered could be obtained from those entities, and to assess it together with the rest of the information already at the IIT's disposal. In its investigation, the IIT reached out, among others, to the following entities:¹²⁴ The Center for Advanced Defense Studies (C4ADS); Chemical Violations Documentation Center of Syria (CVDCS); Commission for International Justice and Accountability (CIJA); Europol Analysis Project on Core International Crimes (AP CIC); European Union Satellite Centre; Global Public Policy Institute (GPPi) – Peace and Security; Human Rights Watch; Independent International Commission of Inquiry on the Syrian Arab Republic; Open Society Justice Initiative; Peace SOS; Syria Civil Defence (SCD); Syria Justice and Accountability Centre; Syrian Archive; Syrian Network for Human Rights (SNHR); Syrian NGO Alliance, World Meteorological Organization (WMO).

¹²³ See also Note EC-92/S/8 (dated 3 October 2019) by the Technical Secretariat (hereinafter “the Secretariat”).

¹²⁴ The IIT does not publicly list entities that have not provided consent to be named. This list also does not include OPCW designated laboratories and other laboratories or specialised institutions that have been providing technical and scientific expertise in the course of the investigation.

3. When entities willing to assist the IIT did not have relevant information directly, but could put the IIT in contact with persons of interest, the IIT proceeded with requesting this type of facilitation on the basis of the following understanding:
 - (a) the IIT would not pay, in any way, fees or other forms of remuneration for the support rendered by these entities;
 - (b) the entity in question would ensure that no person had been unduly influenced or pressured to provide information or extend his/her cooperation for the purpose of the IIT's investigations; and
 - (c) with a view to protecting persons of interest who might be at risk because of their interaction with the IIT, sufficient guarantees would be provided to protect confidentiality as well as the privacy of these persons, including their identification data and statements.
4. Unless specific circumstances dictated otherwise, the IIT treated all information obtained from external entities and individuals as "OPCW Highly Protected", the highest classification category within the OPCW confidentiality regime, and restricted its access on the basis of the need-to-know principle in accordance with the Confidentiality Annex to the Chemical Weapons Convention (hereinafter "the Convention") and the OPCW Policy on Confidentiality.¹²⁵
5. The IIT treated the information collected through a widely shared methodology among investigatory bodies, including international fact-finding bodies and commissions of inquiry, in particular with regard to the chain of custody of the samples and material from the three incidents in Ltamenah in March 2017 which were further analysed by the IIT.
6. In relation to the treatment of specific samples from the moment of their collection or receipt, these samples were treated so as to ensure their reliability, including during their transportation to the OPCW Laboratory in the Netherlands and from there to OPCW designated laboratories. This was also done in accordance with the Director-General's responsibility under paragraph 56 of Part II of the Verification Annex to the Convention and corresponding applicable internal procedures and practices of the Secretariat.¹²⁶
7. For such material and samples, the chain of custody was thus maintained and documented by the Secretariat from the moment of collection or receipt. For instance,

¹²⁵ See paragraph 4.1 of Part V and paragraphs 3.1 to 3.4 of Part VI of the OPCW Policy on Confidentiality (C-I/DEC.13/REV.2, dated 30 November 2017) as well as subparagraph 2(h) of the Confidentiality Annex to the Convention.

¹²⁶ Paragraph 56 of Part II of the Verification Annex states, in the relevant part, that "[t]he Director-General shall have the primary responsibility for the security, integrity and preservation of samples and for ensuring that the confidentiality of samples transferred for analysis off-site is protected". With specific respect to the storage conditions in the OPCW Laboratory and the degradation of samples to be analysed, see further "Advice on chemical weapons sample stability and storage provided by the Scientific Advisory Board of the Organisation for the Prohibition of Chemical Weapons to increase investigative capabilities worldwide", also available in *Talanta*, vol. 188 (2018), pages 808, at 810 and 811.

once in the custody of the Secretariat, samples were treated according to OPCW procedures to ensure, from this point on, their integrity, as well as their security, preservation, and confidentiality. At the OPCW Laboratory, the samples were prepared for off-site analysis at two OPCW designated laboratories in accordance with paragraph 57 of Part II of the Verification Annex. The sample processing included verification of their identity, i.e., through sample codes, item descriptions, and seal numbers; solvent extraction and/or splitting into fresh primary containers; packaging of sample splits together with positive and negative control samples; and detailed analysis of positive and negative control samples before dispatch. Internal established procedures for splitting, packing, and transportation to the OPCW designated laboratories were applied and all steps of the process were documented.

8. Upon arrival at the OPCW designated laboratories, the identity and seal integrity of the samples are once again verified against the accompanying chain of custody form. All samples (i.e., authentic and control samples) are prepared and analysed in accordance with instructions issued by the Head of the OPCW Laboratory on behalf of the Director-General. This is in the form of a document setting out the scope of analysis, which also contains the identification data for the samples and their corresponding tamper-proof seal numbers.
9. The OPCW designated laboratories, which operate under a quality system in accordance with International Organization for Standardization/International Electrotechnical Commission standard ISO/IEC 17025, are also obliged to maintain the chain of custody of the samples throughout their processes. All activities performed by the OPCW designated laboratories on behalf of the OPCW must conform to the terms and conditions of the technical arrangements between the Secretariat and the OPCW designated laboratories.
10. In relation to the period between the alleged incident and the receipt of the samples by the Secretariat, the following remarks summarise the approach taken by the IIT in conformity with the Convention. In the vast majority of incidents of chemical weapons use during armed conflict, no independent authority will be able to gather samples before one party to the conflict (and/or other third parties) has access to the area in question. Thus, investigations of the type required of the IIT under the decision of the Conference of the States Parties (hereinafter “the Conference”) entitled “Addressing the Threat from Chemical Weapons Use” (C-SS-4/DEC.3, dated 27 June 2018) (hereinafter “the Decision of 27 June 2018”) must rely on other elements to verify the chain of custody and the credibility of such information.
11. Since, because of the ongoing conflict in the relevant area, access by the Secretariat to the sites of the incidents shortly after their occurrence was not possible, the IIT has consistently ensured that samples and other material taken by other entities were supported, to the extent possible, by documents, photographs, video footage, forensic analyses, and/or witness testimony. This exacting approach has been applied consistently in light of the fact that it is the combination, consistency, and

corroboration of all of the information gathered as a whole, rather than single pieces of evidence, which form the basis of the IIT's conclusions.¹²⁷

12. In this context, the IIT also took note of the decision by the Conference entitled "Sampling and Analysis during Investigations of Alleged Use of Chemical Weapons" (C-I/DEC.47, dated 16 May 1997) and applied it *mutatis mutandis* to the type of investigations required of the IIT. This decision is premised on the recognition that, in cases of alleged use, investigation teams may not be able to arrive at the site, and thus collect samples, immediately after such alleged use (Annex, Section I.1). Nonetheless, the decision recognises the ability of the Secretariat to conduct its investigation under such circumstances.
13. This is the case in the type of investigations conducted by the IIT as required by paragraph 10 of the Decision of 27 June 2018, where the Conference, fully cognizant of the similar challenges faced by the FFM in conducting its work, nonetheless required the IIT to work on the basis of the FFM's findings.
14. Moreover, these challenges are taken into account in long-standing applicable internal Secretariat procedures concerning evidence collection, documentation, chain of custody, and preservation during an investigation of alleged use of chemical weapons, which provide guidance for these types of situations and were applied *mutatis mutandis* to the IIT's investigations.

¹²⁷ See, for instance, Note S/1654/2018 (dated 20 July 2018), pages 3, 9-10, and 21. The IIT further notes that this approach follows the practice of international and domestic investigations in these types of events.

Annex 3

SUMMARY OF CONTACTS WITH REPRESENTATIVES OF THE SYRIAN ARAB REPUBLIC RELEVANT TO THE WORK OF THE INVESTIGATION AND IDENTIFICATION TEAM

1. Delegations representing the OPCW Technical Secretariat (hereinafter “the Secretariat”) and the National Authority of the Syrian Arab Republic had a meeting in Beirut, Lebanon from 4 to 8 February 2019. During the meeting, the Coordinator of the Investigation and Identification Team (IIT) made a presentation on the mandate and work of IIT. The representatives of the National Authority expressed their disagreement with the decision by the Conference of the States Parties entitled “Addressing the Threat from Chemical Weapons Use” (C-SS-4/DEC.3, dated 27 June 2018) (hereinafter “the Decision of 27 June 2018”).
2. The Secretariat continued to seek substantive engagement with representatives of the Syrian Arab Republic on all issues through the agreed “Structured Dialogue”. Within this framework, the Secretariat proposed an agenda and list of participants for a second round of high-level consultations to take place in Damascus from 8 to 10 May 2019. In order to advance the work of the consultations, it was proposed that the Coordinator of the IIT be included in these talks. In response, the Syrian Arab Republic reiterated its position that it did not recognise the Decision of 27 June 2018 and that, consequently, the Syrian Arab Republic would not issue a visa to the Coordinator of the IIT to visit Damascus, nor recognise the IIT and its mandate.¹²⁸
3. On 9 May 2019, the Director-General sent a letter to the Deputy Minister of Foreign Affairs and Expatriates of the Syrian Arab Republic, H.E. Dr Faisal Mekdad, inviting the Syrian Arab Republic to reconsider its position. In this letter, the Director-General also communicated his decision to postpone the second round of consultations under the “Structured Dialogue”, and invited a delegation of the Syrian Arab Republic to The Hague for further consultations. Through a letter dated 13 June 2019, H.E. Dr Mekdad reiterated the previous position of the Syrian Arab Republic.
4. On 28 June 2019, the Secretariat circulated a Note entitled “Work of the Investigation and Identification Team Established by Decision C-SS-4/DEC.3 (dated 27 June 2018)” (EC-91/S/3, dated 28 June 2019) to all States Parties outlining the mandate and methods of work of the IIT, as well as stating that the IIT expected full good-faith cooperation from them all, in particular as regards the provision of relevant information and access to relevant places and persons.
5. On 2 September 2019, the Coordinator of the IIT sent a letter to H.E. Ambassador Bassam Sabbagh, Permanent Representative of the Syrian Arab Republic to the OPCW, stating that the IIT would welcome information potentially relevant to establish the origin of the chemical weapons used and useful to identify perpetrators in those incidents falling within the IIT’s purview (including delivery methods and background information related to actors that might have the capabilities to use such

¹²⁸ See, for example, Statement by Permanent Representative of the Syrian Arab Republic to the OPCW (EC-91/NAT.41, dated 10 July 2019).

weapons), evidence suggesting or contradicting attribution to certain actors, as well as any element related to the relevance, probative value, and reliability of such information. The IIT further welcomed any information that the Syrian Arab Republic may be able to provide on any criminal investigation and/or proceedings undertaken in relation to the use of chemical weapons within its territory, and in particular in relation to the nine incidents under investigation, as well as on the relevant penal legislation applicable to such cases.

6. On 3 October 2019, another Note by the Secretariat entitled “Work of the Investigation and Identification Team Established by Decision C-SS-4/DEC.3 (dated 27 June 2018)” (EC-92/S/8, dated 3 October 2019) was circulated to all States Parties, explicitly outlining the IIT’s internal practices relating to information management, investigations, documentation, and chain of custody. The Note specifically welcomed input from States Parties.
7. On 23 October 2019, the Director-General sent a letter to the Deputy Minister of Foreign Affairs and Expatriates of the Syrian Arab Republic, H.E. Dr Faisal Mekdad, reiterating that cooperation from the Syrian Arab Republic was expected and inviting him to provide the IIT with any relevant information on “the relevance, probative value, and reliability of the information potentially relevant to establish the origin of the chemical weapons and useful to identify perpetrators”.
8. On 12 December 2019, the Director-General forwarded to H.E. Dr Faisal Mekdad a note by the Coordinator of the IIT once again seeking the cooperation of the Syrian Arab Republic on the IIT activities consistent with paragraph 7 of Article VII of the Chemical Weapons Convention. The note of the IIT specifically set out four “headings” (i.e., scenarios) under which the investigations of the IIT were being pursued, indicating lines of inquiry that were being undertaken and requesting any information that the authorities of the Syrian Arab Republic may have had in respect to them. The IIT reiterated once again the benefit of it meeting with key representatives of the Syrian Arab Republic, at their convenience and at a location of their choosing, to discuss the progress of the investigation and the provision of other information, including access to locations in the Syrian Arab Republic.



OPCW

Organisation for the Prohibition of Chemical Weapons

Director-General

The Hague, 9 May 2019

L/ODG/219297/19

Dear Vice-Minister,

I refer to your letter N° 95 dated 23 April 2019, conveyed to the Organisation for the Prohibition of Chemical Weapons (the “OPCW”) on the same date, which I have read with attention.

Since the day I took office as Director-General, I have made the Technical Secretariat’s (the “Secretariat”) engagement with the Syrian Arab Republic on chemical weapons issues a priority, in order to find ways, together with you, to address and resolve these issues in a concerted and collaborative manner. The Secretariat and the Syrian Arab Republic are bound to resolve these issues under the Convention, the relevant decisions of the OPCW’s Policy-Making Organs, and the relevant Resolutions of the United Nations Security Council.

In October 2018, you welcomed my Chief of Cabinet in Damascus. In November, I invited you to the 24th Session of the Conference of the States Parties. On this occasion, we met and exchanged views on the Syrian Arab Republic’s chemical weapons issues. You then described these talks as “new beginnings” in relations between the Secretariat and the Syrian Arab Republic. We both emphasised that we should be able to address all issues, no matter how difficult or complex, and that the Secretariat would keep the States Parties to the Convention informed. At that time, we concurred on having our respective delegations meet in early 2019 to start defining the framework and scope of discussions that would enable us to address all issues in a comprehensive and structured manner.

In February 2019, a delegation from the Secretariat met in Beirut with a delegation from the Syrian Arab Republic. All chemical weapons issues were addressed at that time, namely, the methods of work of the Fact-Finding Mission (FFM), the activities of the Declaration Assessment Team (DAT), and the biannual visits to the Scientific Studies and Research Centre (SSRC). Additionally, the Secretariat provided a briefing on the activities of the Investigation and Identification Team (IIT). On this occasion, the Syrian delegation welcomed the idea of having the Secretariat come to Damascus to discuss the IIT’s activities. Subsequently, the Secretariat held a briefing for States Parties on 21 February to inform them of the outcome of the discussions.

...

H. E. Dr Faisal Mekdad
Deputy Foreign Minister
Ministry of Foreign Affairs and Expatriates
Syrian Arab Republic

Following these meetings, in March 2019, the Secretariat hosted the 20th round of DAT consultations to identify ways forward in resolving the gaps, inconsistencies, and discrepancies in the Syrian initial declaration and subsequent submissions. The work on outstanding issues was reviewed and reprioritised, and a plan of activities was discussed, with the goal of accelerating progress. Subsequently, the DAT was deployed to Damascus in April for its 21st round of consultations during which activities were undertaken in line with the aforementioned plan of activities.

This round of consultations was supposed to be followed by an FFM deployment to Damascus to further investigate the alleged incident reported by the Syrian Arab Republic to have occurred in Aleppo in November 2018. Due to a late request of change of plans by the Syrian National Authority, and for subsequent security and logistical implications of this late request, the Secretariat decided to postpone the mission. The Secretariat is looking into possibilities to plan a new deployment and will coordinate with the Syrian National Authority in due time.

Following up on all these steps, the Secretariat sent Note Verbale NV/ODG/219065/19, dated 18 April 2019, to the Syrian Permanent Representation to the OPCW to propose a draft agenda for the next high-level consultations to take place in Damascus from 8 to 10 May. The agenda the Secretariat proposed in this Note Verbale was similar to the one agreed upon for the consultations in Beirut in February. It included the list of the members of the Secretariat's delegation. The purpose of these consultations was to further engage in addressing the different missions under the Secretariat's mandate in the Syrian Arab Republic.

It is in this context that your above-mentioned letter arrived. While emphasising your high appreciation "for [our] genuine desire to move forward with our ongoing cooperation", you also stated that, due to Syria's position on the decision adopted by the Conference of the States Parties at its Fourth Special Session, you "refuse to deal with the decision or any subsequent implications and effects." Proceeding from this, while welcoming the Secretariat delegation, you informed me of your denial of a visa for the Coordinator of the Investigation and Identification Team (IIT). This is a regrettable development.

The decision adopted on 27 June 2018 by the Conference of the States Parties, in conformity with the rules of procedure of the Conference, applies to the Secretariat and all States Parties, including the Syrian Arab Republic. Hence, it is the obligation of the Secretariat to pursue with its implementation. I therefore invite you to assist and cooperate with the Secretariat in this process. Accordingly, I invite you to reconsider your position.

On 3 May, I received the Ambassador, Permanent Representative of the Syrian Arab Republic to the OPCW, to convey my disappointment in relation to this latest development, and to inform of my decision to postpone our high-level consultations in Damascus. I hope that in the coming days we can find a mutually-agreeable solution so that this mission, and our ongoing work, can go forward. The Secretariat remains available for further discussions in The Hague. In the meantime, the Secretariat will continue to inform States Parties and the United Nations Secretary General of the developments of our ongoing engagements.

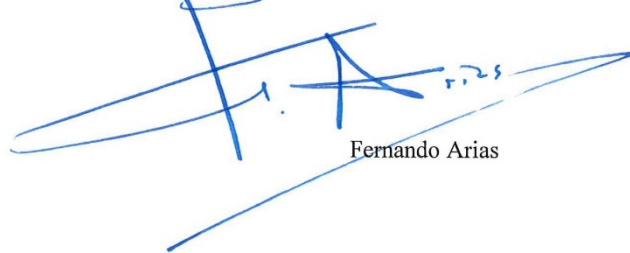
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I would like to avail myself of this opportunity to reiterate my sincere and genuine wish to continue working with you and the Syrian Arab Republic on addressing issues related to Syria's implementation of the Convention. I believe that a sustained and structured dialogue will contribute towards this joint endeavour. Along all the frequent contacts that the Secretariat has kept with your representatives at the OPCW, I remain at your disposal and look forward to engaging further on this path.

Please accept, Excellency, the assurances of my highest consideration.

With kind regards Yours sincerely,

A handwritten signature in blue ink, appearing to read 'F. Arias', is written over a large, sweeping blue flourish that extends across the page.

Fernando Arias

ORGANISATION FOR THE PROHIBITION OF CHEMICAL WEAPONS



L/IIT/220593/19

The Hague, 2 September 2019

OPCW

Johan de Wittlaan 32

2517 JR The Hague

The Netherlands

Telephone + 31 (0)70 416 33 00

Fax + 31 (0)70 306 35 35

www.opcw.org

Your Excellency,

I have the honour to write in my capacity as Coordinator of the OPCW Technical Secretariat's Investigation and Identification Team.

As you are aware, on 27 June 2018 the Conference of the States Parties of the Organisation for the Prohibition of Chemical Weapons, at its Fourth Special Session, adopted the decision "Addressing the Threat from Chemical Weapons Use", C-SS-4/DEC.3. In paragraph 10 of this decision, the Conference decided that the Secretariat put in place arrangements to identify the perpetrators of the use of chemical weapons in the Syrian Arab Republic by identifying and reporting on all information potentially relevant to the origin of those chemical weapons in instances in which the OPCW Fact-Finding Mission has determined that use or likely use occurred, and cases for which the JIM did not issue a report. The Secretariat therefore established the IIT, which has started its work with a view to identifying individuals or entities directly or indirectly involved in certain instances of chemical weapons' use in the Syrian Arab Republic.

The IIT, an integral part of the Secretariat and functioning under the authority of the Director-General, conducts its operations in an independent, impartial, and objective manner, as set out in the Note by the Secretariat entitled "Work of the Investigation and Identification Team Established by Decision C-SS-4/DEC.3 (Dated 27 June 2018)", EC-91/S/3, of 28 June 2019 and circulated for the information of States Parties to the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction. In order to gather information and conduct investigations, the IIT is establishing contacts, *inter alia*, with States Parties, seeking their cooperation and provision of assistance pursuant to paragraph 7 of Article VII of the Convention.

As also explained in Note EC-91/S/3 of 28 June 2019, the IIT has preliminarily decided to focus its investigations on nine incidents for which the OPCW Fact-Finding Mission has determined use or likely use of a chemical weapons and the OPCW-UN Joint Investigative Mechanism has not issued findings attributing responsibility. These are, in chronological order:

1. Al-Tamanah, 12 April 2014;¹
2. Kafr-Zita, 18 April 2014;²
3. Al-Tamanah, 18 April 2014;³
4. Marea, 1 September 2015;⁴
5. Ltamenah, 24 March 2017;⁵
6. Ltamenah, 25 March 2017;⁶
7. Ltamenah, 30 March 2017;⁷
8. Saraqib, 4 February 2018;⁸
9. Douma, 7 April 2018.⁹

In carrying out its task of considering all available information on different hypotheses and scenarios, the IIT would in particular appreciate access to any material in the possession of the Syrian Arab Republic in relation to one or more of these incidents. In particular, the IIT would welcome information potentially relevant to establish the origin of the chemical weapons used in those instances and useful to identify perpetrators (including delivery methods and background information related to actors that might have the capabilities to use such weapons), evidence suggesting or contradicting attribution to certain actors, as well as any element related to the relevance, probative value, and reliability of such information as well as the credibility of the source(s).

With specific reference to paragraph 1 of Article VII of the Convention, the IIT would further welcome any information that the Syrian Arab Republic may be able to provide on any criminal investigation and/or proceedings undertaken in relation to the use of chemical

¹ Ref.: Note by the Technical Secretariat, Second Report of the OPCW Fact-Finding Mission in Syria Key Findings, S/1212/2014.

² Ref.: Note by the Technical Secretariat, Second Report of the OPCW Fact-Finding Mission in Syria Key Findings, S/1212/2014.

³ Ref.: Note by the Technical Secretariat, Second Report of the OPCW Fact-Finding Mission in Syria Key Findings, S/1212/2014.

⁴ Ref.: Note by the Technical Secretariat, Report of the OPCW Fact-Finding Mission in Syria Regarding Alleged Incidents in Marea, Syrian Arab Republic August 2015, S/1320/2015.

⁵ Ref.: Note by the Technical Secretariat, Report of the OPCW Fact-Finding Mission in Syria Regarding Alleged Incidents in Ltamenah, the Syrian Arab Republic 24 and 25 March 2017, S/1636/2018.

⁶ Ref.: Note by the Technical Secretariat, Report of the OPCW Fact-Finding Mission in Syria Regarding Alleged Incidents in Ltamenah, the Syrian Arab Republic 24 and 25 March 2017, S/1636/2018.

⁷ Ref.: Note by the Technical Secretariat, Report of the OPCW Fact-Finding Mission in Syria Regarding Alleged Incidents in Ltamenah, the Syrian Arab Republic, 30 March 2017, S/1548/2017.

⁸ Ref.: Note by the Technical Secretariat, Report of the OPCW Fact-Finding Mission in Syria Regarding an Alleged Incident in Saraqib, Syrian Arab Republic on 4 February 2018, S/1626/2018.

⁹ Ref.: Note by the Technical Secretariat, Report of the Fact-Finding Mission Regarding the Incident of Alleged Use of Toxic Chemicals as a Weapon in Douma, Syrian Arab Republic, on 7 April 2018, S/1731/2019.

weapons within its territory, and in particular in relation to the nine aforementioned incidents, as well as on the relevant penal legislation applicable to such cases.

The IIT would therefore welcome communications, addressed to the email address santiago.onate@opcw.org, so as to discuss the most appropriate way of sharing any information that your Government may possess relevant to the IIT focus of work. My team and I would be of course available for any clarification you might deem necessary in this respect.

Please accept, Your Excellency, the assurances of my highest consideration.

[SIGNED IN ORIGINAL]

H.E. Santiago Oñate-Laborde

IIT Coordinator

H.E. Mr Bassam Sabbagh

Permanent Representative of the Syrian Arab Republic to the OPCW
President Kennedylaan 19
2517 JK The Hague



OPCW

Organisation for the Prohibition of Chemical Weapons

Director-General

The Hague, 23 October 2019
L/ODG/221311/19

Dear Vice-Minister,

Excellency,

I have the honour of addressing this letter following the debate at the Ninety-Second Session of the Executive Council (EC-92) and my prior requests, to all concerned States Parties, to provide their full cooperation to the Investigation and Identification Team (IIT).

As you are aware, on 28 June 2019 and 3 October 2019 the Technical Secretariat circulated two Notes (respectively, EC-91/S/3 and EC-92/S/8), with the aim of informing all States Parties about the establishment and progress of the IIT in fulfilling its mandate as required by Decision "Addressing the Threat from Chemical Weapons Use", C-SS-4/DEC.3 (dated 27 June 2018), and requesting input and assistance from all States Parties.

During the debates at EC-92, reference was also made to the findings of the Fact-Finding Missions (FFM) which – pursuant to C-SS-4/DEC.3 – the IIT is required to use as points of departure in its independent investigations, to the extent that the use or likely use of chemical weapons was determined in certain incidents. As reiterated in EC-92/S/8, the Secretariat is seeking cooperation and provision of assistance from States Parties. This cooperation could include views on the relevance, probative value, and reliability of the information potentially relevant to establish the origin of the chemical weapons and useful to identify perpetrators. In light of remarks made during EC-92, I would like to invite the Syrian Arab Republic to provide the Secretariat (according to modalities agreeable to you) with any relevant input and information that the Syrian Arab Republic may have in its possession. Furthermore the Secretariat, welcomes any technical assistance your Government may wish to provide on the best methodologies to carry out investigations on the incidents mandated by the Conference of States Parties. Your cooperation with the Secretariat will be highly appreciated. The Coordinator of the IIT remains of course available for any clarification you might deem necessary in this respect.

Please accept, Excellency, the assurances of my highest consideration.

With kind regards

Fernando Arias

H. E. Dr Faisal Mekdad
Deputy Foreign Minister
Ministry of Foreign Affairs and Expatriates
Syrian Arab Republic



OPCW

Organisation for the Prohibition of Chemical Weapons

Director-General

The Hague, 19 December 2019

L/ODG/221960/19

Dear Vice-Minister,

Excellency,

I refer to the work of the Investigation and Identification Team (IIT), established pursuant to paragraph 10 of the Decision adopted by the Conference of States Parties to the Chemical Weapons Convention on 27 June 2018 (C-SS-4/DEC.3).

The IIT is proceeding with its investigations and, as mandated by the above mentioned decision, has reached out to States Parties in order to gather information and conduct investigations and analysis on those incidents under its scope.

I am attaching to this letter a Note seeking the cooperation of the Syrian Arab Republic on these activities as mandated by paragraph 7 of Article VII of the Chemical Weapons Convention.

Please accept, Excellency, the assurances of my highest consideration.

Yours sincerely,

Fernando Arias

H. E. Dr Faisal Mekdad
Deputy Foreign Minister
Ministry of Foreign Affairs and Expatriates
Syrian Arab Republic

NOTE IIT

This note follows the letters of 2 September 2019 and 23 October 2019 addressed to the authorities of the Syrian Arab Republic related to the work of the Investigation and Identification Team (IIT) and related requests for information.

The investigation of the IIT is proceeding. The Secretariat wishes to reiterate its willingness to receive information related to the IIT's mandate, in any setting or format the authorities of the Syrian Arab Republic may deem feasible, in particular on the current focus of its investigation outlined in Annex 2 of the Note of the Technical Secretariat dated 28 June 2019 (EC-91/S/3). To enhance transparency of the work of the IIT vis-à-vis the Syrian Arab Republic, and in addition to the information provided in the Notes by the Technical Secretariat dated 28 June 2019 (EC-91/S/3) and 3 October 2019 (EC-92/S/8), respectively, the following is set out for the consideration of the authorities of the Syrian Arab Republic.

The Secretariat requires concrete information to pursue leads related to such investigations. The investigations of the IIT can be succinctly summarized under four headings, each of course adapted to the specific circumstances of the specific incidents:

- Chemical weapon(s) were prepared elsewhere and brought to – or around - the sites of the incidents identified by the FFM;
- Chemical weapon(s) were dropped by aircraft on – or around – the sites of the incidents identified by the FFM;
- Chemical weapons were launched or deployed in other ways to – or around – the sites of the incidents identified by the FFM;
- No chemical weapons attack occurred, but conventional weapon(s) were deployed or brought to – or around – the sites of the incidents identified by the FFM, while chemicals were added later to “stage” a chemical attack and blame one side of the conflict.

The Secretariat has taken note of various remarks and indications by the authorities of the Syrian Arab Republic that various groups – including armed groups – “staged” chemical attacks and reference to the fact that they are (i) fabricating videos, including by having foreign media filming fake attacks in areas controlled by these groups; (b) training civilians to pretend to suffer symptoms of exposure to chemicals; (iii) training medical crews to give first aid typically provided in cases of use of CWs, implying that these medical crews might be part of the videos under (i). Moreover, indications have emerged that in 2017 a plant existed in or around Aleppo specialised in the production of chemical munitions, and that sarin may have been transferred by plane from another State Party to areas in the Syrian Arab Republic at the time controlled by armed groups.

Therefore, the Secretariat will be grateful for any information that the authorities of the Syrian Arab Republic may have supporting these investigations.

Moreover, in light of the unambiguous provisions of the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction, and in particular paragraph 7 of Article VII, the IIT would once again reiterate the benefit of meeting with key representatives of the Syrian Arab Republic, at their convenience and at a location of their choosing, to discuss the progress of the investigation and the provision of other information, including access to locations, which the authorities of the Syrian Arab Republic may be able to facilitate.

19 December 2019

Annex 4

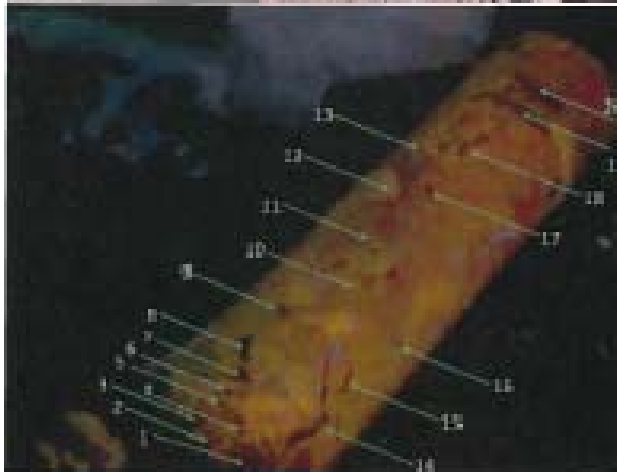
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24 MARCH 2017 INCIDENT – FRAGMENT IDENTIFIED AS 04SDS



* The images (including the map) in this Annex are provided for information and reference purposes only, and do not as such constitute evidence related to the incidents in question.

25 MARCH 2017 INCIDENT – COMPARISONS OF PICTURES OF THE CYLINDER
DROPPED ON THE HOSPITAL



30 MARCH 2017 INCIDENT – TAIL FIN IDENTIFIED AS 01SDS(B)*



* Other images of remnants relevant to this incident can be found in the appendices to Annex 5.



Annex 5

CHEMICAL ANALYSIS (SARIN)

This Annex has been classified as “OPCW Highly Protected” and is available to all States Parties in document IIT/HP/001, dated 8 April 2020.

Annex 6

REDACTED PARAGRAPHS

This Annex has been classified as “OPCW Highly Protected” and is available to all States Parties in document IIT/HP/002, dated 8 April 2020.

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