



2016年8月24日秘书长给安全理事会主席的信

谨随函转递禁止化学武器组织-联合国联合调查机制的第二次报告。

请安全理事会成员注意此信和该报告和送文函为荷。

潘基文(签名)



## 2016年8月24日禁止化学武器组织-联合国联合调查机制领导小组给秘书长的信

禁止化学武器组织-联合国联合调查机制领导小组谨转递联合调查机制根据安全理事会第2235(2015)号决议提交的第三次报告。

本报告提供最新资料，说明调查机制截至2016年8月19日的各项活动。报告还概述了领导小组根据对阿拉伯叙利亚共和国境内将化学品用作武器的九个特定案件的调查结果迄今提出的结论性评估意见。

领导小组要感谢秘书长对它的信任。小组赞赏秘书处包括裁军事务厅、政治事务部和法律事务厅以及在纽约、日内瓦和大马士革协助余留机制的联合国官员们提供了不可或缺的支持。小组还赞赏禁止化学武器组织领导层和工作人员提供的宝贵支持。小组要肯定调查机制的杰出工作人员发扬专业精神，孜孜不倦地开展和支持调查。

领导小组感谢安全理事会理事国支持调查机制。小组还感谢它们和联合国其他会员国在调查过程中向调查机制提供必要的信息和财政资源。小组同样肯定所有其他组织、机构和个人协助调查机制开展工作。

领导小组要强调，小组根据安全理事会第2235(2015)号决议的授权，客观、独立和专业地开展调查工作。小组对其结论全权负责。

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## 禁止化学武器组织-联合国联合调查机制第三次报告

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## 一. 引言

1. 本报告根据安全理事会设立禁止化学武器组织-联合国联合调查机制的第2235(2015)号决议提交,机制的任务是在禁化武组织实况调查团认定或已经认定在阿拉伯叙利亚共和国境内某一事件涉及或可能涉及化学品被用作武器的案件中,尽最大可能查明阿拉伯叙利亚共和国境内实施、组织、资助或以其他方式参与把包括氯或任何其他有毒化学品在内的化学品用作武器行为的个人、实体、团体或政府。

2. 调查机制的前两份报告(S/2016/142 和 S/2016/530)介绍了机制采用的方法及其从2015年9月24日任务开始到2016年6月10日的调查活动。此外,该机制每月还向安全理事会通报进展情况。

3. 本报告阐述截至2016年8月19日各项活动的最新情况。本报告还概述了领导小组根据对阿拉伯叙利亚共和国境内将化学品用作武器的九个特定案件的调查结果,迄今进行的评估和得出的结论。报告内有十个附件:一个是关于工作方法的附件,以下每个调查中案件都有一个附件:

- (a) Kafr Zita, 哈马省, 2014年4月11日;
- (b) Kafr Zita, 哈马省, 2014年4月18日;
- (c) Talmenes, 伊德利布省, 2014年4月21日
- (d) Al-Tamanah, 伊德利布省, 2014年4月29日和30日
- (e) Al-Tamanah, 伊德利布省, 2014年5月25日和26日
- (f) Qmenas, 伊德利布省, 2015年3月16日
- (g) Sarmin, 伊德利布省, 2015年3月16日
- (h) Binnish, 伊德利布省, 2015年3月23日<sup>1</sup>
- (i) Marea, 阿勒颇省, 2015年8月21日

4. 附件载有对各事件的说明,并详细阐述了领导小组迄今得出的调查结果、评估意见和结论。

## 二. 背景情况

5. 调查机制由三人领导小组领导,小组成员包括负责人比希尼亚·甘巴(阿根廷)和两名副手阿德里安·内里塔尼(阿尔巴尼亚)和埃贝哈德·尚策(德国)。两名副手分别负责机制的政治和调查部门。

<sup>1</sup> 实况调查团提及,事件发生日期为2015年3月23日,但调查机制确认事件发生在2015年3月24日下午7时左右。

6. 调查机制包括一个设在纽约的政治事务办公室，负责开展政治分析、法律咨询、媒体关系和信息管理；一个设在海牙的调查办公室，着重负责化学和医疗分析、法证、军械分析和其他相关信息分析；以及一个设在纽约的规划和业务支助办公室，负责向领导小组以及政治和调查部门提供支持。
7. 调查机制还在大马士革设立了一个联络办事处，有一名政治事务干事，作为与阿拉伯叙利亚共和国政府联系的主要联络人，同时就实质性政治问题向领导小组提供最新资料和建议。
8. 为了确保机制有适当和足够的调查资源，已征聘 6 名专家(包括笔译员)，以加强在海牙的工作小组，使之具有进行专业调查所必要的专门知识。为满足调查机制物质和技术需求而设立的信托基金已用于这一目的。

### 三. 联合调查机制的活动

9. 2015 年 9 月 24 日至 11 月 13 日调查机制工作的初期阶段忙于在纽约和海牙设立办事处。根据调查机制的第一次报告(S/2016/142)的解释，机制在此期间征聘了掌握相关技能和专长的工作人员；举行了规划会议并与会员国进行了协商；采取了措施确保其工作的完整性和保密性，包括保护文件、证据和证人；开始在一个适用于该机制获取或产生一切信息的健全信息安全体系内开发并启用记录管理系统；还开始为支持其活动和满足其物质和技术需求筹措预算外资金。2015 年 11 月 9 日，秘书长告知安全理事会，调查机制将于 2015 年 11 月 13 日全面启用(见 S/2015/854)。
10. 2015 年 11 月 13 日至 2016 年 2 月 29 日是调查的第一阶段，其中包括收集资料和规划办案进程。2015 年 11 月 26 日，调查机制和禁化武组织缔结了一项关于实况调查团和调查机制获取、储存和处理信息包括证据的《谅解备忘录》。根据该《谅解备忘录》，调查机制 12 月开始工作，调查员对与实况调查团已调查和断定使用或可能使用了有毒化学品的那些事件有关的信息和证据进行了审查和分析。
11. 2015 年 12 月 11 日，联合国和阿拉伯叙利亚共和国缔结了一项关于机制地位的协定，以确保在该国境内及时、安全和有保障地履行机制任务。此后不久，领导小组访问了大马士革，与政府讨论合作支持执行第 2235(2015)号决议的各项参数。
12. 在第一阶段，领导小组制定了调查机制开展调查的工作方法，包括收集证据和其他相关信息，以及资料的分析、核查和证实。领导小组决定了向安全理事会报告调查结果的方法(见下文第四节)。按照该机制制定的方法，确定要对 9 个案件进行进一步深入调查，第一阶段到此结束。
13. 第 2 阶段于 2016 年 3 月 1 日开始，该机制开始逐案调查。这包括制定具体案件的调查计划，以帮助指导总体调查和规划进程本身。调查机制继续收集并非来自实况调查团的更多信息，并约谈证人。为支持调查对阿拉伯叙利亚共和国和

该区域进行了几次访问。随着收集到更多的信息，调查工作转入分析、评估与核证阶段，同时仍不断收到新的数据。

14. 在调查机制的整个任务期内，领导小组继续从会员国、国际组织、非政府组织和其他相关实体和个人那里积极寻求和获得与调查有关的资料。

15. 领导小组向 28 个会员国包括安全理事会理事国发出了索要资料的正式请求，并应邀访问了其中的 11 个国家。调查人员还进行了技术访问。在访问期间以及在其驻纽约和海牙的办事处，调查机制收到了与调查有关的信息和相关技术简报。除了它收集的信息和材料外，该机制还审查并分析了实况调查团的全部现有信息。这包括 8 500 多页文件、200 多次访谈的记录誊本、950 多件图片材料、从公开来源获得和证人提供的 450 多个视频资料、300 多页法证分析材料和 3 500 多页档案，包括更多视频资料、图片和录音。鉴于调查机制收集的大量信息只有阿拉伯文，大量文件需经翻译后才能审查。此外，调查人员还记录了与证人的多次约谈。

16. 领导小组一直敦促阿拉伯叙利亚共和国政府务必对调查机制索要资料的要求作出迅速回应。小组与政府保持不断互动，包括 2015 年 12 月和 2016 年 8 月访问大马士革、与阿拉伯叙利亚共和国常驻联合国代表团举行 20 多次双边会议以及调查机制在大马士革设立联络处。该机制的调查人员还对大马士革进行了 4 次技术访问。

17. 自 2015 年 9 月 24 日以来，领导小组在纽约和海牙与安全理事会理事国和其他会员国举行了 150 多次双边会议。虽然几个会员国积极支持机制的调查工作，提供了信息和技术简报，但令领导小组感到遗憾的是，区域内的一些国家没有为调查作出更大贡献。

#### 四. 对调查方法的考虑

18. 领导小组注意到，查明实施、组织、资助或以其他方式参与把化学品用作武器行为涉事方的调查没有先例，这与调查指控使用化学武器、生物武器或毒素武器的秘书长机制不同，该机制有准则和程序可循(见 [A/44/561](#))。因此，小组采用了调查机制的工作方法(见附件一)。

19. 实况调查团关于把化学品用作武器问题的报告所载说明和结论是调查机制对 9 个案件展开调查的出发点。此外，该机制还审查了调查团“按发况”呈现的资料和证据，对其来源的真实性或采用的方式方法没有进行审查。

20. 调查机制的工作须遵守公正性、客观性和独立性原则，并作为一个非司法调查机制行使职能。调查机制调查了并力求查明各类实施、资助、组织或以其他方式参与把化学品用作武器行为的涉事方。

21. 除了提供背景资料外，调查工作还旨在确定每个案件的以下要素：(a) 日期和时间；(b) 天气状况；(c) 受影响地点；(d) 弹药(如残留物)；(e) 提供方式(如手段和方向)；(f) 损害和影响(如对建筑物、环境、动植物群和其他受体的损害和影响)；(g) 医疗效果。这些要素都是调查机制通过调查计划和案件卷宗确定的，其中包括以下资料：实况调查团的材料(经过审查和分析，以提取与调查机制有关的信息)；与证人约谈和证人说明(在可能情况下收集的音频和视频记录或誊本)；文件包括报告、正式文件、医疗记录和手写材料(如草图和名单)；包括卫星图像在内的图像、照片和录像；地图；信息图表和其他数据。

22. 为每个案件都制订了调查计划，以帮助指导整个调查。在调查过程中编制了案件卷宗，以详细记录收集来的信息和证据，包括实况调查团获得的任何有关信息。案件卷宗中需要有针对收集所获资料的分析内容，并记录对具体问题的核证过程与程度。

23. 该机制力求对所有信息进行核证。如有必要，还要对这些信息进行单独分析。调查机制视个案情况聘请了4个过去曾向联合国机构提供协助的国际公认的法证和辩护机构。这种分析就其性质而言是一项耗费时间的工作。

24. 领导小组审查了调查员编写的9个案件的卷宗及其所载资料和证据。小组对这些收集而来的信息和证据，包括其准确性、可信性和可靠性、核证程度以及法证和辩护机构的分析意见进行了权衡，协商一致地得出了调查结果、评估意见和结论。小组在工作中遵循以下标准(见 S/2016/142)：

- (a) 压倒性证据(支持调查结果的非常有说服力的证据)；
- (b) 实质性证据(支持调查结果的强有力证据)；
- (c) 充分证据(调查机制有可信和可靠证据认定涉事方参与把化学品用作武器)。

25. 领导小组凡确定调查机制所调查的事件证据不足，都提出了相应的报告。

## 五. 评估意见、调查结果和结论

26. 按照任务规定，调查机制仅限于调查实况调查团认定阿拉伯叙利亚共和国境内某一事件涉及或可能涉及化学品被用作武器包括氯或任何其他有毒化学品的案件。调查团对2014年4月至2015年9月阿拉伯叙利亚共和国境内发生的事件作出了这种认定。

27. 调查人员因当地安全局势恶劣而无法进入调查地点，影响了该机制调查工作的顺利进行。如能对某些地点进行访问，本可协助该机制发挥能力，从而确认感兴趣的地点、收集可比环境样品、找到新的证人、实际评价该机制感兴趣的地点(如残留物)。

28. 尽管第 2235(2015)号决议尤其是其执行部分第 7 段已给予调查机制授权，但该机制仍无法强行规定必须向它提交资料或文件。因此，它依靠掌握有关信息的各个来源自愿提交资料。同样，调查机制仅与那些愿意在没有任何报酬的情况下接受约谈的个人进行了谈话。鉴于收集资料过程的自愿性质，双方必须就涉及保密、国家安全和人身安全的具体合作条件达成一致。

29. 此外，下列因素也影响调查：(a) 在某些案件中，事件发生两年多后才展开调查；(b) 对一些收到的材料没有监管链；(c) 信息和材料来源属于次级或三级性质；(d) 一些信息材料包括描述事件规模和性质的材料有误导；(e) 确实难以发现能够接触个人的独立信息来源和信息材料。

30. 调查结果系以 5 个多月收集而来并经调查机制核实的信息为基础，体现了调查机制在阿拉伯叙利亚共和国境内持续冲突的高度敏感政治环境下收集信息的数量和质量。上文所述情况使调查工作极为耗时，需要开展大量建立信任工作，还需要设法与各个信息来源进行互动协作。

31. 本报告概述领导小组迄今为止的调查结果、评估意见和结论。

#### A. 调查案件中的共同要素

32. 调查机制调查了 9 起案件，其中 8 起案件涉及把氯或氯衍生物用作武器，1 起案件涉及使用硫芥剂。在调查期间和审查了调查机制收集的所有材料之后，领导小组确定了八个与氯有关案件的以下共同要素。这些要素应连同具体调查结果一并阅读。

##### 1. 氯

33. 阿拉伯叙利亚共和国境内各方都有氯。氯广泛用作消毒剂和净化水复合物。氯还用于各种行业，如塑料、纸浆和纸张、杀虫剂和制药业。氯属于危险材料，接触高剂量氯可能致命。特别容易接触氯的人群有婴儿、病人和老年人。氯在人体中几乎或根本不会留下任何痕迹。鉴于氯具有腐蚀性和毒性，氯的安全处理需要有专门知识和专门设备。例如，将氯从一吨容量的储罐转移到较小的储罐需要建造专门的灌注站。

34. 氯作为武器的效力取决于弹药的类型、传播方法、地形特征的当时的天气条件。

35. 在 2014 年的 5 个氯相关案件中，据称使用的弹药内储瓶直径从 30 至 40 厘米不等，长度则从 155 至 175 厘米不等。这表明一个储瓶的估计最低容量为 125 公升。这些储瓶均焊接而成，在顶部中央位置有一个阀门，在偏离中央的位置有一个安全塞。这些储瓶没有遵循国际标准化组织的国际标准，标准化组织规定，氯必须储存在只有一个阀门的无缝瓶中。然而，根据某些国家的标准，这些(有一个阀门和安全塞的)焊接瓶可用来储存液态氯。小组注意到，这些储瓶可随时也常常在世界各地交易。

36. 在至少一个案件中，制造商的资料明显压印在储瓶上，还有“CL2”字样，显示按行业规范存储了氯。在大多数其他案件中，内储瓶的详细规格无从发现。

37. 这些储瓶可灌注和加注液体或压缩气体，但需要适当设备。

38. 在 2015 年与氯有关的 3 起案件中，调查机制掌握的信息显示，在据称使用的弹药包壳中填载了一次性氢氯氟碳化合物气罐和被认为装有高锰酸钾的塑料瓶。这些塑料瓶和导爆索都用胶带贴在气罐上。

39. 氢氯氟碳化合物气罐，通常指制冷剂罐，可普遍获得，因为它们被广泛用于冰箱和空调的加注作业。然而，它们是一次性用品，改变用途或加注需要对阀门进行技术改造。为储罐加注液体或压缩气而改造阀门需要有技术专长和设备。

40. 叙利亚沙特化学品公司在阿勒颇以东 29 公里处有一套生产氢氧化钠和液态氯的氯生产设施。政府表示这套设施是 2012 年 8 月从努斯拉阵线<sup>2</sup> 缴获的，并说努斯拉阵线和一些反对派武装团体有能力在全国各地运输氯。政府提供的资料显示，该工厂在被扣押时有大约 400 吨氯。调查机制证实，该设施的载氯储罐 2012 年 8 月后被移走。没有信息显示这些储罐被运往何处，以及其中的储物可能如何使用。

41. 政府还表示，德尔祖尔省有一家纸浆和造纸厂，其中设有一个氯生产单位。据政府说，该设施于 2012 年第一季度被反对派武装团体扣押，当时该设施内有 59 吨盐酸和 3 吨次氯酸钠。公开来源资料称，该工厂被扣押后，其储存和安全性能都得到维持。这表明工厂内仍储存一些化学品。

## 2. 飞机

42. 在大多数与氯有关的案件中，调查机制已获得信息，特别是证人的证词，提到正在调查的事件发生时间前后及发生地点周围曾出现过飞机(旋转翼和固定翼飞机)。证人称，视事发的时间(白天/夜间)而定，他们或者看到过飞机，或者听到飞机响声。调查机制多次要求政府提供飞行记录、情况报告和阿拉伯叙利亚空军的其他文件。迄今为止，政府并未提供。

43. 政府向调查机制证实，在机制审查的事件发生期间，它控制着叙利亚领空，不过它还指出，假如飞机在雷达覆盖面以下飞行的话，则政府没有能力证实或否认其是否确实在叙利亚领空飞行过。政府具体确认，在调查机制所调查的事件发生时，它控制着：阿勒颇国际机场，其中包括 Nayrab 空军基地(阿勒颇省)；哈马空军基地(哈马省)；巴塞尔·阿萨德国际机场，其中包括 Humaymim 空军基地(拉塔基亚省)；以及 Abu al-Zuhur 空军基地(伊德利卜省)。不过，在调查期间，政府失去了对六个空军基地的控制，这些基地包括：Taftanaz 空军基地(伊德利卜省)、Minaq 空军基地、Kuwayris 空军基地和 Jarrah 空军基地(阿勒颇省)。政府告知调查机制，在 Taftanaz 空军基地留下了 15 架直升机，其中 9 架被认为还能飞。

<sup>2</sup> 2013 年 5 月 30 日，安全理事会根据第 1267(1999)号决议将努斯拉阵线认定为恐怖主义团体。

44. 应注意的是，这些飞机需要大量维护工作，需要拥有具体的技术专门知识、零件和设备才能加以操作。此外，阿拉伯叙利亚空军的现代防空能力使飞机不可能在阿拉伯叙利亚共和国西部起飞和飞行而不被发现和(或)摧毁。已请政府提供资料，说明武装反政府团体使用此类直升机的情况，但迄今尚未提供任何资料。政府告知调查机制，一些武装反对派团体能获得而且确实使用过无人驾驶飞行器。不过，鉴于据认为在与氯有关的案件中所用装置体积较大，据报由武装反对派团体操控的小型无人驾驶飞行器不可能投下这些装置。

45. 在研究了收集到的所有信息后，调查机制认为，没有证据显示在所调查案件发生的时间和地点，武装反对派团体在操控直升机。

### 3. 桶式炸弹

46. 在所有与氯有关的案件中，有指控说使用了桶式炸弹。这些简单制造的装置据称在包壳内配置填满炸药或有毒化学品的内筒或桶罐。由于它们是简易的，桶式炸弹的大小和重量被认为各不相同，但专家根据残留物图像估计，它们重约 350 至 400 千克。装满炸药的桶式炸弹由于破坏力大，会炸出大坑，不会留下较大的弹药碎片。另一方面，装满有毒化学品的桶式炸弹预期将炸出较小的弹坑，因为它们可能装有足够炸开外壳以释放出化学品的炸药，从而留下较大的残余物。调查机制未能找到任何信息来支持这样的理论，就是在所调查的案件中，“气瓶导弹”和“简易火箭助推炸药”等地面发射方法被用来发射此类装置。在这些案件中，没有任何视频、样本或残余弹药支持使用了“气瓶导弹”的说法。由于重量因素，据信任何设计的桶式炸弹只能从直升机上投下。

47. 领导小组研究了其掌握的信息和证据，认为阿拉伯叙利亚空军使用了从直升机上投下的简单制造的武器，包括桶装武器。政府否认拥有桶式炸弹。领导小组指出，宜开展进一步研究，将 9 个案件中所用的各种弹药与调查机制未审议的案件中的残留物加以对照和比较。就与氯有关的 8 个案件而言，在某些情况下不能排除弹药击中地面上的有毒化学品的可能性，这特别是因为所示弹着点的所称装置残留物已在记录之前被移离现场(见下文第 49-51 段)。

### 4. 当地预警系统

48. 领导小组注意到，在大多数情况下，当地社区成员设立了预警系统，以在直升机飞来时发出警报，在某些情况下特别针对所称的有毒化学品袭击。这部分是通过监听无线电通讯做到的。当地居民已被告知在发生空袭时跑到地下室，在发布化学品警报时，要逃到上风口。据报告，在某些情况下，化学品警报在民众中造成了恐慌。至少在 3 个案件中，证人提到发布了化学品虚警，在 2 个案例中，他们称在撤离后房屋被洗劫。在一些情况下，当地预警人员就据称是由直升机发动的袭击所作的描述是有关直升机投放方法的唯一记录。

## 5. 其他方面的记录

49. 领导小组发现,有关弹坑和弹药的许多信息,要么来自急救人员和医务人员,要么来自得到国际支持的各种监测组。很难找到自称拥有与案件具体相关的信息、而且这些信息不基于上述来源的新的证人。

50. 在大多数情况下,对弹着点的记录、包括取样,并非在事发后立即进行的,而是在几天之后。此外,在记录之前,所用弹药的残留物已被拆解,并从弹着点移走。因此,调查机制必须重新评估弹着点与这些残留物之间的联系,而这在一些情况下是不可能的。调查机制发现,一些弹着点已被改变,并非所有弹坑都与弹药残留物匹配。在某些情况下,似乎是来自其他地方的残留物被放在所称的弹着点。

51. 有关爆炸、弹着点和残留物的不同视频被上载到社交媒体网站,被公布或提供了调查机制,称其与正在调查的事件有关。不过,在对有关材料进行认真分析、包括由法证机构进行分析之后,一些视频显示它们发生在不同的地点、或属于常规弹药发生的爆炸及(或)发生在不同的时间。由此,调查机制就要调查更多的弹着点和残留物。

## B. 具体的调查结果

52. 对所调查的9个案件中的每一个都需要研究多种描述。此外,关于与氯有关的案件存在多个弹着点的指称,所有这些都需要调查。不过,调查机制发现,在许多此类案件中,仅有有关一个弹着点的充足信息,而就所称的其他弹着点而言,信息极其缺乏,即没有关于残留物、弹坑、弹着点和影响的相关信息。

53. 关于 Talmenes 案(2014年4月21日)、Sarmin 案(2015年3月16日)和 Marea 案(2015年8月21日),领导小组有足够的信息,能就所涉的行为体得出结论。

2014年4月21日,伊德利布省 Talmenes

54. 领导小组研究了有关2014年4月21日在 Talmenes 出现的两个弹着点的现有信息。有足够的信息让领导小组得出结论认为,第2弹着点事件的情况是,阿拉伯叙利亚空军的一架直升机先投掷了一个装置,给一个混凝土块住房造成破坏,然后有毒物质被释放出来,使民众受到伤害。

55. 这一结论基于下述情况:

- 自由沙姆人伊斯兰运动和努斯拉阵线在 Talmenes 周围有大量人员存在。据说双方都控制着该镇。Talmenes 于2014年4月21日前后和当日受到定期的火炮和空中袭击。当天政府军与武装反对派团体、以及与在 Wadi Deif 和 Hamidiyah 的两个军事基地的努斯拉阵线发生了持续不断的战斗,而这两个军事基地都临近 Talmenes。
- 证人说,一架飞机投掷的一枚桶式炸弹爆炸过后,有毒化学品被释放出来。

- 政府和武装反对派团体双方都没有否认氯气于 2014 年 4 月 21 日在 Talmenes 被使用过。
- 政府指出，弹着(第 2 弹着点)是一个武装反对派团体发射的陆基射弹造成的。结构性损害被发现与这一说法不相符。
- 所称的两处弹着点仅有一处(第 2 弹着点)被调查机制认为是可能的。
- 在事件发生时，政府已失去对 6 个空军基地、包括对 Taftanaz 空军基地(伊德利卜省)的控制。政府告知调查机制，有 15 架直升机被留在 Taftanaz 空军基地，其中有 9 架被认为还能飞。
- 在研究了收集到的所有信息后，领导小组认为，没有证据显示武装反对派团体在事件发生的时间和地点操控了直升机。
- 尽管无法明确病人的确切数目，但很明显有许多人受到有毒化学品的伤害。

2015 年 3 月 16 日，伊德利布省 Sarmin

56. 领导小组研究了有关 2015 年 3 月 16 日在 Sarmin 出现的两个弹着点的现有信息。有足够的信息让领导小组得出结论认为，第 2 弹着点的事件是阿拉伯叙利亚空军直升机投掷一个装置造成的，该装置击中了房子，之后有毒物质被释放出来，这种物质符合氯的特点，对居住在其中的所有 6 人是致命的。装置残留物与桶式炸弹的构造相符。

57. 这一结论基于下述情况：

- 证人证实，至少有一架直升机在事件发生时飞越 Sarmin 上空。
- 专家和法医分析支持证人的说法，即从一架直升机上投掷的一个装置或桶式炸弹击中一所房屋(第 2 弹着点)的通风管，该房屋当时住有一家 6 口。损害符合一个装置或桶式炸弹从空中落下的动能效应，而不是高爆炸药爆炸或起爆的效应。
- 有关第 2 弹着点的多个视频显示，房屋内有氟氯烃气体罐，地上有紫色物质。
- 政府指出，2015 年 3 月 16 日阿拉伯叙利亚空军没有飞机飞行，但没有提供任何佐证的信息。然而，调查机制从其他来源获得的信息证实了证人有关阿拉伯叙利亚空军直升机在事件发生的日期和时间飞行的陈述。
- 在事件发生时，政府已失去对 6 个空军基地、包括对 Taftanaz 空军基地(伊德利卜省)的控制。政府告知调查机制，有 15 架直升机被留在 Taftanaz 空军基地，其中有 9 架被认为还能飞。
- 在研究了收集到的所有信息后，领导小组认为，没有证据显示 Sarmin 的武装反对派团体于事件发生的时间和地点在操控直升机。

2015 年 8 月 21 日，阿勒颇省 Marea

58. 领导小组研究了有关 2015 年 8 月 21 日在 Marea 发生的事件的现有信息，并认定有足够的信息可以得出结论认为，伊拉克和黎凡特伊斯兰国(伊黎伊斯兰国)<sup>3</sup> 是唯一有能力、有实力、有动机、有手段于 2015 年 8 月 21 日在 Marea 使用芥子气的实体。

59. 这一结论基于下述情况：

- Marea 是与政府军作战的武装反对派团体的一个传统据点。2015 年 8 月 21 日，伊黎伊斯兰国向西朝 Marea 推进。
- 一些证人以及一些其他来源提供的信息表明，Marea 曾遭到约 50 枚炮弹轰击，其中一些装有芥子气，炮弹从东部或东南部发射过来，而那些地区处于伊黎伊斯兰国控制之下。
- 当日及以后数日，一些人去了医院，其症状与暴露于芥子气有关。
- 调查机制收到并分析了有关在 Marea 所用弹药的大量照片和视频。四个来源说，所用弹药是 130 毫米的炮弹。对于从炮弹中释放出黑色的粘性液体而言，所拍的弹药的照片和视频是一致的。

60. 关于 Kafr Zita 案(2014 年 4 月 18 日)、Qmenas 案(2015 年 3 月 16 日)和 Binnish 案(2015 年 3 月 24 日)，领导小组接近于有足够的信息，能就所涉的行为体得出结论。领导小组建议对这三个案件进行进一步调查。

2014 年 4 月 18 日，哈马省 Kafr Zita

61. 领导小组研究了有关 2014 年 4 月 18 日在 Kafr Zita 发生的事件的现有信息和证据，并认定阿拉伯叙利亚空军当日在这一地区实施了空袭。然而，领导小组无法证实确实使用了桶式炸弹，原因是据称所用的装置残留物已移离现场，现阶段无法肯定地将之与第 2 弹着点联系起来。

62. 领导小组认定，需要对此案进行进一步调查。

63. 这一评估基于下述情况：

- 2014 年 4 月 18 日，武装反对派团体和努斯拉阵线出现在 Kafr Zita。该地区经常遭到炮火和阿拉伯叙利亚空军飞机的袭击，其中一些袭击就发生于 2014 年 4 月 18 日。
- 政府已证实，在事件发生的日期和时间，阿拉伯叙利亚空军对一处观察哨发动了空袭，并向一座被用作爆炸装置仓库的房屋开火。该房屋被击中后，绿色的有害气体被排放出来。

<sup>3</sup> 2013 年 5 月 30 日，安全理事会根据第 1267(1999)号决议指认伊黎伊斯兰国为恐怖主义团体。

- 政府和武装反对派团体双方都没有否认氯气于 2014 年 4 月 18 日在 KafrZita 被使用过。
- 仅一处弹着点(第 2 弹着点)得到调查机制的证实。不过, 调查机制不能认定弹着坑是由桶式炸弹造成的, 还是由另一种弹药、如一枚迫击炮弹造成的。
- 据称所用的弹药残留物不是在所称的弹着点或其附近发现的, 因其已被移除现场, 并转移到另一个地点。尽管一个公开来源已就 2014 年 4 月 18 日的事件发布了一些残留物照片, 但有关残留物的额外信息不足以印证弹着点。

#### 2015 年 3 月 16 日, 伊德利布省 Qmenas

64. 领导小组研究了有关 2015 年 3 月 16 日在 Qmenas 所发生事件的现有信息, 并认定阿拉伯叙利亚空军的一架直升机在 Qmenas 投下了一个装置或桶式炸弹。
65. 领导小组接近于拥有足够的信息来就所涉的行为得出结论, 不过在现阶段它还无法肯定地就装置或桶式炸弹内装爆炸物还是氯得出结论。
66. 领导小组认定, 需要对此案进行进一步调查。
67. 这一评估基于下述情况:
  - 根据证人的陈述, 一架直升机在 Qmenas 军事区边缘投下了两个装置。不过, 通过对照片和卫星图像进行的法证分析, 只能对 3 个不同证人提供的 1 个弹着点加以印证。
  - 在弹着坑附近发现的一个装置的残留物与在其他弹着点、最主要是 Sarmin 的弹着点发现的桶式炸弹残留物相似。然而, 从对残留物和弹坑进行的分析发现, 无法认定该装置内装爆炸物还是有毒化学品。
  - 有人向调查机制提供了有关该事件的其他描述, 例如一个武装反对派团体开的一辆车上掉下一只桶, 气体意外释放, 或反对派作战人员对其他武装反政府团体使用了填有化学品的“气瓶导弹”。调查机制未能获得支持这些另类说法的可信的信息。
  - 调查机制得到信息说, 一架直升机在事件发生的日期和时间飞过了 Qmenas 上空。
  - 政府指出, 2015 年 3 月 16 日阿拉伯叙利亚空军没有飞机在该地区飞行, 但没有提供任何佐证的信息。然而, 调查机制从其他来源获得的信息证实了在事件发生的日期和时间有直升机飞行一事。
  - 在事件发生时, 政府已失去对 6 个空军基地、包括对 Taftanaz 空军基地(伊德利卜省)的控制。政府告知调查机制, 有 15 架直升机被留在 Taftanaz 空军基地, 其中有 9 架被认为还能飞。

- 在研究了收集到的所有信息后，领导小组认为，没有证据显示 Qmenas 的武装反对派团体于事件发生的时间和地点在操控直升机。

#### 2015 年 3 月 24 日，伊德利布省 Binnish

68. 领导小组研究了有关 2015 年 3 月 24 日在 Binnish 发生的事件的现有信息，能够证实确实有桶罐存在，并有氯或氯样物质的痕迹。它还收到有关一个装置外壳残留物的更多信息，该装置与桶式炸弹的构造相符。

69. 领导小组接近于拥有足够的信息来依据所发现残留物的一系列保管程序和实况调查团的总体调查结果就所涉行为体得出结论。不过，此案中有若干不一致之处，包括残留物与弹着点之间的联系、有关爆炸的描述和受伤害的个人情况，目前正对这些不一致之处进行进一步调查。

70. 这一评估基于下述情况：

- 据 3 位证人称，阿拉伯叙利亚空军的一架直升机于夜间在 Binnish 上空投下了一个内装化学品的装置或“桶式炸弹”。不过，就事件的日期和时间、弹着点以及有关当地居民因暴露于有毒化学品而受害的描述而言，存在若干不一致之处。
- 尽管存在种种不一致以及缺乏有关此案的信息，调查机制还是能证实其中的一些关键内容，如当地的救援者从 Binnish 的农田中找到的残留物，这些残留物随后得到记录和记载。在第 1 弹着点发现的残留物，即外壳、一个桶罐和一个塑料瓶，与桶式炸弹的构造相符。实验室对桶罐以及塑料瓶内的东西进行了分析，在桶罐内发现了氯或氯样物质的痕迹。该实验室还得出结论认为，原先装在塑料瓶内的东西是高锰酸钾。这些残留物的一系列保管程序业已确立。
- 调查机制无法获得有关装置爆炸的任何信息。不过，它已收到有关弹着点的信息，现正对其进行法证分析。

71. 关于 Kafr Zita 案(2014 年 4 月 11 日)和 Al-Tamanah 案(2014 年 4 月 29 日和 30 日及 2014 年 5 月 25 日和 26 日)，领导小组认为，信息要么自相矛盾，要么不充足，无法就所涉行为体得出结论。领导小组建议不对这三个案件进行进一步调查。

#### 2014 年 4 月 11 日，哈马省 Kafr Zita

72. 领导小组研究了有关 2014 年 4 月 11 日在 Kafr Zita 发生的事件的现有信息和证据，并认定阿拉伯叙利亚空军当日在这一地区实施了空袭。空袭造成至少有一次爆炸。

73. 领导小组无法证实确实使用了桶式炸弹，原因是据称所用的装置残留物已移离现场，无法将之与任何弹着点联系起来。

74. 尽管有很多人——多达 150 人——可能于 2014 年 4 月 11 日暴露于氯气，但领导小组认定，现阶段没有足够的信息就所涉的行为体得出结论。

75. 这一评估基于下述情况：

- 2014 年 4 月 11 日，努斯拉阵线和若干武装反政府团体出现在 Kafr Zita。该地区经常遭到炮火和阿拉伯叙利亚空军飞机的袭击。此类袭击在 2014 年 4 月 11 日持续进行。
- 政府证实，它在事件发生的日期和时间打击了努斯拉阵线一名指挥官的房屋，政府称该房屋被用于制造简易爆炸装置和储存氯气。
- 政府和武装反对派团体双方都没有否认氯气于 2014 年 4 月 11 日在 Kafr Zita 被使用过。
- 调查机制无法证实 5 个所称的弹着点中的任何一个。
- 两个公开来源的视频显示，Kafr Zita 的爆炸系由一架飞机投下的装置造成。另一个视频显示了另外一次爆炸。不过，调查机制无法认定后一次爆炸是由飞机投下的装置造成的，还是由从陆上发射的弹药造成的。此外，两次爆炸无法与专门使用氯气进行的袭击联系起来。
- 据称所用的弹药残留物已从所称的弹着点移到其他地点。

2014 年 4 月 29 日至 30 日，伊德利布省 Al-Tamanah

76. 领导小组认定，没有足够的信息来证实或排除化学武器袭击的可能性。它还认定，证据存在矛盾，也不充足，因此无法就所涉行为体得出结论。

77. 这一评估基于下述情况：

- 目前缺乏与 Al-Tamanah 所有事件相关的信息。调查机制无法认定飞行活动。
- 各位证人的陈述有差异，对事件的描述也不一致。一方面，一些证人描述民众受到用作武器的氯气的伤害。另一方面，其他证人则描述说 2014 年 4 月或 4 月底在 Al-Tamanah 发生了空袭，并说空袭中没有使用化学品。
- 专家们认为，这一事件源自使用常规弹药进行的攻击。

2014 年 5 月 25 日和 26 日，伊德利布省 Al-Tamanah

78. 领导小组研究了与 2014 年 5 月 25 日和 26 日在 Al-Tamanah 发生的事件有关的现有信息和证据，并认定没有足够的证据就所涉行为体和在此次事件中将化学品用作武器的方式得出结论。

79. 这一评估基于下述情况：

- 目前缺乏与 Al-Tamanah 所有事件相关的信息。调查机制无法认定飞行活动。
- 一些证人说,自 2014 年 4 月以来,经常不定期地发出化学武器“虚警”,在 Al-Tamanah 化学品不曾被用作武器。
- 其他证人报告说有一枚未爆的“桶式炸弹”泄漏了氯气。不过,没有足够的证据证实这些证词。

## 六. 结论意见

80. 领导小组在成立之后,立即注意到有关在阿拉伯叙利亚共和国境内将化学品用作武器的指控数量减少。不过,在其任务期限内仍有这类指控提出,而最近,这些指控称使用了各种化学制剂,其中一些在《关于禁止发展、生产、储存和使用化学武器及销毁此种武器的公约》(《化学武器公约》)中被列为化学武器。

81. 调查机制在 2015 年 12 月至 2016 年 8 月间从会员国收到的有关在阿拉伯叙利亚共和国境内使用了《化学武器公约》所列化学武器以及(或)将有毒化学品用作武器的指控包括:沙林(13);芥子气(12); VX 毒剂(4); 氯(41)以及其他有毒化学品或制剂(61)。信息表明,政府和其他行为体都参与了所指控的这些事件。

82. 领导小组重申,它坚信任何将化学品用作武器的行为,不论原因如何、在何种情况下使用,都是十分可憎的行为。领导小组重申,它相信必须追究将化学品用作武器或打算用作武器者对这一行为负有的责任。

83. 领导小组谨对各会员国、国际组织和其他实体为支持其工作迄今提供的充分合作、包括提供的慷慨捐款表示感谢。

84. 最后,领导小组谨对联合国秘书处、特别是裁军事务厅以及禁止化学武器组织技术秘书处提供的支持表示感谢。

## Annex I

### Methods of work

1. There were no precedents for the investigation into the identification of the perpetrators, organizers, sponsors or those otherwise involved in the use of chemicals as weapons. This is unlike the case for investigating the alleged use of chemical weapons for which there are guidelines and procedures established for use by the Secretary-General's Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons (see [A/44/561](#)). Consequently, in the absence of a framework to guide its efforts in fulfilling its unprecedented mandate, the Mechanism has been developing operating guidelines and procedures with the aim of identifying those involved in the use of chemicals as weapons in order to ensure that its work adhered to the principles of impartiality, objectivity and independence.

### Overview

2. The information obtained by the Organisation for the Prohibition of Chemical Weapons (OPCW) Fact-Finding Mission was reviewed "as is" and the conclusions contained in their reports formed the starting point of the work of the Mechanism. The material collected by the Fact-Finding Mission was reviewed and analysed by the Mechanism with a view to extracting information relevant for the identification of the perpetrators, organizers, sponsors or otherwise involved in the use of toxic chemicals as weapons.

3. The Mechanism's mandate was implemented in two phases: Phase I — information collection and planning for case development, which consisted of reviewing and analysing the Fact-Finding Mission data, mapping of the incidents (i.e., the identification of specific incidents in which the Fact-Finding Mission had carried out an investigation and had determined the use or likely use of chemicals as weapons, screening and prioritization of the incidents (through severity, delivery method and munition, quantity of data and information)) and elaborating an investigation plan and methodology, including evidentiary standards and relevant procedures; Phase II — case investigation, which consisted of in-depth analysis of the cases identified during Phase I and continued until sufficient information was gathered, analysed, assessed and corroborated to allow the Mechanism to present its findings to the Security Council.

### Information management

4. The Mechanism took measures to ensure that its personnel complied with the confidentiality and security protections set out in the memorandum of understanding concluded between the Mechanism and the OPCW on 26 November 2015, concerning the provision of access, storage and handling of information. All personnel were also required to enter into individual confidentiality undertakings.

5. In addition, the Mechanism applied the Secretary-General's bulletin on information sensitivity, classification and handling of 12 February 2007 ([ST/SGB/2007/6](#)) in relation to the information collected and produced by the

Mechanism. Furthermore, relevant sections of the Secretary-General's bulletin on record-keeping and the management of United Nations archives of 12 February 2007 (ST/SGB/2007/5), concerning the creation, management and disposition of records, have been applied by the Mechanism.

6. The Mechanism adopted standard operating procedures and guidelines on information management, as well as the conduct of interviews; collection of evidence and information, including chain of custody forms; and analysis of information.

### **Collection of information and evidence**

7. In addition to information and evidence obtained by the Fact-Finding Mission, the Mechanism gathered information from the following:

- (a) The Government of the Syrian Arab Republic and all parties in the Syrian Arab Republic;
- (b) Other Member States of the United Nations;
- (c) International organizations, international and national non-governmental organizations, other entities and individuals; and
- (d) Open sources.

8. The information and evidence collected by the Mechanism included witness interviews and statements given to other entities (where possible collected as audio and video records or as a transcript); documents including reports, medical records and handwritten material; images including satellite imagery, photographs and videos; infographics and other data. Furthermore, the Mechanism collected forensic analysis, laboratory results and other material such as maps.

#### **Information from the Government of the Syrian Arab Republic**

9. At the Mechanism's request, documents and other supporting material such as reports, power point presentations, videos, photos, maps and diagrams were provided by the Government of the Syrian Arab Republic on the nine cases. The Government also facilitated interviews with some of the witnesses. Furthermore, the Mechanism met with representatives of the Government of the Syrian Arab Republic, including members of their armed forces, during its missions to Damascus.

#### **Information from all parties in the Syrian Arab Republic**

10. The Mechanism held meetings with armed opposition groups, during which information on the cases under investigation was provided. One group facilitated an interview with one witness. The Mechanism also met with the National Coalition of Syrian Revolution and Opposition Forces. Furthermore, other parties provided documents to the Mechanism.

**Information from Member States**

11. The Mechanism received case-specific information from 14 Member States. It collected further material to obtain independent confirmation of the information received or used such information to confirm the Mechanism's information or understanding of the cases under investigation.

**Information from international organizations, non-governmental organizations, other entities and individuals**

12. The Mechanism established a network of contacts in possession of relevant information on the cases under investigation. This included international organizations, non-governmental organizations, the private sector, research organizations, laboratories and institutes, civil society organizations and individuals.

13. This network of contacts provided information and facilitated access to witnesses.

**Open sources and social media**

14. Extensive material is available on open sources and social media related to the cases under investigation. Such material was mainly in Arabic. The Mechanism reviewed videos and other media files available online allegedly documenting the incidents, including the munition used and the remnants thereof, the delivery method and the impact and effects resulting from the use. Open source and social media material deemed central to the investigation was subjected to forensic analysis.

**Compiling of the information**

15. Investigation plans were developed for each case to help guide the overall investigation. During the course of the investigation, case files were prepared to document the details of the information and evidence collected, including any relevant information obtained by the Fact-Finding Mission. The case files included the analysis of the information collected and documented the process and amount of corroboration on specific issues. Annexes II to X of the present report are based on the case files prepared during the investigation.

16. In addition to providing the background, the investigation sought to establish for each case the following key elements: (a) date and time; (b) weather conditions; (c) impact location; (d) munition (e.g., remnants); (e) delivery method (e.g., means and direction); (f) damage and effects (e.g., on buildings, environment, flora and fauna); (g) medical effects.

**Weather conditions**

17. The Mechanism received weather related information for the dates and places under investigation from the World Meteorological Organization (WMO). In providing the information, the WMO stated the following: "The coverage of weather stations across [the Syrian Arab Republic] was very poor during the [periods in question] which makes it extremely difficult to assess weather conditions at the requested locations from observations. One station was close to Kafr Zita [...] so data from that site was used where appropriate. [In addition...] short range forecasts

from a world-leading high resolution global atmospheric model have been used [...] These forecasts are initiated from our best estimate (analysis) of the state of atmosphere [...] Satellite imagery [have also been used] to provide supplementary information, notably for weather descriptions.”

18. Furthermore, the WMO has informed the Mechanism that while the humidity values and temperature data provided are thought to be relatively accurate (within 2 °Celsius for temperature), the wind direction/speed are not as accurate as they can be subject to significant variability on time scales of minutes. Nevertheless, the values indicated in the annexes are believed to be reasonable as 60 minute averages. The times of the sunrise and sunset were taken from <http://www.esrl.noaa.gov/gmd/grad/solcalc/sunrise.html>.

## **Analysis, verification and corroboration of information**

### **Corroboration and analysis**

19. The Mechanism aimed to corroborate information. In this connection, identifying circular reporting was important in order to ensure that the corroboration was in fact from separate sources of information.

20. As necessary, information material collected by the Mechanism was subjected to a separate analytical process. On a case-by-case basis, the Mechanism engaged four internationally recognized forensic and defence institutes, which had provided assistance to United Nations bodies in the past. These forensic institutes worked on, among other things, verifying whether videos and photographs had been modified or altered, determining the dates and times of when a video or a photograph was taken and verifying the locations depicted. The defence institutes provided analysis of imagery, munitions-related issues, explosions and modelling of the dispersion of chlorine in the atmosphere. The Mechanism also consulted with a ballistic and explosives expert on the imagery of the points of impact.

### **Analysis and review**

21. As part of the analytical process, an analytical/review team was established to ensure the following: (a) technical adequacy of the information collected; (b) consistency in all the cases under investigation; and (c) identification of patterns emerging from the cases under investigation. During this process, the information received was mapped and entered into a database. Several standard tools such as those used for making projections of information against continuous/discontinuous variables and reconstructive evidence-gathering were used.

### **Assessment**

22. The Leadership Panel carefully reviewed the material submitted by the investigators. They presented the case files, which included the information collected by 10 August 2016. The Panel weighed the information and evidence collected and came to its assessments, findings and conclusions by consensus.

23. The Leadership Panel decided that, in reporting its findings to the Security Council, a sufficient degree of supporting evidence was required; that is, there is

evidence of a credible and reliable nature to determine that a party was involved in the use of chemicals as weapons on the date and time of the incident in which the Fact-Finding Mission determined use or likely use. In so doing, the Panel was guided by the following standards:

- (a) Overwhelming evidence (highly convincing evidence to support a finding);
- (b) Substantial evidence (very solid evidence to support a finding); or
- (c) Sufficient evidence (there is evidence of a credible and reliable nature for the Mechanism to make a finding that a party was involved in the use of chemicals as weapons on the date and time of the incident investigated).

24. Narratives of the incidents and a summary of the information and evidence collected are contained in annexes II to X. In addition, it contains a summary of the findings and concluding assessment.

25. Where the Leadership Panel determined that there was insufficient evidence in relation to an incident investigated by the Mechanism, it has reported accordingly.

### **Challenges and constraints**

26. As was the case with the Fact-Finding missions, the lack of access to the locations under investigation due to the dire security situation on the ground affected the manner in which the Mechanism was able to conduct its investigation. Visits to certain locations would have facilitated the ability of the Mechanism to (a) confirm and access specific locations of interest; (b) collect comparative environmental samples; (c) identify new witnesses; and (d) physically evaluate the material of interest to the Mechanism (e.g., remnants).

27. Other challenges and constraints include the following factors: (a) the time period that had elapsed since the incident (i.e. in some cases, more than two years since the incident); (b) the lack of chain of custody for some of the material received; (c) the source of information and material was of secondary or tertiary nature; (d) some of the information material, including those depicting the size and nature of the incident, were misleading; (e) finding independent sources of information that could provide access to individuals and information material proved difficult; and (f) the impact locations were not preserved and were compromised by the time they were recorded (e.g., the videos and photographs of the impact locations were taken days after the incident and in many cases after the remnants had been removed from the impact location).

### **Ethical issues and considerations**

28. In conducting its investigation and in particular when conducting its interviews, full consideration was given to the privacy and protection of all individuals concerned. All vital information was kept confidential and the identity of witnesses was protected at all times. An identity number, which was assigned to each witness, was used for the processing of data. The master list with the names of the witnesses was kept secure by the Mechanism. Throughout the investigation, the Mechanism made all efforts to respect religious values and norms, national customs and the personal pressures and traumas associated with exposure to conflict.

## Annex II

### Kafr Zita, 11 April 2014

#### Findings of the OPCW Fact-Finding Mission in the Syrian Arab Republic

1. The Fact-Finding Mission (FFM) concluded that the information collected constituted “a compelling confirmation that a toxic chemical was used as a weapon, systematically and repeatedly, in the villages of Talm[e]nes, Al-Tamanah, and Kafr Z[i]ta in northern Syria. The descriptions, physical properties, behaviour of the gas, and signs and symptoms resulting from exposure, as well as the response of the patients to the treatment, leads the FFM to conclude, with a high degree of confidence, that chlorine, either pure or in mixture, is the toxic chemical in question.” (S/2015/138, page 24, paragraph 29)
2. “Kafr Zita and its neighbourhood have been subjected to some 17 attacks involving the use of toxic chemicals, with the first attack occurring on the night of 10 April 2014, and the latest incident being reported to the Mission on 30 August 2014. Because of the frequency of these attacks and constantly living in a war zone, the witnesses had essentially lost their sense of the dates and times of the various incidents. Witnesses informed the Mission that all except one of the attacks (which happened between 1800 and 1900 hours on 11 April 2014) occurred at night.” (S/2015/138, page 49, paragraph 5.59)
3. The incident on 11 April 2014 between 1800 and 1900 hours is listed in the FFM as the second attack with toxic chemicals in Kafr Zita, with 12 patients (that includes patients from the first incident on 10 April 2014). (S/2015/138, page 50, Table 6)

#### The Mechanism’s investigation

##### Background

4. Kafr Zita (Hama Governorate, Muhradah District) is located 30 km north of Hama, at the administrative border with Idlib District. It is located approximately 8 km west of Morek, which sits at M5 Damascus-Aleppo motorway. Hama city and the Hama Military Airfield are located approximately 30 km south-south-east of Kafr Zita. Muhradah village, at the M56 Damascus-Latakia motorway, as well as the Muhradah dam and hydro-electric power plant located 8 km south.
5. According to a 2004 census, the Kafr Zita sub-district had 39,302 inhabitants. Throughout 2014, high movements of internally displaced persons (IDPs) led to considerably higher numbers of people in the sub-district. A report from the United Nations Office for the Coordination of Humanitarian Affairs indicated that over 61,000 people were considered in need of humanitarian assistance in August 2014, out of which 39,500 were IDPs.
6. The Government of the Syrian Arab Republic stated that it had not been in control of Kafr Zita as of 20 December 2012. The town has since been contested.

Throughout 2014, it saw high intensity of conflict, with frequent air strikes, as well as artillery, mortar and rocket fire reported.

7. In 2014, Government presence in Idlib consisted of networks of checkpoints and military installations: one running along the M5 between Ma'arrat al-Nu'man and Khan Sheikhoun, and the other along the M4 connecting Latakia to Idlib city. At the time, the Government of the Syrian Arab Republic was committed to its obligation to remove its chemical weapon stockpiles to Latakia for maritime removal.

8. From spring 2014 onwards, several armed opposition groups concentrated their efforts in Idlib Governorate on cutting Government access to its military bases and Aleppo via the M5. At the time of the first incident, Morek had recently been captured by armed opposition groups, but was contested between the Syrian Arab Armed Forces (SAAF) and armed opposition group.

9. The Government of the Syrian Arab Republic stated that its troops were located 5 km west of Kafr Zita. Reports indicate that in Muhradah and Al-Suqaylabiyah, National Defense Forces (NDFs) had been established. Most of the immediate neighbouring villages of Kafr Zita have been contested at the time.

10. In spring 2014, armed opposition groups and United Nations Security Council designated terrorist organizations,<sup>4</sup> such as the Nusra Front, and their affiliates were present in Kafr Zita. Some reports indicate that the city had been partly under control of the Islamic State in Iraq and the Levant (ISIL) until 6 January 2014.

11. Armed opposition groups present included Failaq Al-Sham, an alliance of several groups formed in March 2014, and Jaish Al-Izza, an alliance of several smaller groups most of which were linked to the Free Syrian Army (FSA).

12. At the time, alliances of groups were shifting, smaller groups merged into larger ones and blocks started to emerge. The open fighting between different armed opposition groups and United Nations Security Council designated terrorist organizations that characterized the second half of 2014 had not yet begun and most of the groups concentrated on their fight against the Government of the Syrian Arab Republic. However, armed opposition groups were in competition for fighters, resources and influence and often had quite diverging ideologies. Hence, the situation in Kafr Zita, in which many armed opposition groups were present, was volatile.

13. Ahrar ash-Sham was active throughout Hama and Idlib in 2014, with several reported activities near the vicinity of Kafr Zita in April. However, the group stated not to have been present in Kafr Zita in April 2014.

14. At the time of the events, there were two hospitals in Kafr Zita, referred to as the Western hospital (No. 5) and the Eastern hospital (No. 6). The Eastern hospital, according to the FFM (S/1230/2014, page 25, paragraph 5.56), has been destroyed in an attack later in 2014.

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<sup>4</sup> On 30 May 2013, Islamic State in Iraq and the Levant (ISIL) and the Nusra Front were designated as terrorist groups by the Security Council under resolution 1267 (1999).

## **Narratives**

15. The description as provided by the FFM report indicates that on 11 April 2014 between 1800 and 1900 hours, the public was informed about imminent attacks through messages relayed on hand-held radios. Shortly before sunset, a helicopter dropped a barrel bomb containing a cylinder filled with chlorine on Kafr Zita. A gas cloud rose to some 50-60 m high and then settled towards the ground, moving into the direction of the air current. A strong, pungent and chlorine-like smell was noticeable from a significant distance and disappeared after some 30 to 45 minutes. Several Member States provided information supporting this description. Other entities published reports stating that a helicopter or “plane” dropped a barrel purportedly containing chlorine.

16. The Government of the Syrian Arab Republic stated that on 11 April 2014, the house of a Nusra Front-commander [name redacted], which was used to manufacture explosives and car bombs, was targeted. Upon impact, the house exploded and the odour of chlorine spread through the town, injuring and killing a number of IDPs in Kafr Zita. Six Nusra Front-affiliated fighters from a neighbouring village were in the house and died in the attack. Several barrels of chlorine had been stored in the house.

17. The Government of the Syrian Arab Republic further stated that the Nusra Front then tried to blame the use of chlorine on the SAAF. To this end, they fabricated a video that portrayed false evidence. Another source supported the view that the video had been staged. In particular, the Government of the Syrian Arab Republic and that source claimed that a physician who was a witness to the FFM was involved in the fabrication of evidence.

18. The FFM, based on the testimony of another witness, provides an alternative description of the incidents. When a helicopter flew in the direction of Kafr Zita, armed men fired a so-called “hell-cannon” in the direction of the town. Yellow and white smoke emerged, and the witness smelled a bad odour and experienced difficulty breathing. At the hospital, other patients experienced the same symptoms.

19. The events received broad media coverage. Some indicated that the Government of the Syrian Arab Republic had attacked Kafr Zita with toxic chemicals, others quoted the Syrian Arab Republic state television that the Nusra Front-affiliated fighters had used chlorine in an attack against Kafr Zita.

## **Date and time**

20. The FFM stated that the attack on 11 April 2014 happened between 1800 and 1900 hours, shortly before sunset. The Mechanism reviewed the FFM witness statements that referred to the 11 April 2014 incident. Two witnesses specifically referred to this incident and confirmed the time. This is corroborated with further witness statements. One witness stated that a few minutes after 1800 hours, several barrel bombs were dropped on Kafr Zita.

21. Several sources uploaded videos to the Internet, claiming that these videos show the attack involving “toxic chemicals” in Kafr Zita on 11 April 2014. One of these videos (v01) shows a large explosion shortly before sunset (1903 hours). The end of the evening prayer can be heard. The metadata analysis indicates that this

video has indeed been uploaded on 11 April 2014 at 1923 hours local time. However, the metadata does not contain any indications on when the video has been filmed.

22. A second open source video (v02) published on 11 April 2014 (date not confirmed by forensic analysis) is labelled “Kafr Zita — The moment of the fall of the explosive barrels carrying toxic materials from helicopters”. Although the results of a forensic analysis are pending at the time of this report, there are several strong indications that suggest that the second part of this video seems to show the same explosion as v01. In the first part, it shows a helicopter dropping a device and follows it while falling. However, there appears to be a cut between the view of the falling device and the first image of the explosion. Further forensic analysis to assess how much time passed between the two video segments that appear to have been cut together is pending.

23. A third video (v03) shows a different large explosion during daylight. It is labelled as showing an explosive barrel impacting on Kafr Zita. Metadata analysis indicates that it was uploaded on 11 April 2014, 1739 hours local time. Although, again, it cannot be excluded that the video was uploaded on 11 April but filmed before that, these videos provide an indication that several attacks might have happened in Kafr Zita at that date, as indicated by a witness.

24. One witness stated to have seen a “hell-cannon being” fired at a helicopter in the direction of Kafr Zita in March or April 2014.

25. Another source stated that a spontaneous explosion of a car laden with unidentified explosives resulted in the death of six Nusrah Front-affiliated fighters. The explosion had been accompanied by a strong smell of chlorine in the air and several dozen civilians were poisoned, and some of them killed. The Mechanism could not obtain any information that supports this description.

### **Weather conditions**

26. The sunset on 11 April 2014 was at 1903 hours. At around 1800 and 1900 hours, the temperature declined from 23 °C to 19 °C with the relative humidity of 72 to 76 per cent. The wind came from the north-west (310 °) at 1 m/s to 2 m/s.

### **Impact location**

#### *Location #1*

27. A witness stated that a barrel bomb fell on “more than one house” on the west side of the Western (No. 5) hospital. The explosion, which looked “different, the smoke was yellowish orange”, could be seen from the Western Field Hospital. In order to corroborate the impact location, the Mechanism established the location of that hospital, as a reference point, from four different sources.

28. A witness visited the impact location several days after the incident and recorded the visit. In the video (v04), a GPS Application on a tablet shows the coordinates as N35.372950 ° E36.589800 °, which would match the description as provided by the witness.

29. None of the additional witnesses confirmed or provided additional information with regard to this location. The resolution of the satellite imagery available to the

Mechanism for this area was too low to identify any signs of the impact. Despite repeated requests, the Mechanism was not provided with any military satellite imagery for the date and location in question.

*Location #2*

30. Through forensic analysis of v01, a potential impact area of the explosion at sunset was determined. The location given by the two witnesses is further west. Hence, the crater at location #1 shown in v04 does not result from the air strike in v01, although the explosion and resulting cloud, as well as the time, resemble the description of the witness.

*Location #3*

31. In v03, an impact with several detonations in series on a wide area can be seen and heard. A yellowish cloud emanates from the impact. The forensic analysis indicates that the impact occurred in the south-west region of Kafr Zita.

*Location #4*

32. The Government of the Syrian Arab Republic provided the coordinates of the house of the Nusra Front-commander targeted on that date (N35.373189° E36.599503°).

33. However, none of the videos seem to show this attack, as the coordinates are neither located in the potential impact areas as determined by the video analysis, nor do they match the account of the witnesses. Comparison of satellite images of the house before and after 11 April 2014 shows damage, probably resulting from an explosion.

*Location #5*

34. The witness who spoke about the impact of a hell-cannon described the impact location as “close to the big mosque” and showed it on a map (N35.373642° E36.602564°). Publicly available satellite images on 2 May 2014, few weeks after the attack, show a potential crater approximately 25 m from this location.

35. The impact location does not match any of the other locations. It is 200 m next to the Eastern hospital (No. 6).

**Munition**

36. The determination of the munition was based on witness statements, videos of the explosion and remnants, in addition to available photos.

*Location #1*

37. According to a witness, the remnants from location #1, together with remnants from other incidents, were collected and stored outside of Kafr Zita. In a video (v04) that was filmed on 23 April 2014, the location is shown, which includes coordinates on a GPS Application on a tablet (N35.354700° E36.584417°). Comparing the reference points seen in the video with a map, the GPS coordinates seem credible.

38. V04 and other open source videos show remnants said to be from location #1. Those remnants had been moved from the actual impact location to another location at the outskirts of the village. Several videos and pictures show remnants that are from Kafr Zita, however, it remains unclear to which incident, date and location they are linked.

39. The witness stated that the remnants from location #1 included an outer jacket and an inner cylinder. This description matches the remnants seen in v04. The measurements of the remnants are 160 cm length (157 cm inner cylinder) and 60 cm in diameter (40 cm inner cylinder).

40. One journalist also took pictures at the same location 12 days after the attack and published 59 of them. The same remnants can be seen in the pictures, as in the FFM witness' video, and it is likely to have been taken at the same location.

41. No further witnesses identified by the Mechanism could provide information to confirm that the remnants in the pictures had been removed from the crater at location #1. The munition could not be linked to the impact location and crater through image analysis either.

42. One witness stated that the explosion at location #1 was large and people initially thought it was an attack with a conventional munition. "The smoke was yellowish/orange in addition to the dust caused by the explosion." Another witness stated that the explosion at location #1 was "very big" and that it could be heard from one village to another. This witness described the cloud as being 50-60 m high, spreading quickly because of wind coming from the west.

43. A witness said that when the first barrel was dropped about 400 m from where he/she was, it resulted in a massive explosion with yellowish fumes. The witness also stated that these fumes started moving eastward with the wind and smelled like chlorine.

44. Reports from two independent entities state that a helicopter dropped a big container that fell between four houses. Other than the witnesses above, these reports state that they exploded without making the usual sound of an explosion, releasing unusual yellow-orange smelly gas within a circle of 500 m.

#### *Location #2*

45. The descriptions by the witnesses resemble the explosion seen in v01. However, two of them had described the location as location #1.

46. The explosion in v01 shows a yellow base of the explosion. According to a forensic examination, the cloud is resulting from the detonation of an "oxygen-deficient military high explosive type (e.g. TNT)" causing a dark cloud. The yellow colour in the base of the cloud is judged to be dust. According to the Mechanism's and independent weapon experts, the explosions seem to result from "advanced military munition with a primary detonation and delayed sub-detonation".

*Location #3*

47. In v03, an impact with several detonations in series on a wide area can be seen and heard. A yellowish cloud emanates from the impact. The Mechanism's munitions experts, in coherence with external independent experts and research institutes, concluded the impact probably resulted from conventional military munition, potentially combined with sub-munitions. The title and description of the video does not indicate any links to chemicals.

48. The Mechanism could not exclude that the blast shown on the video originated from ground-based explosives.

*Location #4*

49. The Government of the Syrian Arab Republic has not provided information on the munition used, although this information was sought on numerous occasions. The Mechanism did not receive any information on footage of or information on remnants from this location.

*Location #5*

50. The witness stated that the munition was delivered by a device called "hell-cannon". A drawing of the munition made by the witness resembles a possible projectile, also described by various open sources. An LPG or propane gas cylinder is repurposed and filled with explosives and shrapnel. Welded to the payload is a metal tube (the tail) about the same circumference as the cannon's muzzle.

51. The Government of the Syrian Arab Republic, in accordance with reports from independent entities and open sources, provided information on armed opposition groups using hell-cannons to launch IEDs allegedly filled with explosives, often fertilizer. However, the expert's assessment is that the munition as described by the witness is extremely unlikely to have been filled with chlorine.

**Delivery method***Location #1*

52. One witness saw a helicopter drop a device on 11 April 2014 around 1800 hours. Another witness stated that "monitors informed that a helicopter was dropping barrel bombs" and that, looking from a window, the witness had seen a "barrel bomb coming down". The report of another organization that documented the events refers to a helicopter taking off from Hama military airport and at 1800 hours targeting the western area of the village.

53. While there are multiple witness statements regarding a helicopter from different sources, the Mechanism has not been able to independently corroborate by a means other than a witness statement that a helicopter was flying in Kafr Zita between 1900 and 2000 hours.

*Location #2*

54. V01 showing the detonation around sunset was reviewed for the delivery method. An independent research institute and the Mechanism's munition experts

were of the view that “the explosive charges [have been] delivered by dropping from an aircraft”. In the video, an object can be seen falling in a rather vertical angle, just before the detonation, in the direction of the detonation site. In the video, a sound resembling that of a jet fighter can be heard. However, there are many possible explanations for that sound.

55. The Government of the Syrian Arab Republic shared their analysis of v01, stating that it showed an air strike with conventional munition.

56. V02, which seems to show the explosion at location #2 (seen in v01), also shows a helicopter. However, as the video appears to be cut between the images of the helicopter and the explosion, the helicopter cannot be linked to the explosion through this video.

#### *Location #3*

57. An independent analysis of v03 indicates that the munitions were delivered by dropping from an aircraft, as indicated in the title of the video. This video is considered not linked to exposure with chlorine.

#### *Location #4*

58. The Government of the Syrian Arab Republic, while confirming the attack, did not confirm whether it was undertaken through air strikes or land-based attacks.

#### *Location #5*

59. “Hell-cannon” is a name used to describe a class of mortar-like improvised firearms. A number of home-made variants have appeared in the Syrian Arab Republic. When fired, the force of the explosion takes the path of least resistance pushing the projectile towards the target at high velocity. Flight stabilizing fins which are part of the tail ensemble ensure the cylinder does not tumble. It is considered extremely unlikely that the projectile described by the witness would have been launched by hell-cannon.

#### *Unclear location*

60. The Mechanism notes that there are two other witnesses interviewed by a different entity who refer to helicopters in Kafr Zita on that day. One of these witnesses was at home at the time of the incident and heard a helicopter hovering at around 1800 hours. A few minutes later the helicopter dropped several barrels specifically on the western part of Kafr Zita. Another witness, who was not in Kafr Zita at the time of the incident, reported that “the nature of the attacks involved air strikes launched by regime warship helicopters that dropped barrel bombs loaded with chlorine which exploded producing yellowish fumes that smelled like chlorine cleanser”. Another entity was quoted by international media referring to a “plane” that dropped a barrel containing chlorine.

61. The Government of the Syrian Arab Republic provided information related to land operations. In response to attacks against SAAF positions, the SAAF used firepower by means of cannons against armed opposition groups in several locations,

including Kafr Zita, resulting in a number of opposition fighters being killed or injured, in addition to vehicles and equipment destroyed.

62. V02, which seems to show the explosion at location #2, also shows a helicopter. However, as the video appears to be cut between the images of the helicopter and the explosion, the helicopter cannot be linked to the explosion through this video.

### **Damage and effects**

#### *Location #1*

63. The size of the crater depicted in v04 was approximately 200 cm deep and 400 cm wide. Forensic analysis of the crater was inconclusive with regard to determining its origin.

64. The FFM report refers to a video showing the crater of 3.6 m diameter and 1.4 m depth, with minimal damage to buildings in the vicinity and a screen shot was listed as Appendix 21. However, after thorough analysis, the investigation team concluded that this is a picture of a crater in Talmenes and not Kafr Zita.

#### *Location #4*

65. A comparison of satellite images before and after the event on 11 April 2014 showed considerable damage, probably resulting from an explosion.

### **Medical effects**

66. Witnesses and other sources indicated that up to 150 patients were treated in the two hospitals on 11 April 2014. Three people died in the aftermath of the events. One hundred patients were treated in the Eastern hospital and 50 in the Western hospital. Several patients were referred to a neighbouring country for further treatment.

67. According to a witness, one person died from exposure to toxic substances. The other two died from other injuries.

68. External research institute conducted a basic simulation of the dispersion of a chlorine plume in Kafr Zita. The model predicted three deaths in a distance of 50 m from the impact location and 120 affected in a distance of 400 m. The Mechanism used this dispersion model at the potential impact locations in Kafr Zita, to assess the effect on the population.

#### *Location #1*

69. On satellite images, 30 houses were located within the plume dispersion area (400 m) at location #1. Based on the assumption that an average of four people was in each house close to sunset, the number of 120 people affected might be possible. For this area, 150 patients stands above the expected number of affected people, in particular if it is considered that one witness referred to the location #1 as an uninhabited area.

70. However, it is also possible that more people might have been in the village or in the area. Also, same as two of the three deadly injured people, according to the

witnesses, did not die of chlorine exposure; some of the patients might have suffered from other injuries and/or anxiety.

71. The Government of the Syrian Arab Republic and one other source accused armed opposition groups and individuals of fabricating false report on patients. They were “filming and taking photographs of the affected population, including children, with a view to presenting the episode as chemical attack by government forces.” A local physician was allegedly directly involved in preparing fake footage paid by other Member States to fabricate these claims. There is no evidence to support the statement given above.

#### *Location #4*

72. According to the Government of the Syrian Arab Republic, there were injuries and deaths among IDPs, in addition to six Nusra Front-affiliated fighters. The investigators analysed the effect of the destruction at location #4 considering that toxic chemicals were stored in the building and released with the explosion. Probably the greatest impact would be less than 100 m from the house.

73. It is plausible that people inside the house died and that the neighbouring houses were affected causing exposure to civilians. The investigators estimated that approximately 30 houses would be in this perimeter. A dispersion analysis was not possible due to the lack of information on the kind and amount of toxic substances stored in the house.

#### *Location #5*

74. The witness saw yellow and white smoke and smelled a bad odour, as never experienced before. The witness and family members experienced difficulty breathing. In a first interview, the witness mentioned to have seen a three-year-old girl exhibiting laboured breathing, secretions and cyanosis in the hospital. In a second interview, the witness referred only to opposition fighters being treated for other injuries. The Mechanism could not gather additional information to corroborate the witness’ testimony.

### **The Leadership Panel’s assessment**

75. The Leadership Panel examined the existing information and evidence regarding the incident in Kafr Zita on 11 April 2014 and determined that the SAAF executed air strikes in that area on that day. At least one explosion resulted from the airstrike.

76. The Leadership Panel could not confirm the use of barrel bombs because the remnants of the device allegedly used had been removed from the site and could not be linked to any of the impact locations.

77. While a significant number of people — up to 150 — may have been exposed to chlorine on 11 April 2014, the Leadership Panel determined that there was insufficient information at this stage to draw a conclusion on the actors involved.

78. This assessment was based on the following:

- On 11 April 2014, the Nusra Front and several armed opposition groups were present in Kafr Zita. This area was subject to regular artillery and air-borne attacks by the SAAF. Such attacks were ongoing on 11 April 2014.
- The Government of the Syrian Arab Republic confirmed that it had targeted, on the date and time of the incident, the house of a Nusra Front-commander, which the Government alleges was used to build improvised explosive devices and store chlorine.
- Both the Government of the Syrian Arab Republic and armed opposition groups concurred that chlorine was used in Kafr Zita on 11 April 2014.
- None of the five alleged impact locations could be confirmed by the Mechanism.
- Two open source videos show an explosion in Kafr Zita caused by a device dropped from an aircraft. Another video shows a separate explosion. The Mechanism could not, however, determine if the latter explosion was caused by a device dropped from an aircraft, or by ground based munitions. Furthermore, the two explosions could not be associated with chlorine-specific attacks.
- The remnants of the munitions allegedly used had been removed from the alleged impact locations to different locations.

## Annex III

### Kafr Zita, 18 April 2014

#### Findings of the OPCW Fact-Finding Mission in the Syrian Arab Republic

1. The Fact-Finding Mission (FFM) concluded that the information collected constituted “a compelling confirmation that a toxic chemical was used as a weapon, systematically and repeatedly, in the villages of Talm[e]nes, Al-Tamanah, and Kafr Z[i]ta in northern Syria. The descriptions, physical properties, behaviour of the gas, and signs and symptoms resulting from exposure, as well as the response of the patients to the treatment, leads the FFM to conclude, with a high degree of confidence, that chlorine, either pure or in mixture, is the toxic chemical in question.” (S/2015/138, page 24, paragraph 29)
2. “Kafr Zita and its neighbourhood have been subjected to some 17 attacks involving the use of toxic chemicals, with the first attack occurring on the night of 10 April 2014, and the latest incident being reported to the Mission on 30 August 2014. Because of the frequency of these attacks and constantly living in a war zone, the witnesses had essentially lost their sense of the dates and times of the various incidents. Witnesses informed the Mission that all except one of the attacks (which happened between 18:00 and 19:00 on 11 April 2014) occurred at night.” (S/2015/138, page 49, paragraph 5.59)
3. The incident on 18 April 2014 around 2230 hours is listed in the FFM as the fifth attack with toxic chemicals in Kafr Zita, with 35 patients. (S/2015/138, page 50, Table 6)

#### The Mechanism’s investigation

##### Background

4. Kafr Zita (Hama Governorate, Muhradah District) is located 30 km north of Hama, at the administrative border with Idlib District. It is located approximately 8 km west of Morek and M5 Damascus-Aleppo motorway. Hama city and the Hama Military Airfield are located approximately 30 km south-south-east of Kafr Zita. Muhradah village, at the M56 Damascus-Latakia motorway, as well as the Muhradah dam and hydro-electric power plant, are located 8 km south.
5. According to a 2004 census, the Kafr Zita sub-district had 39,302 inhabitants. Throughout 2014, high movements of internally displaced persons (IDPs) led to considerably higher numbers of people in the sub-district. A report from the United Nations Office for the Coordination of Humanitarian Affairs referred to over 61,000 people as considered in need of humanitarian assistance in August 2014, out of which 39,500 were IDP.
6. The Government of the Syrian Arab Republic stated that it was not in control of Kafr Zita as of 20 December 2012. The town has since been contested. Throughout 2014, it experienced a high intensity of conflict, with frequent air strikes, as well as artillery, mortar and rocket fire reported.

7. From spring 2014 onwards, several armed opposition groups concentrated their efforts in Idlib Governorate on attempts to cut Government access to its military bases and Aleppo via the M5. At the time of the second incident, Morek had just been recaptured by the Syrian Arab Armed Forces (SAAF), but was contested between them and armed opposition groups.

8. The Government of the Syrian Arab Republic stated that its troops were located 5 km west of Kafr Zita. Reports indicate that in Muhradah and Al-Suqaylabiyah, National Defense Forces (NDF) had been established. Most of the immediate neighbouring villages of Kafr Zita have been contested at that time.

9. In the first half of 2014, United Nations Security Council designated terrorist organizations,<sup>1</sup> such as the Nusra Front, and their affiliates were present in Kafr Zita. Some reports indicate that the city had been partly under the control of the Islamic State in Iraq and the Levant (ISIL) until 6 January 2014.

10. Other factions present included Failaq Al-Sham, an alliance of several armed opposition groups formed in March 2014, and Jaish Al-Izza, an alliance of several smaller groups most of which were linked to the Free Syrian Army (FSA).

11. At the time, alliances of groups were shifting, smaller groups merged into larger ones and blocks started to emerge. The open fighting between different armed opposition groups and United Nations Security Council designated terrorist organizations that characterized the second half of 2014 had not yet begun and most of the groups concentrated on their fight against the Government of the Syrian Arab Republic. However, armed opposition groups were in competition for fighters, resources and influence and often had quite diverging ideologies. Hence, the situation in Kafr Zita, in which many groups were present, was volatile.

12. Ahrar ash-Sham was active throughout Hama and Idlib in 2014, with several reported activities near the vicinity of Kafr Zita in April 2014. However, the group stated that it was not present in Kafr Zita around that time.

13. At the time of the events, there were two hospitals in Kafr Zita, referred to as the Western hospital (No. 5) and the Eastern hospital (No. 6).

### **Narratives**

14. The description that emerged from the testimony of witnesses interviewed by the FFM was that on 18 April 2014 around 2230 hours, a helicopter dropped two barrel bombs containing cylinders filled with chlorine.

15. The Government of the Syrian Arab Republic provided a different description of the events on 18 April 2014. The SAAF conducted an air strike against an observation post of the Nusra Front or an affiliated group in the north-eastern part of the town. Fighters had launched an improvised explosive device from there, at the tip of which a gas cylinder had been attached. After the rocket had been fired, it emitted an odour and a thick, white smoke. The group exploited the situation and produced videos, alleging that SAAF had fired shells with chlorine gas. At the same

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<sup>1</sup> On 30 May 2013, Islamic State in Iraq and the Levant (ISIL) and the Nusra Front were designated as terrorist groups by the Security Council under resolution 1267 (1999).

time, the SAAF also targeted the house of a person affiliated with a specific armed opposition group that was used as depot for explosive devices. When the house exploded, a noxious, green gas was emitted. The opposition, with the help of a local physician, created false evidence that blamed the chemical attack on the SAAF.

16. A different description provided by another source indicated that the Nusrah Front fighters had used mortar shells filled with chlorine. The Mechanism could not obtain information to support this narrative, including on the impact location, munition and the delivery mechanism used.

#### **Date and time**

17. Two witnesses stated that on 18 April 2014 at 2245 hours, two barrel bombs fell on Kafr Zita. Another witness stated that the attack happened around 2300 hours.

#### **Weather conditions**

18. The sunset on 18 April 2014 was at 1909 hours. The temperature between 2200 and 2300 hours was 19 °C to 20 °C. The wind varied at 1 m/s.

#### **Impact location**

##### *Location #1*

19. A witness indicated that one barrel bomb impacted within a 50 m radius of the Eastern (No. 6) hospital. The Mechanism identified the location of the Eastern (No. 6) hospital as the reference point in two videos retrieved from open sources. The location was confirmed by a witness and the Government of the Syrian Arab Republic.

20. No further information is available on the crater at this impact location and it was not possible to corroborate this information.

##### *Location #2*

21. A witness stated that one of the two barrels was dropped on the Kafr Zita football field. The day after the incident, the barrel bomb was still in the crater and removed by an “engineering battalion”. The Mechanism could not identify any new witnesses who could corroborate this information.

22. On 23 April 2014, a witness went to the football field area where the second barrel bomb had reportedly impacted and registered the coordinates at N35.3731667 ° E036.5973167 °. In a satellite image analysis, an anomaly that looks like a crater can be seen.

##### *Location #3*

23. The Government of the Syrian Arab Republic provided the location of the farm targeted by the SAAF at N35.3843222 ° E36.6145250 °.

24. Comparison of open source satellite imagery from before and after the event did not show signs of an impact that occurred in this area. An anomaly that looks like a crater was already present in September 2012.

*Location #4*

25. The Government of the Syrian Arab Republic provided the location of the house which it had also targeted at N35.3721417 ° E36.6025000 ° in front of the Big Mosque.

26. Comparison of open source satellite imagery did not show any significant damage after, compared to before 18 April 2014. However, better pictures of a higher resolution would have been required to confirm. The Mechanism has requested high resolution military imagery, but did not receive any.

**Munition***Location #1*

27. No information.

*Location #2*

28. In the footage from the impact location, no remnants can be seen. A witness stated that all remnants had been moved to another location outside of Kafr Zita. That witness provided a video (v01) of the purported remnants filmed at that location. The device consists of an outer jacket of 114 cm in length and 45 cm in diameter and an inner cylinder of the same (114 cm) length and 30 cm in diameter.

29. The title of an open source video (v02) published on 18 April 2014 indicates that it shows an “Engineering Battalion Mohamad” dismantling a barrel bomb filled with chemicals in Kafr Zita at night. According to visual comparison, the remnants resemble those seen in v01.

30. V02 shows an outer barrel with an inner cylinder that appears to have been repainted. A blue detonating cord is wrapped around the opening where the valve had been attached. The valve was removed from the cylinder, but it appears that the cylinder, which had an additional safety plug, did not explode. The rest of the device appears intact. Any gas leakage would, therefore, have been from where the valve was attached.

31. Both the inner cylinder and outer jacket are metallic, which means that it would require at least four metres of detonating cord to breach the walls of both the inner cylinder and the outer jacket. Tape was used to attach the detonation cord to the surface of the inner cylinder.

32. Forensic examination of the video that shows the impact site found that no remnants or remaining fragments can be seen on site, “which suggests the detonation pit is old (>24 hours) when filmed. This fact makes it difficult to assess the size and thereby the cause of the formation of the detonation pit”.

33. Appendix 19 of the FFM report ([S/2014/138](#), page 107, Appendix 19) also shows the sketch of an improvised barrel bomb and a screen grab from a video showing a barrel bomb. The picture and sketch show a larger cylinder and smaller containers. Labels added to the pictures indicate that the smaller containers are filled with sulphuric acid. However, there is no connection between the cylinder valve and the sulphuric acid. Accordingly, it does not appear to be an improvised explosive.

Furthermore, the cylinder is intact and does not match the remnants shown in other footage from the Kafr Zita on the 18 April 2014 case.

34. Several pictures of remnants are published by an open source in relation to the 18 April incident. The Mechanism could not find additional information to corroborate that the remnants were from the incident of 18 April.

#### *Locations #3 and #4*

35. The Government of the Syrian Arab Republic has not provided information on the munition used for targeting both locations. The Mechanism could not obtain any other information on the munition used from other sources.

### **Delivery method**

#### *Location #1*

36. A witness indicated that one barrel bomb impacted within a 50 m radius of the Eastern hospital (No. 6). No further information could be found.

#### *Location #2*

37. Witnesses said that they heard about an approaching helicopter through a radio system. One witness specifically referred to the approach of a helicopter at 2245 hours. The attack occurred at night and none of the witnesses stated that they had seen a helicopter.

38. While there are witness statements regarding a helicopter, the Mechanism has not been able to independently corroborate that a helicopter was flying in Kafr Zita at 2230 hours.

39. A witness took measurements and recorded a video of the crater said to be from 18 April 2014. The crater was 300 cm in diameter and 100-110cm in depth. An external expert stated that this kind of crater could result from a barrel bomb with a cylinder filled with chlorine dropped from a helicopter at high altitude and hitting the ground orthogonally or somewhat obliquely.

40. Another external ballistics expert stated that the large detonation pit diameter, in combination with the shallow depth, suggested the munition had detonated at the surface or directly beneath the surface. The large diameter and geometry of the detonation pit suggest a large calibre mortar round (120 mm or more) may have hit and detonated at the filmed site. However, it cannot be excluded that other possible munitions, like a barrel bomb or another type of bomb dropped from helicopters or aircraft, created this crater.

#### *Location #3*

41. The Government of the Syrian Arab Republic had initially stated that an air strike was directed against this position. As mentioned above, the Mechanism could not obtain any footage showing the impact, and satellite image analysis did not yield any results with regard to signs of an air strike.

*Location #4*

42. The Government of the Syrian Arab Republic did not specify the delivery method for this location. However, the Government provided general information on operations in the area — as a response to attacks against SAAF positions, firepower “by means of canons” was used in several locations, including Kafr Zita. As mentioned above, the Mechanism could not obtain any footage showing the impact, and satellite image analysis did not yield any results with regard to signs of an air strike.

**Damage and effects***Location #1*

43. Unknown.

*Location #2*

44. Soil samples from the impact crater in the football field were taken by a witness and handed over to two Member States. The Mechanism reviewed the results of the analysis, which indicated the presence of chlorinated compounds.

45. The Mechanism requested a ballistics/explosives expert to analyse the crater images and the expert reported that: “The crater arising is somewhat larger than the practical maximal predicted for [a barrel bomb filled with chemicals] ... the inner gas cylinder is quite heavy and pointed it may be expected to penetrate deeper than the predicted value. There may also possibly have been an additional explosive charge in the bomb. If this would be the additional main contributor to the cratering it would be expected to have been of the order of about 2kg of TNT-equivalent. This is judged to be too much if resulting from detonating cord present in the bomb only, but could well be the result of the chlorine gas streaming out violently from the pressure vessel in bomb after it impacted and penetrated into the ground.”

*Locations #3 and #4*

46. Unknown.

*General*

47. The distance between the locations indicated by different sources leads the Mechanism to consider the possibility that there were more than two targeted places on this date.

48. There are contradictions, insufficient information and tampering with impact sites. Therefore, the Mechanism could not reach a conclusion on this event.

**Medical effects**

49. The FFM reports of 35 patients in relation to the incident. No death was recorded. A witness stated that approximately 30 people were affected and went to the hospital. Two other witnesses said that there were around 100 people injured in total. One witness specified that tens of people were suffocating from the impact in the football field and people near the second impact place (close to the Eastern

hospital) were suffering from shortness of breath and suffocation, among them medical staff in that hospital.

50. Too little information was available on topography, obstacles, locations, population density and characteristics (age, gender, health conditions). Therefore, a simulation of the plume dispersion did not yield tangible results.

### **The Leadership Panel's assessment**

51. The Leadership Panel examined the existing information and evidence regarding the incident in Kafr Zita on 18 April 2014 and determined that the SAAF executed air strikes in that area on that day. However, the Leadership Panel could not confirm the use of barrel bombs because the remnants of the device allegedly used had been removed and could not, at this stage, be linked with certainty to impact location #2.

52. The Leadership Panel determined that this case merits further investigation.

53. This assessment was based on the following:

- On 18 April 2014, armed opposition groups and the Nusra Front, were present in Kafr Zita. This area was subject to regular artillery and air-borne attacks by the SAAF, some of which took place on 18 April 2014.
- The Government of the Syrian Arab Republic has confirmed that on the date and time of the incident, the SAAF conducted an airstrike on an observation post and targeted a house that was used as depot for explosive devices. When the house was struck, a noxious, green gas was emitted.
- Both the Government of the Syrian Arab Republic and armed opposition groups do not deny that chlorine was used in Kafr Zita on 18 April 2014.
- Only one impact site (location #2) has been confirmed by the Mechanism. However, the Mechanism could not determine whether the impact crater was caused by a barrel bomb or a different munition, such as a mortar round.
- The remnants of the munitions allegedly used were not found at or near the alleged impact locations, as they were removed and brought to a different location. While several pictures of remnants are published by an open source in relation to the 18 April incident, the additional information on the remnants has not been to corroborate the impact location.

## Annex IV

### Talmenes, 21 April 2014

#### Findings of the OPCW Fact-Finding Mission in the Syrian Arab Republic

1. The Fact-Finding Mission (FFM) concluded that the information collected constituted “a compelling confirmation that a toxic chemical was used as a weapon, systematically and repeatedly, in the villages of Talm[e]nes, Al-Tamanah, and Kafr Z[i]ta in northern Syria. The descriptions, physical properties, behaviour of the gas, and signs and symptoms resulting from exposure, as well as the response of the patients to the treatment, leads the FFM to conclude, with a high degree of confidence, that chlorine, either pure or in mixture, is the toxic chemical in question.” (S/2015/138, page 24, paragraph 29)
2. “Talmenes village was attacked with toxic chemicals on two separate occasions, first on 21 April 2014 and again on 24 April 2014.” (S/2015/138, page 35, paragraph 5.6)

#### The Mechanism’s Investigation

##### Background

3. Talmenes (Idlib Governorate, Ma'arrat al-Nu'man District) is located 5 km east of the district capital Ma'arrat al-Nu'man, on one of two highways that connect the district capital with villages to the east, including Abu al-Dhuhur and the nearby Airbase.
4. According to a 2004 census, Ma'arrat al-Numan District had 58,008 inhabitants, 11,359 of which lived in Talmenes. In 2014, according to the FFM report, around 20,000 people were living in the town, which included several thousand internally displaced persons (IDPs) from other places. According to a report of the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), in August 2014 over 65,500 people were in need of humanitarian assistance in the District, including 23,000 IDP.
5. The Nusra Front<sup>1</sup> and Ahrar ash-Sham were reported to have had a heavy presence around Talmenes and involved in frequent clashes with the Syrian Arab Armed Forces (SAAF). Ahrar ash-Sham claimed that they and Firqa 13 controlled Talmenes, while others claimed that the Nusra Front had been in control. Failaq al-Sham had presence in the area, and several other armed opposition groups may also have been present, including Suqour al-Sham.
6. Several sources, including the Government of the Syrian Arab Republic, stated that the Islamic State in Iraq and the Levant (ISIL) had largely retreated from Idlib

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<sup>1</sup> On 30 May 2013, Islamic State in Iraq and the Levant (ISIL) and the Nusra Front were designated as terrorist groups by the Security Council under resolution 1267 (1999).

by March 2014. According to this information, ISIL had not been present in Talmenes at the end of April 2014 and their next position was over 30 km away.

7. On 5 March 2014, armed opposition groups launched an offensive in the area. The frontline lay to the west of Talmenes, between the village and the SAAF military base at Wadi Deif; armed opposition groups effectively controlled the territory east of the M5 motorway. By 4 April 2014, armed opposition groups had succeeded in cutting off supply lines to the two SAAF bases of Wadi Deif and Al-Hamadiyah for the second time that year, and laid siege to these bases. The Government of the Syrian Arab Republic stated that Wadi Deif had been completely surrounded at the time.

8. In April 2014, there were contradicting witness statements about the situation within Talmenes. Some witnesses indicated that the village experienced daily attacks, while others stated that the village had largely been spared. Media and open sources have very few references to attacks in Talmenes. However, there were many reports of clashes in nearby Ma'arrat al-Nu'man.

9. It is indicated in the FFM report that the Al-Siddiq Hospital in Talmenes had very limited resources and facilities, offering only basic medical aid. The more severe cases were transferred to hospitals in Bab al-Hawa and Saraqeb.

#### **Narratives**

10. The FFM report (S/2015/138) stated that on 21 April 2014, between 1030 and 1045 hours, two "barrel bombs" were dropped on the village in the neighbourhood around the "big mosque". They impacted on two residential properties. The people from the neighbourhood sought refuge from the air strike at an olive grove to the east of the village. A honey-wax-to-yellow coloured gas cloud rose from the impact of one of the bombs to a height of some 50-75 m. It was very dense and the smell of the released gas was pungent, irritating and "of chlorine". This cloud settled along with the wind towards the east at a height of some 1-1.5 m above the ground and covered the main escape route to the east. Approximately 200 people were affected and three people died.

11. The Government of the Syrian Arab Republic confirmed that there was an incident in Talmenes on 21 April 2014. According to their description, an armed opposition group fired a projectile from Ma'ar Shamarin (south of Talmenes) that fell in the centre of the village, close to a residential house which is one of the residential properties mentioned in paragraph 10 above. The impact caused substantial damage and two people died. The Government further said that armed opposition group used this incident to accuse the Syrian Arab Army (SAA) to have fired a projectile armed with chlorine gas. This description did not include any information on the use of chlorine gas or affected people. One witness said to have heard the explosion and smelled an odour like "rotten eggs", but did not see any injured people.

12. Another source provided an assessment indicating that an ISIL-firing position for an unguided missile launcher in the area experienced a spontaneous detonation in the course of launching of a live round, releasing an unidentified toxic gas. The explosion allegedly resulted in the death of the missile launcher's operating personnel, the "intoxication" of 83 civilians and the death of livestock. The

Mechanism could not obtain any additional information to support this allegation, or even ISIL presence at an operational distance.

#### **Date and time**

13. A video (v01), provided by a witness, includes eyewitness statements. One of the individuals in the video stated that an “air strike” took place on Monday, 21 April 2014, at around 1100 hours and both munitions landed within 200 m of the “big mosque”. According to a forensic examination, the metadata indicated that the video was originally captured on 23 April 2014, but also noted that metadata can be altered. The Government of the Syrian Arab Republic confirmed that an incident occurred on 21 April 2014, but did not specify the time.

14. On 25 April 2014, an international newspaper published an article about the attack that occurred in Talmenes on 21 April 2014 based on its own investigations.

#### **Weather conditions**

15. On 21 April 2014, between 1000 and 1100 hours, the wind in Talmenes was blowing from west to east (250 °-270 °) at 3 m/s. The temperature was around 19 °C to 21 °C, with a relative humidity of 74 to 77 per cent.

#### **Impact location**

16. According to a witness, the “air strike” hit approximately 200 m from the big mosque. It is unclear whether this testimony refers specifically to the first or the second impact location.

##### *Location #1*

17. Two videos handed over by a witness (v02, v03) show an impact site in a courtyard. In one of the videos, a tablet is shown displaying a GPS application with the coordinates N35.6408333 ° E36.7426167 °, approximately 140 m north-east of the mosque.

##### *Location #2*

18. The same videos (v02, v03) also show the impact location at a house. The coordinates displayed on the tablet are N35.6405500 ° E36.7418833 °, which is approximately 75 m north-north-east of the mosque and approximately 75 m south-west-west of location #1.

19. Metadata of the above-mentioned videos do not contain GPS coordinates. Visual comparison of images and satellite pictures carried out by an external forensic institute strongly support that the GPS coordinates displayed in the videos are indeed the sites depicted in it (error 4-8 m). However, they caution, satellite images in higher resolution or other reference images could corroborate the findings, but could also theoretically give a different outcome.

20. The Government of the Syrian Arab Republic provided the name of the owner of the house that had been targeted in the attack by armed opposition groups that they described. The name corresponds to the name of the owner of the house at

location #2. The Government had stated that this person had died in the attack; however, this person was interviewed by the FFM several months after the attack.

### **Munition**

21. The FFM report had quoted witnesses, describing the sound of the falling munition as “whistling”. Upon impact, a witness heard a muted, distinct sound, as if there was no explosion or one with very low impact.

#### *Location #1*

22. V02 and v03, taken two days after impact, show a crater in a backyard, but no remnants. A person is seen taking measurements of the crater (300 cm in diameter and 100 cm in depth), as referred to in the FFM report ([S/2015/138](#)).

23. A forensic examination of v02 and v03 concluded that: “[The] detonation site [is] questionable in terms of showing an alleged site for a barrel bomb strike with toxic chemicals.” A barrel bomb without a large explosive charge would not penetrate the hard soil to the extent seen. The expert analysis further excludes that a barrel bomb with explosives or other munition has been used, as no traces of shrapnel hits are visible in the surrounding walls and a barrel bomb with corresponding explosive content would cause surrounding walls to collapse. A mortar round, artillery shell or a bomb may have caused a detonation pit of similar size, but there would, most likely, also be traces of shrapnel hits in the surrounding walls and partially or fully collapsed walls due to the damage effect caused by the detonation.

24. According to the forensic expert analysis, the crater (“pit”) in v02 and v03 is caused by a detonation, but the origin of the detonation is probably an explosive charge of 5 to 10 kg TNT-equivalent buried in the ground.

25. A video (v04) by local media shows the same courtyard and crater. There appears to be a cylinder inside containing the deformed remains of the outer jacket of a “barrel bomb”, which is lying next to a crater in the courtyard. Forensic examination and image comparison strongly supported that this video showed the same backyard with a crater (location #1) as v02 and v03. Dead animals are seen next to the crater. Metadata of V04 include timestamps that indicate 20 April 2014 as the creation date, one day before the incident. It is noted, that metadata depends on the settings of the recording device used and can be altered.

26. The analysis of v04 did not change the analysis of the crater above. The forensic report further stated that the remnants seen in v04 are not likely the carrier of the explosives that caused the crater (“pit”), since the device would have fragmented at the top and sides dispersing into smaller pieces, like the remnants in v04. The munition would only have carried a small amount of explosives and could not have caused a crater of this size. In addition, the bodies of the dead animals seen in v04 look clean and intact, making it highly unlikely that they were in the backyard or at close vicinity when the device causing the crater detonated.

27. Another video (v05) provided a witness depicting the same courtyard, but had to be disregarded because it had signs of heavy editing.

28. As a result of these inconsistencies, location #1 was disregarded for further investigation.

#### *Location #2*

29. V02 shows the remnants of a barrel bomb that impacted with the outside kitchen structure of a house. The remnants of the outer jacket are deformed. The remains of an inner cylinder, which has been split at the bottom, can be seen lying adjacent to the remnants of the outer jacket. This split is considered to be caused by either a kinetic or explosive force. The measurements of the inner cylinder are approximately 100 cm in length and 40 cm in diameter. The inner cylinder has a main valve at the centre on top and a safety valve, also on top, but offset from the centre. The main valve is broken off. Given that v02 has been taken two days after the incident, it is possible that the remnants may have been moved from the initial point of impact.

30. Samples taken two days after the event at location #2 were provided to an international newspaper. The results of a sample analysis have been published on 29 April 2014, stating that soil samples from Kafr Zita and Talmenes “were found by a chemical warfare expert to contain traces of chlorine and ammonia”. A witness indicated that the samples were analysed by an independent expert, however, the details of the analysis and the chain of custody for these samples have not been established.

31. Another source had collected samples “in Talmenes at the end of April”. This source shared its analysis results, stating that chlorinated compounds, as well as traces of TNT, had been found in the soil and gravel. However, the source cautioned that it had no scientific evidence of the use of chlorine.

32. Another witness mentioned the presence of a likely foreign non-governmental organization which also took samples. The Mechanism did not have direct access to any of the samples.

33. The Government of the Syrian Arab Republic stated that the munition was launched from a land-based delivery system. The munition did not contain chemicals. The Government provided a picture of the type of munition supposedly used at location #2. The munition shown in the photograph has a number of significant differences as compared with the remnants seen in the other pictures and videos related to location #2. That munition is rocket-propelled, with at least eight fins. No remnants of this kind were documented at the site.

#### **Delivery Method**

34. Three witnesses stated to have seen a helicopter approaching Talmenes on 21 April 2014, between 1000 and 1100 hours. They said that the helicopter carried munitions on external platforms, which they described as “wings”.

35. In a video (v06) provided by a witness, a person states to have seen an aircraft flying right over the minaret of the mosque. First, it turned east, but then, suddenly, it attacked. This was followed by an explosion which was not very strong.

36. In the same video another person said to have seen an aircraft right over the minaret of the mosque dropping a bomb.

37. Another witness stated to have heard an aircraft at around 1030 hours and saw a helicopter flying over the village. A detonation occurred approximately 30 minutes later and a cloud of yellow smoke emerged, causing panic among the population.

38. Other sources provided their assessment that overflights on 21 April 2014 occurred. There are indications that a helicopter took off from Hama airbase at around 1030 hours, was spotted flying over several villages on the way to Talmenes and allegedly dropped two devices over Talmenes at around 1100 hours.

39. The Government of the Syrian Arab Republic stated that the impact was caused by a land-based projectile launched by an armed opposition group from the vicinity of Ma'ar Shamarin, which is approximately 3 km from the point of impact.

#### **Damage and effects**

40. Three witnesses described a 50 to 75-m high yellowish cloud, which was “shaped like a tree”. This cloud settled at a height of some 1 to 1.5 m above the ground, over 200 m towards the east in the direction of the wind. People were affected as far as 1 to 1.5 km downwind.

41. According to the FFM report, all witnesses described the smell as pungent, irritating and “of chlorine”, or similar to household cleaning agents, but much more intense.

#### *Location #2*

42. The videos from this impact location (v02) show a lot of destruction and damage to the structure of the house. The munition is understood to have impacted a concrete block building and resulted in extensive damage to the structure. Large quantities of rubble and other building debris are visible. As a result, there is not a clear view of the crater; however, a crater-like structure is visible. The video shows yellowing leaves on the trees and dead leaves on the ground.

43. The forensic analysis of the destruction at location #2 indicates that it is possible that the structural damage to the building could have been caused by the detonation of a barrel bomb. The large size of the remnants, they argue, would indicate that either the device contained explosives that did not detonate, or that it only contained a small amount of explosives.

44. The rocket-propelled munition type indicated by the Government of the Syrian Arab Republic is, according to munition experts, almost certainly a conventional high-explosive type. Such an amount of explosives, estimated to be at least 200 kg, would have totally destroyed the house at location #2 and possibly a number of surrounding buildings. The damage seen in the available pictures and footage at location #2 is inconsistent with this assessment.

45. One witness referred to animals that had died when the barrel bomb hit at location #2. Another witness reported that the pepper plants in the garden turned yellow and half of them dried out.

### Medical effects

46. A witness stated that 200 people had been affected by the use of chemicals, many of whom were transferred to other hospitals. Another witness produced a list of 133 patients registered at Talmenes Hospital on 21 April 2014, based on the information of another witness, and also provided four photographs of severely affected patients. The number of injured people in Talmenes was confirmed by one other source. Another witness confirmed that 150 patients from Talmenes had been received at Jarjanaz Hospital that day.

47. V06 concludes with chaotic scenes in what appears to be Talmenes Hospital. It includes interviews with people who were identified as hospital staff. One of them stated that the number of casualties from 21 April 2014 went up to 400, although the timeframe is unclear.

48. V06 also includes testimonies of those who lived in the two houses that were impacted (locations #1 and #2). Family members reported suffering from choking and heavy coughing, unconsciousness and vomiting blood. One mother described her skin irritation from touching her affected daughter. A young boy had blood and foam coming from the mouth.

49. Three persons are reported to have died after referral to other hospitals in a neighbouring country. The “death certificate” of one of the victims at location #2, issued on 25 April 2014, has been obtained by the Mechanism. This document, however, does not include the cause of death. The autopsy report does not provide the cause of death either.

50. People used the usual escape route in case of air strikes, eastward into a low-lying olive ground. The wind was blowing from west to east with 3 m/s; according to the data from the World Meteorological Organization (WMO), the direction of the dispersion of the plume is credible. Two external sources provided their results of a chlorine dispersion plume analysis, stating that it was feasible that a chlorine barrel bomb could have affected 200 people, most of them mildly.

51. The Government of the Syrian Arab Republic indicated that the main impact of the explosion was the destruction of a structure at location #2, which killed the owner (name provided) and his child. However, a witness interviewed by the FFM later identified himself as this person (i.e., the owner of the house and father of the child that died in the attack).

52. The launch of a projectile from the ground would not explain the 200 to 300 victims suffering from chlorine exposure. The Government of the Syrian Arab Republic stated that it believed the number of victims was incorrect. According to a witness, armed opposition fighters spread the information about the use of chemicals after the explosion, causing panic among the population. The same people also provided face masks to people and told them to leave the village. Despite a smell of “rotten eggs”, the witness did not feel any symptoms and did not see any injured people; just those in panic. The witness attempted to enter the hospital, but was denied access. The same witness stated that people who were referred to other hospitals came back to town two days later, with no visible signs of injuries.

53. The description of the effect on the population — who were evacuated from the town after an air strike and caught up in a toxic plume — is consistent with a

plume dispersion analysis carried out by two Member States and the weather information received by WMO. While the exact number of patients could not be definitively established, it is obvious that large numbers of people were affected by toxic chemicals. Several sources shared their analysis of soil samples, which indicated the presence of chlorinated compounds.

54. The structural damage at location #2 could result from the detonation of a barrel bomb, but not from a conventional high-explosive type munition. The remnants documented at the location resemble those of barrel bombs, with remnants of an inner cylinder and an outer jacket. No remnants of a rocket-propelled munition were documented at the site. Witness statements provide a clear link between an explosion, the smell of chlorine, a cloud and the effect on the population.

55. Witnesses and other sources provided information indicating that helicopter(s) were present; and some said that the helicopters delivered the munition. Only one witness seems to have actually seen a device falling. The testimony of other witnesses and persons interviewed in videos that were provided to the Mechanism differ in their description of the time lapse between observing the “aircraft” and the explosion.

### **The Leadership Panel’s assessment**

56. The Leadership Panel examined the existing information regarding the two impact locations in Talmenes on 21 April 2014. There is sufficient information for the Leadership Panel to conclude that the incident at impact location #2 was caused by a SAAF helicopter dropping a device causing damage to the structure of a concrete block building house and was followed by the release of a toxic substance which affected the population.

57. This conclusion was based on the following:

- Ahrar ash-Sham and the Nusrah Front had heavy presence around Talmenes. Both were said to have been in control of the town. Talmenes was subject to regular artillery and air force attacks around and on 21 April 2014. On that day there was an ongoing battle between Government forces and armed opposition groups, as well as the Nusrah Front around the two military bases at Wadi Deif and Al-Hamidiyah, both of which are in close proximity of Talmenes.
- Witnesses stated that the release of toxic chemicals followed the explosion of a barrel bomb dropped from an aircraft.
- Both the Government of Syrian Arab Republic and the armed opposition groups do not deny that chlorine was used in Talmenes on 21 April 2014.
- The Government of the Syrian Arab Republic stated that the impact (location #2) was caused by a land-based projectile launched by an armed opposition group. The structural damage was not found to be consistent with this.
- Only one of the alleged impact sites (location #2) has been found plausible by the Mechanism.
- At the time when the incident occurred, the Government of the Syrian Arab Republic had lost control of six airbases, including Taftanaz airbase (Idlib

Governorate). The Government informed the Mechanism that 15 helicopters were left behind of at Taftanaz airbase, nine of which were deemed operational.

- The Leadership Panel reviewed all the information gathered and found no evidence that armed opposition groups in Talmenes was operating a helicopter at the time and location of the incident.
- While the exact number of patients could not be definitively established, it is obvious that large numbers of people were affected by toxic chemicals.

## Annex V

### Al-Tamanah, 29-30 April 2014

#### Findings of the OPCW Fact-Finding Mission in the Syrian Arab Republic

1. The OPCW Fact-Finding Mission (FFM) concluded that the information collected constituted “a compelling confirmation that a toxic chemical was used as a weapon, systematically and repeatedly, in the villages of Talm[e]nes, Al-Tamanah, and Kafr Z[i]ta in northern Syria. The descriptions, physical properties, behaviour of the gas, and signs and symptoms resulting from exposure, as well as the response of the patients to the treatment, leads the FFM to conclude, with a high degree of confidence, that chlorine, either pure or in mixture, is the toxic chemical in question”. (S/2015/138, page 24, paragraph 29)
2. “The dates recounted are 12, 18, and 30 April 2014, and 22 and 25 May 2014. All attacks, except the one of 22 May 2014, occurred at night. These attacks resulted in more than 150 casualties, and eight of the most severely affected, mostly women and children, died from exposure to lethal doses of the toxic chemical.” (S/2015/138, page 20, paragraph 10)
3. Among the five dates the witnesses recalled was an incident in the night from 29 to 30 April, resulting in 35 casualties. (S/2015/138, Table 4 on page 43)

#### The Mechanism’s Investigation

##### Background

4. Al-Tamanah (Idlib Governorate, Ma’arrat al-Nu’mān District) is located less than 9 km east of the M5 Damascus-Aleppo motorway, on the section between the cities of Hama and Idlib. The FFM reported that, in 2014, approximately 20,000 inhabitants lived in the vicinity of Al-Tamanah, as compared to 7,385 in town and 29,144 in the sub-district in the 2004 census. This included 5,000 to 10,000 internally displaced persons (IDPs). According to a report from the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), in August 2014, 5,500 IDPs were in need of humanitarian assistance in the Al-Tamanah sub-district.
5. At the time of the incidents, Al-Tamanah found itself in immediate proximity to the front line. While several armed opposition groups operated from the vicinity of Al-Tamanah, the Government of the Syrian Arab Republic held checkpoints and bases along the M5 motorway and Khan Shaykhun in the west of Al-Tamanah.
6. The first half of 2014 in Idlib saw clashes between the Government of the Syrian Arab Republic and armed opposition groups around the M5. The armed opposition groups were aiming at — and partly succeeding in — opening their access to Idlib city and cutting Government supply to their military bases. Morek (approximately 10 km to the south-south-west of Al-Tamanah) had been captured by armed opposition group in February 2014, since then been contested and reportedly recaptured by Government forces on 14 April 2014.

7. In March and April 2014, armed opposition group operations concentrated on capturing checkpoints along the M5 between Morek, Khan Shaykhun and Ma'arrat al-Nu'man. It seems that different armed opposition groups were at that time joining forces and divided "responsibility" of checkpoints among them. The Government of the Syrian Arab Republic sought to maintain M5 access, while also establishing alternative routes to Aleppo and Idlib city.

8. In spring 2014, Al-Tamanah was used as a "collective operational base" by several armed opposition groups. United Nations Security Council designated terrorist organizations,<sup>1</sup> such as the Nusra Front, and those affiliated with them were also present. Witnesses also referred to the presence of the Islamic State in Iraq and the Levant (ISIL) in Al-Tamanah; however, following clashes with the Nusra Front and armed opposition groups, ISIL had largely retreated from Idlib in March 2014.

9. Several other armed opposition groups had presence and operations in the area, however, the period was characterized by a high volatility of conflict dynamics, armed opposition group locations and alliances, as well as spheres of influence.

10. One of the more influential armed opposition groups was reportedly the Idlib Military Council, which formed part of the Jabhat Thuwar Suriyya since December 2013. There are contradicting statements regarding the presence of other armed opposition groups at the time of the incidents. While some sources report that Jaish Al-Izza, an alliance of several groups formed in 2014, was temporarily headquartered in Al-Tamanah, other sources did not confirm this. Witnesses indicated that Ahrar ash-Sham had presence there as well, but its representatives did not confirm this.

11. Two health facilities in Al-Tamanah have been mentioned by witnesses in relation to the incidents under investigation: The Hanin Medical Charity/Point and the 9th Medical Point. In open sources and media reports about patients suffering from exposure to chlorine, the Hanin Medical Point and a medical field facility can be seen. Hanin Medical Point is funded by donations, without the consent of the Government of the Syrian Arab Republic. Due to the limited capacities, severely injured people are often referred to other hospitals.

### **Narrative**

12. There are different descriptions of the events in Al-Tamanah. The description emerging from the testimony of FFM witnesses is that in the night between 29 and 30 April 2014, an alert was issued by a flight monitoring observatory of helicopters approaching and potentially bringing chlorine bombs. Two barrel bombs were dropped and 35 patients sought medical attention with symptoms related to chlorine exposure at that day. According to the witnesses, Al-Tamanah was attacked five times with barrel bombs possibly containing chlorine dropped from helicopters in April and May 2014.

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<sup>1</sup> On 30 May 2013, Islamic State in Iraq and the Levant (ISIL) and the Nusra Front were designated as terrorist groups by the Security Council under resolution 1267 (1999).

13. The Government of the Syrian Arab Republic denies any military activity of its Forces in Al-Tamanah on that date and provided information to show that the events had been fabricated. In accordance with this, seven witnesses stated that frequent alerts had been issued, but in fact no incidents with chemicals took place. While people sought safety after the warnings, their homes were looted and rumours spread that the events were being staged.

14. Based on witness statements, the Mechanism assessed the possibility that a conventional air strike or attack took place and the chemical exposure was wrongly attributed to this. However, no air activity could be established. The witness testimonies of air strikes did not specify a date and the description as such could not be linked to the incident of 29-30 April 2014. Hence, this possibility was disregarded.

15. Several witnesses gave testimony of repeated air strikes around or on the dates of the incidents in Al-Tamanah. Information and statistics available to and analysed by the Mechanism did not contain specific data on air strikes in the town, to establish a more accurate picture of the conflict dynamics in the immediate vicinity at the time. The Government of the Syrian Arab Republic stated that no military activities were conducted from land or air in Al-Tamanah on the dates of the incidents, but did not provide any records of flight operations to support this statement.

#### **Date and time**

16. Most of the witnesses were interviewed several months after the alleged incidents. Due to the frequency of alerts and incidents related to military activity, the witnesses' memory of the events might have blurred. Most of them did not give specific dates, but referred to several incidents in a timeframe between March and June 2014.

17. Only one witness specifically referred to the incident on 29-30 April 2014, but did not provide a specific time. The same witness said that four people died in this incident and did not mention a second impact location.

18. Three witnesses, who did not give any description of the incident on 29-30 April 2014, provided material of unknown source. One witness had second-hand knowledge of two of the five incidents in Al-Tamanah, but did not remember the exact dates. Later that witness provided a USB-stick with information of unknown origin, which was saved in separate folders according to the dates of all the five incidents mentioned by the FFM. Another witness provided the dates of all five incidents reading it from a piece of paper, but did not provide any testimony on the incident on 29-30 April 2014. The latter also provided a video titled "site where second barrel containing toxic chlorine gas was dropped tamanaa 30 April 14".

19. Several media reports quoted "local activists" saying that one or several helicopters dropped "two bombs laden with gas" or "explosive devices containing chlorine" on the town of Al-Tamanah in the early hours of the morning of 30 April 2014. Several open source videos show patients being treated in what appears to be Hanin Medical Point and a field medical facility.

20. Several witnesses stated that chemical weapons alerts through media or the local early warning systems occurred frequently at non-regular intervals since April or May 2014. Although the majority of witnesses referred to the chemical weapons alerts, issued by a “flight observatory”, the exact dates of the warnings remained unclear.

21. Seven witnesses stated that after several alerts, no attack actually occurred, and that they had come forward to contest the wide-spread false media reports. The alerts, they said, were false alarms and toxic chemicals had never been used in Al-Tamanah. It remained unclear how they could make such exclusive statements for the whole town at any time. Some of these witnesses stated that after the false chemical alerts, the houses of those who evacuated had been looted.

22. When interviewed a second time, two of those witnesses described air strikes in Al-Tamanah in or at the end of April 2014, which they had not mentioned before, but said that chemicals were not involved in any of the attacks. Although no specific dates have been given, the Mechanism investigated the possibility that these statements refer to the incident on 29-30 April 2014, but could not find any links to support that.

#### **Weather conditions**

23. In the night from 29 to 30 April 2014, between 2000 and 0100 hours, the wind came from the west (260-300 °) and the wind speed declined from 4 m/s to 2 m/s over that period. For the rest of the night, the wind speed from various directions declined from 4 m/s to 2 m/s. From 2000 to 0600 hours, the temperature dropped gradually from 18 °C to 13 °C and the relative humidity increased from 82 per cent at 2000 hours to 93 per cent at 0600 hours.

#### **Impact locations**

##### *Location #1*

24. The Mechanism endeavoured to establish the location of the impact at a residential house in the north of Al-Tamanah. The exact location was not given and could not be determined from the descriptions and reference points given by the witnesses. No public satellite imagery was available for the time and location in question. Despite repeated requests, no military satellite imagery was made available to the Mechanism either.

25. All footage provided by witnesses was showing the interior of the Hanin Medical Point, but not the surrounding area. Two videos (open source) show an impact location between houses that appear uninhabited. The videos do not show enough of the surroundings to establish the exact impact location.

##### *Location #2*

26. Another video (available on open sources), which has been provided to the Mechanism by several different sources, shows remnants on an open field. An additional video provided by a witness shows an impact location on an open field with something that looks like remnants of munition. The impact location is next to an unpaved road. Houses that look uninhabited can be seen in the vicinity, some of

which are damaged. The video does not show enough of the surroundings to establish of the exact impact location.

### **Munition**

#### *Location #1*

27. The Mechanism did not obtain any parts, samples or imagery (photos or videos) of the munition or its remnants at location #1. Some remnant fragments can be observed in the videos mentioned previously, but not enough to allow for sufficient analysis.

28. The witness described the impact of a barrel and subsequent explosion, as observed from a roof, as follows: “A flame or fire or something yellow went 20-25 m up in the air and disappeared immediately.” This is understood to refer to the location #1. The witness did not mention a second impact and stated that four people had died in this attack, although no deaths have been established by the FFM for this incident. The witness did not have a mask and, therefore, was unable to go to the impact location. The witness neither mentioned the smell of chlorine nor was aware of a chemical alert.

#### *Location #2*

29. The Mechanism did not obtain any parts or samples of the munition or its remnants at location #2. The remnants in the video of location #2 could be interpreted as remnants of a barrel bomb. However, only parts of the outer jacket can be seen, not allowing for a definite analysis either. In the absence of sufficient footage or any description of the remnants, the Mechanism endeavoured to draw conclusions on the munition from the description of the impact.

30. The Government of the Syrian Arab Republic provided information that on 30 April 2014 a device left by an armed opposition group exploded on an agricultural road west of Al-Tamanah, which led to the death of one citizen. The Mechanism investigated potential links to location #2, but could not find any further information to support this.

### **Delivery method**

31. Despite repeated requests, none of the Mechanism’s sources provided information regarding air movements on the night from 29 to 30 April 2014; neither affirmative nor negative. Only the Government of the Syrian Arab Republic provided information and stated that they did not have any military activities from land or air in Al-Tamanah at this date. Witness statements about air strikes around the time could not be linked to the specific night from 29 to 30 April 2014.

#### *Location #1*

32. The eyewitness, who stated to have been on the roof, said to have heard a helicopter and the “very loud” sound of a falling barrel. Some interviewees had referred to a distinct whistling sound of barrels that contain chlorine as they fall. The witness statement could not be corroborated with any further information.

*Location #2*

33. No witness statements or other information was available to either confirm the claim that a second barrel bomb was dropped from a helicopter, or that an improvised explosive device (IED) exploded.

**Damage and effects***Location #1*

34. According to the eyewitness, the building was almost entirely destroyed, with only two walls remaining standing. The surrounding area was also affected. The two videos mentioned above also show a high level of destruction.

35. The Government of the Syrian Arab Republic has put forward their analysis of these two videos, concluding that the destruction was a result of a conventional munition rather than a chemical munition.

36. The Mechanism requested a forensic examination from an independent institute. The findings were inconclusive. A shallow “hole” can be seen; it might have been the result of a conventional barrel bomb with explosives, but an impact from a chemical barrel bomb could not be excluded.

37. Additional open source videos are allegedly related to the incident on 29-30 April 2014. Two of those videos were considered showing location #1. Parts of a destroyed house can be seen, together with a crater and something that might be remnants of munition. However, it could not be determined whether these munition parts are linked to the impact, or not. The videos do not show enough of the surrounding areas to determine potential environmental impact.

38. The description of the impact by the witness, in addition to the destruction seen in the videos, does rather point to the use of conventional munition (air or land) than to the use of a barrel bomb filled with chlorine, which would have a small explosive charge. The information available, however, is not enough for a thorough analysis.

*Location #2*

39. The videos do not show a crater or other signs of the impact of the remnants.

**Medical effects**

40. The FFM describes the medical symptoms of patients for all of the five incidents in summary. For the 29-30 April 2014 incident, the FFM reported 35 patients. A witness who provided the dates, number of patients and deaths for each of the five incidents, read it from a piece of paper.

41. The eyewitness of the explosion related to location #1 stated that four people died and 70 were injured in this incident, while the FFM report had established only 35 patients and no deaths. Some media reports also referred to 70 people affected by the use of chlorine as a weapon.

42. An independent source provided a list of unknown origin with 12 names of people injured with chlorine gas on 29 April 2014. No medical records have been

received from the Hanin Medical Point, despite repeated requests. The Mechanism requested medical documentation from referral hospitals, but did not receive any information relevant to the date and incident in question.

43. Videos retrieved from open sources and from a witness, respectively, show patients being treated in Hanin Medical Point and in a medical field facility. However, the analysis of these videos did not provide any additional and verifiable information on the alleged impact site or delivery methods. For that reason, no further forensic analysis has been undertaken.

44. Some of the witnesses stated that “nothing happened” in Al-Tamanah and did not see any patients that suffered from chemical exposure. However, these witnesses are not considered to be in a position to make definitive statements for the whole town.

45. Without knowing the impact location and how densely the impact area was populated, in addition to the fact that many people had left the village when a chemical weapons alert was issued, insufficient data was available to apply chlorine dispersion models.

#### **Further information**

46. The incident received broad media coverage. Some international media reported that the Government of the Syrian Arab Republic had used barrel bombs with toxic chemicals.

47. Several witnesses reported that local responders (sometimes specified as the “white helmets”) established basic early warning systems through local media, volunteers, hand-held radios and mosques. After the first chemical attacks, they provided information about the recommended behaviour in case of air strikes and chemical attacks. In case of chemicals alerts, people were encouraged to move upwind of the point of impact to higher elevations, while in case of conventional attacks people were advised to seek shelter in basements.

48. Six witnesses stated that people left the village and that during the evacuation after what they said were false alarms, their own or neighbours’ houses were looted. Some referred to people with “masks”, potentially gas masks, who were giving face masks soaked in “Coca-Cola” or “Pepsi” to children. Two witnesses referred to rumours in town of people trying to “blame” the Government or stage the incidents.

49. A witness described an air strike on the house of an armed opposition group fighter “at the end of April”. The next day, people wearing masks were “digging something out of the ground” and filming the scene, saying that Al-Tamanah was hit with toxic chlorine gas. However, the witness did not smell gas or see any injured people. When interviewed before, the same witness had not mentioned this incident.

50. Some of the witnesses said that armed men, some of them from Al-Tamanah and some foreigners from other countries, were issuing false chemical alarms saying that the Government of the Syrian Arab Republic military would attack the village with chemicals, sometimes saying chlorine, and telling people to leave the village. These alerts were issued in different ways, from vehicles with microphones, mosques or just telling people in person. Two witnesses mention the same person who was allegedly filming the “staged” scenarios.

51. One witness said that people were knocking on the door. People on motorcycles and cars told people to leave the house because a plane was going to attack. Children of different ages were running after them. Apparently the people, which the witness believes to belong to the Nusrah Front, went to the school, took the children out and gave them diapers soaked with a liquid in order to use them as gas masks, claiming that chlorine would be used in the air strike. The witness stayed at home despite the warning and did not smell or see anything.

### **The Leadership Panel's assessment**

52. The Leadership Panel determined that there is insufficient information to confirm, or to exclude the possibility of a chemical attack. It further determined that there was contradictory and insufficient evidence to draw a conclusion on the actors involved.

53. This assessment was based on the following:

- There is scarcity of relevant information about the incidents in Al-Tamanah. No flight movements could be established by the Mechanism.
- There are discrepancies in the statements made by different witnesses and the descriptions of the event are inconsistent. On the one hand, some witnesses described people affected by the use of chlorine as a weapon. On the other hand, other witnesses described air strikes in Al-Tamanah in or at the end of April 2014 and stated that chemicals were not involved in any of the attacks.
- This incident has been considered by experts to stem from an attack with conventional munition.

## Annex VI

### Al-Tamanah, 25-26 May 2014

#### Findings of the OPCW Fact-Finding Mission in the Syrian Arab Republic

1. The Fact-Finding Mission (FFM) concluded that the information collected constituted “a compelling confirmation that a toxic chemical was used as a weapon, systematically and repeatedly, in the villages of Talm[e]nes, Al-Tamanah, and Kafr Z[i]ta in northern Syria. The descriptions, physical properties, behaviour of the gas, and signs and symptoms resulting from exposure, as well as the response of the patients to the treatment, leads the FFM to conclude, with a high degree of confidence, that chlorine, either pure or in mixture, is the toxic chemical in question”. (S/2015/138, page 24, paragraph 29)
2. “The dates recounted are 12, 18 and 30 April 2014, and 22 and 25 May 2014. All attacks, except the one of 22 May 2014, occurred at night.” (S/2015/138, page 20, paragraph 10)
3. Among the five dates that the witnesses recalled was an incident in the night from 25 to 26 May 2014, without casualties. (S/2015/138, Table 4 on page 43)

#### The Mechanism’s investigation

##### Background

4. Al-Tamanah (Idlib Governorate, Ma'arrat al-Nu'man District) is located less than 9 km east of the M5 Damascus-Aleppo motorway, on the section between the cities of Hama and Idlib. The FFM reported that in 2014 approximately 20,000 inhabitants lived in Al-Tamanah, as compared to 7,385 in town and 29,144 in the sub-district in the 2004 census. This included 5,000 to 10,000 internally displaced persons (IDPs). According to a report from the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), in August 2014, 5,500 IDPs were in need of humanitarian assistance in the Al-Tamanah sub-district.
5. At the time of the incidents, Al-Tamanah found itself in immediate proximity to the front line. While several armed opposition groups operated from the vicinity of Al-Tamanah, the Government of the Syrian Arab Republic held checkpoints and bases along the M5 motorway and Khan Shaykhun in the west of Al-Tamanah.
6. The first half of 2014 in Idlib saw clashes between the Government of the Syrian Arab Republic and armed opposition groups around the M5. The armed opposition groups were aiming at — and partly succeeding in — opening their access to Idlib city and cutting Government supply to their military bases. Morek (approximately 10 km to the south-south-west of Al-Tamanah) had been captured by armed opposition groups in February 2014, since been contested and reportedly recaptured by Government forces on 14 April 2014.
7. In March and April 2014, armed opposition groups’ operations concentrated on capturing checkpoints along the M5 between Morek, Khan Shaykhun and Ma'arrat

al-Nu'man. It seems that different groups were at that time joining forces and divided “responsibility” of checkpoints among them. The Government of the Syrian Arab Republic sought to maintain M5 access while also establishing alternative routes to Aleppo and Idlib city.

8. Several witnesses gave testimony of repeated air strikes around or on the dates of the incidents in Al-Tamanah. Information and statistics available to and analysed by the Mechanism did not contain specific data on air strikes in the town to establish a more accurate picture of the conflict dynamics in the immediate vicinity at that time. The Government of the Syrian Arab Republic stated that it did not conduct any military activities from land or air in Al-Tamanah on the dates of the incidents.

9. In the first half of 2014, Al-Tamanah was reportedly being used as a “collective operational base” by several armed opposition groups. Witnesses also referred to the presence of the Islamic State in Iraq and the Levant (ISIL)<sup>1</sup> in Al-Tamanah; however, following clashes with the Nusra Front and armed opposition groups, ISIL had largely retreated from Idlib in March 2014.

10. Several armed opposition groups had presence and operations in the area, however, due to the high volatility of conflict dynamics, their locations and alliances (in addition to contradicting reports, most of which do not have the level of detail required), the exact locations and spheres of influence at the date and locations investigated cannot be established with certainty.

11. One of the more influential armed opposition groups was reportedly the Idlib Military Council, which formed part of the Jabhat Thuwar Suriyya since December 2013. There are contradicting statements regarding the presence of other armed opposition groups at the time of the incidents. While some sources report that Jaish Al-Izza, an alliance of several groups formed in 2014, was temporarily headquartered in Al-Tamanah, other sources did not confirm this. Witnesses indicated that Ahrar ash-Sham had presence there too, but its representatives did not confirm this.

12. Two health facilities in Al-Tamanah have been mentioned by witnesses in relation to the incidents under investigation — the Hanin Medical Charity/Point and the 9th Medical Point. In open sources and media reports about patients suffering from exposure to chlorine, the Hanin Medical Point and a medical facility in a tent can be seen. Hanin Medical Point is funded by donations, without consent of the Government of the Syrian Arab Republic. Due to the limited capacities, severely injured people are often referred to other hospitals.

### **Narratives**

13. The description that emerged from the testimony of FFM witnesses was that on the night between 25 and 26 May 2014, two barrel bombs were dropped over Al-Tamanah. One of it failed to explode (location #1), but the impact opened a cylinder inside the barrel which leaked chlorine. The unexploded barrel was found

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<sup>1</sup> On 30 May 2013, Islamic State in Iraq and the Levant (ISIL) and the Nusra Front were designated as terrorist groups by the Security Council under resolution 1267 (1999).

in the morning. The other barrel bomb exploded (location #2), but nobody was affected as it fell in an uninhabited area of the village.

14. Similarly to the incident on 29-30 April 2014, the Government of the Syrian Arab Republic denies any military activity of its forces in Al-Tamanah on 25 and 26 May and provided information to show that the events had been fabricated. Accordingly, other witnesses stated that frequent alerts had been issued but in fact no incidents with chemicals took place, and while people sought safety after the warnings, their homes were looted. Witnesses stated that they heard rumours that the events were being staged.

#### **Date and time**

15. Most of the witnesses did not give specific dates, but referred to several incidents between March and July 2014. Only one witness specifically recalled the date of 25-26 May 2014. The same witness stated to have helped dismantle the munition the following day and noticed a strong smell of chlorine. That witness also provided five videos of the excavation of the munition, in addition to five pictures of the remnants in a courtyard.

16. Another witness gave the summary of an event that resembled the description of the first witness and likely refers to the same incident, without recalling the exact date, and said that the event occurred around 2300 hours. The interviewee was among a group of people who found the unexploded munition the following morning.

17. A third witness described second-hand knowledge about an incident in which one barrel bomb failed to explode but leaked gas.

18. One witness had second-hand knowledge of two of the five incidents in Al-Tamanah. The witness did not remember the exact dates, but later provided a USB-stick with information, which was saved in separate folders according to the dates of all the five incidents mentioned by the FFM. The folder “صور البرميل 25-5-2014” contained four pictures and a video of the munition in a courtyard. This witness did not refer to this incident during the interview.

19. Another witness provided the dates of all five incidents, reading it from a piece of paper, but did not provide any testimony related to the incident on 25-26 May 2014.

20. Seven witnesses from Al-Tamanah said that since April 2014, “false” chemical weapons alerts occurred frequently in non-regular intervals. Several of them stated that no chemical weapons had ever been used in Al-Tamanah.

#### **Weather conditions**

21. On the night from 25 to 26 May 2014, between 2000 and 0500 hours, the wind came from the west (280 °) at a speed from 3 m/s to 2 m/s (3 m/s at 2000 hours). The temperature dropped gradually from 22 °C to 15 °C and the relative humidity increased from 79 per cent at 2000 hours to 89 per cent at 0500 hours.

### **Impact location**

22. The witness who gave a testimony resembling the events on 25 and 26 May without recalling the date drew a map of the impact location. However, due to the lack of detail and reference points on that map, it did not help to determine the impact location. Another witness drew a map of four impact locations in Al-Tamanah and numbered them 1, 2, 3 and 5, but it is unclear which impact location from the drawing correlates to which incident.

#### *Location #1*

23. The exact impact location of the barrel that failed to explode could not be determined from the witness statements or footage provided. Four videos showed this impact location (v01-v04). All four videos are filmed in close-ups and the surroundings cannot be seen. These videos were not forensically examined.

24. A witness stated that an unexploded barrel fell on a house and mentioned the name of the owner. The exact location of the house could not be determined. No public satellite imagery of the timeframe in question was available to find a potential crater or impact. No military satellite imagery has been made available to the Mechanism despite repeated requests.

#### *Location #2*

25. The witness who helped to evacuate the unexploded munition and recalled the exact date stated that another barrel exploded but fell onto a house in an uninhabited area. This witness also provided a video of the impact location. Another witness also provided a video of that impact location. While these two videos are filmed from different angles and have different lengths, they show the same scene. Not enough of the surrounding area can be seen in these videos to help determine the coordinates of the impact location. The witness who helped excavate the munition at impact location #1 but did not remember the exact date mentioned the impact in an uninhabited area too, and said that they searched but could not find this impact location.

### **Munition**

#### *Location #1*

26. The device at location #1 failed to explode. The witness who helped to excavate it and recalled the exact date provided four videos related to impact location #1: v01 shows the impact site; v02, the dismantling of the barrel; v03, the excavation; and v04, the barrel being loaded onto a pickup truck. That witness also provided five pictures of the munition in a courtyard. Another witness could not remember the dates of the incidents and in the interview could not describe the incident on 25-26 May 2014, but provided a USB-stick that had four pictures and a video of the munition in the same courtyard under a folder named “صور البرميل 25-5-2014”.

27. The Mechanism could not independently verify the time and location of these videos and pictures, in particular due to the fact that they were shot up close and there was a lack of surroundings on the videos (i.e., no comparators to do the analysis). The surroundings are not clearly visible in any of the footage.

28. V02 shows the unexploded barrel that looks like it landed in a hole approximately 2.5 m deep, buried more than halfway in the soil with its fins up in the air (i.e., the rear end of the barrel). Two persons are in the hole, dismantling the munition. Both persons, in addition to other people at the edge of the hole, have protective masks without canisters over their faces (i.e., those “gas masks” would be non-functioning). Also, none of the people are wearing any additional protective gear such as gloves. During the whole dismantling process, the two persons were not using any of the safety measures or equipment that would be required for this activity if hazardous substances were leaking in a confined space like the hole.

29. From what can be seen, the unexploded barrel bomb consists of an outer barrel, an inner cylinder, powder that might be explosive and detonation cords. There seems to be a significant amount of the powdery substance between the inner cylinder and the outer barrel. The inner cylinder has two valves, one of which is wrapped in large amounts of detonation cords, fixed with tape. The detonation cords go from the valve of the inner cylinder towards the bottom part of the barrel. It cannot be said if the inner cylinder is empty or filled with anything. A piece of cloth and more of the powdery substance were between the outer barrel and inner cylinder.

30. In v03, the barrel is still in the position as described above, but chains were attached. Many people, including children, surround the hole, none of them wearing protective masks or gloves. The barrel is being dragged out of the ground and the hole. When the barrel is pulled out of the hole, the damage of the outer barrel can be seen at the rear end where the fins are. The bottom of the inner cylinder is also visible and no defects or ruptures can be noticed.

31. V04 shows people dragging the barrel through a courtyard, up the stairs and loading it on a pickup truck. None of them are wearing any protection. Five pictures provided by this witness show the same munition in a tiled courtyard. It looks like all the powdery substance was removed together with the detonation cords and pieces of cloth.

32. The witness who provided the videos described the munition as follows: “On the valve of the inner cylinder was a detonator, which looked like a blue rope or blue strain and goes around the valve to detonate it so the gas could come out; and a yellow-brownish powder (about 50 kg in total) was between the inner cylinder and the outer barrel and on the top of the inner cylinder. It is there to help with the explosion.” The unexploded barrel was approximately 1.5 m long and had a cover on the top and bottom, held with screws. The barrel did not contain any markings and was locally made. The cylinder had numbers on the top, “maybe 976”. This witness stated that the device fell and impacted with the tail part first, damaging the bottom of the cylinder, and demonstrated this with a self-made drawing. On this drawing, the tails and fins of the device are shown sticking in the ground. However, in the video that the same witness provided, the tail and fin parts are above the ground and the nose-end impacted the ground first.

33. The munition in a tiled courtyard shown in the video and pictures provided by another witness matches the one in the videos.

34. In an additional open source video (v05), a person that is also seen in the videos discussed above stands next to what is assessed to be the same barrel. The person states that this was the fifth attack on Al-Tamanah with a barrel that

contained a substance that they think is chlorine, but that the barrel did not explode when it fell on soft soil. The cylinder inside released the gas slowly over the course of at least three hours. Forensic examination found a time stamp indicating the uploading date of the video to “YouTube” as 29 May 2014 at 14:23:32 UTC, although it could also have been uploaded on 28 May, two to three days after the alleged incident. However, the analysis can neither establish the date on which the video was filmed nor give information on the location.

35. In none of the videos and pictures provided can a fuse or blasting cap be seen. Hence, it cannot be determined from this material how this barrel bomb functioned. The covers on top and bottom mentioned by the witness, held with screws, were not seen in any of the videos or pictures.

36. Forensic examination of v05 stated that the munition “seems to be of the same thin metal as seen before in other cases”. According to the analysis, which is coherent with the Mechanism’s assessment, the explosion of 50 kg of explosives would have destroyed (fragmented into small pieces) the outer jacket. The munition’s effects on the surroundings would be more like those of a conventional munition rather than of a munition filled with chemicals. If this amount of explosives detonated, and the inner cylinder had contained chlorine, the chlorine would likely be oxidized which would greatly limit the effect of chlorine gas.

37. Also, it is unclear when the gas leakage took place. The witnesses said that upon arrival at the scene, they had to get gas masks because the smell was too strong. However, the gas masks in the videos were missing filter canisters. It is unclear how long after finding of barrel the dismantling, as seen in the video, started.

38. The forensic report also stated: “It is judged that the cylinder may leak gaseous substances for shorter or longer times than three hours depending of the content of the cylinder (pure gas, extent of mixing of chemicals) and the damage type and extent.”

39. The Government of the Syrian Arab Republic provided their analysis of v05, in which a person says that the cylinder leaked gas for three hours, stating that the gas in the inner cylinder would be released in seconds due to the pressure, volume, damage, temperature and impact strength. The Mechanism can neither accept nor reject this assessment, as too little is known about the specifics of the container, filling of the cylinder, damage and surroundings to exclude the possibility of a three-hour long leaking process with certainty.

#### *Location #2*

40. According to a witness, the second barrel fell onto a house which nobody lived in and exploded. The witness went to location #2 and smelled chlorine, but did not see any remnants. Another witness stated that “they” had searched, but could not find this impact location. The videos from this location show something that looks like remnants, but it cannot be said for sure.

**Delivery method**

41. The Government of the Syrian Arab Republic stated that they did not have any military operations on land or air at the time of the incident. Despite repeated requests, none of the sources used by the Mechanism could provide any information regarding air movements on the date in question, neither affirmative nor negative.

42. The witness who helped to excavate the munition said that on 25 May 2014, two barrels were dropped. In the open source videos described above, the speaker refers to air strikes by the “Assad” forces.

*Location #1*

43. Forensic examination of the footage of the munition assessed that the existence of stabilizing fins point towards the barrel bomb being constructed to be dropped from an aircraft. On hard soil, the penetration of the barrel into the ground after being dropped from a high altitude would be very limited and the damage on the barrel would be substantial, which is not the case with the barrel in the video. In soft soil, it could penetrate further down and the impact could have affected the nose/front part of the barrel in such a way as seen of the barrel depicted in the video. A witness mentioned impact in “soft soil”; however, the condition of the soil could not have been determined from the video analysis to assess whether the deep penetration of the barrel into the ground could have resulted from a high-altitude drop.

*Location #2*

44. There is no further specific information on location #2 with regard to the delivery method.

**Damage and effects***Location #1*

45. The barrel fell into a hole in the ground and failed to explode.

*Location #2*

46. The videos from this impact location show a lot of destruction and damage on the houses. No crater can be seen in any of the videos.

**Medical effects**

47. None.

**Further information**

48. The incident received broad media coverage. Some international media reported that the Government of the Syrian Arab Republic had used barrel bombs with toxic chemicals.

49. Several witnesses reported that local responders (sometimes specified as the “white helmets”) established basic early warning systems through local media, volunteers, hand-held radios and mosques. After the first chemical attacks, they provided information about the recommended behaviour in case of air strikes and

chemical attacks. In case of chemicals alerts, people were encouraged to move upwind of the point of impact to higher elevations, while in case of conventional attacks people were advised to seek shelter in basements.

50. Six witnesses stated that people left the village and that during the evacuation after what they said were false alarms, their own or neighbours' houses were looted. Some referred to people with "masks", potentially gas masks, who were giving face masks soaked in "Coca-Cola" or "Pepsi" to children. Two witnesses referred to rumours in town of people trying to "blame" the Government or stage the incidents.

51. A witness described an air strike on the house of an armed opposition group fighter "at the end of April". The next day, people wearing masks were "digging something out of the ground" and filming the scene, saying that Al-Tamanah was hit with toxic chlorine gas. However, the witness did not smell gas or see any injured people. When interviewed before, the same witness had not mentioned this incident.

52. Some of the witnesses said that armed men, some of them from Al-Tamanah and some foreigners from other countries, were issuing false chemical alarms saying that the Government of the Syrian Arab Republic military would attack the village with chemicals, sometimes saying chlorine, and telling people to leave the village. These alerts were issued in different ways, from vehicles with microphones, mosques or just telling people in person. Two witnesses mention the same person who was allegedly filming the "staged" scenarios.

53. One witness said that people were knocking on the door. People on motorcycles and cars told people to leave the house because a plane was going to attack. Children of different ages were running after them. Apparently the people, which the witness believes to belong to the Nusra Front, went to the school, took the children out and gave them diapers soaked with a liquid in order to use them as gas masks, claiming that chlorine would be used in the air strike. The witness stayed at home despite the warning and did not smell or see anything.

### **The Leadership Panel's assessment**

54. The Leadership Panel examined the existing information and evidence regarding the incident in Al-Tamanah on 25-26 May 2014 and determined that there was insufficient evidence to draw a conclusion on the actors involved and the modality of the use of chemicals as weapons in this incident.

55. This assessment was based on the following:

- There is scarcity of relevant information about all incidents in Al-Tamanah. No flight movements could be established by the Mechanism.
- Several witnesses stated that since April 2014, "false" chemical weapons alerts occurred frequently in non-regular intervals and that no chemicals had ever been used as weapons in Al-Tamanah.
- Other witnesses informed of an unexploded "barrel bomb" which leaked chlorine. However, there was insufficient evidence to corroborate these testimonies.

## Annex VII

### Qmenas, 16 March 2015

#### Findings of the OPCW Fact-Finding Mission in the Syrian Arab Republic

1. The Fact-Finding Mission (FFM) report (S/2015/908, page 84, paragraph 3.8) refers to an incident on the night of 16 March 2015 between 2000 and 2100 hours: "... the occupants of the houses situated in the eastern and north-eastern part of the village, relatively close to the impact point, smelled an odour similar to chlorine-based household cleaning agents, but much more intense." (S/2015/908, page 84, paragraph 3.9)
2. "From the 60 or so individuals who arrived from Qmenas to the Sarmin field hospital on 16 March 2015, 40 cases had clinical signs of anxiety, six cases were considered as secondary exposure (one treating physician and five first responders), and 14 patients were considered as directly exposed." (S/2015/908, page 84, paragraph 3.12)
3. "In itself, no one source of information or evidence would lend particularly strong weighting as to whether there was an event that had used a toxic chemical as a weapon. However, taken in their entirety, sufficient facts were collected to conclude that incidents in the Syrian Arab Republic likely involved the use of a toxic chemical as a weapon. There is insufficient evidence to come to any firm conclusions as to the identification of the chemical, although there are factors indicating that the chemical probably contained the element chlorine." (S/2015/908, page 151, paragraph 5.19)

#### The Mechanism's investigation

##### Background

4. Qmenas (Idlib Governorate, Idlib District) is located 6 km south-east of Idlib city. Sarmin is less than 5 km to the northeast and Saraqib 12 km to the east, the latter located at the junction of the M5 Damascus-Aleppo and M4 Latakia motorways. The airfield of Taftanaz is approximately 13 km linear distance in the north-east.
5. In the 2004 census, the village of Qmenas had about 2,700 inhabitants. In August 2014, a report from the Office for the Coordination of Humanitarian Affairs recorded high numbers of internally displaced persons (IDPs) in Idlib District. Some sources report that Qmenas still had a large population, as many people from Idlib city had been displaced there and often stayed with relatives, while other sources state that the village had been depopulated due to the proximity to the frontline.
6. In 2014, Government presence in Idlib had consisted of networks of checkpoints and military installations: one running along the M5 between Ma'arrat al-Numan and Khan Sheikhoun, and the other along the M4 connecting Latakia to Idlib city.

7. In summer 2014, the Nusrah Front<sup>1</sup> started to fight armed opposition groups in Idlib, many of whom it had been fighting alongside against the Government. Those included Jabhat al-Thuwar and Harakat Hazm. The Nusrah Front took control of several regions and towns in Idlib Governorate, in addition to weapons and facilities of the groups it defeated.

8. On 15 December 2014, the Nusrah Front, as well as Ahrar ash-Sham, Jund al-Aqsa and fighters from armed opposition groups captured the military bases of Wadi al-Deif and Al-Hamidiyah and thus controlled the M5 motorway north of Morek and several military checkpoints, cutting an important Government access route to Idlib and consolidating their presence in the southern part of Idlib Governorate.

9. Qmenas and Sarmin, immediately to the west of Idlib City, were controlled by armed opposition groups and right next to the frontline. Towards the east, Saraqib at the strategic M5-M4 junction and Taftanaz Military Airbase had been under the control of armed opposition groups since November 2012 and January 2013, respectively.

10. The Government of the Syrian Arab Republic controlled Idlib city and military bases south of Idlib, 4 km west of Qmenas.

11. On 24 March 2015, several factions officially announced the formation of Jaish al-Fatah and commenced operations to seize Idlib city, temporarily succeeding on 28 March 2015, after heavy clashes. The founding members of Jaish al-Fatah included Nusrah Front, Ahrar ash-Sham, Jund al-Aqsa, Failaq al-Sham and others.

12. Qmenas served as one of the bases to prepare the Idlib offensive, with the presence of Nusrah Front and other Jaish al-Fatah factions. While some sources stated that Ahrar ash-Sham controlled the village, the group did not confirm that. Witnesses reported of military installations in the village, without specifying the affiliation of fighters or groups.

13. A witness stated that armed groups were preparing to attack Idlib “in order to liberate it”, and that the incident occurred a few days before the offensive started. According to the same witness, fighters were positioned in Qmenas and on the road to Sarmin awaiting the attack.

14. Between 16 March and 20 May 2015, the incident in Qmenas was the first of several incidents reported in and around Idlib city where chemicals were used as weapons, as recorded by the FFM. However, it remained the only incident in Qmenas. The incidents in Sarmin in the same night occurred only two to three hours later.

15. Qmenas does not have any health-care facilities; the next available medical facilities are the field hospital in Sarmin and the general hospital in Saraqib.

## **Narrative**

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<sup>1</sup> On 30 May 2013, the Nusrah Front was designated as a terrorist group by the Security Council under resolution 1267 (1999).

16. The description that emerged from the testimony of FFM witnesses was that a helicopter dropped two items or “barrel bombs” at the edge of a military zone. A few minutes later, the witnesses noticed a chlorine-like odour. Those exposed suffered from tearing of the eyes, coughing and breathing difficulties. A chemical alert was issued through a local warning system, causing panic.

17. The Government of the Syrian Arab Republic denied any air movements in that area that day and provided a different explanation of the exposure of people to chemical substances. The Government reported that Jund al-Aqsa fighters transported barrels filled with an unidentified liquid from underground hollows known as Maghawir al-Dawash, located between Sarmin and Qmenas. One of the barrels fell from the vehicle, releasing gas that affected the fighters and some residents from Qmenas and Sarmin. All suffered from “asphyxiation”.

18. In the course of the investigation, the Government of the Syrian Arab Republic provided information indicating that opposition fighters used a hell-cannon filled with chemicals against other armed opposition groups. Due to the lack of supporting information and inconsistency with the Mechanism’s findings, the use of a hell-cannon has been excluded as a viable option.

#### **Date and time**

19. Three witnesses confirmed the date of the event occurred on 16 March 2015. The indications of the time diverge slightly, but focus around 2000 and 2100 hours. Four Member States provided information that supports the time of the incidents. The Government of the Syrian Arab Republic confirmed the date of the incident involving chemicals, but did not provide a time.

#### **Weather conditions**

20. The sunset in Qmenas on 16 March 2015 was at 1741 hours. From 2000 to 2100 hours, the temperature was at 10 °C with wind from the west (260 °) at a speed of 3 m/s. The humidity was at 95 per cent.

#### **Impact location**

21. One witness stated that both “barrel bombs” impacted inside a military zone; another said that only one impacted inside the military zone and the other one in a residential area.

22. The Maghawir al-Dawash hollows are located at the south-west outskirts of the village of Sarmin, near the road to Qmenas. The distance between the hollows and Qmenas is approximately 3 km.

#### *Location #1*

23. Three witnesses showed the impact location on a map, at the outskirts of Qmenas on the road to Al-Nerab. The differences in the coordinates were minimal.

24. In order to corroborate the location, ten images of the alleged impact location were examined by a forensic institute. It concluded that all ten included image content that visually linked the images together and thus could confirm that all the

images depict the same place. The metadata examination and visual analysis did not show any sign of manipulation.

25. There are no signs indicating that the pictures were altered to include the remnants. Since the pictures were taken two days after the attack, it cannot be ruled out that the remnants could have possibly been placed at the location beforehand.

26. Through visual comparison of the pictures with satellite images, the forensics specialist determined geographical coordinates of this location matching those shown by the witnesses.

#### **Coordinates of location #1 as provided by different sources**

<i>Source</i>	<i>Latitude (decimal)</i>	<i>Longitude (decimal)</i>
Witness	N35.882889 °	E36.680778 °
Witness	N35.882833 °	E36.681222 °
Witness	N35.882833 °	E36.680722 °
Forensic institute	N35.882772 °	E36.681096 °

#### *Location #2*

27. Only one witness gave information on the second impact location as N35.882972 ° and E36.679111 °. This is close to location #1, further inside the village. The Mechanism had neither found any additional information to confirm the coordinates for location #2, nor any other information on the barrel bomb that allegedly fell there. Two witnesses stated that a military facility or militarized zone was impacted, and that civilians were affected because the wind had carried the gas to a residential area. The kind of military installation or presence, as well as the military actor, could not be established, apart from the fact that it was not a SAAF facility, but related to an armed opposition or other group.

#### **Munition**

28. The following considerations are derived from the analysis of location #1, as no further information is available on location #2.

29. Witnesses described the remnants of the device as a metallic barrel or drum, with a number of exploded gas canisters. This description matches with pictures analysed by the Mechanism and forensic institutes. The metallic barrel, which is possibly the outer jacket of the bomb, has fins. A small exploded canister of a blue-greenish colour is also visible in the pictures. Regarding authenticity, the forensic analysis of the picture concluded that the results of the examination support that the images have not been manipulated and that the photographs were taken two days after the event.

30. Witnesses described a marking on the barrel “IYAD”, but this cannot be seen in any of the pictures.

31. According to explosive experts, if the barrel had contained high explosives, the outer jacket would most probably have splintered into small pieces and completely

destroyed. It is also possible that the explosive filler did not explode, but that would not explain the canisters found.

32. The remnants seen in this and other pictures look like the remnants seen in Sarmin (canisters and the outer jacket), from the incident that occurred at the same day.

### **Delivery method**

33. Witnesses stated that they heard helicopters and the sound of an explosion which they described as “muted” in comparison with other air-strike impacts. Shortly after, they stated to have received a chemical weapon alert through hand-held radios and the loudspeakers of the minarets of the mosques.

34. A witness described an intercepted radio communication of two helicopter pilots, allegedly using the call sign “Bravo”. According to this testimony, a helicopter took off from Latakia airport around 2100 hours. A few moments after the pilot had informed having “entered the working area”; residents reported the impact of a barrel bomb. This occurred around 2130 hours. From Latakia airbase to Qmenas, a helicopter would take 30 to 33 minutes.

35. After reviewing the type of helicopters that are within the SAAF fleet and the distance from Latakia airport to Qmenas, the witness’ assessment on the time needed to reach Qmenas from Latakia is considered correct.

36. The Mechanism gathered information that a helicopter departed the Bassel al-Assad Airport in Latakia at 2030 hours and passed over Qmenas at 2105 hours, returning to the base at 2130 hours.

37. The Government of the Syrian Arab Republic stated that there was no flight activity at that day in that area, but did not provide any supporting documentations, such as flight records. The Government did not respond to questions regarding the call signs used.

### *Location #1*

38. A defence institute studied the images of the remnants and stated that the outer barrel “has the hallmarks of being dropped from an aircraft. The stabilizing fins are clearly visible as well as a mount for attaching the device to the aircraft. This [barrel bomb] has probably been carried underneath the wings or hull of an aircraft (fixed-wing or helicopter). It is doubtful it was carried by a rocket”.

39. A ballistic expert and a defence institute studied the crater formed at location #1 with regard to determining the delivery method. The crater on the pictures can be observed on satellite imagery dated after 16 March 2015 at the determined location.

40. The ballistics expert concluded that “a bomb, dropped from a helicopter at high altitude, and hitting the ground somewhat obliquely, would be quite likely to create an impact mark looking similar to the one shown in” the crater of location #1. The expert noted that the crater had changed between the moment of impact and when the picture was taken: “On the image it appears that a heavy lorry may have driven across the mark after it was made. It could also be possible that some

material was filled back into the hole before the photo was taken, if it had been somewhat deeper, to permit traffic to pass unobstructed.”

41. The defence research institute concluded that the image of the crater was consistent with an object dropped from high altitude onto a hard surface. It was noted that they could not rule out the possibility that “it was simply a bad road” or that someone had dug a hole. They also noted that there were no obvious signs of a large detonation, therefore, the device either contained a low amount of explosives or the explosive filler did not function properly.

42. The Mechanism, with support from several external expert analyses, assessed the possibility that the munition found was launched from a land-based launcher. However, this is considered not feasible.

#### *Location #2*

43. No information was available on the second location mentioned by witnesses, which potentially was located in a militarized zone.

### **Damage and effects**

#### *Location #1*

44. Witnesses stated that the soil around location #1 had partly changed its colour to reddish-pink. Such colouring on the soil is not visible on any of the photos.

45. The pictures of the impact location show a visible discolouration of the vegetation. A satellite image vegetation index analysis showed “less healthy” vegetation in the north and east of the crater. While damage and effects would suggest the use of chlorine or other toxic chemicals, the Mechanism could not rule out other possible causes.

#### *Location #2*

46. No information was made available on the second location.

### **Medical effects**

47. According to witnesses, the ambulances were dispatched to Qmenas after the alerts, but they arrived when all those affected had left the village. One witness stated that some people stopped the ambulances and told them to return, as all patients had already left.

48. Three witnesses confirmed the number of patients as described in the FFM report (S/2015/908). According to these statements, Sarmin hospital from 2045 hours onwards, 60 people sought medical assistance; however, the medical staff assessed that only 20 of them presented clinical symptoms related to chemical exposure, while the others presented symptoms related to anxiety and panic. A witness stated that some opposition fighters were exposed and treated by their military units within their area. There were no deaths reported.

49. Witnesses confirmed the number of patients and provided some names, however, no medical records were provided, despite several requests.

50. The information available on the amount of chlorine, gas and dispersion rate, obstacles and topography was not sufficient for a scientific analysis of the potential chlorine dispersion. With this in mind, the Mechanism used part of the model dispersion model provided by a defense research institute, the established impact location and weather information at the time corroborated to assess whether the number of affected people was in the realm of possible. Noting the lack of information of the exact conditions, this seemed to be the case.

51. The Government of the Syrian Arab Republic stated that people in both Sarmin and Qmenas had been affected as a result of the car accident with a barrel containing chlorine. The numbers of people affected according to this statement are lower than the numbers provided by the hospital in Sarmin and other witnesses.

52. To affect the population of Qmenas, this accident would have had to have occurred on the outskirts of the village of Qmenas. Anywhere further in the direction of Sarmin, the exposure of Qmenas civilians would be significantly reduced. However, if the car accident was close to Qmenas, the population in Sarmin would not have been exposed to chlorine gas or other toxic gaseous substance, as the direction of the wind was not towards the east and the dispersion would have passed by Sarmin in the south.

### **The Leadership Panel's assessment**

53. The Leadership Panel examined the existing information regarding the incident in Qmenas on 16 March 2015 and determined that a SAAF helicopter dropped one device or barrel bomb in Qmenas.

54. The Leadership Panel was close to having sufficient information to reach a conclusion on the actors involved, however, at this stage the Panel could not draw a conclusion with certainty as to whether the device or barrel bomb contained explosives or chlorine in this incident.

55. The Leadership Panel determined that this case merits further investigation.

56. This assessment was based on the following:

- According to witness statements, a helicopter dropped two devices at the edge of a military zone in Qmenas. However, only one impact location as provided by three different witnesses could be corroborated through forensic analysis of pictures and satellite images.
- The remnants of a device found near the impact crater resemble the remnants of barrel bombs found near other impact sites, most notably in Sarmin. Nevertheless, from the analysis of the remnants and the crater it was not possible to determine if the device contained explosives or toxic chemicals.
- The Mechanism was offered alternative descriptions of the event, such as the accidental release of gas from a barrel that fell from a vehicle operated by an armed opposition group, or opposition fighters using a "hell-cannon" filled with chemicals against other armed opposition groups. The Mechanism was unable to obtain any credible information that would support those alternatives.

- The Mechanism obtained information that a helicopter passed over Qmenas on the date and time of the incident.
- The Government of the Syrian Arab Republic indicated that there had not been any SAAF flights on 16 March 2015 in the area, but did not provide any supporting information. However, the Mechanism obtained information from other sources, which corroborate the helicopter flights on the date and time of the incident.
- At the time when the incident occurred, the Government of the Syrian Arab Republic had lost control of six airbases, including Taftanaz airbase (Idlib Governorate). The Government informed the Mechanism that 15 helicopters were left behind of at Taftanaz airbase, nine of which were deemed operational.
- The Leadership Panel reviewed all of the information gathered and found no evidence that armed opposition groups in Qmenas were operating a helicopter at the time and location of the incident.

## Annex VIII

### Sarmin, 16 March 2015

#### Findings of the OPCW Fact-Finding Mission in the Syrian Arab Republic

1. The Fact-Finding Mission (FFM) described two incidents that occurred on 16 March 2015 between 2230 and 2300 hours in Sarmin. (S/2015/908, page 90, paragraph 3.29)
2. “Between 3 May and 5 June 2015 the FFM team interviewed 21 individuals who provided accounts and information regarding incidents of alleged use of toxic chemicals as a weapon in and close to this village on 16 March, 23 March, and 26 March 2015, and 16 May 2015.” (S/2015/908, page 90, paragraph 3.35)
3. “In itself, no one source of information or evidence would lend particularly strong weighting as to whether there was an event that had used a toxic chemical as a weapon. However, taken in their entirety, sufficient facts were collected to conclude that incidents in the Syrian Arab Republic likely involved the use of a toxic chemical as a weapon. There is insufficient evidence to come to any firm conclusions as to the identification of the chemical, although there are factors indicating that the chemical probably contained the element chlorine.” (S/2015/908, page 151, paragraph 5.19)

#### The Mechanism’s investigation

##### Background

4. Sarmin (Idlib Governorate, Idlib District) is approximately 7-8 km south-east of the eastern outskirts of Idlib city, on the road to Saraqib. Binnish is approximately 5-6 km north of Sarmin, while the airfield of Taftanaz is 8 km north-east. Qmenas is 5 km to the south-west of Sarmin. The Bassel Al-Assad Airport in Latakia is located approximately 85 km away on the Mediterranean coast.
5. In the 2004 census, Sarmin had approximately 14,500 inhabitants. According to the FFM, due to the proximity of the front lines, Sarmin had been depopulated in 2015 to less than 5,000 people. In August 2014, The United Nations Office for the Coordination of Humanitarian Affairs had identified only 2,500 people in need in Sarmin and no internally displaced persons (IDPs), but a high number of IDPs were recorded in Idlib District. Other statements, however, have indicated that Sarmin still had a large population, and many of the IDPs had relocated there from Idlib.
6. In 2014, Government presence in Idlib had consisted of networks of checkpoints and military installations, one running along the M5 between the towns of Ma’arrat al-Numan and Khan Sheikhoun and the other along the M4 connecting Latakia to the city of Idlib.

7. In the summer of 2014, the Nusrah Front<sup>1</sup> began to clash with many of the armed opposition groups it had been fighting alongside against the Government before. Those included Jabhat al-Thuwar and Harakat Hazm. Consequently, the Nusrah Front took control of several regions and towns in Idlib Governorate, in addition to some of the weapons and facilities of those armed opposition groups.

8. On 15 December 2014, the Nusrah Front, as well as Ahrar ash-Sham, Jund al-Aqsa and fighters from other armed opposition groups captured the military bases Wadi al-Deif and Al-Hamidiyah, south of Ma'arat al-Nu'man, and thus gained control of the strategic M5 motorway north of Morek and several military checkpoints. This cut an important access route to Idlib, impeding the ability of Government of the Syrian Arab Republic to resupply its forces within the city and surrounding area.

9. By March 2015, Qmenas and Sarmin, immediately to the east of Idlib city, were controlled by armed opposition groups, as was Binnish to the north. Sarmin had been largely controlled by Liwa Dawoud until 2014, when the group's commander defected to join the Islamic State in Iraq and the Levant (ISIL). Some 100 fighters reportedly declined and returned to Sarmin to join other groups. Ahrar ash-Sham did confirm its presence in March 2015. Failaq al-Sham and other factions of Jaish al-Fatah were likely present.

10. Further to the east, both Saraqib and Taftanaz Military Airbase were also under control of armed opposition groups from November 2012 and January 2013, respectively.

11. The Government of the Syrian Arab Republic still controlled Idlib city and the military bases near Almastumah, south of Idlib. Pro-Government paramilitary National Defense Forces (NDFs) also controlled the nearby communities of Fouah and Kafraya, north of Binnish.

12. On 16 March 2015, there were two allegations of the use of chemicals as weapons in Sarmin and one in Qmenas. A witness stated that on 16 March 2015, the armed groups located in Qmenas and on the road from Qmenas to Sarmin had been preparing for the attack on Idlib city (which commenced 24 March 2015).

13. On 24 March 2015, several groups officially announced the formation of Jaish al-Fatah (elements included the Nusrah Front, Ahrar ash-Sham, Jund al-Aqsa, Failaq al-Sham and several other), which commenced operations to seize Idlib city. The city fell to their control on 28 March 2015.

14. By the end of May 2015, the FFM recorded allegations of five incidents of alleged use of chemicals as weapons in Sarmin.

15. Sarmin has one primary health-care centre, one private clinic and one field hospital, which was previously supported by the Syrian Arab Red Crescent (SARC), and now also by the Syrian American Medical Society (SAMS).

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<sup>1</sup> On 30 May 2013, the Nusrah Front was designated as a terrorist group by the Security Council under resolution 1267 (1999).

**Narratives**

16. The description that emerged from the FFM is that on 16 March 2015 around 2230 to 2300 hours local time, a helicopter dropped two barrel bombs filled with chlorine or chlorine derivative, resulting in the release of chlorine gas. One fell on an open field (location #1). The other fell through the ventilation shaft of a partially built house (location #2). There was a family of six living in the basement of the house, all of whom died in the incident. The population was warned through a local early warning system. Those close to the impact described the odour of chlorine. Twenty-six people were treated in the hospitals of Saraqib and Sarmin after experiencing a feeling of suffocation.

17. The Government of the Syrian Arab Republic denied any air movements in the area that day and provided a different explanation of the people's exposure to chemical substances. The Government explained that Jund al-Aqsa fighters transported barrels filled with an unidentified liquid from underground hollows known as Maghawir al-Dawash, located between Sarmin and Qmenas. During a car accident, one of the barrels fell from the vehicle (location #3), releasing gas that affected the fighters as well as some residents in both Qmenas and Sarmin. All suffered from "asphyxiation".

18. Another description of the events, as given by another source, indicated that an air strike from the Syrian Arab Armed Forces (SAAF) in the vicinity of Sarmin around 2200 hours destroyed depots with conventional ammunition and non-poisonous chemicals. A fire led to the release of "caustic combustion gases" from the chemical agents, which was then used as a pretext for allegations against the Government of the Syrian Arab Republic. The Mechanism could not obtain information to confirm an air strike or the explosion of a munition depot. The Government of the Syrian Arab Republic stated that overflights were very common in that period but denied that there were any air operations on 16 March 2015, although they did not provide any documentation to support this.

**Date and time**

19. Three witnesses confirmed that the two incidents occurred on 16 March 2015 at approximately 2230 hours. No exact time was given for the alleged car accident or air strike on a munition depot.

**Weather conditions**

20. The sunset in Sarmin on 16 March 2015 was at 1741 hours. From 2200 to 2300 hours, the temperature ranged from 9 °C to 10 °C. The wind came from the west (260 °) with a wind speed of 3 m/s. The relative humidity was at 96 per cent.

**Impact location***Location #1*

21. A witness' statement identified the first impact location in an agricultural field, adjacent to a target of potential military interest, at N35.902407 ° and E36.729282 °.

22. Photos and videos from the Sarmin incident were forensically analysed for metadata extraction, image analysis and manipulation. A forensic institute, through

image analysis and visual comparison with satellite images, confirmed the impact location.

#### *Location #2*

23. Three witnesses identified the house on a map where a device fell and six people died. Through analysis of photos, satellite images and videos the following coordinates were identified as the second impact location: N35.903257 ° and 36.729642E °.

24. The forensic institute, through image analysis and visual comparison with satellite images, confirmed the impact location.

25. Locations #1 and #2 are 90 metres apart. While no GPS coordinates or time stamp could be obtained from material, the forensic analysis established that all photographs and videos submitted include image content that was linked to at least one other image for the two locations. Nine pictures and seven videos have been analysed by a forensic institute.

#### **Coordinates of location #2 as provided by different sources**

<i>Source</i>	<i>Latitude (decimal)</i>	<i>Longitude (decimal)</i>
Witness	N35.903257 °	E36.729642 °
Witness	N35.903214 °	E36.729650 °
Witness	N35.903197 °	E36.729594 °
Forensic analysis	N35.903257 °	E36.729642 °

#### *Location #3*

26. The Maghawir al-Dawash hollows are located at the south-west outskirts of the village of Sarmin, close to a road that links Sarmin to Qmenas (N35.897722 ° E36.714589 °). The exact location of the alleged car accident could not be determined.

#### **Munition**

##### *Location #1*

27. Three witnesses described “a barrel” (parts of the outer jacket) and several “canisters”. One of them stated that the canisters looked like those filled with refrigerant gas for refrigerators. That witness also described the odour of chlorine.

28. One witness described the outer jacket as a 125-cm long “make-shift” weapon, which was “obvious[ly] locally made”. It had three or four iron rollers, which were fixed rollers that could function as wheels. The barrel bomb was made of a thick metal.

29. The Mechanism analysed several pictures of the remnants of the munition and submitted several of them for forensic analysis. While no signs of manipulation of the pictures could be found, it appears that the remnants have been moved from the point of impact (crater) to the road.

30. The pictures show several exploded canisters, as well as pieces that were most probably parts of the outer jacket (“barrel”). On the outer jacket, “stabilizing fins” and the “wheels” can be seen.

31. According to explosive experts, the large size of the remnant parts of the outer jacket, indicate a smaller explosive charge. If the barrel had been filled with large amounts of explosives, it would likely have disintegrated into very small fragments. Theoretically, if a larger explosive charge did not function properly, the size of the remnants could be larger. However, no remaining explosives can be seen in the pictures.

#### *Location #2*

32. A witness said that the size of the munition (“barrel”) was 150 cm in height and 60 cm or more in diameter. The witness stated that there were several gas canisters of the kind filled with refrigerant gas used in air conditioners. The canisters’ had English inscriptions. The inside of the canisters was of a yellow colour. A video shows the remnants, damage and debris in each room of the house, as described by the witness. This witness had seen this several hours after the attack.

33. Several videos and pictures provided by witnesses and retrieved from open sources show the impact location and remnants. This includes videos taken by first responders who tried to enter the house during the night through thick smoke to rescue the family members in the basement, as well as videos showing the impact scene the next day. The device is understood to have fallen into a kitchen area. The outer jacket is visible in the pictures, in addition to a cylinder from a heating system that is not part of the munition. There is a lot of rubble and parts of a collapsed structure, while the dishes and items in the kitchen shelf are in place. In other videos, the kitchen shelves have been emptied, indicating that this video has been taken at an even later stage.

34. Some pictures and videos show exploded refrigerant canisters, as described by the witnesses, in addition to a reddish or purple substance on the floor. This is understood to be possibly from potassium permanganate. According to a forensic institute, potassium permanganate would be delivered as a powder. The purple liquid phase would be caused by a secondary effect, such as contact with water.

35. The FFM has been provided with samples, which were analysed in an OPCW-designated laboratory to determine whether any chemical substance had been used. Neither the FFM nor the Mechanism was able to establish the full chain of custody for these samples.

36. The canisters are HCFC<sup>2</sup> gas canisters used in different household items, such as refrigerators and air conditioners. Based on the scripts on a canister, it appears that the canisters are manufactured according to United States standard, as non-reusable canisters for disposal after use. The several canisters were produced by different manufacturers. These canisters could have been easily retrieved. However, to refill and repurpose the canisters to be part of the device, some modifications would have been necessary. A Member State provided the analysis that refilling the

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<sup>2</sup> Hydrochlorofluorocarbon.

canisters would bear a high risk and require modification of the valves. For this process, some technical expertise and equipment, including the ability to create conducive conditions, would be required.

37. The indentation line, fractures and cuts in the metallic canister seem to be consistent with the use of a detonation cord. A blasting cap, fitted with the fuze, appears to have been taped to the base of the barrel, and the detonation cords fitted to the blasting cap and taped around the cylinders.

38. The plastic bottles are believed to be 500-ml-PET bottles filled with potassium permanganate (KMnO<sub>4</sub>). Mixing with the content of the refrigerant containers upon explosion, the potassium permanganate would have generated the chlorine. As discussed above, the potassium permanganate could have caused the purple colour of the soil. Potassium permanganate is used in pharmaceutical products, water treatment, disinfection products and for other civilian purposes; however, chlorine may be produced by the reaction of hydrochloric acid (HCl) with KMnO<sub>4</sub>.

39. The laboratory analysis did not provide sufficient evidence to confirm the exact composition of the toxic substance used, but strongly supported the use of chlorine or a chlorine derivative. Higher concentrations of chloride were found in the inner surface of the refrigerant cylinders, compared with the exterior surface. This indicates that a chlorine containing substance was in the cylinders, either in the form of chlorine or HCl.

40. The presence of bornyl chloride was also found in a piece of wood removed from the affected building. This substance is the product of the reaction of HCl or chlorine (Cl<sub>2</sub>) with alpha-pinene, a terpene-based wood ingredient.

41. It has been suggested that this could indicate a two-component reaction needed to produce the toxic substances, and other less toxic chemicals are contained in the device and brought to reaction upon impact. This theory has been supported by analysis provided by another source.

42. The presence of trinitrotoluene (TNT) was identified in some of the samples. This explosive is not normally found in detonation cords or in the cylinders and the hypothesis of the working model described above would not explain the presence of TNT. Traces of TNT may possibly be present due to contamination of the munition parts during construction. However, this needs additional analysis to verify the presence of explosives to allow a definitive conclusion.

#### *Location #3*

43. No further information could be found on a barrel of chemicals that fell from a truck, as indicated by the Government of the Syrian Arab Republic.

#### **Delivery method**

44. Eight witnesses heard at least one helicopter flying over Sarmin between 2230 and 2300 hours. Several of them stated that the helicopter(s) dropped two items. The statements about how much time was between the impacts are slightly diverging. The sound of the falling items was described as a diving fighter jet sound, followed by a soft explosion.

45. One witness heard through a radio communication system used to intercept SAAF communication that a helicopter took off from Latakia airbase. The witness stated that one helicopter was returning to Latakia airbase after having dropped a barrel bomb on Qmenas at approximately 2130 hours. The helicopter flew over Sarmin between 2230 and 2330 hours and dropped two items. The pilot communicated with the base twice about having “executed”, with a difference of one minute. Then, the pilot informed the base and said “Sir, the barrels are at the terrorist area”.

46. One source shared their assessment that a helicopter departed from Latakia (Bassel al-Assad Airport) at 2215 hours and flew over Sarmin around 2250 hours, returning to base at 2325 hours. The Government of the Syrian Arab Republic stated that there had not been any SAAF flights from Latakia or other airbases in the region on 16 March 2015, but, despite repeated requests, did not provide any supporting information (e.g., flight plans).

#### *Location #1*

47. The Mechanism analysed the impact, remnants and crater with a view to find out about the delivery method. Experts agree that the launch of a barrel of the size and kind described above from a land-based cannon or mortar-like launching system is not feasible, and highly unlikely from a rocket-based launcher.

48. Asked if the crater could result from the impact of a bomb dropped from a helicopter from high altitude, the expert stated that this was “quite likely”. The expert had used the following calculation: A steel barrel bomb of 60 cm diameter and 150 cm length, containing nine pressure tanks/canisters, filled with either hydrochloric acid or chlorine, and weighing approximately 390 kg.

49. A defence institute analysed the pictures of the remnants and conveyed its view that it had the “hallmarks of being dropped from an aircraft. Stabilizing fins are clearly visible [...] and also a mount for attaching the device to the aircraft”.

#### *Location #2*

50. A ballistic expert analysis supports the statement of the witnesses, improbable as it sounds, that the device impacted through the ventilation shaft. There is a pale whitish mark on the right side of the shaft, which is likely the impact mark.

51. According to another forensic analysis, the deformation of the canisters and the plastic bottles is consistent with a mechanical impact, such as upon impact on the ground, and an explosive rupture, most probably through the detonation cord, set-off by the blasting cap. The sound produced at the impact would not be expected to be as loud as a device filled with explosives.

52. Another laboratory states that from the samples, it was “difficult to fathom” that the device was launched from the ground. The weight and location of the remnants would suggest that they fell from a helicopter, as this device would have been too heavy to launch from the ground. In addition, the canisters would have fallen further apart.

*Location #3*

53. The barrel “with an unidentified liquid” fell from a truck. No further information has been provided on the nature and filling of this barrel or the truck.

**Damage and Effects***Location #1*

54. According to a witness, the crater was 150 cm wide and 50 cm (or 75 cm) deep, which matches with the crater seen in the pictures, as well as several open source videos. A ballistic expert studied the crater and estimated the size as approximately 250 cm in diameter and less than 70 cm in depth, however, cautioning that matter could have fallen back into it after the actual impact, reducing the depth.

55. Differences in the colour of the grass can be observed around the crater. A satellite image vegetation index analysis shows “less healthy” vegetation at the open field on which the crater is (location #1) next to location #2. It is possible that this could have been caused by chlorine or other toxic chemicals, but it is also possible that there are other causes.

*Location #2*

56. The entry point of the device into the residential house (location #2) was a ventilation shaft. The device fell to the basement of a partially built house, and impacted in the kitchen. In the basement were, apart from the kitchen, three bedrooms and a hall. There is no crater; however, the basement of the house was partially destroyed.

57. A ballistic expert stated that the bomb appeared to have impacted onto the kitchen wall. In the expert’s view, the fact that objects and shelves appear relatively intact would exclude a major explosion. The structure or vault on its top might rather have collapsed when the kitchen wall was impacted, but it may also have been directly impacted. The damage could have been caused by the device impacting on one end of the ventilation shaft, bouncing against the rock wall, impacting walls and other structures below the upper floor, which when collapsing, pulled with it other parts of the ceiling and possibly a staircase. A defence institute shared this assessment and concluded that it was possible that the damage was caused by the kinetic effect of the impact (i.e., the barrel bomb broke the structure of the building after falling from high altitude).

58. The Government of the Syrian Arab Republic stated that the cause of the explosion of the house was an accident with a LPG<sup>3</sup> (cooking gas) cylinder. However, there is no evidence of fire inside the kitchen, which reduces the probability of an accident with LPG.

59. Also, as an expert analysis points out, there was no apparent blackening of the walls, which would be expected in an explosion or detonation of any high explosive. There were only signs of a very minor explosion, such as a detonating cord, having occurred, if any at all. A defence research institute noted that if there had been a large

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<sup>3</sup> Liquefied petroleum gas, often referred to as propane.

detonation, there should have been (a) more signs of scourging; (b) more damage to the items in the background; and (c) less remnants of the barrel bomb itself.

### **Medical effects**

60. According to witnesses, 17 patients were treated by the Sarmin Field Hospital and 11 by the Saraqib Field Hospital. In addition, witnesses stated that 20 civil defence personnel also received first aid treatment as they had suffered secondary exposure. All six members of the family living at location #2 died.

61. A witness stated that a man, his wife and their youngest child managed to get out of the house and called for help. The eyewitnesses described an irritating smell, similar to chlorine used as a household cleaning agent but much more intense. This odour immediately induced coughing and a feeling of suffocation among all who were exposed. The three family members were brought to the Sarmin Field Hospital. The woman told first responders that the grandmother and two children were still in the house. Several first responders tried to rescue them but had to return because they were affected and suffered from symptoms (“suffocation”) when they entered the house.

62. None of the witnesses provided information on how the other family members were finally evacuated. However, in the video material they appear in the hospital. The grandmother is apparently dead and the two other children are unresponsive.

63. A witness provided reports signed by medical doctors at the Sarmin hospital, confirming the deaths of the six family members, but not certifying the cause of death.

64. In an attempt to estimate the number of people that would likely be exposed to the release of chlorine, a basic simulation exercise of the possible chlorine dispersion was carried out. The exercise presents the probability and severity of injuries, considering the theoretical concentration of this chemical in the atmosphere.

65. To assess a more reliable number of casualties, certain aspects, such as position and distance from the terrain, rate of dispersion of the substance at source, urban characteristics and obstacles, topography and actual population density and characteristics (gender, age, pre-existing conditions, etc.) would need to be known. Nevertheless, with this in mind, the Mechanism used part of the model to assess the effect on the population exposed.

66. The death of six persons in this case may be explained as exposure that occurred in an underground confined space. As chlorine is heavier than air it would be directed to and remain in the lowest areas where it was released (i.e., the basement).

67. The model had predicted a higher number of affected people (91), based on a calculation in the city centre. Applying the predicted chlorine plume to the actual weather conditions and the impact location in the outskirts of the village, a lower number of affected people would be expected. The exact population density in the area at the time of the incident could not be established with certainty, thus, no exact calculation can be made.

68. In relation to the incident in which a barrel fell from a truck, it is noted that the accident would have had to happen quite close to Sarmin, in the vicinity of the Maghawir al-Dawash hollows, to cause exposure of any patients in Sarmin.

Considering the wind direction, in an accident close to Sarmin on the road to Qmenas, a toxic gas could have been carried to Sarmin and affected people at the outskirts of Sarmin, particularly on its south-western border. However, this could not explain the people exposed in eastern Sarmin.

69. This accident allegedly affected the population of Qmenas and Sarmin. In order to affect the population in Qmenas, it would have had to occur near the outskirts of Qmenas, maximal 500 m from the centre of Qmenas. However, in that case it would be impossible for the population in Sarmin to be exposed to chlorine gas or other toxic gaseous substance, as the direction of the wind was not towards Sarmin but towards the south of the village.

### **The Leadership Panel's assessments**

70. The Leadership Panel examined the existing information regarding the two impact locations in Sarmin on 16 March 2015. There is sufficient information for the Leadership Panel to conclude that the incident at impact location #2 was caused by an SAAF helicopter dropping a device which hit the house and was followed by the release of a toxic substance, which match the characteristics of chlorine, that was fatal to all (6) occupants. The remnants of the device are consistent with the construction of a barrel bomb.

71. This conclusion was based on the following:

- Witnesses confirmed that at least one helicopter flew over Sarmin at the time of the incident.
- Expert and forensic analyses support witness statements that a device or barrel bomb dropped from a helicopter impacted through the ventilation shaft of a house (impact location #2) inhabited at the time by a family of six. The damage was consistent with the kinetic effect of a device or “barrel bomb” falling from high altitude rather than the explosion or detonation of any high explosive.
- Multiple videos of the location #2 show HCFC gas canisters inside the house, with a purple substance on the floor.
- The Government of the Syrian Arab Republic indicated that there had not been any SAAF flights on 16 March 2015, but did not provide any supporting information. However, the Mechanism obtained information from other sources, which corroborate witness statements of SAAF helicopter flights on the date and time of the incident.
- At the time when the incident occurred, the Government of the Syrian Arab Republic had lost control of six airbases, including Taftanaz airbase (Idlib Governorate). The Government informed the Mechanism that 15 helicopters were left behind of at Taftanaz airbase, nine of which were deemed operational.
- The Leadership Panel reviewed all of the information gathered and found no evidence that armed opposition groups in Sarmin, were operating a helicopter at the time and location of the incident.

## Annex IX

### Binnish, 24 March 2015

#### Findings of the OPCW Fact-Finding Mission in the Syrian Arab Republic

1. “The FFM team interviewed only one person from Binnish, who was a treating physician at the time of the alleged incident.” (S/2015/908, page 112, paragraph 3.76) On 23 March 2015 at around 1900 hours, the physician was in the field hospital and was informed of the incident through local early warning methods, including hand-held radios. (S/2015/908, page 112, paragraph 3.78)
2. Binnish Field Hospital registered 21 patients related to the incident on 23 March 2014. (S/2015/908, page 112, paragraph 3.79)
3. “In itself, no one source of information or evidence would lend particularly strong weighting as to whether there was an event that had used a toxic chemical as a weapon. However, taken in their entirety, sufficient facts were collected to conclude that incidents in the Syrian Arab Republic likely involved the use of a toxic chemical as a weapon. There is insufficient evidence to come to any firm conclusions as to the identification of the chemical, although there are factors indicating that the chemical probably contained the element chlorine.” (S/2015/908, page 151, paragraph 5.19)

#### The Mechanism’s investigation

##### Background

4. Binnish (Idlib Governorate, Idlib District) is located 8 km north-east of Idlib. Sarmin is 6 km to the south and Saraqib 12 km to the south-east. The airfield of Taftanaz, under control of armed opposition groups, is 6 km to the north-east.
5. In the 2004 census, Binnish had about 21,848 inhabitants. A witness stated that in March 2015, Binnish had a population of approximately 5,000 at the time of the incident, as large numbers of people had been displaced from there. In August 2014, a report from the United Nations Office for the Coordination of Humanitarian Affairs indicated 8,500 internally displaced persons (IDPs) in Idlib District.
6. In 2014, Government presence in Idlib consisted of networks of checkpoints and military installations, one running along the M5 motorway between the towns of Ma’arrat al-Numan and Khan Sheikhoun, and the other along the M4 motorway connecting Latakia to the city of Idlib.
7. In the summer of 2014, the Nusrah Front<sup>1</sup> began to clash with many of the armed opposition groups it had been fought alongside against the Government before. Those included Jabhat al-Thuwar and Harakat Hazm. Consequently, the

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<sup>1</sup> On 30 May 2013 the Nusrah Front was designated as a terrorist group by the Security Council under resolution 1267 (1999).

Nusra Front took control of several regions and towns in Idlib Governorate, in addition to some of the weapons and facilities of those armed opposition groups.

8. On 15 December 2014, the Nusra Front and armed opposition groups, including Ahrar ash-Sham and Jund al-Aqsa, captured the military bases Wadi al-Deif and Al-Hamidiyah, south of Ma'arat al-Nu'man, and thus gained control of the strategic M5 motorway north of Morek as well as several military checkpoints. This cut an important Government access route to Idlib, impeding the ability of the Government of the Syrian Arab Republic to resupply its forces within the city and surrounding area.

9. On 23 March 2015, the Government of the Syrian Arab Republic controlled Idlib city and the military bases near Almastumah, south of Idlib. Pro-Government paramilitary National Defense Forces (NDFs) also controlled the nearby communities of Fouah and Karfaya, north of Binnish.

10. Binnish was largely controlled by the Nusra Front and Ahrar al-Sham. Failaq al-Sham and other groups were also reportedly present. According to the Government of the Syrian Arab Republic, on 23 March 2015, fighters of the Nusra Front and armed opposition groups had gathered in the western part of Binnish in preparation for the attack on Idlib city, and were targeting checkpoints of the Syrian Arab Armed Forces (SAAF) towards Idlib with mortar fire, to which Government forces responded with artillery.

11. On 24 March 2015, several factions officially announced the formation of Jaish al-Fatah. This included elements of the Nusra Front, Ahrar ash-Sham, Jund al-Aqsa, Failaq al-Sham and several others. Jaish al-Fatah commenced operations to seize Idlib city. The city fell to control of Jaish al-Fatah on 28 March 2015.

### **Narratives**

12. The description of events as emerging from the Fact-Finding Mission (FFM) report indicates that on 23 March 2015,<sup>2</sup> a helicopter dropped a barrel bomb filled with chlorine or chlorine derivative between 1900 and 2000 hours. Chlorine or chlorine derivative was released, affecting 21 people. The Mechanism further investigated the events, and established that the date of the incident was 24 March 2015. Also, two possible impact locations were identified and considered.

13. The Government of the Syrian Arab Republic stated that no incident took place on either of the dates and that armed opposition groups or their supporters staged the use of chlorine as a weapon with the intention to blame the Government.

14. One witness provided hearsay information during an interview about the explosion of a warehouse, in which chemicals were stored. The witness stated that on 22 or 23 March 2015, there had been an explosion around 1930 hours. The witness recounted the testimony of family members. According to them, yellow and white smoke went up to the sky. One family member had breathing difficulties as a result of inhaling something with a distinct smell. The smell was also noticed by another family member. Other people from Binnish told the witness that there had

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<sup>2</sup> FFM referred to the date of the incident as being 23 March 2015, however the Mechanism established the time of the event as 24 March 2015 around 1900 hours.

been an explosion in Binnish at a warehouse containing gas cylinders, used to produce “hell-cannons”. The neighbourhood, in which this warehouse was reportedly located, in addition to the time of the accident, do not match the date established by the Mechanism.

#### **Date and time**

15. While the FFM referred to the date of the incident as being 23 March 2015, the Mechanism established the time of the event as 24 March 2015 around 1900 hours.

16. Four witnesses indicated that the incident took place around 1900 hours local time on 24 March 2015. According to one witness, the Binnish hospital started receiving patients around 1915 hours. A second witness stated that a telephone call was received from people in Binnish about the attack at 1900 hours.

17. Several photo and video files have been submitted for independent forensic analysis. For some of the files, the original metadata — including time stamps — had been wiped out and could not be determined.

18. Several individuals posted information concerning this incident on social media websites, starting around 1930 hours on 24 March 2015. Another source provided its assessment to the Mechanism that confirms the same date and time.

19. Two witnesses indicated a different time for the incident on 24 March 2015. One of the two witnesses thought the event might have occurred between 2200 and 2300 hours. Another one had heard military radio communications on a walkie-talkie before the attack and during the treatment of patients at the Binnish hospital.

#### **Weather conditions**

20. The sunset on 24 March 2015 was at 1748 hours. At 1900 to 2000 hours, the temperature was 11 °C. The wind came from the north-west (320 °) and the wind speed declined from 3 m/s to 2 m/s. The humidity was at 95 per cent. It was partly cloudy.

#### **Impact location**

##### *Location #1*

21. A witness identified the impact point on 24 March 2015 in an agricultural field on the south-eastern side of Binnish, at the coordinates N35.955286 ° E36.717797 °. Another witness described the same impact location of a barrel bomb in the south-eastern area of Binnish in an agricultural field.

22. The location was further corroborated through forensic examination of photographs provided by one of the witnesses. The forensic institute stated that while there was no GPS information in the metadata, comparative image analysis indicates that the pictures were likely taken at the same location.

##### *Location #2*

23. A second unexploded barrel bomb has been reported to have landed in a northern neighbourhood by a witness and an independent organization that published this information on open sources. However, there is some discrepancy

about the locations, which are over 200 m apart from each other. The witness also indicated that the remnants of this device were buried in a nearby field.

#### **Coordinates of location #2 as provided by different sources**

<i>Source</i>	<i>Latitude (decimal)</i>	<i>Longitude (decimal)</i>
Witness	N35.959185 °	E36.713626 °
Open source	N35.957925 °	E36.711673 °

24. A report published on an open source referred to the same location and remnants, but indicated that the incident occurred on 23 March 2015 at 1430 hours. A video from that date had also been posted, as well as the recovery of the remnants, which was indicated to have taken place on 26 March 2015.

25. No additional information is available with regard to the second reported barrel bomb. The Mechanism has been unable to find additional or corroborating information on the second impact location.

#### **Munition**

26. A witness identified location #1 and described the munition as a barrel bomb, which the witness thought contained six canisters filled with chemicals. The witness estimated the size of the munition as approximately 60 cm in diameter and 150 cm in length. At least one of the canisters remained intact.

27. Pictures of the outer jacket of the munition at location #1 were received from a source. Forensic examination is pending at the time of submission of this report. The same source stated that at least one unexploded canister and a plastic bottle with a dark, crystallized liquid recovered from location #1 was in its possession. There was no evidence of remnants of any other canisters.

28. The chain of custody for the remnants was attested by the source based on the testimony of a witness and a written confirmation by the organization that had collected the samples.

29. The same source also provided a laboratory report on the canister and the content of the plastic bottle. This report indicates that the recovered canister is an HCFC<sup>3</sup> gas canister. Although the contents had leaked from a rupture in the bottom, traces of chlorine or a chlorine-like substance had been found on the inside of the canister. The report also concluded that the content of the plastic bottle had been potassium permanganate. The source shared its assessment that the munition consisted of multiple HCFC gas canisters, in addition to several plastic bottles containing potassium permanganate, placed in a large barrel.

30. The two other witnesses who were first responders stated that they recovered remnants of both munitions and that they had buried the remnants out of fear of the chemicals they believed it contained. The Mechanism could not confirm the location where the remnants were allegedly buried.

<sup>3</sup> Hydrochlorofluorocarbon.

31. There is no video documentation of the impact location, dismantling and excavation of munition, remnants or crater. Pictures of the place where the remnants were allegedly buried, including of the outer jacket of the munition, have been submitted to the Mechanism on 19 August 2016 and have been submitted for independent forensic analysis, the results of which are pending at the time of the submission of this report.

#### **Delivery method**

32. According to three witnesses, a SAAF helicopter dropped barrel bombs with chemicals. Open sources indicated that there were continuous air operations taking place over Binnish during this period, including on 24 March 2015, which was also confirmed by other sources.

33. The Government of the Syrian Arab Republic informed that no SAAF flight operations took place in the Binnish area on 24 March 2015. The Government did not, however, provide any supporting documentations, such as flight records.

34. Two sources shared their assessment that on 24 March 2015 at 1930 hours, a helicopter departed from Bassel Al-Assad Airport in Latakia in the direction of Idlib. It passed over Binnish at 2015 hours and returned to base at 2107 hours.

35. However, the specific times referred to above do not correlate with the time of the incident 1900 hours, when first affected people sought medical assistance.

#### **Damage and effects**

36. Two witnesses had visited the impact location in the agricultural field (location #1) and noted that there was damage to the vegetation manifested by a distinct yellow colour and “dead flora” in the area of the impact. Pictures of the area of damaged foliage were provided to a forensic laboratory which shows that the pictures were taken in Binnish.

37. A satellite imagery analysis indicated that there was no crater visible, but a soil distortion that might be related to an impact. A vegetation index analysis showed that, at this location and two areas in the immediate vicinity, the vegetation was less healthy. This could have been caused by chlorine, other toxic chemicals or other factors. The Mechanism obtained photographs of a site where remnants were buried including an outer jacket, a canister and a plastic bottle, but cannot corroborate this site is also the original impact site.

#### **Medical effects**

38. The Binnish hospital registered 21 patients related to the incident. Ten of these were mild cases, ten were moderate cases and one was identified as a severe case. The clinical examination demonstrated that most of the cases were presented with the following symptoms: coughing, difficulty breathing and drowsiness. There were no deaths reported. Two witnesses confirmed the testimony of the treating physician interviewed by the FFM with regard to the extent and type of symptoms of the patients.

39. Two witnesses had indicated that all patients were decontaminated, including washing of the exposed area of skin, outside the hospital, five to 10 m from the

emergency room. The physician did not smell chlorine odour emanating from the clothing but was informed of the smell by the patients. The video seems to show patients entering the hospital directly without having been decontaminated.

40. A forensic analysis of the plume effect of the chlorine dispersion on the date and time of the incident indicates that the number of the reported injuries is consistent with the use of chlorine under the prevailing weather conditions. However, this analysis did not take into account the topography and any obstacles, such as houses.

41. The Government of the Syrian Arab Republic shared their assessment of a video retrieved from an open source. The video, titled “Poisonous chlorine gas leads to suffocation in the countryside of Idlib”, shows patients being treated in a health facility. The Government of the Syrian Arab Republic indicated that according to their analysis the video was staged.

42. Independent forensic analysis indicated that the creation date of the file, based on the information in the metadata, was 29 March 2015 at 0330 hours. However, the creation date for this video likely corresponds with the date on which the modified file was created, not the original file.

43. Photographs of the patients taken in the hospital at the time of the incident have been forensically examined, and the conclusion reached is that the pictures were taken in the same place.

44. Whether the scenes in the footage are “staged” cannot be determined by video analysis. It is, however, noted that the patients appear relatively unaffected by the typical symptoms. No red eyes, tearing, paleness, sweating, cyanosis or breathing difficulties can be observed from the footage. The patients interviewed in the video show little or no signs of having been exposed to a toxic chemical.

45. The structure and extent of video material on the Binnish case shows only the activity at the hospital.

### **The Leadership Panel’s Assessment**

46. The Leadership Panel examined the available information regarding the incident in Binnish on 24 March 2015 and was able to confirm the existence of a canister with traces of chlorine or a chlorine-like substance. It has further received additional information in relation to remnants of the outer jacket of a device that is consistent with the construction of a barrel bomb.

47. The Leadership Panel was close to having sufficient information to reach a conclusion on the actors involved on the basis of the chain of custody on the remnants found and the overall findings of the FFM. However, there are inconsistencies in the case, including the link between the remnants and the impact site(s), accounts of the explosion and affected individuals, which are being further investigated.

48. This assessment was based on the following:

- According to three witnesses, a SAAF helicopter dropped a device or “barrel bomb” with chemicals at night over Binnish. However, there are

inconsistencies in relation to the date and time of the incident, the impact location(s) and the description of the exposure to toxic chemicals suffered by the local population.

- Despite the inconsistencies and scarcity of information surrounding this case the Mechanism has been able to corroborate some key elements such as the remnants recovered by local respondents from an agricultural field in Binnish which were subsequently recorded and documented. The remnants found at location #1, i.e. the outer jacket, a canister and a plastic bottle, are consistent with the construction of a barrel bomb. The canister and the content of the plastic bottle were analysed by a laboratory which found traces of chlorine or a chlorine-like substance in the canister. The laboratory also concluded that the content of the plastic bottle had been potassium permanganate. The chain of custody for these remnants was established.
- The Mechanism could not obtain any information concerning the explosion of the device. Nevertheless it has received information on the impact location, which is being forensically analysed.

## Annex X

### Marea, 21 August 2015

#### Findings of the OPCW Fact-Finding Mission in the Syrian Arab Republic

1. “The team can conclude [...] with the utmost confidence that at least two people were exposed to sulfur mustard [...] and] it is very likely that the effects of sulfur mustard resulted in the death of an infant.” (S/2015/908, page 215, paragraph 4.6)

#### The Mechanism’s investigation

##### Background

2. Marea (Aleppo Governorate, Azaz District), is located 35 km north-east of Aleppo city and 18 km south of the Bab al-Salam border crossing to Turkey. In the 2004 census, Marea had a population of close to 17,000 in the city and 40,000 in the Marea sub-district.

3. In July 2015, two coalitions of armed opposition groups (Fatah Halab and Ansar al-Sharia) launched a major offensive against Government forces in western Aleppo city, capturing the Scientific Research Centre to the west of the Jamiyat al-Zahra frontline.

4. The Islamic State in Iraq and the Levant (ISIL),<sup>1</sup> which controlled territory to the east, north-east and south-east of Aleppo city, took advantage of the armed opposition groups’ engagement with Government forces to advance westward towards Marea. This was of strategic importance due to Marea’s location near key routes through Azaz and the Bab al-Salam border crossing.

5. By August 2015, Ahrar al-Sham, Failaq Al-Sham and other Free Syrian Army-affiliated groups had moved reinforcements to Marea to counter ISIL’s advance towards the west. Heavy clashes were reported in Tilalyan on the North and Umm Hawsh in the south. However, by 26 August, ISIL had circled Marea by three sides, effectively besieging the city.

6. Marea had been a traditional stronghold of armed opposition groups, such as Liwa al-Tawhid, whose leadership originated there. Other armed opposition groups present in August 2015 included Jabhat al-Sham, its faction Thuwar al-Sham, Failaq al-Sham, Ahrar al-Sham, the 101st Infantry Brigade, the Firqa 13 and Jaish al-Thuwar. The Nusra Front was present in and around Marea, too.

7. The Al-Houria Hospital in Marea is supported by a non-governmental organization. It provides mainly emergency health care and transfers severe cases to Tal Rifaat Hospital.

##### Narrative

8. The Fact-Finding Mission (FFM) stated that on 21 August 2015 around 1000 to 1100 hours, over the course of approximately one hour and a half, Marea was bombarded by around 50 artillery projectiles. (S/2015/908, page 201, paragraph 3.7)

<sup>1</sup> On 30 May 2013, Islamic State in Iraq and the Levant (ISIL) and the Nusra Front were designated as terrorist groups by the Security Council under resolution 1267 (1999).

9. Several witnesses, other sources and independent entities supported this description of the events. Accordingly, on 21 August 2015 over 50 artillery projectiles, several of which were filled with sulfur mustard, were fired towards Marea from the east or south-east. On that and the following days a number of people reported to the hospital with symptoms related to exposure to sulfur mustard.

10. The Mechanism considered an alternative hypothesis, in which an accident occurred within Marea. That it could either have been an operational incident, for example, while trying to fill munitions with sulfur mustard, or in form of a leakage due to the detonation of a conventional munition. However, no information was found to substantiate this theory, which would also not explain the exposures of the victims.

### **Date and time**

11. Two eyewitnesses stated that Marea was subjected to artillery fire on 21 August 2015. Five other sources stated this occurred on 21 August 2015 between 0930 and 1130 hours, Marea. The Government of the Syrian Arab Republic shared its assessment that the shelling started at 0930 hours.

### **Weather conditions**

12. On 21 August 2015, between 0900 and 1100 hours, the wind came from the west (280 °) at a speed of 5 m/s. The temperature increased from 27 °C to 32 °C and the relative humidity decreased from 90 per cent at 0900 hours to 83 per cent at 1100 hours.

### **Impact location**

#### *Location #1*

13. One artillery shell hit a house “close to the vegetable market” in the south-east of Marea. Two witnesses gave the address as Mouabbad Street.

#### *Location #2*

14. A different artillery shell fell in the courtyard of a house. An individual who disposed of the shell was exposed to a dark liquid that leaked from that shell.

#### *Other locations*

15. A witness mentioned several additional impact points of artillery shells across the city, with some landing close to the water reservoir. For those shells, the Mechanism does not have any indications of whether they were filled with sulfur mustard.

16. A map provided by an independent organization shows multiple impact sites of artillery shells equally distributed throughout the town. Among those indicated impact points, it is unclear which shells were filled with sulfur mustard.

### **Munition**

#### *Location #1*

17. Some witnesses said that their house “had been shelled”, but did not provide any further information on the exact type of the delivery method or munition.

*Location #2*

18. A witness provided pictures of artillery shells, stating that they were 130 mm shells. The witness described that the shell created a small hole in a wall and removed a small piece (10-16 cm) of tarmac.

*Location #3*

19. A witness said that an unexploded artillery shell landed on a roof of a house in the south-east part of Marea.

*General*

20. Witnesses stated that on 21 August 2015 over 50 artillery shells fell all over the town of Marea. One witness stated that the artillery shelling lasted over one hour with a frequency of one artillery shell per minute. Several open sources also refer to the artillery shelling of Marea on 21 August.

21. Four other sources stated that the munition used in all these locations were 130 mm artillery shells. These artillery shells are thought to be easily repurposed and filled with different payloads.

22. The Mechanism received more than 20 photos and 61 videos of the munition used in Marea from different sources, witnesses and entities. Some of these photos indicate that the agent release method of the munition was improvised and unsophisticated. Forensic examination of the pictures with regard to the munition type was inconclusive. The pictures of the munition show that they had been moved from the impact point to the location where the pictures and videos were taken.

**Delivery method**

23. In relation to 130 mm artillery shells, the Government of the Syrian Arab Republic stated that they had not abandoned nor did any armed opposition group seize 130 mm towed field guns, which were used to launch these munitions, during their retreat from this area in December 2012. The Government stated, however, that ISIL may have had access to such weapons in Northern Iraq, which was under ISIL control. Open sources information shows pictures of ISIL having 130 artillery shells and towed-field guns.

24. A witness stated to have seen the launching of artillery shells from a roof. According to this witness, the shelling originated from either Tel Malid (about 5 km in the south-east) or from Al-Sayed Ali, a few hundred metres south of Tel Malid. Another witness stated that ISIL had launched the shells from Hawar al-Nahr (about 5 km in the north-east-east) or Ahtemelat (about 10 km in the north-north-east).

25. Several sources, including the Syrian Arab Republic, stated that the shells came from the east.

26. The Mechanism attempted to corroborate the direction which the artillery shells came from and requested a forensic institute to conduct imagery analysis, including comparison with satellite imagery. However, this analysis did not yield any tangible results. The forensic institute confirmed that all of the videos and photos analysed had not been tampered with. The Mechanism could not establish a direct link between these images and exposure of people.

27. The Mechanism requested additional satellite imagery of the area around Marea to identify a potential source. Some imagery was received on 19 August and analysis is ongoing.

#### **Damage and effects**

28. The videos from one of the impact locations show a lot of destruction and damage on the houses. No crater can be seen in any of the videos. One witness described that the artillery shell created a small hole in a wall of a house and removed a small piece (10-16 cm) of tarmac from the wall.

#### **Medical effects**

29. A family of four persons who were residing in the house at location #1 have been exposed to sulfur mustard. The exposure of two of these family members was confirmed by the FFM. In addition, a witness stated that a family of five was exposed.

30. One individual was exposed while removing an artillery shell. There is a video of this individual at the hospital, in which clinical symptoms such as blisters on the left leg can be seen. The person stated that when carrying a shell in order to bury it in the ground and a liquid leaked out of the shell over his/her leg causing the blisters. A witness confirmed the identity of the injured person that appeared in the video. Forensic analysis did not yield any further information.

31. Different sources report up to 85 people seeking medical assistance with injuries and symptoms related to sulfur mustard exposure over the course of the next four days. The number of injured have been cross-checked with reports from several sources, who indicated numbers as “at least 10”, “50” and “up to 85” casualties. One witness said that 23 people sought medical attention on 21 August 2015, and more than 60 over the next few days.

32. The medical effects described by the FFM were consistent with witness statements and reports of independent organizations.

33. In order to find more information on the munition and delivery method, the Mechanism undertook several activities to identify additional victims. However, no additional victims have been found to date.

#### **Further information**

34. Sulfur mustard is a colourless, viscous liquid, odourless in its distilled, pure form. However, if not stabilized properly, it can easily polymerize resulting in a yellow-brown liquid of increasing density with an odour resembling mustard plants, garlic or horseradish.

35. Several witnesses, entities and other sources referred to the bad smell in the area (e.g., smell of garlic, rotten eggs, irritating, very bad). Several pictures from different sources show a dark viscous liquid. The examination of the pictures by a forensic institute could neither confirm nor exclude that the liquid on the photo is sulfur mustard.

36. Multiple sources suggested that the sulfur mustard in question was undistilled and had been generated through the Levinstein process. According to them, the bad smell (rotten eggs) and colour of the substance (dark green/blue) were consistent

with sulfur mustard used by ISIL in other incidents, including in a neighbouring State. The olfactory observation of a rotten smell supports the assessment that the sulfur mustard may have been produced through the Levinstein process. The smell is stronger when undistilled, similar to that of rotten eggs, due to impurities of such reactions.

37. Some sources provided information that indicated that ISIL had the capacity to produce sulfur mustard through the Levinstein chemical reaction process.

38. The Organisation for the Prohibition of Chemical Weapons (OPCW) confirmed that the sulfur mustard from the Syrian Arab Republic did not contain impurities such as polysulphides, meaning that a different process was used by the Government. The OPCW also reported that the sulfur mustard used by ISIL in northern Iraq on several occasions in 2015 and 2016 was produced through the Levinstein process.

39. The Mechanism requested clothing from victims and environmental or certain biomedical samples. However, none were made available to the Mechanism for further analysis, despite repeated requests.

40. There is not sufficient information available to draw conclusions on the origin of the sulfur mustard used during this incident.

### **The Leadership Panel's assessment**

41. The Leadership Panel examined the existing information regarding the incident in Marea on 21 August 2015 and determined that there is sufficient information to conclude that the Islamic State of Iraq and the Levant (ISIL) was the only entity with the ability, capability, motive and the means to use sulfur mustard in Marea on 21 August 2015.

42. This conclusion was based on the following:

- Marea had been a traditional stronghold of armed opposition groups, which were fighting against Government forces. On 21 August 2015, ISIL advanced westward towards Marea.
- Several witnesses, as well as a number of other sources provided information that Marea was bombarded by around 50 artillery shells, several of which were filled with sulfur mustard, from the east or south-east, an area under the control of ISIL.
- On that and the following days a number of people reported to the hospital with symptoms related to exposure to sulfur mustard.
- A large number of photos and videos of the munition used in Marea were received and analysed by the Mechanism. Four sources stated that the munition used was 130 mm artillery shells. The photos and videos of the munition are consistent in relation to the release of a dark viscous liquid from the artillery shell.