



"DAY OF JUDGMENT"

The Role of the US and Europe in Civilian Death, Destruction, and Trauma in Yemen



“I saw tragedy. The men who were filling the place with happiness and dance were in scattered pieces of charred flesh. The blood was everywhere. Fingers and intestines were in all directions...Body parts were on trees and rocks and people tried to collect as many of them as possible and the remaining body parts were eaten by dogs.”

—Amina Al-Shahb

Survivor of attack on son's wedding in Hajjah Governorate
April 2018

Front and back cover images: Damage from an airstrike on Dar Sa'ad neighborhood, Aden, Yemen. (c) May 2016 Mwatana for Human Rights.

■ ■ PREFACE

Their country ravaged by war, Yemenis have had to endure extraordinary suffering over the past four years. In a country that was already among the poorest and most fragile in the region, 14 million people are now threatened by famine and even more depend on humanitarian assistance. While precise figures are lacking, an estimated 50,000 people have been killed as a direct effect of the war and 85,000 children may have died of hunger and preventable diseases.

While often cited as “the forgotten war,” the war in Yemen could also be described as the ignored war, in which allies of western countries commit atrocities with western-supplied weaponry. Whereas some states have curbed or stopped arms exports because of the conflict in Yemen, the biggest arms suppliers—mainly the United States, the United Kingdom, and France—have so far applied a ‘business as usual’ attitude. In fact, they have accelerated arms sales because of the war.

The countries supplying weapons to Saudi Arabia, the United Arab Emirates, and others involved in the conflict have plenty of arms trade regulations in place. In fact, they claim to apply the highest standards. It is, however, a well-determined policy of these countries to continue supplying and supporting a few ultra-rich oil states that help maintain the profitable and dominant position of western arms manufacturers. Western states have made a clear choice to support undemocratic regimes in a war that has denied the people of Yemen the most basic human rights.

We can only hope that the recent cease-fire agreement reached in Sweden will be the turning point in the conflict and bring a real and lasting peace in Yemen. Along with many people in Yemen, we believe peace is possible. To enable a peace process, however, weapons transfers must stop and justice must be done with respect to the victims of the war.

For that reason, we believe the work that Mwatana undertakes in Yemen, under the most difficult and dangerous circumstances, is a crucial part of what is needed to achieve justice and amplify the voices of those who have suffered so much because of the war. Reports such as this one are immensely valuable to that process.

Jan Gruiters

General Director, PAX

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Mwatana for Human Rights (mwatana.org) is an independent Yemeni organization that advocates for human rights through the documentation of violations, provision of legal support to victims, lobbying, awareness raising, and capacity building. In recognition of its courageous human rights documentation and advocacy, Mwatana received the Roger N. Baldwin Medal of Liberty and the Hrant Dink Award in 2018. Mwatana's work on human rights issues in Yemen has been cited in leading television, radio, print, and online sources around the world.

The University Network for Human Rights (humanrightsnetwork.org) facilitates supervised undergraduate engagement in the practice of human rights at colleges and universities in the United States and across the globe. The University Network partners with advocacy organizations and communities affected or threatened by abusive state, corporate, or private conduct to advance human rights at home and abroad; trains undergraduate students in interdisciplinary human rights protection and advocacy; and collaborates with academics and human rights practitioners in other parts of the world to foster the creation of practical, interdisciplinary programs in human rights.

PAX (paxforpeace.nl) is a Dutch peace organization that works with committed citizens and partners to protect civilians in conflict, end armed violence, and build peace. PAX operates independently of political interests.

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■ ■ EXECUTIVE SUMMARY

“The situation was tragic. Body parts were everywhere.
It was like the Day of Judgment.”

—Fadhil Al-Musabi

Survivor of attack in Bani Qais District, Hajjah Governorate
April 22, 2018

Since March 26, 2015, Saudi Arabia and the United Arab Emirates (UAE) have led a coalition of countries in a military campaign against Ansar Allah (Houthi) rebels in Yemen. As documented by multiple human rights organizations as well as the UN, the Saudi/UAE-led Coalition has consistently attacked civilians and critical civilian infrastructure—including hospitals, schools, school children, weddings, farms, and water wells—in violation of the laws of war. The Coalition has also imposed a naval blockade on major ports in Houthi-controlled areas, obstructing imports of vital food and medical supplies to the war-ravaged country. In areas of Yemen under their control, Coalition forces have engaged in other human rights violations, including widespread arbitrary detention.¹

The Houthi armed group, which took over the capital city of Sana'a by force in late 2014 and then expanded its control to much of the country, has also violated the laws of war, including by indiscriminately shelling civilians, laying antipersonnel landmines, impeding humanitarian supplies, arbitrarily detaining individuals, committing acts of torture, and conscripting child soldiers.²

1 Human Rights Council, 39th Session, Situation of Human Rights in Yemen, Including Violations and Abuses since September 2014, Report of the United Nations High Commissioner for Human Rights Containing the Findings of the Group of Independent Eminent International and Regional Experts and a Summary of Technical Assistance Provided by the Office of the High Commissioner to the National Commission of Inquiry, U.N. Doc. A/HRC/39/43 (Aug. 17, 2018).

2 Mwatana for Human Rights et al., Submission to the United Nations Universal Periodic Review of Yemen, Third Cycle, Human Rights Council, 32nd Session, Jan.-Feb. 2019 (July 11, 2018), <http://mwatana.org/wp-content/uploads/2018/10/UNIVERSAL-PERIODIC-REVIEW-OF-YEMEN-2.pdf>. See also, MWATANA FOR HUMAN RIGHTS, WOES OF “ARABIA FELIX”: SITUATION OF HUMAN RIGHTS IN YEMEN 2017 (May 15, 2018), <http://mwatana.org/wp-content/uploads/2018/08/The-Woes-of-Arabia-Felix-English-Version-1.pdf>; MWATANA FOR HUMAN RIGHTS, PRESS IN YEMEN FACES EXTINCTION (June 2017), <http://mwatana.org/wp-content/uploads/2017/10/Press-report-En.pdf>; MWATANA FOR HUMAN RIGHTS, CONCEALED KILLER: FALL OF CIVILIANS BY THE LANDMINES LAID BY THE ANSAR ALLAH ARMED FORCES (THE HOUTHIS) AND SALEH FORCES (Apr. 2017), <http://mwatana.org/wp-content/uploads/2017/10/Concealed-Killer-Report-En.pdf>; MWATANA FOR HUMAN RIGHTS, CHAPTERS FROM HELL: VIOLATIONS OF THE INTERNATIONAL HUMANITARIAN LAW IN THE ARMED GROUND CONFLICT IN TAIZ (Nov. 2016), <http://mwatana.org/wp-content/uploads/2018/08/Chapter-from-hell.pdf>; MWATANA FOR

Four years into the conflict, around 20,000 Yemeni civilians have been killed or wounded and half the population—14 million people—are at risk of famine, according to the UN.³ Other estimates, however, range much higher: ACLED has recorded over 50,000 reported deaths as a direct result of the fighting,⁴ and according to Save the Children, 85,000 children may have died of hunger and preventable disease.⁵

Although happening thousands of miles from United States shores and hundreds of miles from Europe, the war in Yemen is closer to home than it might seem. Indeed, the US and UK actively enable the unlawful bombings of Yemeni civilians by Saudi/UAE-led Coalition forces. For decades, the US has provided Saudi Arabia and the UAE with arms and military training. Despite years of credible reporting on Coalition abuses in Yemen—and in blatant contravention of US arms trade law and international law, as this report details—the US continues to sell Saudi Arabia and the UAE weapons for use in Yemen. The US military has also provided the Coalition with intelligence, logistical support, targeting assistance, and training. This assistance has continued for years without the Congressional authorization required by US law. The UK, too, continues to sell Coalition countries arms for use in Yemen in direct violation of its obligations under the Arms Trade

HUMAN RIGHTS, THEY ARE NOT HERE: INCIDENTS OF ARBITRARY DETENTION AND ENFORCED DISAPPEARANCE UNDER THE DEFACTO AUTHORITY OF THE HOUTHIS ARMED GROUP IN YEMEN (May 2016), http://mwatana.org/wp-content/uploads/2017/10/They-are-not-here-E_2.pdf.

3 UN Office of the High Commissioner for Human Rights, *Bachelet Urges States with The Power and Influence to End Starvation, Killing of Civilians in Yemen* (Nov. 10, 2018), <https://www.ohchr.org/EN/NEWSEVENTS/PAGES/DISPLAYNEWS.ASPX?NEWSID=23855&LANGID=E>.

4 ARMED CONFLICT LOCATION & EVENT DATA PROJECT, ACLED METHODOLOGY AND CODING DECISIONS AROUND THE YEMEN CIVIL WAR 4 (Oct. 2018), https://www.acledata.com/wp-content/uploads/dlm_uploads/2018/10/Coding-of-Yemen-CivilWar_Final.pdf.

5 Save the Children, *Yemen: 85,000 Children May Have Died from Starvation Since Start of War* (Nov. 20, 2018), <https://www.savethechildren.org/us/about-us/media-and-news/2018-press-releases/yemen-85000-children-may-have-died-from-starvation>.

“I was still awake. I was sitting in a chair because I was afraid of the planes flying overhead and making a very loud noise. Then they dropped a bomb near us and afterwards they hit our neighborhood with three bombs. After that I lost consciousness.”

—Ahmad Mansour

10 years old
Wounded in Midi District, Hajjah Governorate
December 12, 2016

Treaty and EU Common Position on military exports.

On August 9, 2018, the Saudi/UAE-led Coalition struck a school bus, killing dozens of children.⁶ CNN identified the weapon used as a US-made Mk-82 bomb manufactured by Lockheed Martin.⁷ The school bus attack and widespread outrage in the US prodded many members of Congress to act, and rightly so. This report demonstrates a pattern of deadly Coalition attacks involving US weapons since the start of the conflict—a pattern that warrants swift and determined action by Congress.

Of the twenty-seven Saudi/UAE-led Coalition attacks documented in this report, weapons remnants indicating that a US-made weapon was likely involved were found in twenty-five cases and weapons remnants indicating that a UK-made weapon was likely involved were found in five cases.⁸ The suspension lug for a US-made bomb used in one of the attacks was produced in Italy.

These twenty-seven Coalition airstrikes include sixteen attacks on civilian gatherings, civilian homes, and a civilian boat; five attacks on educational and health facilities; five attacks on civilian businesses; and an attack on a government cultural center. The twenty-seven attacks killed at least 203 people and injured at least 749. At least 122 children and at least 56 women were among

6 Human Rights Watch, *Yemen: Coalition Bus Bombing Apparent War Crime* (Sept. 2, 2018), <https://www.hrw.org/news/2018/09/02/yemen-coalition-bus-bombing-apparent-war-crime>.

7 Nima Elbagir et al., *Bomb that Killed 40 Children in Yemen was Supplied by the US*, CNN (Aug. 17, 2018), <https://www.cnn.com/2018/08/17/middleeast/us-saudi-yemen-bus-strike-intl/index.html>. Based on its rigorous methodology, Mwatana could not positively identify the bomb used in the school bus attack.

8 Three of the twenty-seven attacks documented in this report likely involved weapons with parts produced in both the US and UK.

the dead and wounded. Many of the attacks appeared to take place far from any potential military target. Others caused harm to civilians that vastly outweighed any likely military benefit. In no case did it appear that Coalition forces took adequate precautions to minimize harm to civilians, as required by international humanitarian law.

Victims and survivors of these Coalition attacks often likened the devastation of the airstrikes to the “Day of Judgment.” In an April 2018 Coalition attack in Hajjah Governorate, a joyous wedding celebration quickly turned tragic when a US-made bomb exploded, killing at least twenty-one and injuring at least ninety-seven drummers, dancers, and wedding guests, including nearly sixty children. In a December 2016 attack on a civilian home, also in Hajjah Governorate, a US-made cluster bomb indiscriminately killed at least fifteen civilians—nine of them children—and wounded at least seven. 10-year-old Ahmad Mansour (quoted above) lost his mother and siblings in the attack, in addition to suffering extensive shrapnel injuries himself. These Saudi/UAE-led Coalition attacks demonstrate the manner in which the Coalition has conducted its campaign in Yemen, often with the assistance of US weapons.

The US-made munitions likely used in twenty-five attacks documented in this report include cluster bombs banned by international treaty due to their indiscriminate effects, Mark 80 series general purpose bombs, Paveway-series precision guided bombs, and bombs with the JDAM guidance system. All of these explosive weapons have wide-area effects and result in foreseeable civilian harm when used in populated areas.

The UK-made munitions likely used in five attacks documented in this report—including Paveway IV and “Hakim” precision guided bombs—damaged or destroyed several civilian businesses

as well as an educational facility.

In recent weeks and months, as civilian casualties in Yemen have climbed and as the UN has warned of “the worst famine in the world in 100 years,” a number of European governments—including Germany, Denmark, the Netherlands, Finland, Austria, Belgium, Switzerland, and Norway—have taken measures to prevent arms exports for use in Yemen.⁹

In the US, Congress appears closer than ever to taking meaningful action. Many members of Congress have committed to opposing future arms sales to Saudi Arabia and the UAE. On February 13, 2019, the House of Representatives passed a historic resolution to rescind US military support for the Coalition’s ongoing campaign in Yemen. The Senate is expected to vote on a parallel resolution in the next month.

Our findings reinforce prior evidence demonstrating that the Saudi/UAE-led Coalition is failing to fulfill its obligations under the laws of war and repeatedly using US weapons in apparently disproportionate and indiscriminate attacks that have resulted in widespread civilian casualties and other civilian harm in Yemen.

Time is of the essence. Millions of Yemenis are on the brink of starvation. Unlawful attacks continue, as the civilian toll of the conflict rises. A UN-brokered peace process may be on the brink of collapse.¹⁰ The US Senate must not delay in demanding an immediate end to US involvement in a brutal campaign that has brought death, destruction, and humanitarian catastrophe to the poorest country in the region. It is a moral and legal imperative for the US and remaining European states supplying Saudi Arabia, the UAE, and other Coalition countries with weapons for use in Yemen to halt these transfers immediately. Many lives depend on swift action by the United States and European governments.

9 Jon Stone, *Germany, Denmark, Netherlands and Finland Stop Weapons Sales to Saudi Arabia in Response to Yemen Famine*, INDEPENDENT (Nov. 23, 2018), <https://www.independent.co.uk/news/world/europe/saudi-arabia-arms-embargo-weapons-europe-germany-denmark-uk-yemen-war-famine-a8648611.html>.

10 Patrick Wintour, *Yemen ceasefire: new UN resolution seeks to save agreement*, GUARDIAN (Jan. 16, 2019), <https://www.theguardian.com/world/2019/jan/16/yemen-ceasefire-un-urgently-tries-to-prevent-collapse-of-agreement>.

■ ■ METHODOLOGY

METHODOLOGY

Mwatana for Human Rights has extensively documented laws of war and human rights violations by the Ansar Allah (Houthi) armed group since the start of the conflict in Yemen.¹ This report seeks to illuminate the role of western states—and, in particular, the role of US and European weapons—in the war. Thus, the report focuses on Saudi/UAE-led Coalition attacks because the Coalition has relied heavily on weapons supplied by western states in its aerial bombing campaign.

To document the incidents described in this report, Mwatana conducted extensive field research in nine Yemeni governorates (Hajjah, Hudaydah, Al-Jawf, Sana'a, Ibb, Taizz, Amanat Al-Asimah, Aden, and Al-Bayda) from April 2015 through April 2018.

Field researchers visited the scenes of Coalition airstrikes and interviewed scores of eyewitnesses, survivors, people who suffered injuries, family members of victims, paramedics, doctors, and other medical personnel. Researchers also took photographs of the scenes of attacks, any weapons remnants recovered, and other evidence. Mwatana commissioned a weapons expert to analyze photographs of weapons remnants recovered at the sites of Coalition attacks. The weapons expert provided Mwatana with the results of the analysis, including (whenever possible) an identification of the weapon type, the manufacturer, the country of origin, and information on the dimensions, weight, composition, and potential on-the-ground impacts of the weapon.

The team in the United States (University Network for Human Rights and Stanford International Human Rights Clinic) reviewed the documentation for each of the twenty-seven cases and applied international and domestic legal standards in analyzing the incidents.

Coalition attacks in which weapons remnants could not be identified at all, or could not be identified with sufficient likelihood of accuracy, were excluded from this report. In addition, Mwatana took care to exclude any incident in which Houthis accessed weapons remnants from the attack. The identities of some of the witnesses quoted or cited in this report have been concealed upon their request or in the interest of their safety.

1 See, e.g., Mwatana for Human Rights et al., Submission to the United Nations Universal Periodic Review of Yemen, Third Cycle, Human Rights Council, 32nd Session, Jan.-Feb. 2019 (July 11, 2018), <http://mwatana.org/wp-content/uploads/2018/10/UNIVERSAL-PERIODIC-REVIEW-OF-YEMEN-2.pdf>. See also, MWATANA FOR HUMAN RIGHTS, WOES OF "ARABIA FELIX": SITUATION OF HUMAN RIGHTS IN YEMEN 2017 (May 15, 2018), <http://mwatana.org/wp-content/uploads/2018/08/The-Woes-of-Arabia-Felix-English-Version-1.pdf>; MWATANA FOR HUMAN RIGHTS, PRESS IN YEMEN FACES EXTINCTION (June 2017), <http://mwatana.org/wp-content/uploads/2017/10/Press-report-En.pdf>; MWATANA FOR HUMAN RIGHTS, CONCEALED KILLER: FALL OF CIVILIANS BY THE LANDMINES LAID BY THE ANSAR ALLAH ARMED FORCES (THE HOUTHIS) AND SALEH FORCES (Apr. 2017), <http://mwatana.org/wp-content/uploads/2017/10/Concealed-Killer-Report-En.pdf>; MWATANA FOR HUMAN RIGHTS, CHAPTERS FROM HELL: VIOLATIONS OF THE INTERNATIONAL HUMANITARIAN LAW IN THE ARMED GROUND CONFLICT IN TAIZ (Nov. 2016), <http://mwatana.org/wp-content/uploads/2018/08/Chapter-from-hell.pdf>; MWATANA FOR HUMAN RIGHTS, THEY ARE NOT HERE: INCIDENTS OF ARBITRARY DETENTION AND ENFORCED DISAPPEARANCE UNDER THE DEFACTO AUTHORITY OF THE HOUTHI ARMED GROUP IN YEMEN (May 2016), http://mwatana.org/wp-content/uploads/2017/10/They-are-not-here-E_2.pdf.

US ARMS TRANSFERS AND MILITARY COOPERATION WITH SAUDI ARABIA AND THE UNITED ARAB EMIRATES





A man holds a remnant of a US-made Mk-82 bomb found at the site of a Coalition attack on a school and health clinic in At-Ta'iziyah District, Taizz Governorate (see Section II).

The United States has a long history of military cooperation with Saudi Arabia and the United Arab Emirates. Military cooperation between Saudi Arabia and the United States dates back to the 1950s, when the US built its first military base in the country.¹ Bilateral agreements in the 1950s and 1970s established the United States Military Training Mission in Saudi Arabia and the Saudi Arabian National Guard Modernization Program to oversee defense cooperation between the two countries.² The US and

Saudi Arabia concluded substantial arms deals in the 1970s.³ The US, Saudi Arabia, and the UAE cooperated in Operation Desert Storm against Iraq in the early 1990s and a series of other military operations in the region and beyond.⁴ The US uses the Al Dhafra air base in the UAE to launch missions to Afghanistan, Iraq, and Syria as well as to station refueling aircraft.⁵

1 Alia Chughtai, *US-Saudi Relations: A Timeline*, AL JAZEERA (May 18, 2017), <https://www.aljazeera.com/indepth/interactive/2017/05/saudi-relations-timeline-170518112421011.html>.

2 CHRISTOPHER M. BLANCHARD, CONG. RESEARCH SERVICE, RL33533, SAUDI ARABIA: BACKGROUND AND US RELATIONS 21 (Sept. 21, 2018).

3 Chughtai, *supra* note USR.

4 Chughtai, *supra* note USR; WILLIAM HARTUNG, CENTER FOR INTERNATIONAL POLICY, US ARMS TRANSFERS TO THE UAE AND THE WAR IN YEMEN 2 (Sept. 2017), <http://www.ciponline.org/research/entry/us-arms-transfers-to-the-uae-and-the-war-in-yemen> [hereinafter UAE TRANSFERS REPORT].

5 UAE TRANSFERS REPORT, *supra* note UTR, at 8.

Saudi Arabia and the United Arab Emirates (UAE) are the Coalition members leading the military campaign in Yemen and likely responsible for most of the airstrikes conducted.⁶ Weapons sold by the United States or that include components sold by the United States have been used repeatedly in Saudi/UAE-led Coalition airstrikes, including all but two of the strikes documented in this report.⁷ Some of the US-made weapons used in Yemen were sold long before the conflict started and retained in Coalition country stockpiles. US weapons used in some strikes, however, appear to have been manufactured—and therefore transferred—after the start of the conflict. The US military has also provided the Coalition with intelligence, logistical support, targeting assistance, and training.⁸ The US has provided mid-air refueling for Coalition planes since March 2015, though the US and Coalition announced in November 2018 that refueling assistance would stop.⁹

Saudi Arabia and the UAE were the two largest importers of US arms between 2013 and 2017. Saudi Arabia purchased 18% of US arms exports in the period and the UAE accounted for 7.4%.¹⁰ In 2017, the US administration notified Congress of \$17.9 billion of proposed sales of arms and other military support to Saudi Arabia and \$2.8 billion to the UAE.¹¹ In 2016, about \$5 billion of sales to each country were proposed.¹²

The US has also provided substantial military training to each country. The US military trained over 5,000 UAE forces between 2009 and 2016.¹³ Saudi Arabia receives about \$10,000 a year in International Military Education and Training assistance from the US under the Foreign Assistance Act, making the country eligible



Remnant of a US-made GBU-12 wing assembly recovered at the scene of an attack that killed fifteen civilians, including twelve children, in Al-Matmmah District, Al-Jawf Governorate (see Section II). The marking “96214” identifies Raytheon as the manufacturer.

for a discount on US military training purchased through the Foreign Military Sales program.¹⁴ Military assistance to Saudi Arabia has been controversial since the early 2000s due to concerns about the Kingdom’s human rights record and commitment to counterterrorism.¹⁵ Between 2004 and 2009, Congress passed legislation that would have prohibited aid to Saudi Arabia in the absence of waivers by the Bush and Obama administrations.¹⁶ As outlined in Section III of this report, since the beginning of the Yemen conflict, members of Congress have increasingly objected to—and proposed legislation to halt—the provision of arms and other US

6 HUMAN RIGHTS WATCH, HIDING BEHIND THE COALITION 1 (Aug. 24, 2018), <https://www.hrw.org/report/2018/08/24/hiding-behind-coalition/failure-credibly-investigate-and-provide-redress-unlawful>; Michael Knights, Washington Institute, *Setting Limits on the Saudi Air Campaign in Yemen* (Aug. 16, 2018), <https://www.washingtoninstitute.org/policy-analysis/view/setting-limits-on-the-saudi-air-campaign-in-yemen>. See also Rahma A. Hussein et al., *New UN Report Says All Parties to Yemen Conflict May Be Responsible for War Crimes*, JUST SECURITY (Sept. 7, 2018), <https://www.justsecurity.org/60612/report-parties-yemen-conflict-responsible-war-crimes/>.

7 Rasha Mohamed, *It’s Time for the US to Stop Supplying Weapons to the Saudi-led Coalition in Yemen*, WASH. POST (Aug. 31, 2018), https://www.washingtonpost.com/news/democracy-post/wp/2018/08/31/its-time-for-the-u-s-to-stop-supplying-weapons-to-the-saudi-led-coalition-in-yemen/?utm_term=.e5266efd2e53.

8 Blanchard, *supra* note CRS, at 22.

9 Saudi Press Agency, *Coalition to Support Legitimacy in Yemen Issues Statement* (Nov. 10, 2018), <https://www.spa.gov.sa/viewfullstory.php?lang=en&news-id=1839657>.

10 Stockholm International Peace Research Institute, *International Arms Transfers*, <https://www.sipri.org/research/armament-and-disarmament/arms-transfers-and-military-spending/international-arms-transfers>.

11 WILLIAM HARTUNG, SECURITY ASSISTANCE MONITOR, TRENDS IN MAJOR US ARMS SALES IN 2017: A COMPARISON OF THE OBAMA AND TRUMP ADMINISTRATIONS 2 (Mar. 2018) [hereinafter SECURITY ASSISTANCE MONITOR].

12 *Id.*

13 UAE TRANSFERS REPORT, *supra* note UTR, at 12.

14 Blanchard, *supra* note CRS, at 19.

15 Blanchard, *supra* note CRS, at 20 (Congressional doubts about commitment to counterterrorism); *infra* Section III (Congressional criticism of Saudi human rights record).

16 Blanchard, *supra* note CRS, at 20.



Remnant of a US-made GBU-12 Paveway II bomb used in an attack on a civilian home in Dar Sa'ad District, Aden Governorate (see Section II). As the marking "FOR USE ON MK82" indicates, an Mk-82 warhead was mounted on the GBU-12 bomb. The marking "1325-01-041-5890," parts of which are visible in the photo, is associated with a Raytheon-manufactured wing assembly.

military assistance to Saudi Arabia and the UAE.

Saudi Arabia has announced plans to localize much of its military production over the next decade.¹⁷ This may reduce its dependence on US arms sales in the long-term. In the short-term, however, much of Saudi Arabia's investment in strengthening its domestic military capacity has gone towards hiring American contractors.¹⁸ For the next several years at least, Saudi Arabia and the UAE will remain dependent on US and European weapons and logistical support for the war in Yemen.¹⁹

US-made munitions identified in Yemen

Human rights organizations have identified remnants of the following US-made munitions at the sites of apparently unlawful Saudi/UAE-led Coalition airstrikes in Yemen since the start of the Coalition's military campaign: cluster bombs, including the CBU-58 with BLU-63 submunitions, CBU-105 with BLU-108 submunitions, CBU-87 with BLU-97 submunitions, and M26 with M77 DPICM submunitions; Mark 80 series general purpose

bombs; Paveway-series precision guided bombs, including the GBU-12 Paveway II; and JDAM GBU-31 bombs.²⁰

This report documents an additional twenty-five apparently unlawful airstrikes in which the Coalition appeared to use munitions made in the US. These munitions include: cluster bombs, including the CBU-58 with BLU-63 submunitions, CBU-52 with BLU-61 submunitions, and CBU-105 with BLU-108 submunitions; Mark 80 series general purpose bombs; Paveway-series precision guided bombs, including the GBU-12 Paveway II, GBU-16 Paveway II, GBU-24 Paveway III, and Paveway IV; and JDAM GBU-31 bombs.

The US companies that have benefitted most from sales of weaponry used in Yemen are Lockheed Martin, Raytheon, and Boeing.²¹ Each of these defense contractors produces equipment and munitions that the Saudi/UAE-led Coalition has used repeatedly in its airstrikes. Lockheed Martin manufactures F-16 fighter planes, Boeing makes Joint Direct Attack Munitions (JDAMs), and Raytheon and Lockheed Martin produce Paveway-series missiles.²² Lockheed Martin's sales in Saudi Arabia for 2019 and 2020 total about \$900 million, according to a company officer.²³ Textron Systems Corporation also manufactured weapons used in the strikes, including cluster bombs such as the CBU-105.²⁴

20 AMNESTY INT'L, 'BOMBS FALL FROM THE SKY DAY AND NIGHT': CIVILIANS UNDER FIRE IN NORTHERN YEMEN 15 (2015), <https://www.amnesty.org/download/Documents/MDE3125482015ENGLISH.PDF>; Amnesty Int'l, Yemen: *New Evidence Challenges Coalition's Denial It Used Cluster Munitions in Recent Attack* (Jan. 15, 2016), <https://www.amnesty.org/download/Documents/MDE3132082016ENGLISH.pdf>; Amnesty Int'l, Yemen: *Evidence Indicates US-made Bomb Was Used in Attack on MSF Hospital* (Sept. 19, 2016), <https://www.amnesty.org/en/latest/news/2016/09/yemen-evidence-indicates-us-made-bomb-was-used-in-attack-on-msf-hospital/>; Amnesty Int'l, Yemen: *Three Years On, US and UK Arms Supplies to Saudi Arabia-Led Coalition Are Devastating Civilian Lives* (Mar. 23, 2018), <https://www.amnesty.org/en/press-releases/2018/03/yemen-three-years-on-us-and-uk-arms-supplies-to-saudi-arabia-led-coalition-are-devastating-civilian-lives/>; Human Rights Watch, *Technical Briefing Note: Cluster Munition Use in Yemen* (Feb. 14, 2016), <https://www.hrw.org/news/2016/02/14/technical-briefing-note-cluster-munition-use-yemen>; Human Rights Watch, Yemen: *Coalition Bombs Homes in Capital* (Dec. 21, 2015), <https://www.hrw.org/news/2015/12/21/yemen-coalition-bombs-homes-capital>; Human Rights Watch, Yemen: *Saudi-Led Funeral Attack Apparent War Crime* (Oct. 13, 2016), <https://www.hrw.org/news/2016/10/13/yemen-saudi-led-funeral-attack-apparent-war-crime>; Human Rights Watch, Yemen: *US Bombs Used in Deadliest Market Strike* (Apr. 7, 2016), <https://www.hrw.org/news/2016/04/07/yemen-us-bombs-used-deadliest-market-strike>.

21 UAE TRANSFERS REPORT, *supra* note UTR, at 13.

22 UAE TRANSFERS REPORT, *supra* note UTR, at 13; Wilcken, *supra* note PWA.

23 Aaron Gregg, *Lockheed Martin Executives Break Silence over Khashoggi Killing and Their Business with Saudi Arabia*, WASH. POST (Oct. 23, 2018), https://www.washingtonpost.com/business/2018/10/23/lockheed-martin-executives-break-silence-over-khashoggi-killing-their-business-with-saudi-arabia/?utm_term=.853fd97714fe.

24 In August 2016, Textron announced that it would discontinue production of the CBU-105 by March 2017, citing the "current political environment"—presumably a reference, in part, to the Obama Administration's decision to suspend cluster weapons transfers to Saudi Arabia in light of evidence of the weapons' use in attacks on civilians in Yemen. Jeff Abramson & Alicia Jensen, *Textron to Halt Cluster Bomb Production*, Arms Control Assoc. (Oct. 2016), <https://www.armscontrol.org/Tex>

17 Mostafa Hashem et al., *UPDATE 2-Saudi Arabia Launches Military Industries Company*, REUTERS (May 17, 2017), <https://www.reuters.com/article/saudi-security-arms/update-2-saudi-arabia-launches-military-industries-company-idUSL8N11J5ZG>; Wilcken, *supra* note PWA.

18 Wilcken, *supra* note PWA.

19 Bruce Ridell, Brookings Inst., *After Khashoggi, US Arms Sales to the Saudis are Essential Leverage* (Oct. 10, 2018), <https://www.brookings.edu/blog/order-from-chaos/2018/10/10/after-khashoggi-us-arms-sales-to-the-saudis-are-essential-leverage/>.



A remnant of a large guided bomb unit recovered at the scene of an attack on a civilian home in Amanat Al-Asimah Governorate (see Section II). The marking “96214” identifies US defense contractor Raytheon as the manufacturer.

A. US arms sales to Saudi Arabia and the United Arab Emirates

The US arms sales process consists of several statutorily-required steps. Government-to-government arms sales follow the Foreign Military Sales procedure. When a US arms dealer negotiates a direct commercial sale to a foreign country, the arms dealer must apply for an export license. Under the Arms Export Control Act, Congress receives notifications of both types of proposed sales if they are worth over \$14 million in major defense equipment or over \$50 million in defense articles or services.²⁵ For Foreign Military Sales, a contractor bidding process generally follows notification. Below we synthesize available data on recent US arms transfers to Saudi Arabia and the UAE, with the following limitations: much of the available data is derived from Congressional notifications, but not all potential deals about which Congress is notified are ultimately reached. Moreover, even when a contract is made, the actual delivery of weapons may be set for a much later date than the initial Congressional notification. Thus, the data below—which has been supplemented by delivery information where available—is not exhaustive; nevertheless, it is useful for the overall picture it presents of US arms relationships with the two major Coalition countries.

tron-to-Halt-Cluster-Bomb-Production.

²⁵ Defense Security Cooperation Agency, *Arms Sales: Congressional Review Process*, <http://www.dscamilitary.com/resources/arms-sales-congressional-review-process>.

1. Saudi Arabia

Saudi Arabia and the United States have engaged in arms deals for decades, including a series of substantial purchases over the past decade, both before and during the ongoing conflict in Yemen.²⁶ The notifications to Congress of proposed Foreign Military Sales and export licenses detailed in Tables 1 and 2, below, are limited to those that contain types of weapons used in Coalition airstrikes in Yemen, including the airstrikes documented in this report. As such, the proposed arms transfers in Tables 1 and 2 represent a small percentage of total proposed US-Saudi arms deals.²⁷

Saudi Arabia’s air force was, to a large extent, built in the US. In 2010, the US announced plans to help the Royal Saudi Air Force expand its arsenal of fighter jets through a transfer of US-made advanced F-15 aircraft.²⁸ The US offered a \$60 billion package of weapons to Saudi Arabia that year.²⁹

In November 2015, the State Department approved a major possible Foreign Military Sale to Saudi Arabia of \$1.29 billion of air-to-ground munitions, associated equipment, parts, and logistical support.³⁰ The Obama administration temporarily halted this sale in November 2016 due to concerns about civilian casualties in Yemen.³¹

In May 2017, President Trump announced a package of proposed defense sales to Saudi Arabia with a potential value of \$110 billion. He has cited this figure frequently in support of the US-Saudi business relationship in the face of widespread criticism of the Saudi human rights record.³² This package included letters of offer and acceptance for sales notified to Congress by the Obama administration and memoranda of intent about possible new sales.³³ These letters and memoranda covered proposed sales of ships, tanks, Patriot missiles, and helicopters as well as upgrades to Saudi military infrastructure.³⁴ However, experts have argued that the actual contracts likely to be concluded will be worth substantially

²⁶ Blanchard, *supra* note CRS, at Appendix B.

²⁷ *See Id.*

²⁸ Blanchard, *supra* note CRS, at 21.

²⁹ SECURITY ASSISTANCE MONITOR, *supra* note SMR, at 1.

³⁰ DEFENSE SECURITY COOPERATION AGENCY, TRANSMITTAL NO. 15-57, THE GOVERNMENT OF SAUDI ARABIA - AIR-TO-GROUND MUNITIONS (Nov. 16, 2015), <http://www.dscamilitary.com/major-arms-sales/government-saudi-arabia-air-ground-munitions>.

³¹ Yara Bayoumy & Mike Stone, *Saudi Arabia Agrees to Buy \$7 Billion in Precision Munitions from US Firms: Sources*, REUTERS (Nov. 22, 2017), <https://www.reuters.com/article/us-raytheon-saudi-munitions/saudi-arabia-agrees-to-buy-7-billion-in-precision-munitions-from-u-s-firms-sources-idUSKBN1DM2XC>.

³² Glenn Kessler, *Trump’s \$110 Billion in Arms Sales to Saudi Arabia: Still Fake*, WASH. POST (Oct. 11, 2018), <https://www.washingtonpost.com/politics/2018/10/11/trumps-billion-arms-sales-saudi-arabia-still-fake>.

³³ Blanchard, *supra* note CRS, at 21.

³⁴ *Id.*

less than \$110 billion.³⁵

Official 2017 notifications to Congress of proposed sales of weapons likely to be used in Yemen included \$118 million for JDAMs, \$95 million for FMU-152A/B Joint Programmable Bomb Fuze Systems, and \$298 million for Paveway II and III, Enhanced Paveway II and III, and Paveway IV Weapons Systems.³⁶ The Obama Administration had put these proposed sales on hold in December 2016, but the Trump administration decided to move them forward.³⁷ As shown in Tables 1 and 2, these sales included many of the same weapons originally planned for inclusion in the \$1.29 billion 2015 Foreign Military Sale. Legislation to disapprove these sales failed in the House and Senate, allowing the sales to proceed.³⁸

In June 2017, the US administration notified Congress of proposed sales to Saudi Arabia of an air force training package for \$750 million and radar systems for \$662 million.³⁹ The administration has notified Congress of five new proposed arms deals with Saudi Arabia in 2018, totaling nearly \$3 billion.⁴⁰

The Saudi/UAE-led Coalition's use of cluster munitions has been widely criticized by human rights groups.⁴¹ The US has sold large

35 Bruce Riedel, Brookings Inst., *The \$110 Billion Arms Deal to Saudi Arabia is Fake News* (June 5, 2017), <https://www.brookings.edu/blog/markaz/2017/06/05/the-110-billion-arms-deal-to-saudi-arabia-is-fake-news/>.

36 SECURITY ASSISTANCE MONITOR, *supra* note SMR, at 6.

37 Blanchard, *supra* note CRS, at 45. Helene Cooper, *US Blocks Arms Sale to Saudi Arabia Amid Concerns Over Yemen War*, N.Y. Times (Dec. 13, 2016), <https://www.nytimes.com/2016/12/13/us/politics/saudi-arabia-arms-sale-yemen-war.html>.

38 Blanchard, *supra* note CRS, at 46.

39 DEFENSE SECURITY COOPERATION AGENCY, TRANSMITTAL No. 16-77, SAUDI ARABIA – BLANKET ORDER TRAINING (June 5, 2017), <http://www.dsca.mil/major-arms-sales/saudi-arabia-blanket-order-training>; DEFENSE SECURITY COOPERATION AGENCY, TRANSMITTAL No. 16-84, KINGDOM OF SAUDI ARABIA – AN/TPQ-53(V) RADAR SYSTEMS AND RELATED SUPPORT (June 5, 2017), <http://www.dsca.mil/major-arms-sales/kingdom-saudi-arabia-antpq-53v-radar-systems-and-related-support>.

40 DEFENSE SECURITY COOPERATION AGENCY, TRANSMITTAL No. 16-48, THE KINGDOM OF SAUDI ARABIA – 155MM M109A6 PALADIN MEDIUM SELF-PROPELLED HOWITZER SYSTEM (Apr. 5, 2018), <http://www.dsca.mil/major-arms-sales/kingdom-saudi-arabia-155mm-m109a6-paladin-medium-self-propelled-howitzer-system>; DEFENSE SECURITY COOPERATION AGENCY, TRANSMITTAL No. 17-62, SAUDI ARABIA – TOW 2B (BGM-71F-SERIES) MISSILES (Mar. 22, 2018), <http://www.dsca.mil/major-arms-sales/saudi-arabia-tow-2b-bgm-71f-series-missiles>; DEFENSE SECURITY COOPERATION AGENCY, TRANSMITTAL No. 17-60, SAUDI ARABIA – ROYAL SAUDI LAND FORCES ORDNANCE CORPS FOREIGN MILITARY SALES ORDER (FMSO) II CASE (Mar. 22, 2018), <http://www.dsca.mil/major-arms-sales/saudi-arabia-royal-saudi-land-forces-ordnance-corps-foreign-military-sales-order>; DEFENSE SECURITY COOPERATION AGENCY, TRANSMITTAL No. 17-52, SAUDI ARABIA – CONTINUATION OF MAINTENANCE SUPPORT SERVICES (MSS) (Mar. 22, 2018), <http://www.dsca.mil/major-arms-sales/saudi-arabia-continuation-maintenance-support-services-mss>; DEFENSE SECURITY COOPERATION AGENCY, TRANSMITTAL No. 17-61, SAUDI ARABIA – CONTINUATION OF MISSILE SYSTEM SUPPORT SERVICES (Jan. 17, 2018), <http://www.dsca.mil/major-arms-sales/saudi-arabia-continuation-missile-system-support-services>.

41 See Human Rights Watch, *Technical Briefing Note: Cluster Munition Use in Yemen*, *supra* note TBN.



Remnants of a likely US-made Mk-83 warhead recovered at the scene of an attack in Bajil District, Hudaydah Governorate (see Section II).



Residents search for weapons remnants after September 2016 airstrike that killed twelve children and three women in Al-Matmmah District, Al-Jawf Governorate (see Section II).

numbers of cluster munitions to Saudi Arabia. In August 2013, the countries concluded a contract for 1,300 CBU-105 Sensor Fuzed Weapons, cluster munitions made by Textron Defense Systems, to be delivered by December 2015.⁴² The countries had previously, in 2011, announced a deal for the sale of 404 CBU-105s.⁴³ The US notified Congress of several transfers of cluster munitions to Saudi Arabia before 1995, including 1,000 CBU-58, 350 CBU-71, 1,200 CBU-87, and 600 CBU-87 cluster bombs.⁴⁴ Reports of US-made cluster munition use in the ongoing conflict in Yemen include CBU-105, CBU-58, CBU-87, and M26 rocket

bombs.⁴⁵ A remnant of an additional type of US-made cluster bomb—the CBU-52—was found at the site of one of the Coalition airstrikes documented in this report.

42 US DEP'T OF DEFENSE, CONTRACTS, No. 593-13 (Aug. 20, 2013), <http://archive.defense.gov/Contracts/Contract.aspx?ContractID=5116>.

43 DEFENSE SECURITY COOPERATION AGENCY, TRANSMITTAL No. 10-03, SAUDI ARABIA - CBU-105 SENSOR FUZED WEAPONS (June 13, 2011), <http://www.dsca.mil/major-arms-sales/saudi-arabia-cbu-105-sensor-fuzed-weapons>.

44 Landmine & Cluster Munition Monitor, *Saudi Arabia: Cluster Munition Ban Policy* (Aug. 8, 2016), <http://www.the-monitor.org/en-gb/reports/2016/saudi-arabia/view-all.aspx>.

45 Id.; Human Rights Watch, *Technical Briefing Note: Cluster Munition Use in Yemen*, *supra* note TBN.

Table 1: Selected Foreign Military Sales Notifications: Saudi Arabia

Date	Amount	Description
June 5, 2017	\$750 million	<p>“...possible sale of continued blanket order training program inside and outside of the Kingdom of Saudi Arabia that includes, but is not limited to, flight training, technical training, professional military education, specialized training, mobile training teams (MTTs), and English language training. These blanket order training cases cover all relevant types of training offered by or contracted through the US Air Force or Department of Defense (DoD) Agencies, to include participation in CONUS DOD-sponsored education, as well as MTTs that will travel to Saudi Arabia. Program management, trainers, simulators, travel, billeting, and medical support may also be included... This training for the RSAF and other Saudi forces will include such subjects as civilian casualty avoidance, the law of armed conflict, human rights command and control, and targeting via MTTs and/or broader Programs of Instruction (POIs).”⁴⁶</p>
Nov. 16, 2015	\$1.29 billion	<p>“Major Defense Equipment (MDE) includes:</p> <ul style="list-style-type: none"> • One thousand (1000) GBU-10 Paveway II Laser Guided Bombs (LGBs) • Two thousand, three hundred (2,300) BLU-117/MK-84 2000lb General Purpose (GP) Bombs • Four thousand twenty (4,020) GBU-12 Paveway II LGBs • Eight thousand twenty (8,020) BLU-111/MK-82 500lb GP Bombs • One thousand, one hundred (1,100) GBU-24 Paveway III LGBs • One thousand, five hundred (1,500) BLU-109 2000lb Penetrator Warheads • Four hundred (400) GBU-31(V1) KMU-556 Joint Direct Attack Munitions (JDAM) tail kits • One thousand (1,000) GBU-31(V3) KMU-557 JDAM tail kits • Three thousand (3,000) GBU-38 KMU-572 JDAM tail kits • Two thousand (2,000) GBU-48 Enhanced Paveway II, dual mode • Global Positioning System (GPS)/LGB with the MXU-667 Airfoil and the MAU-169L/B • Computer Control Group (CCG) Dual mode • Two thousand (2,000) BLU-110/MK-83 1000lb GP Bombs • Five hundred (500) GBU-54 KMU-572 Laser JDAM tail kits, dual mode GPS/LGB with the MXU-667 Airfoil and the MAU-169L/B CCG Dual mode • Three hundred (300) GBU-56 KMU 556 Laser JDAM tail kits, dual mode GPS/LGB with the MXU-667 Airfoil and the MAU-169L/B CCG Dual mode • Ten thousand two hundred (10,200) FMU-152 Fuzes <p>This request also includes the following Non-MDE items and services: procurement of bomb equipment components such as adaptors, nose plugs, fusing mechanisms, swivels, support links and connections; associated support equipment; publications, such as technical orders, and system manuals; training; engineering and technical support; transportation (to include special airlift support); program management; and other administrative support and related services. The total estimated MDE value is \$1.10 billion, and the estimated total overall value is \$1.29 billion.</p> <p>...</p> <p>This acquisition will help sustain strong military-to-military relations between the United States and Saudi Arabia, improve operational interoperability with the United States, and enable Saudi Arabia to meet regional threats and safeguard the world’s largest oil reserves.”⁴⁷</p>

46 DEFENSE SECURITY COOPERATION AGENCY, TRANSMITTAL No. 16-77, *supra* note DSC.

47 DEFENSE SECURITY COOPERATION AGENCY, TRANSMITTAL No. 15-57, *supra* note TTT.

Table 2: Selected Export Control Licenses Notifications: Saudi Arabia

Date	Amount	Description
May 19, 2017	\$118.3 million ⁴⁸	"...export of defense articles, including technical data, and defense services to Saudi Arabia to support the integration, installation, operation, training, testing, maintenance, and repair of the Joint Direct Attack Munition (JDAM)." ⁴⁹
May 19, 2017	\$95.3 million ⁵⁰	"...export of defense articles, including technical data, and defense services to Saudi Arabia to support the integration, installation, operation, training, testing, maintenance, and repair of the FMU-152A/B Joint Programmable Bomb (JPB) Fuze System." ⁵¹
May 19, 2017	\$298.4 million ⁵²	"...export of defense articles, including technical data, and defense services to the United Kingdom, Italy, Spain, and Saudi Arabia to support the assembly, modification, testing, training, operation, maintenance, and integration of the Paveway II and III, Enhanced Paveway II and III, and Paveway IV Weapons Systems for the Royal Saudi Air Force." ⁵³

48 Security Assistance Monitor, *US Arms Sales Notifications: A Comparison Between Trump and Obama* (Mar. 8, 2018), https://securityassistance.org/fact_sheet/us-arms-sales-notifications-comparison-between-trump-and-obama.

49 State Dep't, Notifications to Congress of Proposed Export Licenses, Transmittal No. 15-132, 82 Fed. Reg. 39,932 (Aug. 22, 2017), <https://www.federalregister.gov/documents/2017/08/22/2017-17770/notifications-to-congress-of-proposed-export-licenses>. As published, these notifications do not include full details. Instead, they generally claim that "[m]ore detailed information is contained in the formal certification which, though unclassified, contains business information submitted to the Department of State by the applicant, publication of which could cause competitive harm to the United States firm concerned."

50 Security Assistance Monitor, *US Arms Sales Notifications*, *supra* note ASN.

51 Transmittal No. 16-011, 82 Fed. Reg. 39,932, *supra* note 82F.

52 Security Assistance Monitor, *US Arms Sales Notifications*, *supra* note ASN.

53 Transmittal No. 16-043, 82 Fed. Reg. 39,932, *supra* note 82F.

2. United Arab Emirates

The US has made Foreign Military Sales offers of over \$27 billion in weapons to the UAE between 2009 and 2017, in 31 deals.⁵⁴ This includes \$7.2 billion of the types of weapons documented as used by the Saudi/UAE-led Coalition in Yemen, such as Paveway bombs, Joint Direct Attack Munitions, and Hellfire missiles.⁵⁵ Tables 3 and 4 highlight several of the proposed sales of weapons that, if transferred, have likely been used by the UAE in the deadly air campaign in Yemen.

More than two-thirds of the arms transfer agreements that the UAE entered from 2008 to 2015 were with the US.⁵⁶ Like Saudi Arabia, the UAE has, to a large extent, relied on the US to build its air fleet. The UAE has acquired 70 sophisticated F-16 combat aircraft, manufactured by Lockheed Martin, from the US, including 30 planes bought in a direct commercial sale in 2014.⁵⁷

Many of the US-UAE arms deals notified to Congress resulted in deliveries. The US has made frequent aircraft and missile deliveries to the UAE since the Yemen conflict began. In 2015 and 2016, the US delivered 2 Predator Unmanned Aerial Vehicles, 3,600 JDAM Guided Bombs, 1,500 GBU-39 SDB Guided Bombs, 16 Archangel-BPA Ground Attack Aircrafts, and 1,000 Talon air to surface missiles.⁵⁸ The US also made earlier deliveries of the types of weapons that have been used in Coalition airstrikes. Between 2011 and 2013, the US delivered 500 AGM-65 Maverick air-to-surface missiles.⁵⁹ Between 2010 and 2013, the US delivered 938 Paveway Guided Bombs and 300 JDAM Guided Bombs.⁶⁰

The UAE has purchased cluster munitions from the US several times. In 2010, the UAE purchased \$57 million of CBU-105 Sensor Fuzed Weapons.⁶¹ In sales announced in 2006, the UAE received 101 M39A1 ATACMS missiles, each with 300 M74 submunitions; 104 M26 multiple launch rocket system (MLRS) rocket pods, each containing six rockets with 644 M77 submuni-

tions per rocket; and 130 M30 GMLRS DPICM rocket pods.⁶² In 1999, the US sold the UAE 1,800 CBU-87 cluster bombs, each with 202 BLU-97 submunitions.⁶³

In April 2016, a UAE official claimed that the UAE had not used cluster munitions in Yemen, reportedly adding, “cluster munitions are banned; everyone knows that. We do not use them.”⁶⁴ The Coalition repeatedly denied using cluster munitions in Yemen throughout 2015 and most of 2016, despite mounting evidence of use of these weapons in Coalition attacks.⁶⁵ In late 2016, the Coalition admitted to using a UK-produced type of cluster munition, but claimed to have done so lawfully and did not clarify which Coalition states had been involved in the weapon’s use.⁶⁶ As of August 2018, the Coalition has not admitted to using other types of cluster munitions, has not appeared to have investigated cluster munition use, and has not clarified the role of various Coalition states in cluster munition attacks.⁶⁷ Records show that the US has supplied the UAE with several of the types of cluster munitions that the Coalition has used in Yemen, including the CBU-105, the CBU-87, and the M26 rocket.⁶⁸

54 UAE TRANSFERS REPORT, *supra* note UTR, at 1.

55 UAE TRANSFERS REPORT, *supra* note UTR, at 1.

56 UAE TRANSFERS REPORT, *supra* note UTR, at 2.

57 UAE TRANSFERS REPORT, *supra* note UTR, at 9, 13; DEFENSE SECURITY COOPERATION AGENCY, TRANSMITTAL NO. 13-60, UNITED ARAB EMIRATES - EQUIPMENT IN SUPPORT OF A DIRECT COMMERCIAL SALE OF F-16 BLOCK 61 AIRCRAFT (Jan. 24, 2014), <http://www.dsca.mil/major-arms-sales/united-arab-emirates-equipment-support-direct-commercial-sale-f-16-block-61> (notification of proposed sale of equipment to support the direct commercial sale of 30 F-16s).

58 UAE TRANSFERS REPORT, *supra* note UTR, at 17-18.

59 UAE TRANSFERS REPORT, *supra* note UTR, at 18.

60 UAE TRANSFERS REPORT, *supra* note UTR, at 19.

61 Landmine & Cluster Munition Monitor, *United Arab Emirates: Cluster Munition Ban Policy* (July 9, 2018), <http://www.the-monitor.org/en-gb/reports/2018/united-arab-emirates/cluster-munition-ban-policy.aspx>.

62 *Id.*

63 *Id.*

64 *Id.*

65 See Human Rights Watch, *Yemen: Saudis Using US Cluster Munitions* (May 6, 2016), <https://www.hrw.org/news/2016/05/06/yemen-saudis-using-us-cluster-munitions>.

66 *Asiri: Coalition Has Stopped Use of Cluster Munitions*, Al Arabiya English (Dec. 19, 2016), <http://english.alarabiya.net/en/News/middle-east/2016/12/19/Asiri-Cluster-munition-used-only-to-prevent-attacks-on-civilians.html>.

67 See HUMAN RIGHTS WATCH, *HIDING BEHIND THE COALITION*, *supra* note HBC.

68 Human Rights Watch, *Technical Briefing Note: Cluster Munition Use in Yemen*, *supra* note TBN.

Table 3: Selected Foreign Military Sales Notifications: UAE		
Date	Amount	Description
July 19, 2016	\$785 million	<p>"...seven thousand seven hundred (7,700) GBU-10 guidance kits with seven thousand seven hundred (7,700) Mk-84/BLU-117 bombs, five thousand nine hundred forty (5,940) GBU-12 guidance kits with five thousand nine hundred forty (5,940) Mk-82/BLU-111 bombs, five hundred (500) GBU-31V1 guidance kits with five hundred (500) Mk-84/BLU-117 bombs, five hundred (500) GBU-31V3 guidance kits with five hundred (500) BLU-109 bombs, and fourteen thousand six hundred forty (14,640) FMU-152 fuzes. This sale also includes non-MDE munitions items. The total estimated value of MDE is \$740 million...</p> <p>This proposed sale contributes to the foreign policy and national security of the United States by helping the UAE remain an active member of the OPERATION INHERENT RESOLVE (OIR) coalition working to defeat the Islamic State in Iraq and the Levant (ISIL)."⁶⁹</p>
Nov. 5, 2015	\$380 million	<p>"...3250 GBU-31V1 (KMU-556 JDAM kit) with 3250 MK-84/BLU-117 bombs, 750 GBU-31V3 (KMU-557 JDAM kit) with 750 BLU-109 bombs, 1000 GBU-12 with 1002 MK-82/BLU-111 bombs, 4,250 FMU-152 fuzes, and 216 GBU-24 tail kits (BSU-84). The sale also includes non-MDE related munitions items (fuzes and bomb components), sustainment, and support....</p> <p>This proposed sale contributes to the foreign policy and national security of the United States by helping the UAE remain an active member of the OPERATION INHERENT RESOLVE (OIR) coalition working to defeat the Islamic State in Iraq and Levant (ISIL) and as part of the Saudi-led coalition to restore the legitimate government in Yemen."⁷⁰</p>
May 29, 2015	\$130 million	<p>"...500 GBU-31B/B(V)1 (MK-84/BLU-117) bombs, 500 GBU-31B/B(V)3 (BLU-109) bombs, and 600 GBU-12 (MK-82/BLU-111) bombs, containers, fuzes, spare and repair parts, support equipment, publications and technical documentation, personnel training and training equipment, US Government and contractor logistics and technical support services, and other related elements of logistics support....</p> <p>The proposed sale will provide the UAE with additional precision guided munitions capability to meet the current threat represented by the Islamic State in Iraq and the Levant, and Houthi aggression in Yemen.... The principal contractors will be The Boeing Company in Chicago, Illinois; and Raytheon Missile Systems in Tucson, Arizona."⁷¹</p>

69 DEFENSE SECURITY COOPERATION AGENCY, TRANSMITTAL No. 16-27, UNITED ARAB EMIRATES - MUNITIONS, SUSTAINMENT, AND SUPPORT (July 19, 2016), <http://www.dsca.mil/major-arms-sales/united-arab-emirates-munitions-sustainment-and-support>.

70 DEFENSE SECURITY COOPERATION AGENCY, TRANSMITTAL No. 15-51, UNITED ARAB EMIRATES (UAE) - JOINT DIRECT ATTACK MUNITIONS (JDAM), SUSTAINMENT AND SUPPORT (Nov. 5, 2015), <http://www.dsca.mil/major-arms-sales/united-arab-emirates-uae-joint-direct-attack-munitions-jdam-sustainment-and-support>.

71 DEFENSE SECURITY COOPERATION AGENCY, TRANSMITTAL No. 15-14, UNITED ARAB EMIRATES (UAE) – GUIDED BOMB UNITS (GBU-31s AND GBU-12s) (May 29, 2015), <http://www.dsca.mil/major-arms-sales/united-arab-emirates-uae-guided-bomb-units-gbu-31s-and-gbu-12s>.

Date	Amount	Description
Dec. 27, 2017	Unknown; \$50 million or more	"...export of Inertial Measurement Units to be Republic of Korea for integration into 2.75 inch guided rockets for end-use by the United Arab Emirates Armed Forces." ⁷²
June 28, 2017	Unknown; \$50 million or more	"...export of defense articles... to Australia, the United Kingdom and the United Arab Emirates to support the marketing, sale and on-going support of Unmanned Aerial Systems (UAS) and for future Intelligence, Surveillance and Reconnaissance (ISR) requirements for the United Arab Emirates Armed Forces." ⁷³
Feb. 9, 2017	Unknown; \$50 million or more	"...export of defense articles... to Italy, the Netherlands, and the United Arab Emirates to support the integration, installation, operation, training, testing, maintenance, and repair of the Rolling Airframe Missile (RAM) Guided Missile Weapon System (GMWS)." ⁷⁴
Mar. 31, 2016	\$118.6 million ⁷⁵	"...export of defense articles... to the United Arab Emirates to support the design, development, integration, training, assembly, disassembly, testing, performance, qualification, failure analysis, modification, operation, repair, and demonstration of the Talon Laser Guided Rocket, Unguided Rocket, and Smart Interfaced Launcher." ⁷⁶
Mar. 30, 2016	Unknown; \$50 million or more	"...export of defense articles... to the United Arab Emirates to support the integration, installation, operation, training, testing, maintenance, and repair of the DB-110 Reconnaissance System for use on F-16 aircraft." ⁷⁷
Mar. 4, 2016	Unknown; \$50 million or more	"export of defense articles... to the United Arab Emirates to support the integration, installation, operation, training, testing, maintenance, and repair of SNIPER Advanced Targeting Pods for end use on the F-16 Block 60 Aircraft." ⁷⁸
Feb. 16, 2016	Unknown; \$50 million or more	"...export of defense articles to the United Arab Emirates for Paveway II Plus Laser Guided Bomb (LGB) Guidance Kits." ⁷⁹
Oct. 16, 2015	Unknown; \$50 million or more	"...export of technical data and defense services for the marketing, sale, and support of the ScanEagle UAS and the Integrator UAS to the United Arab Emirates." ⁸⁰
Oct. 1, 2015	Unknown; \$50 million or more	"...export of defense articles... to the United Arab Emirates, France and the United Kingdom to support the integration, operation, training, testing, repair and operational level maintenance of the Maverick AGM-65 Weapons System and Paveway II, Paveway III, Enhanced Paveway II, and Enhanced Paveway III Weapons Systems for end-use by the United Arab Emirates." ⁸¹

72 State Dep't, Notifications of Proposed Export Licenses to the Congress, Transmittal No. DDTC 16-088, 83 Fed. Reg. 14,705 (Apr. 5, 2018), <https://www.federalregister.gov/documents/2018/04/05/2018-06952/notifications-of-proposed-export-licenses-to-the-congress>.

73 Transmittal No. DDTC 16-128, 82 Fed. Reg. 39,932, *supra* note 82F.

74 Transmittal No. DDTC 16-119, 82 Fed. Reg. 39,932, *supra* note 82F.

75 Security Assistance Monitor, *US Arms Sales Notifications*, *supra* note ASN.

76 State Dep't, Bureau of Political-Military Affairs, Directorate of Defense Trade Controls: Notifications to the Congress of Proposed Commercial Export Licenses, Transmittal No. DDTC 15-107, 81 Fed. Reg. 36,647 (June 7, 2016), <https://www.federalregister.gov/documents/2016/06/07/2016-13453/bureau-of-political-military-affairs-directorate-of-defense-trade-controls-notifications-to-the>.

77 Transmittal No. DDTC 15-113, 81 Fed. Reg. 36,647, *supra* note 81F.

78 Transmittal No. DDTC 15-124, 81 Fed. Reg. 36,647, *supra* note 81F.

79 Transmittal No. DDTC 15-123, 81 Fed. Reg. 36,647, *supra* note 81F.

80 State Dep't, Bureau of Political-Military Affairs, Directorate of Defense Trade Controls: Notifications to the Congress of Proposed Commercial Export Licenses, Transmittal No. DDTC 15-041, 81 Fed. Reg. 21,435 (Apr. 11, 2016), <https://www.federalregister.gov/documents/2016/04/11/2016-08236/bureau-of-political-military-affairs-directorate-of-defense-trade-controls-notifications-to-the>.

81 Transmittal No. DDTC 15-064, 81 Fed. Reg. 21,435, *supra* note F21.

Table 4 Continued: Selected Export Control Licenses Notifications: UAE		
Date	Amount	Description
June 12, 2015	Unknown; \$100 million or more	"...export of defense articles, including technical data, and defense services for the intermediate and depot level maintenance support of F110-GE-132 engines installed in F-16 Block 60 aircraft for end-use by the United Arab Emirates Armed Forces." ⁸²
Jan. 28, 2015	Unknown; \$50 million or more	"...proposes to transfer defense articles, including technical data, and defense services to support the sale of 24 Archangel Intelligence, Surveillance and Reconnaissance ("ISR") Border Patrol Aircraft to the government of the United Arab Emirates." ⁸³
Aug. 6, 2014	Unknown; \$50 million or more	"...export of defense articles, including technical data, and defense services to the United Arab Emirates, France and the United Kingdom to support the integration, operation, training, testing, repair and operational level maintenance of the Maverick AGM-65 Weapons System and Paveway II, Paveway III, Enhanced Paveway II and Enhanced Paveway III Weapons Systems for use on the Blackhawk, Rafale, Cougar, Puma, Super Puma, F-16 Block 60, Hawk 100 Series, Mirage 2000, Apache AH-64 and Air Tractor 802 aircraft for end use by the United Arab Emirates' Air Defense Force and Air Force." ⁸⁴

82 State Dep't, Notifications to the Congress of Proposed Commercial Export Licenses, Transmittal No. DDTC 15-017, 81 Fed. Reg. 559 (Jan. 6, 2016), <https://www.federalregister.gov/documents/2016/01/06/2015-33297/notifications-to-the-congress-of-proposed-commercial-export-licenses>.

83 State Dep't, Bureau of Political-Military Affairs, Directorate of Defense Trade Controls: Notifications to the Congress of Proposed Commercial Export Licenses, Transmittal No. DDTC 14-123, 80 Fed. Ref. 52,832 (Sept. 1, 2015), <https://www.federalregister.gov/documents/2015/09/01/2015-21646/bureau-of-political-military-affairs-directorate-of-defense-trade-controls-notifications-to-the>.

84 Transmittal No. DDTC 14-055, 80 Fed. Ref. 52,832, *supra* note 80F.

B. Other US military assistance to the Saudi/UAE-led Coalition in Yemen

In addition to arms sales, the US provides other forms of military assistance to the Saudi/UAE-led Coalition in Yemen. This has included intelligence sharing, aerial refueling, logistical support, and the deployment of advisors.⁸⁵ On November 9, 2018, the United States and the Coalition announced the end of US mid-air refueling assistance to Coalition countries for their operations in Yemen.⁸⁶ Other types of military assistance did not appear to be affected. The US and Coalition contended that the move was due to the Coalition's increased capacity to handle its own refueling.⁸⁷ However, commentators suggested that the US administration moved to cease refueling assistance to preempt Congressional action following the high-profile murder of US-based journalist Jamal Khashoggi by Saudi operatives.⁸⁸ Congressional opponents of US involvement in Yemen praised the move but pushed for full US disengagement from the conflict.⁸⁹

The complete details of US operational support to the Coalition are not public. As of February 2018, the Department of Defense contended that roughly 50 US personnel were in Saudi Arabia for activities related to supporting the Coalition in the conflict, including provision of advice on countering Houthi ballistic missile threats to Saudi Arabia.⁹⁰ US personnel apparently also advise the Coalition on compliance with the law of armed conflict and reduction of civilian casualties.⁹¹

The US Department of Defense has concluded bilateral Acquisition and Cross-Servicing Agreements with Saudi Arabia and the UAE that govern in-flight refueling to their militaries.⁹² The UAE agreement dates to 2006.⁹³ The agreement with Saudi was not signed until May 2016, even though refueling support began in March 2015.⁹⁴ Moreover, this agreement never officially entered into force because Saudi Arabia has not fulfilled all of the required

procedures.⁹⁵ Congress was never notified of the agreement.

US Air Force tankers have conducted more than 2,800 refueling operations over the Horn of Africa between the start of Saudi/UAE-led operations in 2015 and March 2018. Unfortunately, the Air Force claims not to have kept statistics on how many of those operations involved refueling of Coalition planes for sorties in Yemen versus refueling for US missions in the area.⁹⁶ In December 2018, it became known that the Department of Defense had failed to adequately charge Saudi Arabia and the UAE for fuel and refueling services due to accounting errors.⁹⁷

85 Blanchard, *supra* note CRS, at 22.

86 Saudi Press Agency, *supra* note SPA; Deirdre Shesgreen, *Trump Administration to Curtail Military Support for Saudi-Led War In Yemen*, USA TODAY (Nov. 9, 2018), <https://www.usatoday.com/story/news/world/2018/11/09/trump-administration-curb-military-support-saudi-led-yemen-war/1949821002/>.

87 *Id.*

88 *Id.*

89 Emmons, *supra* note, AEI.

90 Blanchard, *supra* note CRS, at 22.

91 *Id.*

92 Blanchard, *supra* note CRS, at 23.

93 Samuel Oakford & Ryan Goodman, *The US Is Paying More Than It Bargained for in the Yemen War*, ATLANTIC (Dec. 8, 2018), <https://www.theatlantic.com/politics/archive/2018/12/pentagon-refueling-controversy-saudi-led-war-yemen/577666/>.

94 Blanchard, *supra* note CRS, at 23.

95 Oakford & Goodman, *supra* note BYW.

96 Oriana Pawlyk, *General Argues to Continue Refueling Saudi Planes in Yemen Fight*, MILITARY.COM (Mar. 13, 2018), <https://www.military.com/daily-news/2018/03/13/general-argues-continue-refueling-saudi-planes-yemen-fight.html>.

97 Oakford & Goodman, *supra* note BYW.

“I was injured by the first strike, and I was trying to save my life. People were on fire, and some people were burned alive. It was horrifying.”

—Hassan Jubran

Wounded in Amanat Al-Asimah Governorate
October 2016



Scene from aftermath of October 2016 airstrike on funeral in As-Sabain District, Amanat Al-Asimah Governorate

■ ■ **CASE STUDIES**

This section describes twenty-seven apparently unlawful Saudi/UAE-led Coalition attacks on civilians in which the Coalition appears to have used weapons made in the United States or United Kingdom. The cases below include sixteen attacks on civilian gatherings, civilian homes, and a civilian boat; five attacks on educational and health facilities; five attacks on civilian businesses; and an attack on a government cultural center.

These twenty-seven airstrikes killed at least 203 people and injured at least 749. At least 122 children and at least 56 women were among the dead and wounded. Beyond the devastation of death and injury, survivors of the attacks and victims' relatives described a number of other long-term effects of Coalition attacks, including destruction of homes, displacement of families, closure of schools and medical facilities, unemployment, loss of livelihood, and trauma and other psychological impacts.

All evidence indicates that the objects attacked in the vast majority of cases below were civilian—neither being used for military purposes nor in the vicinity of legitimate military targets. Attacks on civilian objects violate the principle of distinction. In each case, Coalition forces appear to have failed to warn civilians of an impending attack and do not appear to have taken feasible precautions to minimize harm to civilians. In the few instances in which a military target was present, the resulting, foreseeable harm to civilians and civilian infrastructure appears out of proportion to any anticipated military advantage of the attack.

These cases reinforce prior evidence demonstrating that the Saudi/UAE-led Coalition is failing to fulfill its obligations under the laws of war and repeatedly using US weapons in apparently disproportionate and indiscriminate attacks that have resulted in widespread civilian casualties and other civilian harm in Yemen.

ATTACKS ON CIVILIAN GATHERINGS AND STRUCTURES

- Date of strike:** April 22, 2018
- Location of strike:** Bani Qais District, Hajjah Governorate
- Civilian casualties:** Twenty-one killed (including eleven children) and ninety-seven injured (including forty-eight children and two women)
- Object(s) struck:** Civilian home during a wedding celebration
- Weapons remnants ID:** **US-made** GBU-12 Paveway II laser-guided bomb with Mk-82 warhead



“Our men were not carrying any weapons—just necklaces of jasmine flowers that we later found, mixed with human flesh and blood.”

—Amina Al-Shahb

50-year-old female
Mother of the groom

At about 10 p.m. on Sunday, April 22, 2018, Saudi/UAE-led Coalition airplanes dropped a US-made GBU-12 bomb on a wedding celebration in Al-Raqa village, Bani Qais District, Hajjah Governorate. The closest military site identified was a checkpoint about twenty-five kilometers away. Of the 150 to 200 people gathered to celebrate the wedding of 20-year-old shepherd Yahya Al-Musabi, the attack killed twenty-one, including eleven children, and injured ninety-seven, including forty-eight children and two women.

Hundreds of wedding guests, many from neighboring areas, had been celebrating in Al-Raqa since the morning. According to the groom’s uncle, 40-year-old Mohammed Al-Musabi, more than 500 people had arrived by noontime. “We prayed and served lunch, as Yemeni traditions dictate. After lunch, we distributed qat to the people and they started to chew qat and the drums started beating. It was afternoon when the people started to perform lahji, hadhrami, and other traditional dances. Happiness continued and drums were still beating when the number of wedding guests dwindled to about 200.”

55-year-old farmer Fadhl Al-Musabi, one of the wedding guests, was celebrating at the groom’s house at the time of the attack. Meanwhile, his wife and daughter were at the bridal party on a small hill about a five-minute walking distance from the groom’s house. Fadhl recalled the moments before the airstrike: “We were dancing happily like any other people who had weddings. It was a happy time and people were happy...I could hear the jets hovering overhead, and I was praying that things would go well that day.” Suddenly, one of the guests—who had received a phone call from the area supervisor to inform him of an impending Coalition attack—began shouting for people to evacuate the wedding tent. Fadhl immediately thought of his wife and daughter and began to panic. Unable to call and warn them about the attack since they did not have phones, he began running toward the bridal party.

As Fadhl ran, a Coalition bomb soared through the air. “I saw a bomb and heard it whistle. I saw the bomb in the sky with a flame emerging from it. I could not move...I prayed to Allah that my daughter and wife be safe.” The bomb struck the groom’s wedding tent. Fadhl described the aftermath of the deadly attack: “The situation was tragic. Body parts were everywhere. It was like the

Day of Judgment.”

A few minutes later, the Coalition airplanes returned and people ran, terrified of further strikes. Fadhl began searching desperately for his wife and daughter, his chest hurting from the gunpowder and dust in the air. “I was thinking about my family because they are all I have,” he said. “I was screaming [my wife’s name], ‘Hajer! Hajer!’ but I did not hear any reply. I was terrified and thought my wife had died. Later on, I heard my daughter shouting, ‘Dad! Dad! Are you ok?’ She hugged me and was crying. I asked her about her mother. She said her mother was fine...I was about to cry out of happiness.”

Fadhl then began assisting the wounded. “It was a horrifying scene,” he recalled. “It was hard to know who was dead and who was injured. The blood was everywhere. The body parts were mixed with each other—we buried the dead and we did not know which body parts belonged to whom.”

“The drummers and dancers were killed, and the happiness turned into grief and sorrow,” he said.

Amina Al-Shahb, 50, the mother of the groom, described the terror of her son’s wedding night: “The sounds of drums, songs, and chants were filling the village. It was almost time to bring the bride from the neighboring village. I was preparing dinner for the bride and groom and counting the money given by guests as gifts. I was in the kitchen, which was about ten meters from the scene of the attack. In the blink of an eye, I saw fire and I heard a powerful explosion. The ground jolted under me. The drums fell silent, replaced by cries for help. My concern was to escape with my kids...We ran to the valley.”

Amina later returned to the scene and witnessed the ravages of the Coalition attack: “I saw tragedy. The men who were filling the place with happiness and dance were in scattered pieces of charred flesh. The blood was everywhere. Fingers and intestines were in all directions...Body parts were on trees and rocks and people tried to collect as many of them as possible and the remaining body parts were eaten by dogs.” Amina emphasized that the men were neither associated with any party to the conflict nor carrying any weapons—“just necklaces of jasmine flowers that we later found, mixed



Remnants of a US-made GBU-12 Paveway II laser-guided bomb recovered at the scene of the wedding attack. Pen shown for scale.

with human flesh and blood.”

“The darkness could not conceal the smell of the blood and burnt flesh,” Amina said, noting that all eleven drummers and dancers at the wedding were killed. Mwatana researchers who arrived on the scene the next day found remnants of wedding drums scattered on the ground.

Amina’s son Yahya, the groom, suffered shrapnel wounds in the attack. The family’s house was destroyed. “Everything is over,” said Amina. “Everything we own is gone—our money, goats, livelihood. But most importantly, many innocent people were killed with no justice.”

15-year-old Abdul-Majeed Al-Musabi was wounded in the attack, with shrapnel in his right shoulder, burns to his feet, and injuries to his face. He, too, recalled how the joyous occasion suddenly turned into a bloodbath. Before the Coalition bomb struck, he reported, “we were sitting and chewing qat at the wedding. We were happy and the drums were beating. The jets had been hovering in the sky since the afternoon.” Within seconds, the scene of celebration became a scene of devastation: “A jet dropped a bomb on us. It was a powerful bomb and things caught fire and fragments were flying everywhere. It destroyed the drums, rooms, and people, and burned many of us, including children and the elderly. People were screaming and the wedding turned into a tragedy. We never expected the jets to strike us during a wedding. We were just regular citizens, not Houthis or anyone else.”

The teenager continued, “I saw bodies scattered everywhere in pieces, and the area was covered in blood. I was screaming out of fear and I did not know where to go. I could hear screams from the bridal party, and women were running away. I ran toward the women, shouting to them not to run away so that the jets—which were still hovering in the sky—would not strike them. Then I

went unconscious.”

Abdul-Majeed’s uncle, 35-year-old Yahya Fitaini, was at his house—about 50 meters from the groom’s wedding tent—when the Coalition bomb struck. He, too, had noticed the airplanes hovering in the sky since the afternoon, but did not expect the wedding party to be attacked. “It was a very powerful explosion,” reported Yahya. “Women were screaming loudly. I went out running to see what was going on. I found my nephew, Abdul-Majeed, running toward the bridal party and shouting to the women not to run away so they wouldn’t be targeted by jet strikes. When Abdul-Majeed got close to me, he went unconscious and I was calling his name, ‘Abdul-Majeed!’ I took him and put him aside, and then I went to see what was going on. People were running toward the groom’s house. We found the place on fire, body parts scattered, people injured, and blood everywhere. The whole place was destroyed.”

Hajer Katil, 40, and Fatima Fitaini, 40, were celebrating with the rest of the women at the bridal party. “I heard the sound of the jets and then the sound of a powerful explosion from the north-western side,” recalled Hajer. “Then I saw the area of the men’s wedding party and it was like a gutter made of fire. My three sons were there, celebrating with the groom. Women started screaming as most of them had relatives inside the men’s tent. All of us were terrified of another bomb.” Hajer later learned that all three of her sons had been wounded in the attack: Jamal, 15, had suffered shrapnel wounds to his head and body; Bassam, 16, had suffered shrapnel wounds to his body; and Badr, 13, had suffered wounds to his leg and had to get the limb amputated. When Mwatana researchers spoke to Hajer the day after the attack, her sons were still at the hospital and she had been unable to visit them. “Our village is remote, in between mountains. I can do nothing except wait here,” she said.

Fatima began screaming when she saw a red flame light up the sky and smoke rising from the men’s wedding party. Two of her sons, celebrating with the groom, were injured: Abdullah, 28, suffered shrapnel wounds to his head and back and lost his hearing, and Haitham, 10, had shrapnel lodged in his body and was vomiting blood.

The Saudi/UAE-led Coalition airstrike appears to have been indiscriminate. Researchers and witnesses did not identify any military targets in the area at the time of the attack—the closest military site identified was a checkpoint about twenty-five kilometers away. Mwatana did not find any evidence to indicate that combatants were present at or near the wedding. Indiscriminate attacks carried out intentionally or recklessly are war crimes. Even if there were fighters in the area, the principle of proportionality would require the military value of the attack to outweigh the significant foreseeable harm to civilians from bombing a crowded wedding party attended by dozens of guests, including many children. Homes are presumed to be civilian objects. Before conducting an attack,

a party must do everything feasible to verify that the persons or objects to be attacked are military objectives and not civilians or civilian objects.

The Coalition's Joint Incidents Assessment Team (JIAT) reviewed the attack after an international outcry regarding the high number of civilian deaths.¹ JIAT claimed the Coalition had intelligence reports suggesting the presence of foreign ballistic missile experts, including a known Houthi leader, "in a specific location in the Hajjah governorate."² JIAT also claimed that it reviewed video recordings of the attack and was unable to verify the presence of a wedding tent or any ceremony gathering in the targeted area.³ Mwatana gathered extensive eyewitness testimony and other evidence confirming that the Coalition struck a wedding party, attended by 150 to 200 people. Mwatana found no evidence of any Houthis or missile experts in attendance.

While JIAT concluded that the Coalition "did not target the wedding tent at the claimed place," it also found that Coalition attackers did not follow the appropriate rules of engagement to minimize damage to the tent as a result of targeting the building. JIAT recommended that those responsible face "legal measures" and the Coalition provide "assistance for the damages and losses" from the attack.⁴ The Coalition has previously failed to follow through on promises to pay redress or to appropriately prosecute individuals credibly implicated in war crimes.

Mwatana researchers recovered a remnant of a US-made GBU-12 Paveway II laser-guided bomb at the scene of the airstrike.⁵ The GBU-12 bomb is equipped with a 227-kilogram (500-pound) Mk-82 warhead.⁶ The Mk-82 contains 87 kilograms (190 pounds) of Composition H6, a highly explosive substance also used in the US Air Force's so-called "Mother of All Bombs."⁷ The Mk-80 series of low-drag, general-purpose bombs are typically used to inflict maximal blast and explosive damage.⁸ In August 2016, US defense contractor General Dynamics was awarded a multi-million dollar contract to supply Saudi Arabia and the UAE with

Mk-82 bomb casings.⁹

Official 2017 notifications to Congress of proposed sales of weapons to Saudi Arabia included \$298 million for Paveway II and III, Enhanced Paveway II and III, and Paveway IV Weapons Systems.¹⁰ Between 2010 and 2013, the US delivered 938 Paveway Guided Bombs to the UAE.¹¹ The Saudi/UAE-led Coalition has dropped US-made GBU-12 and Mk-82 bombs on civilians and civilian infrastructure repeatedly since the start of the war. CNN reported that the Coalition used Lockheed Martin's Mk-82 Paveway bomb in a widely-condemned August 2018 airstrike on a school bus that killed dozens of children.¹² Ten of the twenty-seven apparently unlawful Coalition attacks documented in this report likely involved Mk-82 bombs.

1 Saudi Press Agency, Counselor Al-Mansour: JIAT is Independent and stands at same distance from all parties to Yemeni conflict 3 Riyadh (Sept. 12, 2018), <https://www.spa.gov.sa/viewfullstory.php?lang=en&newsid=1812903>.

2 *Id.*

3 *Id.*

4 *Id.*

5 Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_26042018-043 (Apr. 26, 2018) (on file with Mwatana).

6 *Id.*

7 *Id.*; Yasmin Tayag, *The "Mother of All Bombs" Uses this Australian Underwater Explosive*, INVERSE (Apr. 14, 2017), <https://www.inverse.com/article/30368-mother-of-all-bombs-moab-h6-composition-explosive>.

8 *General Dynamics to Provide MK82 Bomb Casings To Saudi, UAE, France And Iraq*, DEFENSEWORLD.NET (Aug. 31, 2016), http://www.defenseworld.net/news/16953/General_Dynamics_To_Provide_MK82_Bomb_Casings_To_Saudi_UA.

9 *Id.*

10 WILLIAM HARTUNG, SECURITY ASSISTANCE MONITOR, TRENDS IN MAJOR US ARMS SALES IN 2017: A COMPARISON OF THE OBAMA AND TRUMP ADMINISTRATIONS 6 (Mar. 2018).

11 WILLIAM HARTUNG, CENTER FOR INTERNATIONAL POLICY, US ARMS TRANSFERS TO THE UAE AND THE WAR IN YEMEN 19 (Sept. 2017).

12 Nima Elbagir et al., *Bomb that Killed 40 Children in Yemen was Supplied by the US*, CNN (Aug. 17, 2018), <https://www.cnn.com/2018/08/17/middleeast/us-saudi-yemen-bus-strike-intl/index.html>. Based on its rigorous methodology, Mwatana could not positively identify the bomb used in the school bus attack.

Date of strike:	September 21, 2016
Location of strike:	Hawak District, Hudaydah Governorate
Civilian casualties:	Twenty-three killed (including five children and two women) and forty-six injured (including three children and nineteen women)
Object(s) struck:	Civilian homes in a residential neighborhood during a funeral
Weapons remnants ID:	US-made GBU-16 Paveway II laser-guided bomb with Mk-83 warhead (likely)



At around 8 p.m. on Wednesday, September 21, 2016, Saudi/UAE-led Coalition forces bombed Al-Honood residential neighborhood in Hawak District, Hudaydah Governorate during a funeral for one of the neighborhood's residents. The attack killed twenty-three civilians, injured twice that number, and destroyed multiple homes—fifteen, according to one witness. A remnant of what appeared to be a US-made bomb, the GBU-16, was recovered at the scene of the strike.

Muhammad Abduljalil, 50, had set up two tents—one for men and one for women—in front of his house to host guests attending his wife's funeral. At about 7:30 in the evening, a bomb struck the provincial presidential palace, about a kilometer away from the neighborhood. Although the women left their tent and went upstairs into the house after the first explosion, no one thought to evacuate the area. "The airstrike [on the presidential palace] was very close to us, but we did not run away because our neighborhood is an old neighborhood and full of people, so we thought there was no possibility of it being bombed," said Muhammad.

Half an hour later, however, a second Coalition bomb struck Al-Honood neighborhood. "My in-law Abdulmalik Maajam [48] died, and they found his headless body," Muhammad reported. "His son Nader [28] died as well, as did my children's cousin, Wael Saleh [30]. Everyone who was in the [men's] tent died, except for my son Hamadah, 25, who is now in the Intensive Care Unit at Al-Amal Hospital." Muhammad suffered shrapnel wounds to different parts of his body. The walls of his two-story house crumbled in the attack.

Ahlam Amouh, 26, attended the funeral with her friend, Aliah Mazjaji, 35. The two young women arrived at the funeral around the time of the presidential palace bombing. "After around half an hour had gone by," said Ahlam, "I just remember that the wall fell on me. I lost consciousness for a short period—I do not know for how long—but I woke up and could not move out of fear. I was thinking of my mother and siblings, and whether they had died or were still alive. I was looking for Aliah and could not find her. I was very scared, and I did not know how I would be able to get out of there. When I saw my mother and siblings alive, I realized that I was bleeding. My ear had been cut off." Meanwhile, Aliah

“I heard people screaming for me to come out. When I came out of the house, people told me that they had found [my two-and-a-half-year-old daughter] Jana and our neighbor on the ground. Jana died instantly, and we buried her in the morning.”

—Obaid Khabaz

49-year-old male
Father of victim

had suffered three cracks in her skull. “She is now in the ICU, in a coma, and her condition is not stable,” reported Ahlam. “The neighbors all died, for no reason, and the ones who are still alive are homeless,” the young woman said before breaking down into uncontrollable sobs.

Aliah’s brother Adel Mazjaji, 32, was at home when the Coalition planes attacked. After the bombing of the presidential palace, Adel assumed that the palace would be struck again—“like what happens all the time, with the same places being bombed multiple times,” he explained. Adel was shocked when the second bomb struck Al-Honood. “The explosion was powerful, and we were shaken around as if we were dummies. I had never imagined that our neighborhood would be bombed.” The house was filled with dust and he could hear people screaming. “When I went out, the neighborhood was dark. The bomb struck the home of Omar Ibbi, around six homes away from ours. Omar’s house collapsed on the home of Ibrahim Afri [45], who died, may Allah have mercy on his soul, and on the home of Salem Qabeeh [60], who also died, along with his wife [Najwa, 50] and daughters [Hanan, 17, Asalah, 16, and Aswan, 15].”

As Adel searched for his sister Aliah, he saw Ahlam, who was screaming and saying that she could not find Aliah. “I looked everywhere,” said Adel. “When I gave up hope, I started looking in the hospitals, and I found her at around 10pm in the ICU at Al-Thawrah Hospital.”

Obaid Khabaz, 49, lost his two-and-a-half-year-old daughter Jana in the attack. Obaid was at home with his wife and children—all except Jana, who was with the neighbor at the grocery store, buying sweets. “The first strike hit the presidential palace at the time of the night prayer,” recalled Obaid. “We heard the explosion but did not feel like we were in any danger because we lived in an old and crowded neighborhood.” Although Obaid’s house was damaged in the Coalition attack that occurred half an hour later, he and his family thought it safer to stay inside. “I emerged later on, when I heard people screaming for me to come out,” he said. “When I came out of the house, people told me that they had found Jana and our neighbor on the ground. Jana died instantly, and we buried her in the morning.”

On the evening of the airstrike, 19-year-old Abdulmajeed Yahya received a phone call from a neighbor telling him that a bomb had struck his father’s grocery store. “The bomb did not fall [on the store],” said Abdulmajeed, “and I still do not know where it hit exactly, but it was very close to the grocery store, which was near the funeral.” Abdulmajeed quickly arrived on the scene and began searching for his father Abdullah, 45. “When I arrived, the homes had all collapsed and everything was very dark,” he recalled. “I could not find my father, and I knew that they had taken him to the hospital. I did not think he was still alive, but all praise be to Allah, he had survived.” According to Mwatana researchers who visited him in the hospital, Abdullah suffered extensive shrapnel injuries and burns and was unable to speak. “Everything in the grocery store was destroyed,” added Abdulmajeed. “The Coalition bombed the neighborhood for no reason. People lost their homes.”

Another person who lost his home in the Coalition attack was 28-year-old qat seller Ammar Al-Kam. Ammar was not at home when the presidential palace was struck. “I heard the airstrike and was scared for my children. I wanted to go back home to comfort them.” Ammar returned to his house, directly opposite the home of Muhammad Abduljalil, where the funeral was taking place. “I did not feel or hear anything when, suddenly, the whole house collapsed on us,” he recalled. Ammar and his wife Rasha, 17, both suffered injuries.

44-year-old teacher Arwa Bishr was in her third-floor apartment with her brother, Muhammad Hamoud, on the evening of the attack. When they heard the first explosion, Arwa and Muhammad knew that the presidential palace had been struck. They called their uncle, who lives next to the palace, to make sure he was safe. “The planes were flying overhead,” recalled Arwa. “I saw a red flame, and suddenly I was on the street and there was rubble on top of me. My brother was next to me. I was reciting the shahada and screaming for people to rescue me.” Arwa and Muhammad both sustained shrapnel wounds in the attack—Arwa to her head and face, and her brother to his face and hand.

Meanwhile, Muhammad Bahr, 40, who lived in a second-floor apartment in the same building, was killed. “His wife was visiting



Remnants of a likely US-made Mk-83 warhead recovered at the scene of the attack on Al-Honood residential neighborhood.

her sick father,” reported Arwa. “Muhammad took her to her family and went back home to chew qat. We found out that he had died, may Allah have mercy on his soul, and they removed his body when the bulldozers came.”

The Saudi/UAE-led Coalition attack on Al-Honood residential neighborhood may have been intended as part of the attack on the presidential palace, but it was apparently indiscriminate, as it did not distinguish between civilians and a military objective. Al-Honood neighborhood is located about a kilometer away from the presidential palace. Indiscriminate attacks carried out intentionally or recklessly are war crimes. Homes are presumed to be civilian objects. Before conducting an attack, a party must do everything feasible to verify that the persons or objects to be attacked are military objectives and not civilians or civilian objects.

A piece of shrapnel recovered at the site of the airstrike on Al-Honood was identified as a possible forward control fin of a US-made GBU-16 Paveway II laser-guided bomb.¹ The remnant was inscribed with the marking “83,” suggesting the 454-kilogram (1,000-pound) Mk-83 high-explosive bomb, which is used as a warhead for the GBU-16.²

1 Report of arms expert consulted by Mwatana for Human Rights, Report ref. IR_05062018-026 (June 6, 2018) (on file with Mwatana).

2 *Id.*; Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03052018-016 (May 3, 2018) (on file with Mwatana).

It appears that the Saudi/UAE-led Coalition used the GBU-16 Paveway II laser-guided bomb fitted with an Mk-83 warhead to attack Al-Honood neighborhood. Official 2017 notifications to Congress of proposed sales of weapons to Saudi Arabia included \$298 million for Paveway II and III, Enhanced Paveway II and III, and Paveway IV Weapons Systems.³ Between 2010 and 2013, the US delivered 938 Paveway Guided Bombs to the UAE.⁴

The Mk-83 contains 202 kilograms (445 pounds) of Composition H6, a highly explosive substance also used in the US Air Force’s so-called “Mother of All Bombs.”⁵ The Mk-80 series of low-drag, general-purpose bombs are typically used to inflict maximal blast and explosive damage.⁶

3 WILLIAM HARTUNG, SECURITY ASSISTANCE MONITOR, TRENDS IN MAJOR US ARMS SALES IN 2017: A COMPARISON OF THE OBAMA AND TRUMP ADMINISTRATIONS 6 (Mar. 2018).

4 WILLIAM HARTUNG, CENTER FOR INTERNATIONAL POLICY, US ARMS TRANSFERS TO THE UAE AND THE WAR IN YEMEN 19 (Sept. 2017).

5 Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03052018-016 (May 3, 2018) (on file with Mwatana); Yasmin Tayag, *The “Mother of All Bombs” Uses this Australian Underwater Explosive*, INVERSE (Apr. 14, 2017), <https://www.inverse.com/article/30368-mother-of-all-bombs-moab-h6-composition-explosive>.

6 *General Dynamics to Provide MK82 Bomb Casings To Saudi, UAE, France And Iraq*, DEFENSEWORLD.NET (Aug. 31, 2016), http://www.defenseworld.net/news/16953/General_Dynamics_To_Provide_MK82_Bomb_Casings_To_Saudi_UA.

- Date of strike:** September 20, 2016
- Location of strike:** Al-Matmmah District, Al-Jawf Governorate
- Civilian casualties:** Fifteen killed (including twelve children and three women) and three injured (three children)
- Object(s) struck:** Civilian pick-up truck
- Weapons remnants ID:** US-made GBU-12 Paveway II laser-guided bomb with Mk-82 warhead
- Weapons manufacturer:** Raytheon



Remnants of the civilian pick-up truck struck in Al-Awlah valley.

“There was something that made me feel like the strike was in our farm, and as soon as I heard the explosion, my heart fell. I quickly went to the farm. There, I found a horrifying scene, and I saw my sisters and sister-in-law, and all of my brother’s children and sisters’ children dead. None of them were left.”

—Salehah Sara

35-year-old female
Family member of victims

At 8 a.m. on Tuesday, September 20, 2016, the Saudi/UAE-led Coalition dropped a US-made GBU-12 bomb on a pick-up truck full of children and women in the agricultural area of Al-Awlah valley, Al-Matmmah District, Al-Jawf Governorate. The attack killed all twelve children and three women in the truck and injured another three children harvesting crops nearby.

On the morning of the Coalition airstrike, fifteen women and children from the same extended family set off for Al-Awlah valley—as they did almost every day during the harvest season—to collect animal feed and grain. Hamdah Taghin, 45, was behind the wheel of her husband’s 1983 pick-up truck, with some passengers in the cabin and the rest in the back of the truck. Just as the family were reaching their destination, Coalition jets struck the truck with a single bomb that dismembered and shred the bodies of all fifteen people on board. According to family members of the victims, there were no Houthis, military vehicles, or military sites in the area of the attack—just farms, where mostly women and children labored in the harvest season.

One relative of the victims, who wished to remain anonymous, reported: “I reached the area of the incident right after the bombing and I saw a very horrible sight that is hard to imagine. The body parts of the victims were all over the place. We would find a hand here and a foot there—all over the surrounding plants and trees—and we started collecting the body parts. People from neighboring areas came to help us collect the body parts.”

Hamdah and her five children—Rawdhah, 12, Hasan, 10, Dhiyab, 6, Abdullah, 3, and Muhammed, 8 months—perished in the attack. So did Hamdah’s two sisters-in-law, 35-year-old Azizah and 32-year-old Muhsinah, and Azizah’s three children: Abdullah, 8, Najeeb, 6, and Muhsin, 5 months. Finally, Hamdah’s brother-in-law’s four children were also aboard the truck: Wazirah, 11, Jaafar, 8, Badr, 5, and Hasan, 1.

Three girls who were harvesting crops about twenty meters away from the site of the strike were severely wounded, including Rayan Qawbar, 15, and Yasmin Al Faqih, 12. Rayan’s stomach was torn open by shrapnel, her intestines falling out. Shrapnel from the attack nearly severed Yasmin’s left foot, which remained attached to her leg by the skin. Rayan and Yasmin were taken to Sana’a for medical treatment after the strike.

Family members of the victims expressed shock and disbelief when interviewed by Mwatana researchers a few days after the Coalition attack. Yahya Al Sara, 39, lost four children, two sisters, a sister-in-law, and eight nieces and nephews in the strike. He said, “This is a crime against our children and women, and we do not know why they targeted our family in this way, trying to exterminate them.” As Yahya’s sister Salehah, 35, put it, “Twelve children and three women were killed by Saudi Arabia. What did they ever do to them? They did not have any rifles or rockets for them to be killed. They were just women and children, and the driver of the car was a woman, Hamdah, my brother Ahmad’s wife. I wish that I could cry for them.”

The Saudi/UAE-led Coalition airstrike on a civilian vehicle appears indiscriminate. Researchers and witnesses did not identify any military targets in the area at the time of the attack. Indiscriminate attacks carried out intentionally or recklessly are war crimes. Before conducting an attack, a party must do everything feasible to verify that the persons or objects to be attacked are military objectives and not civilians or civilian objects.

The Coalition’s Joint Incidents Assessment Team (JIAT) reviewed this attack after the United Nations High Commissioner for Human Rights documented the incident and reported the deaths of



Remnant of the US-made GBU-12 wing assembly that struck the vehicle packed with children and women in Al-Awlah agricultural valley. The marking “96214” identifies Raytheon as the manufacturer. The marking “DATE OF MFR 06/16” indicates that the wing assembly was manufactured in June 2016.

the 15 civilians.¹ JIAT claimed that the Coalition had intelligence indicating the vehicle was carrying leading Houthi commanders² and that “secondary explosions” took place when the Coalition struck the vehicle, “meaning that the vehicle was carrying weapons and ammunition along with the Houthi commanders.”³ JIAT’s findings are entirely inconsistent with the evidence gathered by

1 *No Violations Conducted by Coalition: Joint Incidents Assessment Team (JIAT) in Yemen*, SAUDI GAZETTE (Aug. 1, 2018), [http://saudigazette.com.sa/article/540261/SAUDI-ARABIA/No-violations-conducted-by-Coalition-Joint-Incidents-Assessment-Team-\(JIAT\)-in-Yemen](http://saudigazette.com.sa/article/540261/SAUDI-ARABIA/No-violations-conducted-by-Coalition-Joint-Incidents-Assessment-Team-(JIAT)-in-Yemen).

2 *Id.*

3 *Id.*

Mwatana and the United Nations that the pick-up truck was filled with women and children at the time of the attack. JIAT did not appear to have interviewed witnesses to the attack, nor to have incorporated witness testimony gathered by others in its conclusions.

A remnant of a US-made GBU-12 Paveway II laser-guided bomb was recovered by Mwatana at the site of the Al-Awlah valley attack.⁴ The remnant was inscribed with the National Stock Number (NSN) 1325-01-041-5890, identifying it as a portion of a GBU-12 Wing Assembly.⁵ The marking “96214”—Raytheon’s Commercial and Government Entity (CAGE) number—identified Raytheon as the manufacturer of the weapon.⁶ Finally, the marking “DATE OF MFR 06/16” indicates that Raytheon produced the bomb in June 2016—over a year after the start of the Coalition’s aerial campaign and after human rights organizations had reported numerous unlawful Coalition strikes on civilians in Yemen.⁷

The GBU-12 bomb is equipped with a 227-kilogram (500-pound) Mk-82 warhead.⁸ The Mk-82 contains 87 kilograms (190 pounds) of Composition H6, a highly explosive substance also used in the US Air Force’s so-called “Mother of All Bombs.”⁹ The Mk-80 series of low-drag, general-purpose bombs are typically used to inflict maximal blast and explosive damage.¹⁰ In August 2016, US defense contractor General Dynamics was awarded a multi-million dollar contract to supply Saudi Arabia and the UAE with Mk-82 bomb casings.¹¹

Official 2017 notifications to Congress of proposed sales of weapons to Saudi Arabia included \$298 million for Paveway II and III, Enhanced Paveway II and III, and Paveway IV Weapons

4 Report of arms expert consulted by Mwatana for Human Rights, Report ref. IR_05062018-025 (June 5, 2018) (on file with Mwatana); Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03042018-002 (Apr. 16, 2018) (on file with Mwatana).

5 *Id.*; 1325-01-041-5890, *Wing Assembly, Guided Bomb*, NSN CENTER (last visited Dec. 23, 2018), <https://www.nsncenter.com/NSN/1325-01-041-5890>.

6 96214, CAGE SEARCH (last visited Dec. 23, 2018), <http://www.govcagecodes.com/?code=96214&company=#results>.

7 Report of arms expert consulted by Mwatana for Human Rights, Report ref. IR_05062018-025.

8 Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03042018-002.

9 *Id.*; Yasmin Tayag, *The “Mother of All Bombs” Uses this Australian Underwater Explosive*, INVERSE (Apr. 14, 2017), <https://www.inverse.com/article/30368-mother-of-all-bombs-moab-h6-composition-explosive>.

10 *General Dynamics To Provide MK82 Bomb Casings To Saudi, UAE, France And Iraq*, DEFENSEWORLD.NET (Aug. 31, 2016), http://www.defenseworld.net/news/16953/General_Dynamics_To_Provide_MK82_Bomb_Casings_To_Saudi_UA.

11 *Id.*

Systems.¹² Between 2010 and 2013, the US delivered 938 Paveway Guided Bombs to the UAE.¹³ The Saudi/UAE-led Coalition has dropped US-made GBU-12 and Mk-82 bombs on civilians and civilian infrastructure repeatedly since the start of the war. CNN reported that the Coalition used Lockheed Martin's Mk-82 Paveway bomb in a widely-condemned August 2018 airstrike on a school bus that killed dozens of children.¹⁴ Ten of the twenty-seven apparently unlawful Coalition attacks documented in this report likely involved Mk-82 bombs.

12 WILLIAM HARTUNG, SECURITY ASSISTANCE MONITOR, TRENDS IN MAJOR US ARMS SALES IN 2017: A COMPARISON OF THE OBAMA AND TRUMP ADMINISTRATIONS 6 (Mar. 2018).

13 WILLIAM HARTUNG, CENTER FOR INTERNATIONAL POLICY, US ARMS TRANSFERS TO THE UAE AND THE WAR IN YEMEN 19 (Sept. 2017).

14 Nima Elbagir et al., *Bomb that Killed 40 Children in Yemen was Supplied by the US*, CNN (Aug. 17, 2018), <https://www.cnn.com/2018/08/17/middleeast/us-saudi-yemen-bus-strike-intl/index.html>. Based on its rigorous methodology, Mwatana could not positively identify the bomb used in the school bus attack.

Date of strike:	December 12, 2016
Location of strike:	Midi District, Hajjah Governorate
Civilian casualties:	Fifteen killed (including nine children and four women) and seven injured (two children and five women)
Object(s) struck:	Civilian home in a residential area
Weapons remnants ID:	US-made BLU-63 submunition from cluster bomb

At about 6 a.m. on Monday, December 12, 2016, Saudi/UAE-led Coalition forces dropped three bombs on and near a civilian home in Al Hajawrah village, Midi District, Hajjah Governorate. The nearest military site identified was a checkpoint located about 1.5 kilometers to the northwest of the village. The attack killed fifteen civilians, including nine children and four women, and injured another seven, two of them children and the other five women. A US-made cluster bomb submunition, the BLU-63, was recovered at the scene of the airstrike.

Noorah Shaw'i Ateen, 35, was on her way to her uncle's house at around 1 a.m. on the day of the attack. "We heard a very loud sound from an airplane, and it bombed an area near the village," she recalled. Fearing another strike,



Noorah ran back to her house. "When the sun came up, another bomb struck the same area as before, and we were very afraid." Then at around 6 a.m., two bombs struck Noorah's house.



"The house and huts were destroyed, and the livestock were killed. Our car was destroyed, and I was calling out for help."

Noorah recalled the horrific aftermath of the attack: "I saw my mother, 70-year-old Zainab Harboush, and her leg was cut off. My father, 70-year-old Ali Shaw'i Ateen, had

fallen and he was covered in blood. My mother was screaming for help. I could not hear her well. My father told me to run before we all died." In a daze, Noorah searched for her uncle, 75-year-old Ali Ateen, so that he could help her family. "I found that he was dead and his wife was next to him and burnt. He had a very deep injury on his face, next to his left eye, caused by shrapnel."

As airplanes continued to fly overhead, Noorah returned to her mother and father. "I told my mother that the head of our village, my uncle, had died," she recounted. Then a third bomb fell next to Noorah's house. "Afterwards, I realized that my sister, 40-year-old Fatimah Shaw'i, was on the ground at the side of the room, and her left leg was torn apart and hanging by some skin. There were shrapnel wounds in her backside, a piece of shrapnel in her right eye, and she was bleeding profusely. Her left thigh was burnt." A neighbor arrived to take Noorah's mother, father, sister, cousins, grandfather, grandmother, cousin's children, and cousin's wife to the hospital; however, everyone died on the way except her mother Zainab, her sister Fatimah, and 10-year-old Ahmad Mansour. Doctors had to amputate both of Zainab's legs and Fatimah's left leg, in addition to removing shrapnel from Fatimah's stomach.

10-year-old Ahmad Mansour, one of the few survivors of the attack, was awake at 6 a.m. when the first bomb struck. "I was sitting in a chair because I was afraid of the planes, which were flying overhead and making a very loud noise. Then they dropped a bomb near us and afterwards they hit our neighborhood with three bombs. After that I lost consciousness." Shrapnel was lodged in the young boy's head and back, above his ribs, and in his finger. Doctors removed the shrapnel from Ahmad's head and hand, but the shrapnel in his back remained until a humanitarian organization funded a medical procedure to remove it. "I stayed at the hospital for 15 days," said Ahmad, "then I returned home. They told me that my mother and brothers had died. I cried. I want my brothers and sisters. They told me that they had died, and that they were my family now."

Another child—2-year-old Bara'a Nader—was also injured in the attack, with shrapnel wounds to her left eye. Nine children—ages 17, 15, 14, 13, 13, 12, 11, 1, and 5 months—perished.

A US-made BLU-63 submunition released from a cluster bomb in the attack that killed 10-year-old Ahmad Mansour's mother and siblings.

“I was still awake. I was sitting in a chair because I was afraid of the planes, which were flying overhead and making a very loud noise. Then they dropped a bomb near us and afterwards they hit our neighborhood with three bombs. After that I lost consciousness.”

—Ahmad Mansour

10-year-old male
Wounded in attack

The Saudi/UAE-led Coalition attack on Al Hajawrah appears to have violated the laws of war. Researchers and witnesses did not identify any military targets in the area at the time of the attack. Indiscriminate attacks carried out intentionally or recklessly are war crimes. Homes are presumed to be civilian objects. Before conducting an attack, a party must do everything feasible to verify that the persons or objects to be attacked are military objectives and not civilians or civilian objects.

Mwatana researchers recovered a US-made BLU-63 cluster bomb submunition at the scene of the attack.¹ These spherical, high-explosive submunitions are designed to inflict casualties by blast and fragmentation and have a lethal radius of up to 137 meters (450 feet).² BLU-63 submunitions are generally released from the 430-kilogram (950-pound) CBU-58 cluster bomb, which disperses 650 of the submunitions widely and with indiscriminate effects.³

According to Human Rights Watch’s Survey of Cluster Munition Policy and Practice, the US transferred 1,000 CBU-58 cluster bombs to Saudi Arabia between 1970 and 1995.⁴ The Saudi/UAE-led Coalition has dropped US-made cluster bombs on civilians and civilian infrastructure repeatedly since the start of the war. In 2016, Human Rights Watch reported that the Coalition dropped at least two CBU-58 bombs on a densely populated residential area of Yemen’s capital, Sana’a, early on January 6.⁵ The attack

killed a 15-year-old boy, injured three people, set twenty cars ablaze, and damaged twenty-six houses.⁶ Coalition forces have also used other types of US-made cluster bombs—both air-dropped and ground-launched—in Yemen, including the CBU-105, the CBU-87, and the M26 rocket.⁷ Five of the twenty-seven apparently unlawful Coalition attacks documented in this report likely involved US-made cluster bombs.

International humanitarian law requires that parties to a conflict take all feasible precautions to minimize harm to civilians, including in choice of means of attack. The Coalition appears to have failed to do so in the attack on Al Hajawrah. Cluster munitions disperse submunitions over a wide area and cannot be directed at specific military objectives. Even if civilians are not killed or wounded in the attack, unexploded submunitions—which cannot distinguish between civilians and combatants—may kill or wound civilians months or years later. It is extremely difficult, if not impossible, for cluster weapons to be used in compliance with international humanitarian law. The international Convention on Cluster Munitions prohibits the use, production, and stockpiling of cluster munitions for this reason. Civilian casualties—like those documented in Al Hajawrah—are the foreseeable result of cluster munition use in a residential area.

1 Report of arms expert consulted by Mwatana for Human Rights, Report ref. IR_11062018-033 (June 11, 2018) (on file with Mwatana).

2 Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03042018-007 (Apr. 16, 2018) (on file with Mwatana).

3 *Id.*

4 HUMAN RIGHTS WATCH, SURVEY OF CLUSTER MUNITION POLICY AND PRACTICE 49 (Feb. 2007), <https://www.hrw.org/legacy/backgrounders/arms/cluster0207/cluster0207web.pdf>.

5 Human Rights Watch, *Yemen: Coalition Drops Cluster Bombs in Capital* (Jan. 7, 2016), <https://www.hrw.org/news/2016/01/07/yemen-coalition-drops-cluster-bombs-capital-0>.

6 Sudarsan Raghavan, *A Cluster Bomb Made in America Shattered Lives in Yemen’s Capital*, WASH. POST (July 10, 2016), https://www.washingtonpost.com/world/middle-east/a-cluster-bomb-made-in-america-shattered-lives-in-yemens-capital/2016/07/08/e3b722cc-283d-11e6-8329-6104954928d2_story.html?utm_term=.2096439a170a.

7 Human Rights Watch, *Technical Briefing Note: Cluster Munition Use in Yemen* (Feb. 14, 2016), <https://www.hrw.org/news/2016/02/14/technical-briefing-note-cluster-munition-use-yemen>.

Date of strike:	August 15, 2015
Location of strike:	Haradh District, Hajjah Governorate
Civilian Casualties:	Ten killed (including six children and three women) and six injured (including four children and a woman)
Object(s) struck:	Civilian home in a residential neighborhood
Weapons remnants ID:	US-made CBU-58 cluster bomb with BLU-63 submunitions

At about 1:30 p.m. on Saturday, August 15, 2015, the Saudi/UAE-led Coalition dropped three cluster bombs on a residential area in Bani Haddad village, Haradh District, Hajjah Governorate. The first bomb struck the home of 28-year-old civilian and farmer Majed Saheli, killing Majed, his wife, and their five children. The second and third bombs killed another three civilians and injured six, all from Majed's extended family. The Coalition used a US-made cluster bomb, the CBU-58, in the attack.

Bani Haddad is a small village without basic services. The nearest military site identified was a Houthis-controlled checkpoint about 500 meters to the northeast of the village. 33-year-old Yahya Saheli, Majed's older brother, was eating lunch at his house on the afternoon of the airstrike. According to Yahya, Coalition jets had been hovering overhead for about an hour when a bomb suddenly struck Majed's home. Majed's 25-year-old wife Fatima was in the

middle of her afternoon prayers, while Majed and the five children—6-month-old Khadija, 5-year-old Raghad; 7-year-old Nouf, 9-year-old Turki, and 11-year-old Tawfiq—sat on the couch. The entire family perished in the attack, their bodies dismembered and charred.

Coalition jets dropped two more bombs in rapid succession, one in the middle of the yard and another on the gate. Three more members of the extended Saheli family—two women and a 16-year-old child—died. Another six were injured, including four children—ages 3, 8, 14, and 17—and one woman, 28-year-old Ayesha Saheli. Ayesha, who is Majed's sister, was in her kitchen preparing lunch at the time of the attack. Suddenly, she recalled, a bomb struck her brother's home. As Ayesha rushed outside towards Majed's home, a second bomb fell in the yard. Shrapnel from the explosion flew into Ayesha's back, where some of it was still lodged at the time of her interview with Mwatana researchers a year and a half later. Ayesha suffered burns to her face and ear and fractures in her hand and leg as well.

Shrapnel from the attacks also lodged in 18-year-old Amin's face, 17-year-old Ali's head, 14-year-old Anoud's face, and 8-year-old Thikra's hand. 3-year-old Ayah was hit by a stone. Ayesha's older brother Ahmed took the wounded victims to Al-Rayyan Hospital in Shafar. After learning that the hospital had no doctors, Ahmed transported his family members to the Medecins Sans Frontieres hospital in Abs, where some of the shrapnel was removed from their bodies. As Ayesha exclaimed, "They struck us for no reason — there were no Houthis, no military checkpoints, nothing worth striking. They destroyed the house, killed my family, and burned our cattle for no reason."

Ayesha and Majed's mother Mariam described the devastating attack that killed her son and his family: "I was taking a shower and the jets were hovering in the sky. Then I heard a loud explosion that shook me. I emerged from the bathroom and heard another strike. I could see the plumes of smoke. My son Yahya was running and I asked him, 'Where are your brothers?' He said that Majed, his wife, and their children all died. Then I saw them in charred pieces on the ground. I felt dizzy and fell to the floor. When I arose, I started screaming for help. I saw my sister Fatima, and she asked if they struck my house. I told her that my child



A US-made CBU-58 cluster bomb casing recovered at the scene of the attack in Bani Haddad village. The CBU-58 cluster bomb disperses about 650 BLU-63 submunitions widely and indiscriminately.

“My son Yahya was running and I asked him, ‘Where are your brothers?’ He said that Majed, his wife, and their children all died. Then I saw them in charred pieces on the ground. I felt dizzy and fell to the floor.”

—Mariam Al-Akwa

58-year-old female
Eyewitness and mother of victim

and his children are dead, and I am not sure what happened to my daughters. She took me to her home and was trying to calm me down. I said to her, ‘Why did they strike us? They killed my child! We are not Houthis and we are not harboring Houthis!’”

The Saudi/UAE-led Coalition attack in Bani Haddad appears to have violated the laws of war. Researchers and witnesses did not identify any military targets in the area at the time of the attack. Indiscriminate attacks carried out intentionally or recklessly are war crimes. Homes are presumed to be civilian objects. Before conducting an attack, a party must do everything feasible to verify that the persons or objects to be attacked are military objectives and not civilians or civilian objects.

A bomb casing from a US-made cluster bomb, the CBU-58, was recovered at the site of the Bani Haddad attack.¹ The CBU-58 is a 430-kilogram (950-pound) cluster bomb loaded with about 650 BLU-63 submunitions that disperse widely and with indiscriminate effects.² These spherical, high-explosive submunitions are designed to inflict casualties by blast and fragmentation and have a lethal radius of up to 137 meters (450 feet).³

The National Stock Number (NSN) inscribed on the remnant links the bomb to the Air Armament Center, which was an Air Force Materiel Command Center for the US Air Force until it closed in 2012.⁴ According to Human Rights Watch’s Survey of Cluster Munition Policy and Practice, the US transferred 1,000 CBU-58 cluster bombs to Saudi Arabia between 1970 and 1995.⁵

The Saudi/UAE-led Coalition has dropped US-made cluster bombs on civilians and civilian infrastructure repeatedly since the start of the war. In 2016, Human Rights Watch reported that the Coalition dropped at least two CBU-58 bombs on a densely populated residential area of Yemen’s capital, Sana’a, early on January 6.⁶ The attack killed a 15-year-old boy, injured three people, set twenty cars ablaze, and damaged twenty-six houses.⁷ Coalition forces have also used other types of US-made cluster bombs—both air-dropped and ground-launched—in Yemen, including the CBU-105, the CBU-87, and the M26 rocket.⁸ Five of the twenty-seven apparently unlawful Coalition attacks documented in this report likely involved US-made cluster bombs.

International humanitarian law requires that parties to a conflict take all feasible precautions to minimize harm to civilians, including in choice of means of attack. Cluster munitions disperse submunitions over a wide area and cannot be directed at specific military objectives. Even if civilians are not killed or wounded in the attack, unexploded submunitions—which cannot distinguish between civilians and combatants—may kill or wound civilians months or years later. It is extremely difficult, if not impossible, for cluster weapons to be used in compliance with international humanitarian law. The international Convention on Cluster Munitions prohibits the use, production, and stockpiling of cluster munitions for this reason. Civilian casualties—like those documented in Bani Haddad—are the foreseeable result of cluster munition use in a residential area.

1 Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03042018-007 (Apr. 16, 2018) (on file with Mwatana).

2 *Id.*

3 *Id.*

4 *Aircraft Dispenser and Bomb, SKU: 1325010384733, Model: 763571-10*, NSN.INFO (last visited Dec. 22, 2018), <https://nationalstocknumber.info/national-stock-number/1325-01-038-4733> (NSN identification); Samuel King Jr., Elgin Air Force Base, *Air Armament Center Leaves Historic Legacy* (July 26, 2012), <https://www.eglin.af.mil/News/Article-Display/Article/391282/air-armament-center-leaves-historic-legacy/> (Air Armament Center closure).

5 HUMAN RIGHTS WATCH, SURVEY OF CLUSTER MUNITION POLICY AND PRACTICE 49 (Feb. 2007), <https://www.hrw.org/legacy/backgrounder/arms/cluster0207/cluster0207web.pdf>.

6 Human Rights Watch, *Yemen: Coalition Drops Cluster Bombs in Capital* (Jan. 7, 2016), <https://www.hrw.org/news/2016/01/07/yemen-coalition-drops-cluster-bombs-capital-0>.

7 Sudarsan Raghavan, *A Cluster Bomb Made in America Shattered Lives in Yemen’s Capital*, WASH. POST (July 10, 2016), https://www.washingtonpost.com/world/middle-east/a-cluster-bomb-made-in-america-shattered-lives-in-yemens-capital/2016/07/08/e3b722cc-283d-11e6-8329-6104954928d2_story.html?utm_term=.2096439a170a.

8 Human Rights Watch, *Technical Briefing Note: Cluster Munition Use in Yemen* (Feb. 14, 2016), <https://www.hrw.org/news/2016/02/14/technical-briefing-note-cluster-munition-use-yemen>.

Date of strike:	September 14, 2015
Location of strike:	Bilad Ar-Rus District, Sana'a Governorate
Civilian Casualties:	Eight killed (including two children and four women) and twelve injured (including six children and two women)
Object(s) struck:	Wa'lan Agricultural Complex
Weapons remnants ID:	US-made GBU-24 Paveway III laser-guided bomb (likely)
Weapons manufacturer:	Raytheon



“I lay down next to my husband and I told him,
‘We will die together.’”

—Abeer Jubari

34-year-old female
Wounded in attack

On the morning of Monday, September 14, 2015, the Saudi/UAE-led Coalition dropped five bombs — at least one of which appears to have been a US-made GBU-24 laser-guided bomb — on the Waʿlan Agricultural Complex in Bilad Ar-Rus District, Sanaʿa Governorate. The strike killed eight civilians — including seven members of a single family and two children — and injured twelve more, half of them children. The Complex’s five residential apartments, which housed agricultural engineers, were all destroyed in the attack. The nearest military site identified was a camp about 500 meters to the west of the Complex.

34-year-old Abeer Jubari recalled the terror of that morning. She was in her kitchen, preparing lunch and watching three little boys—including 4-year-olds Jalal Wakil and Ahmed Saeed—play outside her window. At around 10 a.m., the earth-shattering explosion of the first bomb shook the ground under Abeer and shattered the kitchen windows. Unable to see because of the thick clouds of black smoke that had filled the apartment, but desperate to find her two-and-a-half-year-old son Ahmed, Abeer began feeling her way out of the kitchen. Ali and Intisar Muqbel’s daughters were screaming next door; when the second bomb struck, recalled Abeer, they fell silent. Later, Abeer would discover that the four Muqbel daughters—16-year-old Rahal, 18-year-old Rihab, 21-year-old Riham, and 26-year-old Rana—all perished in the attack, along with their father Ali, mother Intisar, and 18-year-old brother Raidan. 4-year-old Jalal Wakil, one of the boys playing outside when the first bomb struck, sustained an injury from that explosion and began running towards his house, only to be killed by the strikes that followed.

Abeer made her way to the bedroom, where she was relieved to find Ahmed safely in her husband Najeeb’s arms. Najeeb recalled, “As soon as Abeer saw me and our kid, she asked if we were still alive. I asked her while tears are streaming down my face if she was still okay, and she said yes.” Abeer lay down next to her husband, telling him, “We will die together.” She and Najeeb began to pray.

Suddenly, “something told me to get up and get out” before more

bombs fell, Abeer recounted, “and I told my husband, ‘let’s get out of here!’” Abeer, Najeeb, and Ahmed tried to escape their apartment through the front door, but pressure from the explosions had made it impossible to open the iron door. They used the back door instead, noticing that the neighboring Muqbel house was leveled to the ground. Najeeb carried Ahmed, who was unconscious, not knowing if the child was still alive. “When we got outside, we thought it was the Day of Judgment because of the darkness in the middle of the day. Gunpowder and sand was flying all around us,” Najeeb described. Abeer had sustained injuries to her feet and was pulling herself along with difficulty.

Further up the complex, Ali Al-Hajj’s mother was sobbing by the door of her son’s home, terrified by the explosions. “I said to her, ‘Get up and come with us!’ because we were hearing the sound of jets,” recounted Abeer. But the elderly woman had a disability and was not able to move quickly. Najeeb told Abeer to continue making her way out of the complex and towards a nearby mountain with their son, while he carried Ali’s mother away from Ali’s house—which was in danger of being attacked—to the relative safety of a chicken coop. Najeeb then rushed to join his wife and son. “Abeer was not fully conscious because of the hell we were seeing and the blood streaming from her feet,” he remembered. “She was screaming, ‘My son died!’ Our kid was still unconscious. I told her he was not dead—he was just unconscious. She felt better after I sprayed some water on him and he woke up.”

Three more bombs fell on Waʿlan Agricultural Complex while Abeer, Najeeb, and Ahmed made their way to the mountain. Rocks flew through the air, striking and injuring Abeer in the back of her head and Najeeb in his back.

44-year-old Mohammed Saeed had been walking back to the Complex from the market when the first bomb fell. He saw plumes of smoke and dust rising from the Complex and—terrified for his family and the other residents—dropped his groceries and ran. “When I reached the gate and wanted to enter to rescue the people inside, others were standing next to us who had come from Sanaʿa and had similar experiences with Coalition airstrikes. They



Remnants of a likely US-made GBU-24 Paveway III laser-guided bomb found at the scene of the attack on the Wa'lan Agricultural Complex. The photo on the right appears to show the forward fin of a guided bomb unit. The parallel indents with circular ends match the configuration of the GBU-24. The photo on the left appears to show the tail wing of a guided bomb unit. The two indents match the configuration of the GBU-24.

warned that the jets will strike again and didn't allow us to enter the building," Mohammed explained.

When Mohammed finally entered the Complex and began searching for the dead and wounded, he discovered that his family members were among those who had sustained injuries: his wife Taqiyya, 3-year-old son Abdul, 10-year-old son Ibrahim, 11-year-old daughter Azhar, and 4-year-old son Ahmed, who had been playing outside with his friend Jalal Wakil moments earlier. "I do not know why they hit us," Mohammed said. "They know that there is nothing in the Complex. They are just cowardly and spiteful."

Over a year after the Coalition attack on Wa'lan Agricultural Complex, Abeer Jubari was suffering from rheumatic heart disease, hypertension, and chronic nosebleeds, all of which she developed in the aftermath of the strikes. "We are still suffering significantly psychologically," Najeeb explained. After the attack, the family moved to Al-O'bas to live with Najeeb's grandfather. Eight months later, when Coalition airstrikes began there as well, they moved to Sana'a. As Najeeb put it, "Whenever we hear the sound of jets, we run away."

The Saudi/UAE-led Coalition attacks appear to have been indiscriminate. Researchers and witnesses did not identify any military targets in the area at the time of the attacks. Indiscriminate attacks carried out intentionally or recklessly are war crimes. Homes are presumed to be civilian objects. Before conducting an attack, a party must do everything feasible to verify that the persons or objects to be attacked are military objectives and not civilians or civilian objects.

Remnants of what appear to be the tail wing and forward fin of a

907-kilogram (2000-pound)¹ US-made GBU-24 Paveway III laser-guided bomb were recovered at the site of the Coalition attack on the agricultural complex.² The GBU-24 family of laser-guided bombs is a subset of Raytheon's larger Paveway III series.³ Official 2017 notifications to Congress of proposed sales of weapons to Saudi Arabia included \$298 million for Paveway II and III, Enhanced Paveway II and III, and Paveway IV Weapons Systems.⁴ Between 2010 and 2013, the US delivered 938 Paveway Guided Bombs to the UAE.⁵

1 Chris Pocock, *Saudis Request Huge Resupply of US Air-To-Ground Weapons*, AINONLINE (Nov. 20, 2015), <https://www.ainonline.com/aviation-news/defense/2015-11-20/saudis-request-huge-resupply-us-air-ground-weapons>.

2 Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03042018-010 (Apr. 16, 2018) (on file with Mwatana).

3 Raytheon, *Paveway Laser and GPS/Laser Precision Guided Bombs* (2006), available at https://web.archive.org/web/20061020015711/http://www.raytheon.com/products/stellent/groups/public/documents/content/cms04_018951.pdf.

4 WILLIAM HARTUNG, SECURITY ASSISTANCE MONITOR, TRENDS IN MAJOR US ARMS SALES IN 2017: A COMPARISON OF THE OBAMA AND TRUMP ADMINISTRATIONS 6 (Mar. 2018).

5 WILLIAM HARTUNG, CENTER FOR INTERNATIONAL POLICY, US ARMS TRANSFERS TO THE UAE AND THE WAR IN YEMEN 19 (Sept. 2017).

Date of strike: August 28, 2015
Location of strike: Al-Dhihar District, Ibb Governorate
Civilian Casualties: Five killed (including a child and a woman)
Object(s) struck: Civilian homes in a residential neighborhood
Weapons remnants ID: US-made DAM GBU-31 bomb (likely)
Weapons manufacturer: Boeing



“Khalid’s hand was cut off, and I realized that the severed hand we had found earlier was his.”

–Saeed Al-Sufiyani

33-year-old male
Eyewitness

On the morning of Friday, August 28, 2015, Saudi/UAE-led Coalition fighter jets dropped three bombs in rapid succession on two civilian homes next to Jabal Rabbi Park in Al-Dhihar District, Ibb Governorate. The attack killed five civilians, including the entire Al-Sanabani family. At least one of the bombs used was likely a US-made Joint Direct Attack Munitions (JDAM) GBU-31.

33-year-old Saeed Al-Sufiyani, a sculptor, was selling his wares in Jabal Rabbi Park on the morning of the attack. Around 10 or 10:30 a.m., he recalled, he heard the sound of jet airplanes hovering directly over the park. Thinking that the jets would strike the park, Saeed moved towards the nearby parking area. Suddenly, two powerful explosions—less than a second apart—sent him flying into the air. Saeed hit the ground and quickly hid under a car. The air was full of dust and debris, and he could not see anything. He noticed that pieces of glass were strewn everywhere. Later, he would realize that these shards were from the shattered windows of the Al-Sanabani house about fifty meters away from the park. Less than a minute after the first two explosions, Coalition jets dropped a third bomb on Najm Harrash’s home, which was under construction at the time and next door to Mohammed Al-Sanabani’s.

After the third explosion, Saeed—still unable to see because of the thick cloud of dust all around him—began to move towards the mosque at the other end of the park. Upon arriving at the mosque and seeing others walk towards the Al-Sanabani house, Saeed realized that the house had been struck. He watched as the villagers carried 70-year-old Mohammed Al-Sanabani’s dead body out of the destroyed home. Then he joined the search for the rest of the family. The villagers feared more airstrikes and tried to move quickly, but entering the skeleton of the collapsed house and sifting through the rubble was no easy task.

After an hour of searching, Saeed and the other villagers found the remains of Mohammed Al-Sanabani’s teenage nephew and grandson—Abdul Malik and Abdul Ghani—on the second floor. The stairs of the house were destroyed, so the villagers used the backyard to access the first floor, where they discovered a severed hand under the window. It was not until 10 p.m. that night that the villagers recovered the bodies of Mohammed Al-Sanabani’s wife Jamila and 25-year-old son Khalid. Saeed recalled the moment when he saw the dead bodies of the mother and son, locked in an embrace. “It was a very touching scene because they were hugging each other,” he said. Khalid’s hand was cut off, noticed Saeed, before realizing that the severed hand found earlier belonged to Khalid.

The Saudi/UAE-led Coalition attack appears to have been indiscriminate. Researchers and witnesses did not identify any military targets in the area at the time of the attack. Indiscriminate attacks carried out intentionally or recklessly are war crimes. Homes are presumed to be civilian objects. Before conducting an attack, a party must do everything feasible to verify that the persons or objects to be attacked are military objectives and not civilians or civilian objects.

The Coalition’s Joint Incidents Assessment Team (JIAT) reviewed the attack.¹ JIAT claimed the Coalition did not attack the house.² Witness testimony and physical evidence gathered by Mwatana indicates that Mohammad Al-Sanabani’s house was indeed struck. In other attacks documented by the UN, Human Rights Watch,

1 Saudi Press Agency, Counselor Al-Mansour: The process of assessing incidents is based on established norms and standards in the international humanitarian law system (Nov. 13, 2018), <https://www.spa.gov.sa/viewstory.php?lang=en&news-id=1841100>.

2 *Id.*



Remnants of a likely US-made JDAM GBU-31 bomb used in the attack that killed the Al-Sanabani family. The four securing holes pictured in the photo on the top resemble those of a JDAM GBU-31 tail fin. The marking “76301-70P86” in the photo on the bottom is associated with JDAM guidance part numbers.

and others, JIAT has reported that the Coalition did not carry out a strike despite clear physical evidence indicating an airstrike.³

Weapons remnants recovered at the scene of the attack that killed the Al-Sanabani family point to the use of a Boeing-manufactured JDAM GBU-31 bomb.⁴ One remnant was inscribed with the marking “76301-70P862100-1005.” “76301” is the Commercial and Government Entity (CAGE) number for Boeing,⁵ and “70P86” is associated with JDAM guidance part numbers.⁶ Another remnant featured four securing holes that resemble those of a JDAM GBU-31 tail fin.⁷ In 2015 and 2016, the US delivered 3,600 JDAM Guided Bombs to the UAE.⁸ Between 2011 and 2012, the US delivered 300 JDAM Guided Bombs to the UAE.⁹

3 HUMAN RIGHTS WATCH, HIDING BEHIND THE COALITION 1 (Aug. 24, 2018), <https://www.hrw.org/report/2018/08/24/hiding-behind-coalition/failure-credibly-investigate-and-provide-redress-unlawful>.

4 Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03042018-009 (Apr. 16, 2018) (on file with Mwatana).

5 76301, CAGE SEARCH (last visited Dec. 23, 2018), <http://www.govcagecodes.com/?code=76301&company=#results>.

6 Boeing Company, *The NSN Parts: 70P860000-1017 - 70P860010-1001*, PartTarget (last visited Dec. 23, 2018), http://www.parttarget.com/Boeing-Company-The_nsn-parts_70P860000-1017_70P860010-1001.html.

7 Report of arms expert consulted by Mwatana for Human Rights, Report ref. IR_03042018-009 (Apr. 3, 2018) (on file with Mwatana).

8 WILLIAM HARTUNG, CENTER FOR INTERNATIONAL POLICY, US ARMS TRANSFERS TO THE UAE AND THE WAR IN YEMEN 18 (Sept. 2017).

9 *Id.* at 19.

- Date of strike:** October 8, 2016
- Location of strike:** Bajil District, Hudaydah Governorate
- Civilian casualties:** Six killed (including four children and a pregnant woman) and one injured (a woman)
- Object(s) struck:** Civilian homes in a residential area
- Weapons remnants ID:** **US-made** GBU-16 Paveway II laser-guided bomb with Mk-83 warhead and **Italy-made** suspension lug (likely)



“I woke up at 3am to the sound of an airstrike, and I thought that it had hit our home. We went outside and started running northward. When we were running away, they continued with the second strike. We were still close by, and the flame burnt us. Two minutes later, the third bomb struck my brother’s home and the fourth bomb struck our home.”

—Ayman Jaber

25-year-old female
Eyewitness and family member of victims

At around 3 a.m. on Saturday, October 8, 2016, Saudi/UAE-led Coalition jets dropped four bombs on a residential area of Dir Al Hajari village, Bajil District, Hudaydah Governorate. The attack killed six members of the same family—including a pregnant woman and four children aged 10 and under—and destroyed four civilian homes. Remnants of what appeared to be a US-made GBU-16 bomb were recovered at the scene of the strike.

According to eyewitnesses, Coalition planes had been hovering overhead for two days prior to the attack. The nearest military site identified was a Houthis-controlled checkpoint 300 meters away.

Ayman Jaber, 25, was asleep when the first Coalition bomb fell. She awoke to the sound of the explosion, thinking that her home had been struck. Ayman and her family, including her 65-year-old father Muhammad, quickly escaped their home and began running northward. As they ran, the second bomb fell. “We were still close by, and the flame burnt us,” reported Ayman. About two minutes later, a third bomb struck Ayman’s brother’s home and a fourth bomb struck Ayman’s home. Ayman would soon discover that the first two bombs had struck the home of her cousin, 35-year-old Hosni Jaber. “I cannot believe that my cousin and his family died, and that we would have died with them if we had not run away,” she said.

Hosni, his pregnant wife Qabool, 25, and their children—Taqiah, 10, Fatimah, 7, Sarah, 4, and Muhammad, 3—all perished in the attack. “They were catapulted out of the house, their bodies torn apart,” said Ayman. Her uncle Ali’s house was destroyed in the attack along with Ayman’s, her brother’s, and Hosni’s houses.

Ayman’s father Muhammed recalled waking up to the sound of

the first explosion and being evacuated from the house by his family. “I could not see because of the dark, the smoke, and the dirt,” he said. “We [later] found [the dead bodies of my nephew Hosni and his wife and kids] all over the place. We had to collect their body parts.”

The Saudi/UAE-led Coalition attack appears to have been indiscriminate. Researchers and witnesses did not identify any military targets in the area at the time of the attack. Indiscriminate attacks carried out intentionally or recklessly are war crimes. Homes are presumed to be civilian objects. Before conducting an attack, a party must do everything feasible to verify that the persons or objects to be attacked are military objectives and not civilians or civilian objects.

Weapons remnants recovered at the scene of the attack appeared to be the control fins of a US-made GBU-16 Paveway II laser-guided bomb.¹ One remnant was inscribed with the number “83”—likely a reference to the Mk-83 warhead.² Additionally, the marking “MS3314”—inscribed on another remnant—is associated with 1000-pound bomb suspension lugs, which are consistent with the Mk-83.³

The Saudi/UAE-led Coalition likely used a GBU-16 Paveway II laser-guided bomb fitted with an Mk-83 warhead in the Dir Al Hajari attack. Official 2017 notifications to Congress of pro-

1 Report of arms expert consulted by Mwatana for Human Rights, Report ref. IR_05062018-029 (June 5, 2018) (on file with Mwatana).

2 *Id.*

3 *Id.*



Remnants of a likely US-made GBU-16 bomb recovered at the scene of the attack in Dir Al Hajri village. The number 83 in the photo on the left appears to be associated with the Mk-83 warhead. The marking “MS3314” in the photo on the right is associated with 1000-pound bomb suspension lugs, which are consistent with the Mk-83.

posed sales of weapons to Saudi Arabia included \$298 million for Paveway II and III, Enhanced Paveway II and III, and Paveway IV Weapons Systems.⁴ Between 2010 and 2013, the US delivered 938 Paveway Guided Bombs to the UAE.⁵

The Mk-83 contains 202 kilograms (445 pounds) of Composition H6, a highly explosive substance also used in the US Air Force’s so-called “Mother of All Bombs.”⁶ The Mk-80 series of low-drag, general-purpose bombs are typically used to inflict maximal blast and explosive damage.⁷

Serial marks on the remnant of the bomb’s suspension lug (which attaches the bomb to the airplane) indicated that the lug was made by RWM Italia S.p.A., an Italian subsidiary of the German company Rheinmetall AG.⁸ In April 2018, the European Center for Constitutional and Human Rights, Mwatana, and Rete Italiana per il Disarmo filed a criminal complaint in Italy against RWM Italia S.p.A. and Italy’s National Authority for the Export of Armament.⁹ The complaint requested that the public prosecutor in Rome investigate the potential criminal liability of the company and government officials for the export of the bomb suspension lug used in the Coalition’s deadly attack in Dir Al Hajari.¹⁰

4 WILLIAM HARTUNG, SECURITY ASSISTANCE MONITOR, TRENDS IN MAJOR US ARMS SALES IN 2017: A COMPARISON OF THE OBAMA AND TRUMP ADMINISTRATIONS 6 (Mar. 2018).

5 WILLIAM HARTUNG, CENTER FOR INTERNATIONAL POLICY, US ARMS TRANSFERS TO THE UAE AND THE WAR IN YEMEN 19 (Sept. 2017).

6 Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03042018-003 (Apr. 16, 2018) (on file with Mwatana); Yasmin Tayag, *The “Mother of All Bombs” Uses this Australian Underwater Explosive*, INVERSE (Apr. 14, 2017), <https://www.inverse.com/article/30368-mother-of-all-bombs-moab-h6-composition-explosive>.

7 *General Dynamics To Provide MK82 Bomb Casings To Saudi, UAE, France*

And Iraq, DEFENSEWORLD.NET (Aug. 31, 2016), http://www.defenseworld.net/news/16953/General_Dynamics_To_Provide_MK82_Bomb_Casings_To_Saudi_UA.

8 EUROPEAN CENTER FOR CONSTITUTIONAL AND HUMAN RIGHTS, EUROPEAN RESPONSIBILITY FOR WAR CRIMES IN YEMEN — COMPLICITY OF ITALIAN SUBSIDIARY OF GERMAN ARMS MANUFACTURER AND OF ITALIAN ARMS EXPORT AUTHORITY 1 (Apr. 2018), https://www.ecchr.eu/fileadmin/Fallbeschreibungen/CaseReport_Yemen_Italy_Arms_ECCHR_Mwatana_ReteDisarmo_20180418.pdf.

9 *Id.* at 2.

10 *Id.*

Date of strike:	September 24, 2016
Location of strike:	Al-Dhihar District, Ibb Governorate
Civilian casualties:	Six killed (including three children and a woman) and one injured (a woman)
Object(s) struck:	Civilian residential apartment building
Weapons remnants ID:	US-made GBU-12 Paveway II laser-guided bomb with Mk-82 warhead
Weapons manufacturer:	Raytheon



A tuft of human hair and a bloodied shirt, both believed to have belonged to 3-year-old Dhia Al Duais or 4-year-old Muhammed Al Duais. Both children were killed in the attack, their bodies mangled.

“I only saw Areej [Al-Juma’i], who was 11 years old. She was in a horrible state. Her legs were shredded, and her body was burnt. I gathered her in a blanket, then I went to look for the rest of the family. I did not find any of them because they had all fallen out into the street. I went to see Muhammed Al Juma’i and found that he was completely burnt. His wife, Ruyayah, and his son, Abdulrahman, were even more burnt, and I found Hajar’s children, Dhia and Muhammed Al Duais. Their bodies were mangled.”

—Anonymous eyewitness

25-year-old male

At around 9:15 p.m. on Saturday, September 24, 2016, Saudi/UAE-led Coalition jets attacked a residential apartment building near Jiblah Fork in Al-Dhihar District, Ibb Governorate, killing six members of the same family—including three children and a woman—and injuring another woman. The Coalition used a US-made GBU-12 bomb in the strike.

The nearest military objective identified was a Houthi-controlled police office about 500 meters from the apartment building. One eyewitness, who works near the building, arrived at the scene of the attack to find Hajar Al-Juma’i, 26, injured with shrapnel wounds to her foot and searching for her young children. Hajar was in her uncle’s apartment when the Coalition bomb struck; her children and other family members were on the floor above. The eyewitness, who wished to remain anonymous, brought Hajar to the home of another of her uncles who lived in the neighborhood, then returned to the smoke-filled apartment building and went upstairs in search of Hajar’s family.

The eyewitness reported: “I only saw Areej [Al-Juma’i], who was 11 years old. She was in a horrible state. Her legs were shredded, and her body was burnt. I gathered her in a blanket, then I went to look for the rest of the family. I did not find any of them because they had all fallen out into the street. I went to see Muhammed Al Juma’i, [44], and found that he was completely burnt. His wife, Ruyayah, [39], and his son, Abdulrahman, [24], were even more burnt, and I found Hajar’s children, Dhia Al Duais, [3], and Muhammed Al Duais, [4]. Their bodies were mangled.”

Another eyewitness, who also wished to remain anonymous,

was near the apartment building at the time of the Coalition attack and recalled: “We were terrified, and we ran away to hide behind a nearby building. When we were sure that there would not be a second strike, we went to the building that was hit so that we could help the victims, the family of Muhammed Al-Juma’i. We were shocked when we found them laid out on the ground, outside the building, and in a very bad condition.”

The Saudi/UAE-led Coalition attack appears to have been indiscriminate. Researchers and witnesses did not identify any military targets in the area at the time of the attack. Indiscriminate attacks carried out intentionally or recklessly are war crimes. Homes are presumed to be civilian objects. Before conducting an attack, a party must do everything feasible to verify that the persons or objects to be attacked are military objectives and not civilians or civilian objects.

The Coalition’s Joint Incidents Assessment Team (JIAT) reviewed this attack.¹ JIAT claimed that Coalition forces targeted a Houthi military headquarters building located over a kilometer away from the apartment building² and that “the Coalition did not target the residential building.”³ JIAT’s findings are inconsistent with eyewitness testimony and other evidence gathered by Mwatana, which indicates that the Coalition struck the residential apartment

1 Saudi Press Agency, JIAT Holds Press Conference 2 (Nov. 19, 2017), <https://www.spa.gov.sa/viewstory.php?lang=en&newsid=1689418>.

2 *Id.*

3 *Id.*



A remnant of the US-made GBU-12 Paveway II laser-guided bomb that killed six members of the Al-Jum'a'i family. As the marking "FOR USE ON MK82" indicates, an Mk-82 warhead was mounted on the GBU-12 bomb. The marking "837760-4" is associated with the guidance fin for the Mk-82/GBU-12. The marking "96214" identifies Raytheon as the manufacturer of the weapon.

building. JIAT's findings are also inconsistent with those of the UN Panel of Experts, which concluded after its own investigation that the Coalition attacked the Ibb residential complex.

Mwatana researchers recovered a portion of a US-made guided bomb unit (GBU) wing assembly at the site of the attack on the apartment building.⁴ The part number inscribed on the weapons remnant, "837760-4," is associated with the guidance fin for the GBU-12 Paveway II laser-guided bomb.⁵ The marking "96214"—Raytheon's Commercial and Government Entity (CAGE) number—identifies Raytheon as the manufacturer of the weapon.⁶ The words "FOR USE ON MK82" are also printed on the remnant, indicating that a 227-kilogram (500-pound)⁷ Mk-82 warhead was mounted on the GBU-12 fin. The Mk-82 contains 87 kilograms (190 pounds) of Composition H6, a highly explosive substance also used in the US Air Force's so-called "Mother of All Bombs."⁸ The Mk-80 series of low-drag, general-purpose bombs are typically used to inflict maximal blast and explosive damage.⁹ In August

2016, US defense contractor General Dynamics was awarded a multi-million dollar contract to supply Saudi Arabia and the UAE with Mk-82 bomb casings.¹⁰

Official 2017 notifications to Congress of proposed sales of weapons to Saudi Arabia included \$298 million for Paveway II and III, Enhanced Paveway II and III, and Paveway IV Weapons Systems.¹¹ Between 2010 and 2013, the US delivered 938 Paveway Guided Bombs to the UAE.¹² The Saudi/UAE-led Coalition has dropped US-made GBU-12 and Mk-82 bombs on civilians and civilian infrastructure repeatedly since the start of the war. CNN reported that the Coalition used Lockheed Martin's Mk-82 Paveway bomb in a widely-condemned August 2018 airstrike on a school bus that killed dozens of children.¹³ Ten of the twenty-seven apparently unlawful Coalition attacks documented in this report likely involved Mk-82 bombs.

4 Report of arms expert consulted by Mwatana for Human Rights, Report ref. IR_05062018-027; Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03042018-002 (Apr. 16, 2018) (on file with Mwatana).

5 *Id.*

6 96214, CAGE SEARCH (last visited Dec. 23, 2018), <http://www.govcagecodes.com/?code=96214&company=#results>.

7 Report of arms expert consulted by Mwatana for Human Rights, Report ref. IR_05062018-027; Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03042018-002 (Apr. 16, 2018) (on file with Mwatana).

8 *Id.*; Yasmin Tayag, *The "Mother of All Bombs" Uses this Australian Underwater Explosive*, INVERSE (Apr. 14, 2017), <https://www.inverse.com/article/30368-mother-of-all-bombs-moab-h6-composition-explosive>.

9 *General Dynamics To Provide MK82 Bomb Casings To Saudi, UAE, France And Iraq*, DEFENSEWORLD.NET (Aug. 31, 2016), http://www.defenseworld.net/news/16953/General_Dynamics_To_Provide_MK82_Bomb_Casings_To_Saudi_UA.

10 *Id.*

11 WILLIAM HARTUNG, SECURITY ASSISTANCE MONITOR, TRENDS IN MAJOR US ARMS SALES IN 2017: A COMPARISON OF THE OBAMA AND TRUMP ADMINISTRATIONS 6 (Mar. 2018).

12 WILLIAM HARTUNG, CENTER FOR INTERNATIONAL POLICY, US ARMS TRANSFERS TO THE UAE AND THE WAR IN YEMEN 19 (Sept. 2017).

13 Nima Elbagir et al., *Bomb that Killed 40 Children in Yemen was Supplied by the US*, CNN (Aug. 17, 2018), <https://www.cnn.com/2018/08/17/middleeast/us-saudi-yemen-bus-strike-intl/index.html>. Based on its rigorous methodology, Mwatana could not positively identify the bomb used in the school bus attack.

Date of strike:	February 6, 2016
Location of strike:	At-Ta'iziyah District, Taizz Governorate
Civilian Casualties:	Two killed (a child and a woman)
Object(s) struck:	Civilian home in a residential neighborhood
Weapons remnants ID:	US-made Mk-82 warhead

At around 1:30 a.m. on Saturday, February 6, 2016, Saudi/UAE-led Coalition jets dropped a US-made Mk-82 bomb on the home of Hamoud Qayed in Al-Miqsas village, At-Ta'iziyah District, Taizz Governorate. Hamoud's wife and 14-year-old daughter perished in the attack, and half the house was destroyed.

For years, Hamoud Qayed and his three sons had been traveling back and forth from Saudi Arabia, where they worked to earn money, save for the family's future, and one day live comfortably in their home country. For the past several decades, many Yemenis have lived and worked in Saudi Arabia to support their families in Yemen. At the time of the attack, Hamoud and his son Bassam were in Saudi Arabia; the rest of the family was at home in Al-Miqsas, where Hamoud had recently built a three-story house that he was in the process of furnishing. As Hamoud's 24-year-old son Alwan lamented, "We worked day and night in Saudi Arabia—my brothers, father, and I—to build the house. My father has been an expatriate for a long time, and we have been saving up money to build this house so that we can live in our country. We built this house after a lot of work outside the country, and in the end, the airplanes coldheartedly destroyed it for no reason. People died without having done anything to deserve this fate."

Bassam lived in the northern apartment on the ground floor with his wife and young daughter. Another of Hamoud's sons, Bassim, lived directly above, in the northern apartment on the second floor, with his wife and young daughter. Alwan lived with his wife in the southern apartment on the ground floor, and Hamoud's 42-year-old wife Saffiyah and 14-year-old daughter Sumayah lived directly above Alwan, in the southern apartment on the second floor.

On the night of the airstrike, Coalition jets had been hovering overhead for a couple of hours, recalled Alwan. He and other eyewitnesses did not imagine that the jets would bomb the village because the nearest identified military site was about three kilometers to the east. Residents assumed that the Coalition was preparing to strike that, or some other, Houthi site. At around 1 a.m., the sound of the jets increased. About thirty minutes later, while most of the family was fast asleep, a bomb struck the building, hitting Saffiyah's second-floor apartment. The 42-year-old woman

and her 14-year-old daughter, Sumayah, died instantly. The second and third floors of the building were destroyed in the attack, and the first floor severely damaged. Neighbors could hear the blood-curdling screams of terror from the other family members in the building—including young children and women—who survived the attack.

37-year-old eyewitness Abdulilah Mahmoud, who lives about 150 meters away from the Qayed house, recalled the earth-shattering sound and blinding red light of the explosion. He and other neighbors quickly arrived at the scene with flashlights to recover the bodies from underneath the rubble. "First, we took out the young girl, Sumayah.... Her hand was cut off her arm because of the shrapnel, and there was blood all over her body. Shrapnel also went into her stomach and chest. She was already dead," he reported. Sumayah's mother Saffiyah had died about eight meters away from her daughter. "She was in very bad shape because the shrapnel from the explosion went into her head," said Abdulilah. "When we took her out of the rubble of the home, her face was covered in blood. She had many injuries in her face and the back of her head, and her brain had come out under her eye. There was a pencil-sized hole in the left side of her face." Once the family had gathered, villagers took the corpses to the nearby mosque for a funeral prayer, then buried the mother and daughter in the Al-Miqsas cemetery.

When Mwatana researchers interviewed Alwan over a year after the strike, his brother Bassim continued to suffer from severe psychological trauma and shock. The family lived in terror of another attack: "My brothers' wives and the small children in the house are now very afraid of the sound of planes, especially at night," explained Alwan. "They do not want to live in our house, half of which was bombed, but there is no chance for us to leave to another house now. We are still confused, afraid, and very worried that we will be targeted again with an airstrike. This is the terrifying question. What should I say when someone from the family or one of the children asks me if we will be targeted again?"

The Saudi/UAE-led Coalition attack appears to have been indiscriminate. Researchers and witnesses did not identify any military targets in the area at the time of the attack. Indiscriminate attacks

“My brothers’ wives and the small children in the house are now very afraid of the sound of planes, especially at night. They do not want to live in our house, half of which was bombed, but there is no chance for us to leave to another house now. We are still confused, afraid, and very worried that we will be targeted again with an airstrike. This is the terrifying question. What should I say when someone from the family or one of the children asks me if we will be targeted again?”

—Alwan Qayed

24-year-old male
Family member of victims

carried out intentionally or recklessly are war crimes. Homes are presumed to be civilian objects. Before conducting an attack, a party must do everything feasible to verify that the persons or objects to be attacked are military objectives and not civilians or civilian objects.

A large remnant of a bomb casing from a US-made bomb—the Mk-82—was found at the site of the February 2016 attack.¹ The bomb casing was inscribed with the markings “EMPTY BOMB MK82” and “BURKAN MUNITIONS SYSTEMS,” referring to a United Arab Emirates (UAE) government company. According to a weapons expert consulted by Mwatana, the initially empty US-made bomb was likely loaded with explosives at the Burkan ammunition factory in the UAE.²

The Mk-82 is a 227-kilogram (500-pound) warhead containing 87 kilograms (190 pounds) of Composition H6, a highly explosive substance also used in the US Air Force’s so-called “Mother

of All Bombs.”³ The Mk-80 series of low-drag, general-purpose bombs are typically used to inflict maximal blast and explosive damage.⁴ In August 2016, US defense contractor General Dynamics was awarded a multi-million dollar contract to supply Saudi Arabia and the UAE with Mk-82 bomb casings.⁵

Mk-82 warheads are part of GBU-12 Paveway II laser-guided bombs, which are manufactured by both Raytheon and Lockheed Martin.⁶ Official 2017 notifications to Congress of proposed sales of weapons to Saudi Arabia included \$298 million for Paveway II and III, Enhanced Paveway II and III, and Paveway IV Weapons

1 Report of arms expert consulted by Mwatana for Human Rights, Report ref. IR_03052018-020 (May 3, 2018) (on file with Mwatana).

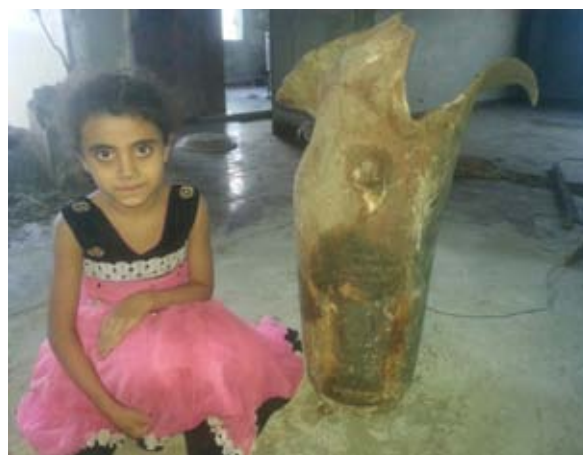
2 *Id.*

3 Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03042018-004 (Apr. 16, 2018) (on file with Mwatana); Yasmin Tayag, *The “Mother of All Bombs” Uses this Australian Underwater Explosive*, INVERSE (Apr. 14, 2017), <https://www.inverse.com/article/30368-mother-of-all-bombs-moab-h6-composition-explosive>.

4 *General Dynamics To Provide MK82 Bomb Casings To Saudi, UAE, France And Iraq*, DEFENSEWORLD.NET (Aug. 31, 2016), http://www.defenseworld.net/news/16953/General_Dynamics_To_Provide_MK82_Bomb_Casings_To_Saudi_UA.

5 *Id.*

6 See *Five Year Extension on Paveway-II Missile Production*, DEFENSE INDUSTRY DAILY (Aug. 13, 2018), <https://www.defenseindustrydaily.com/usaf-issues-fy-2011-2016-order-for-gbu-12-paveway-ii-bombs-07017/>.



Remnant of a US-made Mk-82 bomb casing used in the attack on Hamoud Qayed's home (girl in photo on right shown for scale). The marking "BURKAN MUNITIONS SYSTEMS" indicates that the initially empty bomb was likely loaded with explosives at the ammunition factory of Burkan Munitions Systems, a UAE government company.

Systems.⁷ Between 2010 and 2013, the US delivered 938 Paveway Guided Bombs to the UAE.⁸ The Saudi/UAE-led Coalition has dropped US-made Mk-82 bombs on civilians and civilian infrastructure repeatedly since the start of the war. CNN reported that the Coalition used Lockheed Martin's Mk-82 Paveway bomb in a widely-condemned August 2018 airstrike on a school bus that killed dozens of children.⁹ Ten of the twenty-seven apparently unlawful Coalition attacks documented in this report likely involved Mk-82 bombs.

7 WILLIAM HARTUNG, SECURITY ASSISTANCE MONITOR, TRENDS IN MAJOR US ARMS SALES IN 2017: A COMPARISON OF THE OBAMA AND TRUMP ADMINISTRATIONS 6 (Mar. 2018).

8 WILLIAM HARTUNG, CENTER FOR INTERNATIONAL POLICY, US ARMS TRANSFERS TO THE UAE AND THE WAR IN YEMEN 19 (Sept. 2017).

9 Nima Elbagir et al., *Bomb that Killed 40 Children in Yemen was Supplied by the US*, CNN (Aug. 17, 2018), <https://www.cnn.com/2018/08/17/middleeast/us-saudi-yemen-bus-strike-intl/index.html>. Based on its rigorous methodology, Mwatana could not positively identify the bomb used in the school bus attack.

Date of strike:	November 12, 2015
Location of strike:	Haradh District, Hajjah Governorate
Civilian Casualties:	Two killed and three injured
Object(s) struck:	Civilian farm
Weapons remnants ID:	US-made CBU-58 cluster bomb with BLU-63 submunitions (likely)

At around 2 p.m. on Thursday, November 12, 2015, Saudi/UAE-led Coalition jets dropped a bomb—likely a US-made CBU-58 cluster bomb—on 65-year-old civilian Mohammed Saheli’s farm in Al-O’saila village, Haradh District, Hajjah Governorate. The jets attacked a group of young men who were fixing a water pump on the farm. The strike killed two of the five men instantly, injured the remaining three, and set the farm on fire.

On the afternoon of the strike, 33-year-old Ali and 19-year-old Othman Saheli were repairing their father’s water pump along with their 19-year-old cousins—Ibrahim and Mohammed Kudaish—and an engineer, 23-year-old Mohammed Lubais. Coalition jets hovered overhead as they did every day, recalled Ali, but the young men did not expect to be struck because the closest identified military site was a checkpoint some 500 meters northeast of the farm. Suddenly, as the men were disassembling the pump, a bomb struck, ripping Mohammed Kudaish’s body into three pieces and killing Mohammed Lubais with shrapnel wounds to his head. Ali suffered shrapnel wounds to his thigh and

leg, Othman suffered a severe fracture in his thigh and shrapnel wounds to his leg, and Ibrahim suffered shrapnel wounds to his face, back, thigh, and leg.

Although seriously injured, Ibrahim managed to make his way to a village about two kilometers away from the farm. He found someone to take him home, told his uncle what had happened, and returned to the scene of the strike in a car with his uncle and other villagers to pick up Ali and Othman, who was unconscious. The three young men were taken to the Medecins Sans Frontieres hospital in Abs, where some of the shrapnel was removed from their bodies.

The Saudi/UAE-led Coalition attack on a water pump and a farm appears to have violated the laws of war. Researchers and witnesses did not identify any military targets in the area at the time of the attack. Before conducting an attack, a party must do everything feasible to verify that the persons or objects to be attacked are military objectives and not civilians or civilian objects. Indiscriminate attacks carried out intentionally or recklessly are war crimes.

A weapons remnant that appears to be a tail section of a US-made CBU-58 cluster bomb was recovered at the site of the Al-O’Saila attack.¹ The CBU-58 is a 430-kilogram (950-pound) cluster bomb loaded with about 650 BLU-63 submunitions that disperse widely and with indiscriminate effects.² These spherical, high-explosive submunitions are designed to inflict casualties by blast and fragmentation and have a lethal radius of up to 137 meters (450 feet).³

According to Human Rights Watch’s Survey of Cluster Munition Policy and Practice, the US transferred 1,000 CBU-58 cluster bombs to Saudi

1 Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03052018-015 (May 3, 2018) (on file with Mwatana).

2 *Id.*

3 *Id.*



A remnant of a likely US-made CBU-58 cluster bomb used in the attack on Mohammed Saheli’s farm. The remnant pictured appears to be a tail unit of the bomb. The CBU-58 cluster bomb disperses about 650 BLU-63 submunitions widely and indiscriminately.

“The jets suddenly and intentionally dropped a bomb...
We did not expect to be attacked by an airstrike as there
were no Houthis, military men, or military checkpoints.”

–Ali Saheli

33-year-old male
Wounded in attack

Arabia between 1970 and 1995.⁴ The Saudi/UAE-led Coalition has dropped US-made cluster bombs on civilians and civilian infrastructure repeatedly since the start of the war. In 2016, Human Rights Watch reported that the Coalition dropped at least two CBU-58 bombs on a densely populated residential area of Yemen’s capital, Sana’a, early on January 6.⁵ The attack killed a 15-year-old boy, injured three people, set twenty cars ablaze, and damaged twenty-six houses.⁶ Coalition forces have also used other types of US-made cluster bombs—both air-dropped and ground-launched—in Yemen, including the CBU-105, the CBU-87, and the M26 rocket.⁷ Five of the twenty-seven apparently unlawful

Coalition attacks documented in this report likely involved US-made cluster bombs.

International humanitarian law requires that parties to a conflict take all feasible precautions to minimize harm to civilians, including in choice of means of attack. Cluster munitions disperse submunitions over a wide area and cannot be directed at specific military objectives. Even if civilians are not killed or wounded in the attack, unexploded submunitions—which cannot distinguish between civilians and combatants—may kill or wound civilians months or years later. It is extremely difficult, if not impossible, for cluster weapons to be used in compliance with international humanitarian law. The international Convention on Cluster Munitions prohibits the use, production, and stockpiling of cluster munitions for this reason.

4 HUMAN RIGHTS WATCH, SURVEY OF CLUSTER MUNITION POLICY AND PRACTICE 49 (Feb. 2007), <https://www.hrw.org/legacy/backgrounders/arms/cluster0207/cluster0207web.pdf>.

5 Human Rights Watch, *Yemen: Coalition Drops Cluster Bombs in Capital* (Jan. 7, 2016), <https://www.hrw.org/news/2016/01/07/yemen-coalition-drops-cluster-bombs-capital-0>.

6 Sudarsan Raghavan, *A Cluster Bomb Made in America Shattered Lives in Yemen’s Capital*, WASH. POST (July 10, 2016), https://www.washingtonpost.com/world/middle_east/a-cluster-bomb-made-in-america-shattered-lives-in-yemens-capital/2016/07/08/e3b722cc-283d-11e6-8329-6104954928d2_story.html?utm_term=.2096439a170a.

7 Human Rights Watch, *Technical Briefing Note: Cluster Munition Use in Yemen* (Feb. 14, 2016), <https://www.hrw.org/news/2016/02/14/technical-briefing-note-cluster-munition-use-yemen>.

Date of strike:	February 2, 2016
Location of strike:	Haradh District, Hajjah Governorate
Civilian Casualties:	One killed and eight injured (including a woman)
Object(s) struck:	Civilian home in a residential neighborhood
Weapons remnants ID:	US-made CBU-52 cluster bomb with BLU-61 submunitions

On the morning of Tuesday, February 2, 2016, Saudi/UAE-led Coalition jets dropped a US-made CBU-52 cluster bomb on a car parked next to a civilian home in Al-Sir village, Haradh District, Hajjah Governorate. The attack killed one civilian and injured another eight, all from the same extended family.

39-year-old Ahmed Abdo was asleep at his home on the morning of the attack. At around 8 a.m., he jolted awake to the sound of a deafening explosion as Coalition planes dropped a bomb on his car, parked just outside the house. The bomb destroyed the car, Ahmed's home, and neighboring houses, in addition to killing cattle and sheep. The family rushed outside and began running to escape further airstrikes, but submunitions from the cluster bomb struck members of the family as they tried to get away, decapitating and killing Ahmed's 26-year-old brother Amer.

Ahmed and his elderly parents, three brothers, and two cousins all suffered shrapnel wounds and burns: Ahmed in his face, torso, and leg; his 69-year-old mother, Aish Ali, in her back; his 79-year-old father, Abdo Ahmed, in his leg; his 19-year-old brother Omar in multiple parts of his body; his 24-year-old brother Othman in his leg; his 26-year-old brother Qassim in his hands; his 24-year-old cousin Abdullah all over his body; and his 34-year-old cousin Mohammed in his face, back, and hands.

The injured were taken to the Medecins Sans Frontieres hospital in Abs, where some of the shrapnel was removed from their bodies. Ahmed's mother needed additional surgery and was admitted to the hospital for a week. The family was temporarily displaced, relocating to another village for about a month after the strike because of the danger of live submunitions—which could explode at any time—in their hometown of Al-Sir. “Bombs explode suddenly. Our village is not safe anymore. We are scared of jets and bombs,” said Qassim Abdo. Abdullah Abdo was suffering psychological trauma at the time of Ahmed's and Qassim's interviews with Mwatana researchers nearly a year and a half after the attack.

The Saudi/UAE-led Coalition attack in Al-Sir appears to have violated the laws of war. Researchers and witnesses did not identify any military targets in the area at the time of the attack. Indiscriminate attacks carried out intentionally or recklessly are war crimes. Homes are presumed to be civilian objects. Before conducting an attack, a party must do everything feasible to verify that the persons or objects to be attacked are military objectives and not civilians or civilian objects.

A US-made cluster bomb, the CBU 52, was recovered at the site of the airstrike that killed Amer Abdo and wounded eight mem-



The US-made CBU-52 cluster bomb remnant recovered at the scene of the attack in Al-Sir village. The CBU-52 contains 217 BLU-61 submunitions that disperse indiscriminately and widely—across an area equivalent to over twenty-two football fields.

“Bombs explode suddenly. Our village is not safe anymore.
We are scared of jets and bombs.”

—Qassim Abdo

26-year-old male
Wounded in attack

bers of his family.¹ The CBU-52 contains 217 BLU-61 submunitions that disperse widely and with indiscriminate effects—across an area equivalent to over twenty-two football fields.² These spherical, high-explosive submunitions—designed to inflict casualties by blast and fragmentation—are lined with flammable zirconium-tin to exact further damage on their targets.³

The National Stock Number (NSN) inscribed on the bomb links it to the Air Armament Center, which was an Air Force Materiel Command Center for the US Air Force until it closed in 2012.⁴ The Saudi/UAE-led Coalition has dropped US-made cluster bombs on civilians and civilian infrastructure repeatedly since the start of the war. According to Human Rights Watch, Coalition forces have used different types of US-made cluster bombs—both air-dropped and ground-launched—in Yemen, including the CBU-58, CBU-105, CBU-87, and M26 rocket.⁵ Five of the twen-

ty-seven apparently unlawful Coalition attacks documented in this report likely involved US-made cluster bombs.

International humanitarian law requires that parties to a conflict take all feasible precautions to minimize harm to civilians, including in choice of means of attack. Cluster munitions disperse submunitions over a wide area and cannot be directed at specific military objectives. Even if civilians are not killed or wounded in the attack, unexploded submunitions—which cannot distinguish between civilians and combatants—may kill or wound civilians months or years later. It is extremely difficult, if not impossible, for cluster weapons to be used in compliance with international humanitarian law. The international Convention on Cluster Munitions prohibits the use, production, and stockpiling of cluster munitions for this reason. Civilian casualties—like those documented in Al-Sir—are the foreseeable result of cluster munition use in a residential area.

1 Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03052018-019 (May 3, 2018) (on file with Mwatana).

2 Paul F. Walker & Eric Stambler, ... *And the Dirty Little Weapons*, 47 BULLETIN OF THE ATOMIC SCIENTISTS 4, 24 (May 1991).

3 Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03052018-019.

4 *Aircraft Dispenser and Bomb, SKU: 1325004772053, Model: 716514-10*, NSN. INFO (last visited Dec. 23, 2018), <https://nationalstocknumber.info/national-stock-number/1325-00-477-2053> (NSN identification); Samuel King Jr., Elgin Air Force Base, *Air Armament Center Leaves Historic Legacy* (July 26, 2012), <https://www.eglin.af.mil/News/Article-Display/Article/391282/air-armament-center-leaves-historic-legacy/> (Air Armament Center closure).

5 Human Rights Watch, *Technical Briefing Note: Cluster Munition Use in Yemen* (Feb. 14, 2016), <https://www.hrw.org/news/2016/02/14/technical-briefing-note-cluster-munition-use-yemen>.

- Date of strike:** April 30, 2015
- Location of strike:** Dar Sa'ad District, Aden Governorate
- Civilian Casualties:** One killed (a woman) and six injured (including a child and two women)
- Object(s) struck:** Civilian home in a residential neighborhood
- Weapons remnants ID:** **US-made** GBU-12 Paveway II laser-guided bomb with Mk-82 warhead
- Weapons manufacturer:** Raytheon



“Fattoum began screaming, ‘A bomb, father, a bomb! Run away! Run away!’ Then I turned around and I saw it hurtling towards us and it was followed by a blinding light and a ball of fire...I found myself in the hospital a few days later. That’s when I knew that my neighbors had dug me out from underneath the dirt and rubble.”

–Tawfiq Mohammed Eissa

50-year-old male
Wounded in attack

At about 10:30 p.m. on Thursday, April 30, 2015, the Saudi/UAE-led Coalition dropped a US-made GBU-12 Paveway II laser-guided bomb in the middle of a residential neighborhood in Al-Basateen area, Dar Sa’ad District, Aden Governorate. The attack killed 51-year-old civilian Haifa Zawqari—a mother and public health professor at Aden University—and injured six others, including a child and two women. According to multiple eyewitnesses, Coalition jets first struck a stone factory about 200 meters away, where members of Ansar Allah (Houthis) were apparently stationed. Minutes later, another bomb fell squarely on the second floor of Haifa’s home, destroying at least three houses in addition to hers.

Haifa’s 22-year-old daughter, Ashar, described the moments before the attack. She and her mother first heard the sound of jets hovering, followed by the deafening blast of the explosion at the stone factory. “The house shook when that first bomb exploded,” recalled Ashar. “We heard the firing of the second bomb and the sound was getting closer and closer to us, and then I felt as if someone threw dust on me. Then I felt nothing until they took me out of the rubble two hours later. The house had crumbled on top of my mother and me.” The next morning, Ashar discovered that her mother had perished in the attack. Ashar survived injuries to her head, back, and leg.

The family in the house adjacent to Haifa’s also sustained injuries from the strike. After the fiery explosion of the first bomb on the stone factory, 50-year-old Tawfiq Mohammed Eissa’s 22-year-old son Abu Bakr—a university student—stepped outside the house to see what was happening. Tawfiq’s 14-year-old daughter Fattoum, a ninth grader, was standing at a window that faced Haifa’s house. “Fattoum began screaming, ‘A bomb, father, a bomb! Run away! Run away!’” recalled Tawfiq. “Then I turned around and I saw it hurtling towards us and it was followed by a blinding light and a ball of fire. I tried to escape, but I could walk only one step

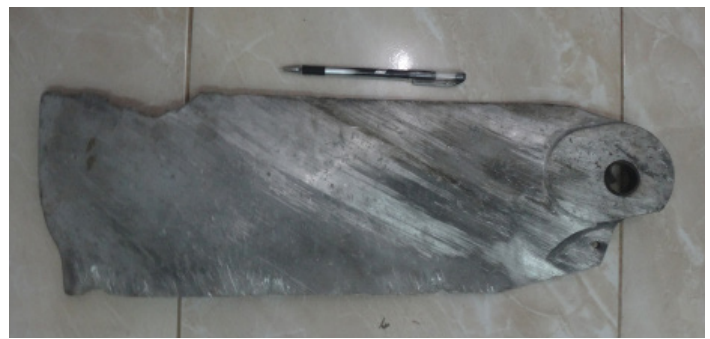
before the bomb struck Haifa’s house. After that, I saw a blinding light. I found myself in the hospital a few days later. That’s when I knew that my neighbors had dug me out from underneath the dirt and rubble.” Tawfiq survived wounds to his head, the area between his heart and left collarbone, and his leg. Tawfiq’s daughter Fattoum suffered wounds to her leg and hand, his son Abu Bakr to his shoulder and leg, and his 49-year-old wife Fatima to her head and hand.

The Ansar Allah (Houthi) fighters reportedly stationed in the stone factory were legitimate targets under international humanitarian law. All forces—including Ansar Allah—must avoid locating military objectives within or near densely populated areas and endeavor to remove civilians from the vicinity of military objectives. Mwatana has previously documented Ansar Allah’s failure to take feasible precautions to minimize harm to civilians.

One party’s failure to take feasible precautions does not negate the other party’s own obligations under the laws of war, however. The Saudi/UAE-led Coalition attack in Al-Basateen may have been intended as part of the attack on the factory, but it appears to have been indiscriminate. Unless enemy fighters are using a residential home for a military purpose—such as deployment or storage of weaponry—the home is presumed to be a civilian object. Before conducting an attack, a party must do everything feasible to verify that the persons or objects to be attacked are military objectives and not civilians or civilian objects. Indiscriminate attacks carried out intentionally or recklessly are war crimes.

A portion of a metal fin from a US-made GBU-12 Paveway II laser-guided bomb was recovered at the site of the attack on Haifa Zawqari’s home.¹ The National Stock Number (NSN) and part

¹ Report of arms expert consulted by Mwatana for Human Rights, Report ref.



Remnants of a US-made GBU-12 Paveway II bomb recovered at the scene of the attack that killed Haifa Zawqari. As the marking “FOR USE ON MK82” indicates, an Mk-82 warhead was mounted on the GBU-12 bomb. The marking “1325-01-041-5890,” parts of which are visible in the photo on the left, is associated with a Raytheon-manufactured wing assembly.

number on the remnant reveal that Raytheon manufactured the bomb.² The words “FOR USE ON MK82” are printed on the remnant, indicating that a 227-kilogram (500-pound)³ Mk-82 warhead was mounted on the GBU-12 fin. The Mk-82 contains 87 kilograms (190 pounds) of Composition H6, a highly explosive substance also used in the US Air Force’s so-called “Mother of All Bombs.”⁴ The Mk-80 series of low-drag, general-purpose bombs are typically used to inflict maximal blast and explosive damage.⁵ In August 2016, US defense contractor General Dynamics was awarded a multi-million dollar contract to supply Saudi Arabia and the UAE with Mk-82 bomb casings.⁶

Official 2017 notifications to Congress of proposed sales of weapons to Saudi Arabia included \$298 million for Paveway II and III, Enhanced Paveway II and III, and Paveway IV Weapons Systems.⁷ Between 2010 and 2013, the US delivered 938 Paveway Guided Bombs to the UAE.⁸ The Saudi/UAE-led Coalition has dropped US-made GBU-12 and Mk-82 bombs on civilians and civilian infrastructure repeatedly since the start of the war. CNN reported that the Coalition used Lockheed Martin’s Mk-82 Paveway bomb in a widely-condemned August 2018 airstrike on a school bus that killed dozens of children.⁹ Ten of the twenty-seven apparently unlawful Coalition attacks documented in this report likely involved Mk-82 bombs.

DR_03042018-002 (Apr. 16, 2018) (on file with Mwatana).

2 Report of arms expert consulted by Mwatana for Human Rights, Report ref. IR_03042018-002 (Apr. 3, 2018) (on file with Mwatana); 1325-01-041-5890, *Wing Assembly, Guided Bomb*, NSN CENTER (last visited Dec. 23, 2018), <https://www.nsncenter.com/NSN/1325-01-041-5890>.

3 Report of arms expert consulted by Mwatana for Human Rights, Report ref. IR_03042018-002; Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03042018-002.

4 Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03042018-002; Yasmin Tayag, *The “Mother of All Bombs” Uses this Australian Underwater Explosive*, INVERSE (Apr. 14, 2017), <https://www.inverse.com/article/30368-mother-of-all-bombs-moab-h6-composition-explosive>.

5 *General Dynamics To Provide MK82 Bomb Casings To Saudi, UAE, France And Iraq*, DEFENSEWORLD.NET (Aug. 31, 2016), http://www.defenseworld.net/news/16953/General_Dynamics_To_Provide_MK82_Bomb_Casings_To_Saudi_UA.

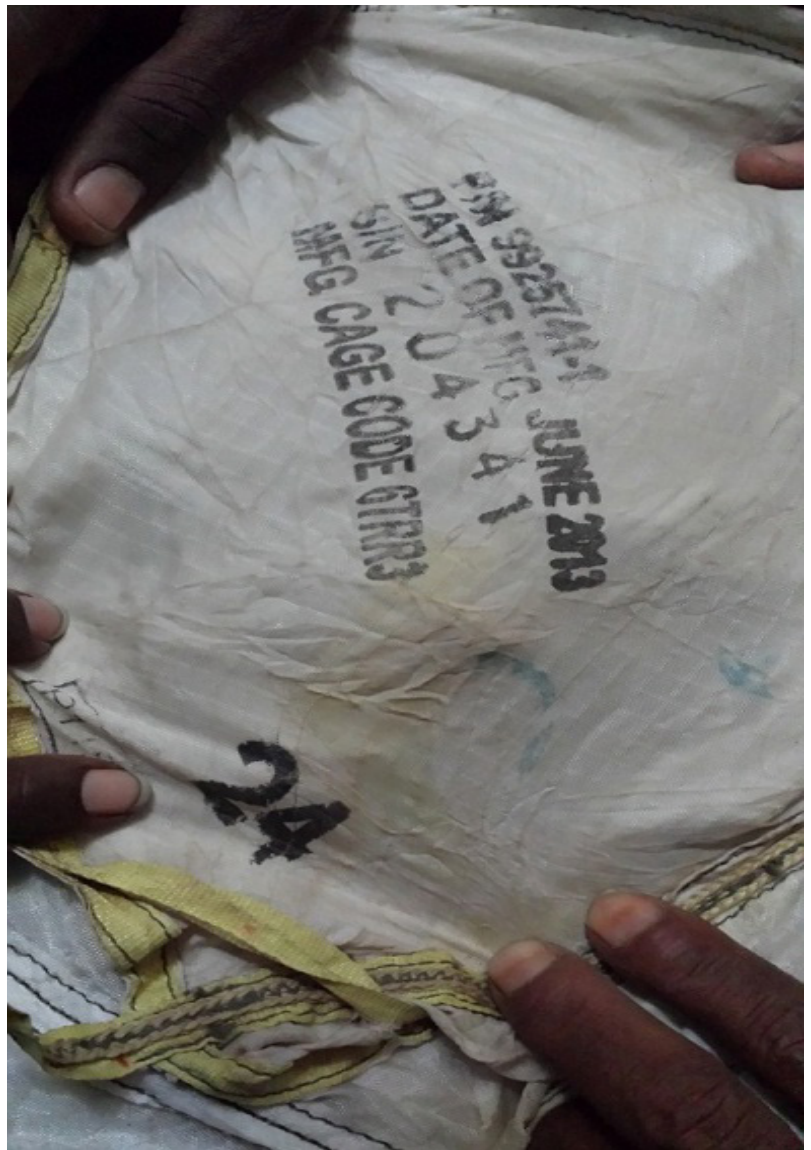
6 *Id.*

7 WILLIAM HARTUNG, SECURITY ASSISTANCE MONITOR, TRENDS IN MAJOR US ARMS SALES IN 2017: A COMPARISON OF THE OBAMA AND TRUMP ADMINISTRATIONS 6 (Mar. 2018).

8 WILLIAM HARTUNG, CENTER FOR INTERNATIONAL POLICY, US ARMS TRANSFERS TO THE UAE AND THE WAR IN YEMEN 19 (Sept. 2017).

9 Nima Elbagir et al., *Bomb that Killed 40 Children in Yemen was Supplied by the US*, CNN (Aug. 17, 2018), <https://www.cnn.com/2018/08/17/middleeast/us-saudi-yemen-bus-strike-intl/index.html>. Based on its rigorous methodology, Mwatana could not positively identify the bomb used in the school bus attack.

Date of strike: October 5, 2016
Location of strike: Al-Khawkhah District, Hudaydah Governorate
Civilian casualties: One killed
Object(s) struck: Fishing boat
Weapons remnants ID: **US-made** CBU-105 cluster bomb with BLU-108 submunitions
Weapons manufacturer: **Textron Systems**



In the photo on the left, a man holds up the parachute from which the BLU-108 submunitions of the cluster bomb descended. The markings on the parachute, visible in the photo on the right, indicate that the parachute was manufactured in June 2013 by a US company, Columbia Parachute Company.

“I heard the sound [of the explosion] and got worried, so I sent my other son, Muhammed, to go look for his brother. He found [Ali’s] body on the beach, with shrapnel in his head.”

—Muqrin Mudarij

55-year-old male
Father of victim

At about 3 p.m. on Wednesday, October 5, 2016, Saudi/UAE-led Coalition jets bombed an anchored fishing boat in the coastal village of Al-Hima in Al-Khawkhah District, Hudaydah Governorate, killing a fisherman and destroying the boat. The Coalition used a US-made cluster bomb, the CBU-105, in the attack.

40-year-old fisherman Ali Mudarij left his home at about 10 a.m. on the morning of the strike to buy qat, according to his father Muqrin. When Ali learned that the qat supply had not yet arrived, he went to the coast where his fishing boat was anchored and lay down under the boat to take a nap.

That afternoon, Muqrin Mudarij heard the sound of an explosion and sent his other son, Muhammed, to search for Ali. Muhammed found his brother’s body on the beach, with shrapnel wounds to the head. Muqrin reported, “There are people who say that they saw Ali before he died. They say that when he heard the explosion, he came out from under his boat and was immediately hit by the shrapnel. The boat was riddled with shrapnel.”

Yahya Majhisi, 60, was the owner of Ali’s fishing boat and an eyewitness to the strike. Yahya was on his way to the coast, near where the boat was anchored, but ran away when he realized that the area was under attack. Yahya recalled, “The bombs looked like an umbrella, and smaller bombs were coming out of it. When the other fishermen and I saw it, we ran away. The bombs were linked with ropes that were two meters long.” Yahya was describing the BLU-108 submunition of a cluster bomb. “The only thing that remained of my boat is the engine,” he reported. “We collected the remains of the bombs in plastic bags, and all of them had [serial] numbers on them.”

The Saudi/UAE-led Coalition attack in Al-Hima appears to have violated the laws of war. Researchers and witnesses did not identify any military targets in the area at the time of the attack. Indiscriminate attacks carried out intentionally or recklessly are war crimes. Before conducting an attack, a party must do everything feasible to verify that the persons or objects to be attacked are military objectives and not civilians or civilian objects.

The stabilization unit for a US-made cluster bomb submunition,

the Bomb Live Unit (BLU)-108, was recovered at the site of the airstrike that killed Ali Mudarij.¹ The weapons remnant was inscribed with the marking “ASSY 8562837-5,” which is associated with Cluster Bomb Unit (CBU)-105, the weapon that released the BLU-108 submunitions.² In August 2016, the manufacturer of the CBU-105, Textron Systems, announced that it would discontinue production of the munition by March 2017, citing the “current political environment”—presumably a reference, in part, to the Obama Administration’s decision to suspend cluster weapons transfers to Saudi Arabia in light of evidence of the weapons’ use in attacks on civilians in Yemen.³

The BLU-108 submunition contains four further “skeet” submunitions.⁴ Upon release from the cluster bomb—the CBU-105, in this case—each BLU-108 descends by parachute to a pre-determined altitude.⁵ A small rocket then sends the BLU-108 into a rapid spin, releasing the skeet submunitions outward.⁶ Each skeet warhead falls independently, firing an Explosively Formed Penetrator directly downward and a ring of fragments outward to damage so-called “soft targets.”⁷

In August 2013, the US and Saudi Arabia concluded a contract for 1,300 CBU-105s to be delivered by December 2015.⁸ The countries had previously, in 2011, announced a deal for the sale

1 Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_05062018-028 (June 5, 2018) (on file with Mwatana).

2 Report of arms expert consulted by Mwatana for Human Rights, Report ref. IR_05062018-028 (June 5, 2018) (on file with Mwatana).

3 Jeff Abramson & Alicia Jensen, *Textron to Halt Cluster Bomb Production*, ARMS CONTROL ASSOC. (Oct. 2016), <https://www.armscontrol.org/Texton-to-Halt-Cluster-Bomb-Production>.

4 Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_05062018-028.

5 *Id.*

6 *Id.*

7 *Id.*

8 US DEP’T OF DEFENSE, CONTRACTS, No. 593-13 (Aug. 20, 2013), <http://archive.defense.gov/Contracts/Contract.aspx?ContractID=5116>.



A stabilization unit of a BLU-108 submunition, recovered at the scene of the attack that killed Ali Mudarij. The marking “ASSY 856283,” visible in lower photo, is associated with the US-made CBU-105 cluster bomb, which releases BLU-108 submunitions. Each BLU-108 submunition contains four further “skeet” submunitions.

of 404 CBU-105s.⁹ In 2010, the US sold the UAE \$57 million of CBU-105s.¹⁰ A Department of Defense (DOD) policy directive on cluster munitions prohibits the US from using or exporting cluster munitions that result in more than 1% unexploded ordnance and requires a commitment from the recipient of the cluster munitions to refrain from using them in civilian areas.¹¹ In 2011, the US asserted that the CBU-105 is the only cluster weapon that meets the 1% standard.¹² However, Human Rights Watch has documented multiple Coalition attacks in Yemen that resulted in BLU-108 submunitions with live skeet warheads attached.¹³ Human Rights Watch has also reported multiple instances of Coalition use of the CBU-105 in civilian areas.¹⁴

International humanitarian law requires that parties to a conflict take all feasible precautions to minimize harm to civilians, including in choice of means of attack. Cluster munitions disperse submunitions over a wide area and cannot be directed at specific military objectives. Even if civilians are not killed or wounded in the attack, unexploded submunitions—which cannot distinguish between civilians and combatants—may kill or wound civilians months or years later. It is extremely difficult, if not impossible, for cluster weapons to be used in compliance with international humanitarian law. The international Convention on Cluster Munitions prohibits the use, production, and stockpiling of cluster munitions for this reason.



9 DEFENSE SECURITY COOPERATION AGENCY, TRANSMITTAL No. 10-03, SAUDI ARABIA - CBU-105 SENSOR FUZED WEAPONS (June 13, 2011), <http://www.dsca.mil/major-arms-sales/saudi-arabia-cbu-105-sensor-fuzed-weapons>.

10 Landmine & Cluster Muniton Monitor, *United Arab Emirates: Cluster Muniton Ban Policy* (July 9, 2018), <http://www.the-monitor.org/en-gb/reports/2018/united-arab-emirates/cluster-muniton-ban-policy.aspx>.

11 Human Rights Watch, *US Embraces Cluster Munitions* (Dec. 1, 2017), <https://www.hrw.org/news/2017/12/01/us-embraces-cluster-munitions>.

12 Memorandum from William E. Landay III, Vice Admiral, USN, Director, Defense Security Cooperation Agency re: Guidance on the Sale of Cluster Munitions, DSCA Policy 11-33 [SAMM E-Change 151] (May 19, 2011), <http://www.samm.dsca.mil/policy-memoranda/dsca-11-33>.

13 Human Rights Watch, *Yemen: Saudis Using US Cluster Munitions* (May 6, 2016), <https://www.hrw.org/news/2016/05/06/yemen-saudis-using-us-cluster-munitions#>.

14 *Id.*

Date of strike:	September 15, 2015
Location of strike:	As-Sabain District, Amanat Al-Asimah Governorate
Civilian Casualties:	Two injured (including a woman)
Object(s) struck:	Civilian home in a residential neighborhood
Weapons remnants ID:	US-made GBU-24 Paveway III laser-guided bomb (likely)
Weapons manufacturer:	Raytheon

On the night of Tuesday, September 15, 2015, Saudi/UAE-led Coalition jets struck Hani Yahya's home in the capital city of Sana'a using what appears to be a US-made GBU-24 laser-guided bomb. The bomb exploded in Hani's garden, just a few meters away from his house, injuring his sister Arwa and brother Mohammed. Hani later reported, "The damage to our house and our neighbors' houses was immense. We are still displaced until today because we are cleaning and repairing the damage and trying to replace all the things destroyed in the house."

The Saudi/UAE-led Coalition attack appears to have been indiscriminate. Researchers and witnesses did not identify any military targets in the area at the time of the attack. Indiscriminate attacks carried out intentionally or recklessly are war crimes. Homes are presumed to be civilian objects. Before conducting an attack, a party must do everything feasible to verify that the persons or objects to be attacked are military objectives and not civilians or civilian objects.

Weapons remnants collected at the site of the strike appeared to originate from a US-made GBU-24 Paveway III laser-guided bomb.¹ One remnant was inscribed with the marking "96214-2870627-2."² "96214" is Raytheon's Commercial and Government Entity (CAGE) number,³ and "2870627-2" is the part number associated with a control actuator for the GBU-24, GBU-27, and GBU-28 using a WGU-36A/B guidance system.⁴ The remnant also featured the marking "09/2010," indicating that the part was manufactured in September 2010.⁵ Another remnant—a likely component of the fin assembly—appeared to be inscribed

with the marking "GBU-24."⁶

The GBU-24 family of laser-guided bombs is a subset of Raytheon's larger Paveway III series.⁷ Official 2017 notifications to Congress of proposed sales of weapons to Saudi Arabia included \$298 million for Paveway II and III, Enhanced Paveway II and III, and Paveway IV Weapons Systems.⁸ Between 2010 and 2013, the US delivered 938 Paveway Guided Bombs to the UAE.⁹

1 Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03052018-011 (May 3, 2018) (on file with Mwatana).

2 *Id.*

3 96214, CAGE SEARCH (last visited Dec. 23, 2018), <http://www.govcagecodes.com/?code=96214&company=#results>.

4 Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03052018-011 (May 3, 2018) (on file with Mwatana).

5 *Id.*

6 *Id.*

7 Raytheon, *Paveway Laser and GPS/Laser Precision Guided Bombs* (2006), available at https://web.archive.org/web/20061020015711/http://www.raytheon.com/products/stellent/groups/public/documents/content/cms04_018951.pdf.

8 WILLIAM HARTUNG, SECURITY ASSISTANCE MONITOR, TRENDS IN MAJOR US ARMS SALES IN 2017: A COMPARISON OF THE OBAMA AND TRUMP ADMINISTRATIONS 6 (Mar. 2018).

9 WILLIAM HARTUNG, CENTER FOR INTERNATIONAL POLICY, US ARMS TRANSFERS TO THE UAE AND THE WAR IN YEMEN 19 (Sept. 2017).

“The damage to our house and our neighbors’ houses was immense. We are still displaced until today because we are cleaning and repairing the damage and trying to replace all the things destroyed in the house.”

–Hani Yahya

Male
Family member of victims



Remnants of a large guided bomb unit recovered at the scene of the attack on Hani Yahya's home. In the top photos, the marking "96214" identifies Raytheon as the manufacturer and the marking "09/2010" indicates that the part was manufactured in September 2010. The marking on the remnant in the bottom photos identifies the weapon as a likely US-made GBU-24 bomb.

Date of strike:	October 8, 2016
Location of strike:	As-Sabain District, Amanat Al-Asimah Governorate
Casualties:	At least 84 killed and at least 550 injured
Object(s) struck:	Community hall during a funeral
Weapons remnants ID:	US-made GBU-12 Paveway II laser-guided bomb with Mk-82 warhead (identified by Human Rights Watch ¹)
Weapons manufacturer:	Raytheon



¹ Human Rights Watch, *Yemen: Saudi-Led Funeral Attack Apparent War Crime* (Oct. 13, 2016), <https://www.hrw.org/news/2016/10/13/yemen-saudi-led-funeral-attack-apparent-war-crime>.

“I had heard a plane flying overhead, but it never even occurred to me that they would bomb a funeral hall.”

—Esam Al-Rawishan

25-year-old male
Wounded in attack

At around 3:30 p.m. on Saturday, October 8, 2016, Saudi/UAE-led Coalition forces attacked a community hall in Amanat Al-Asimah Governorate. The hall was packed with about 1,500 guests attending the funeral of Ali Al-Rawishan, father of Yemeni interior minister Jalal Al-Rawishan. Multiple survivors of the airstrike reported that three bombs struck the funeral gathering approximately five minutes apart; at least one of these bombs was a US-made GBU-12. According to the UN, the attack killed more than 140 people and wounded more than 525.¹

Yusuf Hadi, 20, was one of the funeral attendees. When the first bomb struck the crowded community hall, he reported, the building collapsed on the guests. A few minutes later, a second bomb struck many of the first-responders and others who had rushed to assist victims of the first explosion. By the time the third bomb dropped, Yusuf had managed to escape the building. “The rubble fell on my legs,” he recalled. “People lifted the rubble off me and took me out. I saw horrendous crimes committed, with people who had been cut apart and were on fire...My brother, Ahmad, 36, was also injured. Both of his legs were burned. Also, my brother’s son Hussein, 15, had his right leg cut off under the knee.”

Just five minutes after Esam Al-Rawishan, 25, entered the community hall to offer his condolences, the first bomb struck. “I had heard a plane flying overhead,” he recalled, “but it never even occurred to me that they would bomb a funeral hall. When the bomb hit, thick black dust was everywhere and I could not see anything. I could not breathe because of the dust. Shrapnel went into the right side of my back, and my face and right hand were burned. The second bomb struck, and because of the horror of the situation, I had no idea what was going on around me. I saw some people who were still alive jumping out of the second story windows. I was too afraid to jump, and when I saw an electric pole, I slid down it to get to the first floor.”

Muhammad Al-Awlaqi, 26, was one of those who escaped the building by jumping out of a second-floor window. “I was chewing qat, relaxing, and reading Quran on the soul of the deceased,” he recounted. “At the beginning, I felt like the whole hall was shaking. Afterward, there was a large explosion and a lot of black dust everywhere. It went into my throat and I started getting

nauseous, so I covered my head. Before the second bomb struck, I jumped out of the second floor and fell on a taxi that was on the street. My hands were burned, and I was also injured by shrapnel in my right hand. Bones on the right side of my body broke when I fell.”

Hassan Jubran, 42, had just offered his condolences to the former interior minister. “We were waiting for the rest of our friends, who were still giving their condolences, and then we were planning to leave,” he said. Suddenly, the first bomb struck. “I was injured by the first strike, and I was trying to save my life. People were on fire, and some people were burned alive. It was horrifying,” recalled Hassan. He, too, was on the second floor at the time of the attack and slid down the electric pole to get to the ground level. In the process of sliding down, Hassan’s left leg—which had broken in the explosion—was severed. “I was also injured by shrapnel in my backside and scratches to my face, as well as burns and scratches on my hands,” he reported. “I barely got out. Many people were killed—I knew some of them—and there were people who were burned beyond recognition...There were also many children. There were three children whose bodies were completely torn apart and strewn all over the place.”

Khalid Al-Raidi, 32, was one of the firefighters who responded to the Coalition attack on the funeral gathering. “When we got there, we saw an inhuman situation,” he said. “The ground was littered. We have been gathering bodies and body parts from 4pm on the day of the incident until today [11am on October 10, 2016]. I believe there were more than 150 people killed here. I have gotten very depressed because of this.”

The Saudi/UAE-led Coalition attack on a crowded community hall almost certainly violated international humanitarian law and was an apparent war crime. Although Houthi commanders and other military personnel were attending the funeral, the Coalition had reason to know that hundreds of civilians would also be present and likely killed or wounded in an attack: the date and place of the funeral were announced on a Facebook page and publicly available before the funeral, and it was foreseeable that the funeral—in such a large gathering hall and for a well-known person—would be well-attended.² If an attack may be expected to

1 Nadia Khomami, *Airstrikes on Yemen funeral kill at least 140 people*, UN official says, *GUARDIAN* (Oct. 8, 2016), <https://www.theguardian.com/world/2016/oct/08/saudi-led-coalition-airstrike-hit-yemen-funeral-officials-say>.

2 Human Rights Watch, *Yemen: Saudi-Led Funeral Attack Apparent War Crime* (Oct. 13, 2016), <https://www.hrw.org/news/2016/10/13/yemen-saudi-led-funeral-attack-apparent-war-crime>.



Weapons remnants recovered at the scene of the Sana'a funeral attack. Pen shown for scale. A US-made GBU-12 Paveway II bomb was identified by Human Rights Watch as one of the weapons used in the attack.

cause incidental loss of civilian life or damage to civilian structures that is excessive in relation to the attack's anticipated concrete and direct military advantage, it is unlawfully disproportionate. Hundreds of civilian casualties were the entirely foreseeable result of the Coalition's attack on the densely packed, public funeral gathering. Laws of war violations carried out intentionally or recklessly are war crimes.

The Coalition's Joint Incidents Assessment Team (JIAT) reviewed the attack. According to JIAT, the Air Operations Center in Yemen received incorrect information about a gathering of armed Houthi leaders at the target location and directed the attack without obtaining approval from the Coalition command or following the Coalition command's precautionary procedures.³ JIAT found that the community hall was wrongfully targeted and recommended that the Coalition take action against the perpetrators and compensate the families of victims.⁴ The Yemeni government dismissed the officers involved in the attack and referred them for military court prosecution.⁵ Other Coalition members, like Saudi Arabia and the UAE, have not clarified what role, if any, they played in this attack, nor whether they have taken any steps towards prosecuting members of their own armed forces credibly implicated in this or other likely Coalition war crimes.

³ *Press Statement by the Joint Incidents Assessment Team (JIAT) on the Great Hall Incident in Sana'a*, SAUDI PRESS AGENCY (Oct. 15, 2018), <https://www.spa.gov.sa/viewstory.php?lang=en&newsid=1548647>.

⁴ *Id.*

⁵ HUMAN RIGHTS WATCH, *HIDING BEHIND THE COALITION* 48 (Aug. 24, 2018), <https://www.hrw.org/report/2018/08/24/hiding-behind-coalition/failure-credibly-investigate-and-provide-redress-unlawful>.

Using photographs and video footage of weapons remnants taken by Mwatana researchers and others, Human Rights Watch identified the weapon used in the funeral attack as a US-made GBU-12 Paveway II laser-guided bomb.⁶ Other photographs confirmed that Raytheon manufactured the bomb.⁷

The GBU-12 bomb is equipped with a 227-kilogram (500-pound) Mk-82 warhead.⁸ The Mk-82 contains 87 kilograms (190 pounds) of Composition H6, a highly explosive substance also used in the US Air Force's so-called "Mother of All Bombs."⁹ The Mk-80 series of low-drag, general-purpose bombs are typically used to inflict maximal blast and explosive damage.¹⁰ In August 2016, US defense contractor General Dynamics was awarded a multi-million dollar contract to supply Saudi Arabia and the UAE with Mk-82 bomb casings.¹¹

Official 2017 notifications to Congress of proposed sales of weapons to Saudi Arabia included \$298 million for Paveway II and III, Enhanced Paveway II and III, and Paveway IV Weapons Systems.¹² Between 2010 and 2013, the US delivered 938 Paveway Guided Bombs to the UAE.¹³ The Saudi/UAE-led Coalition has dropped US-made GBU-12 and Mk-82 bombs on civilians and civilian infrastructure repeatedly since the start of the war. CNN reported that the Coalition used Lockheed Martin's Mk-82 Paveway bomb in a widely-condemned August 2018 airstrike on a school bus that killed dozens of children.¹⁴ Ten of the twenty-seven apparently unlawful Coalition attacks documented in this report likely involved Mk-82 bombs.

⁶ *Id.*

⁷ Alex Emmons, *Photos Show Fragments of US Bombs at Site of Yemen Funeral Massacre*, INTERCEPT (Oct. 10, 2016), <https://theintercept.com/2016/10/10/photos-show-fragments-of-u-s-bombs-at-site-of-yemen-funeral-massacre/>.

⁸ Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_26042018-043 (Apr. 26, 2018) (on file with Mwatana).

⁹ Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03042018-002; Yasmin Tayag, *The "Mother of All Bombs" Uses this Australian Underwater Explosive*, INVERSE (Apr. 14, 2017), <https://www.inverse.com/article/30368-mother-of-all-bombs-moab-h6-composition-explosive>.

¹⁰ *General Dynamics To Provide MK82 Bomb Casings To Saudi, UAE, France And Iraq*, DEFENSEWORLD.NET (Aug. 31, 2016), http://www.defenseworld.net/news/16953/General_Dynamics_To_Provide_MK82_Bomb_Casings_To_Saudi_UA.

¹¹ *Id.*

¹² WILLIAM HARTUNG, SECURITY ASSISTANCE MONITOR, *TRENDS IN MAJOR US ARMS SALES IN 2017: A COMPARISON OF THE OBAMA AND TRUMP ADMINISTRATIONS* 6 (MAR. 2018).

¹³ WILLIAM HARTUNG, CENTER FOR INTERNATIONAL POLICY, *US ARMS TRANSFERS TO THE UAE AND THE WAR IN YEMEN* 19 (SEPT. 2017).

¹⁴ Nima Elbagir et al., *Bomb that Killed 40 Children in Yemen was Supplied by the US*, CNN (Aug. 17, 2018), <https://www.cnn.com/2018/08/17/middleeast/us-saudi-yemen-bus-strike-intl/index.html>. Based on its rigorous methodology, Mwatana could not positively identify the bomb used in the school bus attack.

ATTACKS ON EDUCATIONAL AND HEALTH FACILITIES



Date of strike: June 2, 2015
Location of strike: At-Ta'iziyah District, Taizz Governorate
Civilian Casualties: One killed
Object(s) struck: Uqba bin Nafie School and Al-Masnah Health Clinic
Weapons remnants ID: US-made Mk-82 warhead



“The Saudi Coalition jets destroyed in a few minutes what we had been building for years.”

—Munir Mohammed Naji

Eyewitness and principal of Uqba bin Nafie School

At about 1:30 p.m. on Tuesday, June 2, 2015, Saudi/UAE-led Coalition fighter jets dropped six bombs—four on Uqba bin Nafie School and two on Al-Masnah Health Clinic—in the rural village of Al-Masnah, At-Ta'iziyah District, Taizz Governorate. The Coalition strike completely destroyed both the school and the adjacent clinic. Shrapnel from the attack killed 60-year-old civilian Mus'id Naji Saeed, bisecting his body in two halves as he walked past the school building. A large remnant of a US-made bomb, the Mk-82, was recovered at the site of the strike.

The nearest military site identified at the time of the attack was a checkpoint at the entrance to Al-Masnah village, some 500 meters north of Uqba bin Nafie School. Researchers and witnesses identified another Houthi-controlled military site—Mount Uman—2.5 kilometers north of the village. Three eyewitnesses reported that initially, upon hearing the sound of Coalition jets hovering overhead, they believed the jets would strike Mount Uman since it was a frequently-targeted site.

Instead, however, multiple eyewitnesses described the explosion of four bombs, in rapid succession, striking the school. After a reprieve of about five minutes, Coalition jets returned to the scene and dropped two more bombs on the adjacent two-story health clinic. According to six eyewitnesses, five or six members of Ansar Allah (Houthis) had been using the school to cook and sleep for about a month and a half prior to the airstrikes, during the summer vacation when school was not in session. Five eyewitnesses reported that these five or six Houthis were inside the school at the time of the attack and were killed. Houthis had never entered or used the health clinic building, according to witnesses.

Moments before the airstrikes, Mus'id Naji Saeed had told his 21-year-old son, Badr, that he was leaving the house to go to Al-A'rdh, a hill near the northern side of Uqba bin Nafie School. These would be the last words that Mus'id uttered. Badr was sitting under a tree outside the house as the sound of jet airplanes grew louder and louder. When the first bomb exploded on the school building about 400 meters away, Badr rushed into the

house. Knowing that his father was in the vicinity of the school, Badr anxiously looked out the window in that direction. He saw only the fiery explosion of the second bomb. After the third and fourth bombs fell, Badr could no longer hear the hovering of Coalition jets in the sky. Believing that the attack was over, he left the house in search of his father, feeling crushed with the fear of what he might find. When Badr was about 100 meters away from the school, a bomb exploded on the Al-Masnah Health Clinic. He described: “Fragments were flying to all the corners of the village. That explosion was terrifying—I saw it with my naked eyes. I had been unaware of my surroundings because I was thinking about my father and fearing for his life. I will never forget that day when the bomb hit the clinic building while I was so close by, on my way to Al-A'rdh to see if my father was alive or dead.” A few hours later, Badr found half of his father's body, charred from the fire of the explosions.

Ahmed Ali Hassan lives in a small house about fifty meters away from Uqba bin Nafie School with his wife and two-and-a-half-year-old son Nasir. At the time of the attack, Ahmed was talking to his wife at home while Nasir played nearby. Ahmed described the aftermath of the first explosion: “We felt the shake and heard the terrifying sound of the bomb. We were overwhelmed by fear. My wife and I were inside our room, saying ‘Oh Allah your protection! Oh Allah your protection!’ We did not know what the target was exactly. My wife took a quick look at the school and building and said that they hit the school. I quickly took my son Nasir, who was crying from that sound, and grabbed my wife's hand to get out of the house and stay at our neighbors'. We tried to get out of the house but could not because, only a few seconds after the first explosion, the second bomb was dropped on the school, destroying the northern part of the school completely.”

Within seconds, a third bomb fell on the western side of the school building and a fourth bomb followed. All the doors and windows of Ahmed's house were shattered, and he watched in terror as shrapnel flew through his home. The large crack in the wall seemed to grow bigger with each explosion. Ahmed began imag-



A remnant of a US-made Mk-82 bomb casing recovered at the scene of the attack on Uqba bin Nafie School and Al-Masnah Health Clinic.

ining that the roof would collapse on top of his family. After the fourth explosion, Ahmed and his family escaped to a neighbor's home before Coalition jets dropped the fifth and sixth bombs on Al-Masnah Health Clinic.

Ahmed's older brother Taha lives only about fifteen meters away from the school building. The airstrikes severely damaged and partially destroyed Taha's home as well. "The whole village knows that we spent everything we had to build these houses, even if they were small—we moved heaven and earth to build our homes," Ahmed said.

The destruction of Uqba bin Nafie School and Al-Masnah Health Clinic has devastated the village. The school—originally a primary and elementary school—had been providing secondary education as well, as a response to the shutdown of secondary schools throughout the governorate due to the war. As school principal Munir Mohammed Naji explained, "For the first time, secondary school students were taught in this area. With all the efforts exerted by the teachers who cooperated to help, the Saudi Coalition jets destroyed in a few minutes what we had been building for years." Students—particularly elementary school students—must now walk to schools that are 3-4 kilometers away in neighboring villages. Having to trek these distances to and from school every day "makes the children suffer greatly and hate school," said the principal, adding that students and teachers also fear another attack while at school.

Before the attack, Al-Masnah Health Clinic offered primary and women's health care services. According to one witness who asked to remain anonymous, the clinic had partially suspended its

services ever since a group of five or six Houthis had begun using the adjacent school to cook and sleep, a month or two prior to the attack. Clinic workers feared Coalition airstrikes due to the nearby presence of the Houthis, the witness said. The clinic continued, however, to provide some basic services. Residents of Al-Masnah had been demanding that the clinic resume its full operations, but as Ahmed Hassan lamented, "it is now completely destroyed rather than operational." Women, especially those in need of maternal health care, have particularly suffered without access to even the basic services for which they used to rely on Al-Masnah Health Clinic, residents of the village reported.

Parties to the conflict must take all feasible precautions to spare civilians under their control from the effects of attacks, including by avoiding placement of forces in densely populated areas. Ansar Allah forces unlawfully placed the school at grave risk by housing a few of their fighters in the school. If Ansar Allah forces purposefully used civilians to shield military objectives or operations, they may have committed a war crime.

However, attacking forces are not relieved of their obligations under international humanitarian law because the opposing party put civilians at unnecessary risk. The civilian harm of the attack—including destruction of an important educational facility, destruction of a health clinic, and death of a civilian—appears to outweigh the apparent military advantage gained by killing five or six Houthi fighters, and thus the attack appears to have been unlawfully disproportionate. Although Houthi fighters were in the school at the time of the attack, witnesses said that Houthis were not present in—and had never entered—the health clinic.

A large remnant of a bomb casing from a US-made bomb—the Mk-82—was found at the site of the June 2015 attack.¹ The Mk-82 is a 227-kilogram (500-pound) warhead containing 87 kilograms (190 pounds) of Composition H6, a highly explosive substance also used in the US Air Force's so-called "Mother of All Bombs."² The Mk-80 series of low-drag, general-purpose bombs are typically used to inflict maximal blast and explosive damage.³ In August 2016, US defense contractor General Dynamics was awarded a multi-million dollar contract to supply Saudi Arabia and the UAE with Mk-82 bomb casings.⁴

Mk-82 warheads are part of GBU-12 Paveway II laser-guided bombs, which are manufactured by both Raytheon and Lockheed

1 Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03042018-004 (Apr. 16, 2018) (on file with Mwatana).

2 *Id.*; Yasmin Tayag, *The "Mother of All Bombs" Uses this Australian Underwater Explosive*, INVERSE (Apr. 14, 2017), <https://www.inverse.com/article/30368-mother-of-all-bombs-moab-h6-composition-explosive>.

3 *General Dynamics To Provide MK82 Bomb Casings To Saudi, UAE, France And Iraq*, DEFENSEWORLD.NET (Aug. 31, 2016), http://www.defenseworld.net/news/16953/General_Dynamics_To_Provide_MK82_Bomb_Casings_To_Saudi_UA.

4 *Id.*

Martin.⁵ Official 2017 notifications to Congress of proposed sales of weapons to Saudi Arabia included \$298 million for Paveway II and III, Enhanced Paveway II and III, and Paveway IV Weapons Systems.⁶ Between 2010 and 2013, the US delivered 938 Paveway Guided Bombs to the UAE.⁷

The Saudi/UAE-led Coalition has dropped US-made Mk-82 bombs on civilians and civilian infrastructure repeatedly since the start of the war. CNN reported that the Coalition used Lockheed Martin's Mk-82 Paveway bomb in a widely-condemned August 2018 airstrike on a school bus that killed dozens of children.⁸ Ten of the twenty-seven apparently unlawful Coalition attacks documented in this report likely involved Mk-82 bombs.

⁵ See *Five Year Extension on Paveway-II Missile Production*, DEFENSE INDUSTRY DAILY (Aug. 13, 2018), <https://www.defenseindustrydaily.com/usaf-issues-fy-2011-2016-order-for-gbu-12-paveway-ii-bombs-07017/>.

⁶ WILLIAM HARTUNG, SECURITY ASSISTANCE MONITOR, TRENDS IN MAJOR US ARMS SALES IN 2017: A COMPARISON OF THE OBAMA AND TRUMP ADMINISTRATIONS 6 (Mar. 2018).

⁷ WILLIAM HARTUNG, CENTER FOR INTERNATIONAL POLICY, US ARMS TRANSFERS TO THE UAE AND THE WAR IN YEMEN 19 (Sept. 2017).

⁸ Nima Elbagir et al., *Bomb that Killed 40 Children in Yemen was Supplied by the US*, CNN (Aug. 17, 2018), <https://www.cnn.com/2018/08/17/middleeast/us-saudi-yemen-bus-strike-intl/index.html>. Based on its rigorous methodology, Mwatana could not positively identify the bomb used in the school bus attack.

Dates of strikes: May 26, 2015 and October 9, 2015

Location of strikes: At-Tuhayat District, Hudaydah Governorate

Object(s) struck: Sheikh Ahmed Al-Faza Primary School

Weapons remnants ID: **US-made** GBU-16 Paveway II laser-guided bomb with Mk-83 warhead (likely)

Weapons manufacturer: Raytheon



“[Since the airstrikes,] many families have refused to allow their children to go to school out of concern for their safety.”

—Omar Jamal

46-year-old male
Eyewitness and schoolteacher

On two separate occasions in 2015, Saudi/UAE-led Coalition jets attacked Sheikh Ahmed Al-Faza Primary School in Al-Faza village, At-Tuhayat District, Hudaydah Governorate. The first airstrike—at around 2:30 p.m. on Tuesday, May 26—destroyed about half the school. A second strike destroyed the rest of the school at around 1 p.m. on Friday, October 9. The Coalition appears to have used a US-made GBU-16 bomb in at least one of these strikes.

Around 200 students in the first through sixth grades attended Sheikh Ahmed Al-Faza School. Al-Faza is a small, coastal village without any military camps, sites, or checkpoints, according to witnesses—which is why school guard Wahb Allah Ayyash did not expect an airstrike when he saw Coalition jets hovering ominously overhead on the afternoon of May 26. When the first bomb exploded in front of the school gate, people in nearby homes rushed outside, fearing that their homes would be targeted. Coalition jets dropped a second bomb on a civilian home behind the school. Fortunately, the residents of that house were among those who had emerged upon hearing the first bomb, according to Mohammed Omar Abdo, an eyewitness and teacher at the school. A third bomb fell squarely on the school, destroying about half the building. Finally, a fourth bomb was dropped into the sea. The May 26 strike damaged many houses in the area, displacing families.

On October 9, the Coalition destroyed the rest of the school with a single bomb. “This dashed our hope of continuing to educate students in the remaining part of the school,” said Mohammed Abdo. Education did not resume in the village immediately, explained Mohammed, because “fear was prevalent among the people of the area” in the aftermath of the attacks on Sheikh Ahmed Al-Faza School. “We decided to wait until fighter jets are no longer a constant presence in our skies and families’ anxiety about allowing their children to go to school subsides.” Children now attend school in the local mosque under difficult conditions, said Mohammed, quickly leaving whenever they hear the sound of jets overhead. The number of students, moreover, has dropped from

200 to about 60 as a result of parents’ sustained fear of sending children to school as well as family displacement due to airstrikes.

The Saudi/UAE-led Coalition attacks appear to have been indiscriminate. Researchers and witnesses did not identify any military targets in or near the school at the time of either attack. Indiscriminate attacks carried out intentionally or recklessly are war crimes. Schools are presumed to be civilian objects. Before conducting an attack, a party must do everything feasible to verify that the persons or objects to be attacked are military objectives and not civilians or civilian objects.

A piece of shrapnel recovered at the site of the strikes was inscribed with three markings of note: “96214,” Raytheon’s Commercial and Government Entity (CAGE) number¹; “83,” suggesting the 454-kilogram (1000-pound) Mk-83 warhead; and “ADAPTER ASSY FORWARD,” possibly relating to a GBU forward control unit—most likely the GBU-16 Paveway II.² Thus, it appears that the Saudi/UAE-led Coalition used Raytheon’s GBU-16 Paveway II laser-guided bomb fitted with an Mk-83 warhead to attack and destroy Sheikh Ahmed Al-Faza School. Official 2017 notifications to Congress of proposed sales of weapons to Saudi Arabia included \$298 million for Paveway II and III, Enhanced Paveway II and III, and Paveway IV Weapons Systems.³ Between 2010 and 2013, the US delivered 938 Paveway Guided Bombs to the UAE.⁴

1 96214, CAGE SEARCH (last visited Dec. 23, 2018), <http://www.govcagecodes.com/?code=96214&company=#results>.

2 Report of arms expert consulted by Mwatana or Human Rights, Report ref. IR_03042018-003 (Apr. 3, 2018) (on file with Mwatana).

3 WILLIAM HARTUNG, SECURITY ASSISTANCE MONITOR, TRENDS IN MAJOR US ARMS SALES IN 2017: A COMPARISON OF THE OBAMA AND TRUMP ADMINISTRATIONS 6 (Mar. 2018).

4 WILLIAM HARTUNG, CENTER FOR INTERNATIONAL POLICY, US ARMS TRANSFERS TO THE UAE AND THE WAR IN YEMEN 19 (Sept. 2017).

The Mk-83 contains 202 kilograms (445 pounds) of Composition H6, a highly explosive substance also used in the US Air Force's so-called "Mother of All Bombs."⁵ The Mk-80 series of low-drag, general-purpose bombs are typically used to inflict maximal blast and explosive damage.⁶



Remnant of a US-made Mk-83 warhead found at the site of the attack on Sheikh Ahmed Al-Faza Primary School. The Mk-83 warhead is associated with the GBU-16 Paveway II bomb. The marking "ADAPTER ASSY FORWARD" may refer to the forward control unit of the GBU. The marking "96214" identifies Raytheon as the manufacturer of the part.

⁵ Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03042018-003 (Apr. 16, 2018) (on file with Mwatana); Yasmin Tayag, *The "Mother of All Bombs" Uses this Australian Underwater Explosive*, INVERSE (Apr. 14, 2017), <https://www.inverse.com/article/30368-mother-of-all-bombs-moab-h6-composition-explosive>.

⁶ *General Dynamics To Provide MK82 Bomb Casings To Saudi, UAE, France And Iraq*, DEFENSEWORLD.NET (Aug. 31, 2016), http://www.defenseworld.net/news/16953/General_Dynamics_To_Provide_MK82_Bomb_Casings_To_Saudi_UA.

Date of strike: August 24, 2015
Location of strike: Al-Mansuriyah District, Hudaydah Governorate
Object(s) struck: Asma'a bint Abi Bakr School
Weapons remnants ID: US-made DAM GBU-31 bomb (likely)



“We heard the hovering of the jet and we also heard when the two bombs hit the school. I took my kids and left the house. I have a disabled 4-year-old son. He was screaming out of fear, not understanding what was going on. I had to spray some cold water on him to try to calm him down.”

—Nabata Abdullah

20-year-old female
Survivor of attack

At around 12 noon on Monday, August 24, 2015, two Saudi/UAE-led Coalition bombs struck Asma'a bint Abi Bakr School in Al-Mansuriyah District, Hudaydah Governorate, destroying part of the school and displacing families who lived nearby. A US-made bomb, the GBU-31 with JDAM guidance system, appeared to be used in the attack.

Asma'a bint Abi Bakr is a school for boys in grades one through three and girls in grades one through nine. Yahya Omar, 50, directs the Al-Mansuriyah Educational Center, located about three meters from the school. He reported hearing two bombs strike the school in rapid succession. “A large part of the school was destroyed—nine classrooms were completely destroyed and five classrooms were partially destroyed,” Yahya said. “Although UNICEF provided the school with tents after the attack, students’ parents are concerned about their kids studying in the tents and prefer that their kids study in the partially damaged classrooms.”

School guard Mujalli Qassim, 70, was in his house on the school premises at the time of the attack, along with his wife and son. One bomb struck the school’s two-story building and another struck the schoolyard, he reported. An entire wall of Mujalli’s house collapsed.

Nabata Abdullah, 20, lives near the school and was also at home with her family when the Coalition bombs struck. “We heard the hovering of the jet and we also heard when the two bombs hit the school,” she said. “I took my kids and left the house. I have a disabled 4-year-old son. He was screaming out of fear, not understanding what was going on. I had to spray some cold water on him to try to calm him down.” Meanwhile, Nabata’s husband Mohammed, 30, noticed that the wall of Mujalli’s house was destroyed and went to check on the guard and his family.

The Coalition airstrike damaged Nabata’s house and displaced her neighbors, who fled the area after the attack. Mwatana researchers visiting the scene in April 2016 observed two abandoned houses next to the school, where the neighbors used to live. “As for us, we cannot move to any other area, and we still feel scared,” Nabata said.

The Saudi/UAE-led Coalition attack appears to have been indiscriminate. Researchers and witnesses did not identify any military targets in or near the school at the time of the attack. Indiscriminate attacks carried out intentionally or recklessly are war crimes. Schools are presumed to be civilian objects. Before conducting an attack, a party must do everything feasible to verify that the



persons or objects to be attacked are military objectives and not civilians or civilian objects.

Weapons remnants recovered at the scene of the attack on Asma'a bint Abi Bakr School point to the use of a US-made JDAM GBU-31 bomb.¹ In 2015 and 2016, the US delivered 3,600 JDAM Guided Bombs to the UAE.² Between 2010 and 2013, the US delivered 300 JDAM Guided Bombs to the UAE.³



Remnants of what appear to be a US-made JDAM GBU-31 bomb found at the scene of the attack on Asma'a bint Abi Bakr School. Above: The four securing holes in the fin-shaped remnant in this photo resemble those of a JDAM GBU-31 tail fin. The silver item in the forefront of this photo may therefore be a JDAM GPS antenna. Below: The marking "LITHIUM" on the remnant in this photo is consistent with the JDAM tail actuator system, which contains a lithium battery.

1 Report of arms expert consulted by Mwatana for Human Rights, Report ref. IR_03042018-008 (Apr. 3, 2018) (on file with Mwatana).

2 WILLIAM HARTUNG, CENTER FOR INTERNATIONAL POLICY, US ARMS TRANSFERS TO THE UAE AND THE WAR IN YEMEN 19 (Sept. 2017).

3 *Id.*

Date of strike: October 28, 2015
Location of strike: Al-Bayda City, Al-Bayda Governorate
Object(s) struck: Al-Khansa Girls' School
Weapons manufacturer: Raytheon (likely)

At about 11:30 p.m. on Wednesday, October 28, 2015, Saudi/UAE-led Coalition forces attacked Al-Khansa Girls' School in the Al-Farid area of Al-Bayda City, Al-Bayda Governorate, destroying part of the school and at least two civilian homes nearby. The Coalition likely used a Raytheon-manufactured bomb in the strike.

According to witness Abdul Qader Al-Anesi, the school's northern and eastern sides—including the science lab, teachers' room, and water and sanitation networks—were destroyed, in addition to the windows, qamariyas,¹ and stairs. Hussein Al-Jamal's home nearby was also demolished in the attack.

Hussein's neighbor, Ahmed Al-Luqasi, reported that he heard a Coalition plane hovering above Al-Khansa School on the night of the attack. Ten minutes later, two bombs sailed over Ahmed's

house, headed for the school. The ensuing explosions destroyed the roofs of two rooms of his house, and the walls of those rooms collapsed as a result. All the windows and doors of Ahmed's house were also destroyed. "It was one of the worst nights for the neighborhood residents," he said.

By April 2016, when Mwatana researchers visited the scene of the airstrike, girls in grades 7, 8, and 9 had been transferred to a different school because their classrooms at Al-Khansa were no longer safe as a result of damage from the Coalition attack. The remaining students continued to study at Al-Khansa School without water or sanitation networks.

The Saudi/UAE-led Coalition attack appears to have been indiscriminate. Researchers and witnesses did not identify any



A remnant of what appears to be a guided bomb unit found at the scene of the attack on Al-Khansa Girls' School. The marking "962" appears to be the initial digits of US defense contractor Raytheon's CAGE number (96214), likely identifying Raytheon as the manufacturer of the part.

¹ A *qamariya*—distinctive to Yemeni architecture—is a multi-colored, stained-glass decorative window.

“I heard the sound of a Coalition jet hovering over the school. Ten minutes later, I heard two bombs sailing over my house, targeting the school. I was scared to go out, fearing another bomb. The explosions destroyed the roofs of two rooms of my house, which made the walls of the rooms collapse. All the windows and doors were also destroyed. The house of my neighbor, Hussein Al-Jamal, was completely destroyed. It was one of the worst nights for the neighborhood residents.”

—Ahmed Al-Luqasi

Male
Eyewitness

military targets in or near the school at the time of the attack. Indiscriminate attacks carried out intentionally or recklessly are war crimes. Schools are presumed to be civilian objects. Before conducting an attack, a party must do everything feasible to verify that the persons or objects to be attacked are military objectives and not civilians or civilian objects.

Mwatana researchers recovered a remnant of what appeared to be a Raytheon-manufactured guided bomb unit (GBU) at the site of the attack.² The remnant was inscribed with the marking, “962,” likely the initial digits of Raytheon’s Commercial and Government Entity (CAGE) number, 96214.³

2 Report of arms expert consulted by Mwatana for Human Rights, Report ref. IR_03052018-013 (May 3, 2018) (on file with Mwatana).

3 96214, CAGE SEARCH (last visited Dec. 23, 2018), <http://www.govcagecodes.com/?code=96214&company=#results>.

Dates of strikes: January 8 and 10, 2016
Location of strike: Bilad Ar-Rus District, Sana'a Governorate
Object(s) struck: Community college
Weapons remnants ID: UK-made "Hakim" A series precision guided munition (PGM)
Weapons manufacturer: GEC-Marconi Dynamics



“I was sitting inside the administration building and heard three bombs strike the student dormitories and classroom building. I went to the [makeshift bomb shelter I had constructed for myself about fifty meters away]. Two days later, at around sunset, they struck again.”

–Ali Al-Muzalim

33-year-old male
Survivor of attack and college security guard

On January 8 and 10, 2016, Saudi/UAE-led Coalition forces attacked a community college in the village of Kouhaza in Bilad Ar-Rus District, Sana'a Governorate, partially destroying some areas of the college compound and completely destroying other areas. Mwatana researchers recovered remnants of a UK-made bomb at the site of the airstrikes.

The educational facility was in its final stages of construction at the time of the attacks. At around 2 p.m. on Friday, January 8, the security guard, 33-year-old Ali Al-Muzalim, heard three bombs strike the student dormitories and classroom building. Ali escaped to a makeshift bomb shelter he had constructed for himself about fifty meters away from the college. Two days later, at around sunset, Coalition forces dropped another two bombs on the compound. Ali was able to film the January 10 airstrike using his mobile phone. “The contractor’s son was next to me and he was going crazy because they had just put the finishing touches on the buildings,” recalled Ali.

The attacks completely destroyed a warehouse in the college compound and partially destroyed the remaining buildings, including the student dormitories. The community college was not located near any potential military targets, according to Ali, who said the nearest military sites were weapons depots located about fifteen kilometers to the north.

The Saudi/UAE-led Coalition attack appears to have been indiscriminate. Mwatana found no evidence to suggest that the college compound was being used for military purposes or that there were any military targets in or near the compound at the time of the attack. Indiscriminate attacks carried out intentionally or recklessly are war crimes. Educational facilities are presumed to be civilian objects. Before conducting an attack, a party must do everything feasible to verify that the persons or objects to be attacked are military objectives and not civilians or civilian objects.

At least one of the bombs used in the attacks was a UK-made “Hakim” A series precision guided munition (PGM) manufactured by GEC-Marconi Dynamics, as Mwatana has noted in a written submission of evidence to the UK Parliament’s Committees on Arms Export Controls.¹ Hakim munitions are rocket-assisted bombs equipped with either 500-pound (A series) or 2000-pound (B series) warheads.²

1 Written Evidence from the Mwatana for Human Rights (UKY 11) to Committees on Arms Export Controls, UK Parliament (Mar. 2016), <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/committees-on-arms-export-controls/use-of-ukmanufactured-arms-in-yemen/written/31059.html>.

2 Armament Research Services, *United Arab Emirates employ British Hakim A series precision guided munitions in Yemen* (Nov. 26, 2015), <http://armamentresearch.com/united-arab-emirates-employ-british-hakim-a-series-precision-guided-munitions-in-yemen/>.

The 500-pound Hakim PGM was most likely dropped by a United Arab Emirates (UAE) Air Force plane—either the Dassault Mirage 2000-9 or F-16E/F “Desert Falcon” fighter.³ The UK delivered 1,750 Hakim A and B series munitions to the UAE between 1989 and 1998.⁴



Remnants of a UK-made “Hakim” A series precision guided munition (PGM) found at the scene of the attack on the community college. The markings on the remnant in the photo on the right identify GEC-Marconi Dynamics as the manufacturer.

³ *Id.*

⁴ *Id.*

ATTACKS ON CIVILIAN BUSINESSES



Date of strike:	December 31, 2015
Location of strike:	Kilo 16, Hudaydah Governorate
Object(s) struck:	Al-Kahlani Factory
Weapons remnants ID:	US-made GBU-16 Paveway II laser-guided bomb with Mk-83 warhead (likely)
Weapons manufacturer:	Raytheon

At around 10:30 p.m. on Thursday, December 31, 2015, three Saudi/UAE-led Coalition bombs struck Al-Kahlani Cosmetics Factory and Tahama Packaging Tools Company in Kilo 16, Hudaydah Governorate. The attack damaged Al-Kahlani Factory and uprooted many families living nearby. The Coalition appears to have used a US-made GBU-16 Paveway II laser-guided bomb in the airstrike.

45-year-old factory owner Adnan Al-Kahlani was at home on the night of the attack. Adnan and the other owners and man-

agers lived in residences directly across from Al-Kahlani Factory, about ten meters away. When Adnan heard the first explosion, he emerged from his house and saw that Tahama Company had been bombed. Five minutes later, another bomb struck Al-Kahlani Factory. Adnan and others quickly evacuated the residences across from the factory, ensuring that families did not remain indoors. Adnan entered the factory with his sons to assess the damage and saw scattered shrapnel and fires raging. Adnan's sons then left the scene and were about 200 meters away when another bomb struck the factory. They came rushing back to get their father out.



Remnants of a US-made Mk-83 warhead found at the scene of the attack on Al-Kahlani Factory. The Mk-83 warhead is associated with the GBU-16 Paveway II bomb. Left: The marking "8,000 PSI" is consistent with the gas containers of a number of GBU forward control units, which are pressurized to 8,000 PSI. The marking "252746-5" is associated with Raytheon aircraft parts.

“Many families have been displaced, especially those in the village behind the factory.”

—Adnan Al-Kahlani

45-year-old male
Factory owner

The nearest military site identified was a camp located about a kilometer away from Al-Kahlani Factory. The two bombs dropped on the factory severely damaged its infrastructure and equipment as well as the materials stored inside—Adnan estimated \$1.5 million in losses. He also reported the displacement of a number of families who lived in a village behind the factory.

The Saudi/UAE-led Coalition attack appears to have been indiscriminate. Mwatana found no evidence to suggest that Al-Kahlani Factory or Tahama Company were producing military goods or otherwise being used for military purposes, or that there were any military targets in or near the facilities at the time of the attack. Indiscriminate attacks carried out intentionally or recklessly are war crimes. Before conducting an attack, a party must do everything feasible to verify that the persons or objects to be attacked are military objectives and not civilians or civilian objects.

A piece of shrapnel recovered at the site of the airstrike on Al-Kahlani Factory was inscribed with the marking “83,” suggesting the 454-kilogram (1,000-pound) Mk-83 high-explosive bomb, which is used as a warhead for the GBU-16 Paveway II.¹ Another remnant was inscribed with the marking “8,000 PSI,” consistent with the gas containers of a number of GBU forward control units, which are pressurized to 8,000 PSI.² This remnant was also inscribed with a number, “252746-5,” associated with Raytheon aircraft parts.³

1 Report of arms expert consulted by Mwatana for Human Rights, Report ref. IR_03052018-016 (May 3, 2018) (on file with Mwatana); Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03052018-016 (May 3, 2018) (on file with Mwatana).

2 Report of arms expert consulted by Mwatana for Human Rights, Report ref. IR_03052018-016.

3 *Id.*

It appears that the Saudi/UAE-led Coalition used Raytheon’s GBU-16 Paveway II laser-guided bomb fitted with an Mk-83 warhead to attack Al-Kahlani Factory. Official 2017 notifications to Congress of proposed sales of weapons to Saudi Arabia included \$298 million for Paveway II and III, Enhanced Paveway II and III, and Paveway IV Weapons Systems.⁴ Between 2010 and 2013, the US delivered 938 Paveway Guided Bombs to the UAE.⁵

The Mk-83 contains 202 kilograms (445 pounds) of Composition H6, a highly explosive substance also used in the US Air Force’s so-called “Mother of All Bombs.”⁶ The Mk-80 series of low-drag, general-purpose bombs are typically used to inflict maximal blast and explosive damage.⁷

4 WILLIAM HARTUNG, SECURITY ASSISTANCE MONITOR, TRENDS IN MAJOR US ARMS SALES IN 2017: A COMPARISON OF THE OBAMA AND TRUMP ADMINISTRATIONS 6 (Mar. 2018).

5 WILLIAM HARTUNG, CENTER FOR INTERNATIONAL POLICY, US ARMS TRANSFERS TO THE UAE AND THE WAR IN YEMEN 19 (Sept. 2017).

6 Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03052018-016; Yasmin Tayag, *The “Mother of All Bombs” Uses this Australian Underwater Explosive*, INVERSE (Apr. 14, 2017), <https://www.inverse.com/article/30368-mother-of-all-bombs-moab-h6-composition-explosive>.

7 *General Dynamics To Provide MK82 Bomb Casings To Saudi, UAE, France And Iraq*, DEFENSEWORLD.NET (Aug. 31, 2016), http://www.defenseworld.net/news/16953/General_Dynamics_To_Provide_MK82_Bomb_Casings_To_Saudi_UA.

Date of strike: January 6, 2016
Location of strike: Kilo 7, Hudaydah Governorate
Object(s) struck: Al-Muqbeli Warehouse
Weapons remnants ID: **UK-made** Paveway IV laser-guided bomb with **US-made** Mk-82 warhead
Weapons manufacturer: **Raytheon**

At about 12:30 a.m. on Wednesday, January 6, 2016, two Saudi/UAE-led Coalition bombs struck Al-Muqbeli Warehouse in Kilo 7, Hudaydah Governorate, setting the warehouse on fire. At least one of the bombs used in the attack was a Raytheon-manufactured Paveway IV bomb. The attack occurred less than an hour prior to the Coalition airstrike on nearby Derhim Factory, discussed below.

83-year-old Ahmed Qayed, sales director of Al-Muqbeli Corporation, lives in the building of the Corporation's headquarters about 1.5 kilometers away from the warehouse. As soon as he heard the first explosion on the night of the strike, Ahmed made his way to the warehouse along with his nephew and a friend. Soon after arriving at the scene, he watched as the second bomb—which he described as a “flaming and burning arrow”—struck. “The

fragments and fire were flying in front of us,” Ahmed recalled. “Because of this horrible scene, the two people who were with me went unconscious.”

Al-Muqbeli Warehouse was ablaze for three days, according to 60-year-old eyewitness Mohammed Jaber, who also noted that there are no military sites nearby. All the goods stored in the warehouse—including approximately 30,000 car parts—were destroyed in the attack and ensuing fire. The nearest military site identified was a checkpoint about 100 meters away.

The Saudi/UAE-led Coalition attack appears to have been indiscriminate. Mwatana found no evidence to suggest that Al-Muqbeli Warehouse was storing military goods or otherwise being used for military purposes, or that there were any military targets in the



Remnant of a UK-made Paveway IV bomb found at the scene of the attack on Al-Muqbeli Warehouse. As the marking “FOR USE ON MK-82” indicates, a US-made Mk-82 warhead was used with the Paveway IV bomb. The marking “NSN1325-01-545351” is associated with the Paveway IV wing assembly. The marking “96214” identifies Raytheon as the manufacturer, and the marking “05/15” identifies the weapon’s date of manufacture as May 2015.

“I saw the second bomb—a flaming and burning arrow. The fragments and fire were flying in front of us. Because of this horrible scene, the two people who were with me went unconscious.”

—Ahmed Qayed

83-year-old male
Sales Director, Al-Muqbeli Corporation

warehouse at the time of the attack. Indiscriminate attacks carried out intentionally or recklessly are war crimes. Before conducting an attack, a party must do everything feasible to verify that the persons or objects to be attacked are military objectives and not civilians or civilian objects.

A weapons remnant that experts identified as part of a Guided Bomb Unit (GBU) rear wing assembly was recovered at the site of the Coalition strike on the warehouse.¹ The NATO Stock Number inscribed on the remnant, “NSN1325-01-545351,” is associated with the wing assembly for the Paveway IV.² Raytheon’s Commercial and Government Entity (CAGE) number, “96214,” was also inscribed on the remnant,³ along with a date of manufacture—“05/15,” or May 2015—indicating that the weapon was produced after the start of the Coalition’s aerial bombing campaign in Yemen.

The remnant also featured the words “FOR USE ON MK82” because the Paveway IV modifies the US-made, 227-kilogram (500-pound) Mk-82 general-purpose bomb.⁴ The Mk-82 contains 87 kilograms (190 pounds) of Composition H6, a highly explosive substance also used in the US Air Force’s so-called “Mother of All Bombs.”⁵ The Mk-80 series of low-drag, general-purpose bombs are typically used to inflict maximal blast and explosive damage.⁶ In August 2016, US defense contractor General Dynam-

ics was awarded a multi-million dollar contract to supply Saudi Arabia and the UAE with Mk-82 bomb casings.⁷

The Paveway IV is a laser-guided bomb manufactured by Raytheon UK. In 2014, Raytheon UK secured its first international contract for the Paveway IV—estimated at £150 million (\$247 million) for 2,400 bombs⁸—after obtaining US congressional approval for the sale (needed because the bomb includes American components).⁹ The identity of Raytheon UK’s first and only export customer—undisclosed by the defense contractor—was confirmed to be Saudi Arabia.¹⁰ In the third quarter of 2015, the UK approved £1 billion of export licenses to Saudi Arabia, a dramatic increase from the £9 million approved in the same period in 2014.¹¹ These deals included Paveway IV bombs originally meant for the UK Royal Air Force but delivered instead to Saudi Arabia, which reportedly needed to restock its supply of the bomb for use in Yemen.¹² In 2017, then-director general of security policy at the UK Ministry of Defence, Peter Watkins, revealed that the UK has trained Saudi air force personnel in the use of the Paveway IV.¹³

1 Report of arms expert consulted by Mwatana for Human Rights, Report ref. IR_03052018-018 (May 3, 2018) (on file with Mwatana).

2 *Id.*

3 96214, CAGE SEARCH (last visited Dec. 23, 2018), <http://www.govcagecodes.com/?code=96214&company=#results>.

4 Report of arms expert consulted by Mwatana for Human Rights, Report ref. IR_03052018-018.

5 Yasmin Tayag, *The “Mother of All Bombs” Uses this Australian Underwater Explosive*, INVERSE (Apr. 14, 2017), <https://www.inverse.com/article/30368-mother-of-all-bombs-moab-h6-composition-explosive>.

6 *General Dynamics to Provide MK82 Bomb Casings To Saudi, UAE, France And Iraq*, DEFENSEWORLD.NET (Aug. 31, 2016), http://www.defenseworld.net/news/16953/General_Dynamics_To_Provide_MK82_Bomb_Casings_To_Saudi_UA.

7 *Id.*

8 Campaign Against Arms Trade, *Huge Increase in Value of Bombs and Missiles Licensed to Saudi Arabia by UK Since War in Yemen Began* (Nov. 8, 2017), <https://www.caat.org.uk/media/press-releases/2017-11-08>.

9 George Allison, *Raytheon Paves the Way for Export of Paveway IV*, UK DEFENCE JOURNAL (Mar. 27, 2014), <https://ukdefencejournal.org.uk/raytheon-paves-way-export-paveway-iv/>.

10 Campaign Against Arms Trade, *supra* note 273.

11 Cahal Milmo, *Saudi Arabia’s Use of British Weapons in Yemen to Be Investigated by Parliamentary Commission*, INDEPENDENT (Mar. 10, 2016), <https://www.independent.co.uk/news/uk/politics/saudi-arabia-use-of-british-weapons-in-yemen-to-be-investigated-by-parliamentary-commission-a6922906.html>.

12 *Id.*

13 Billy Briggs, *Smart Bombs Made in Scotland Were Dropped in Yemen by UK-trained Saudi Air Force*, DAILY RECORD (Feb. 19, 2017), <https://www.dailyrecord.co.uk/news/scottish-news/smart-bombs-made-scotland-were-9848386>.

Date of strike:	January 6, 2016
Location of strike:	Al-Marawi'ah District, Hudaydah Governorate
Object(s) struck:	Derhim Industrial Factory
Weapons remnants ID:	UK-made Paveway IV laser-guided bomb with US-made Mk-82 warhead (likely)
Weapons manufacturer:	Raytheon

In the very early hours of Wednesday, January 6, 2016—less than an hour after attacking nearby Al-Muqbeli Warehouse—Saudi/UAE-led Coalition fighter jets dropped four bombs on Derhim Industrial Factory near Al-Maraw'a, Hudaydah Governorate, setting the factory on fire. A Raytheon-manufactured Paveway IV bomb appears to have been used in the attack.

The Derhim Factory's Deputy Director, 60-year-old Adnan Ali, was at home when he received a phone call from his secretary, Adel, at around 1:15 a.m. on the day of the strike. "His voice was shaking and he was shouting, "They bombed the factory!" recalled Adnan. As Adnan began making his way to the factory, Adel called again, this time to inform him that the factory was completely destroyed. Three bombs had struck the factory's production line and one had struck the spare parts warehouse.

Fifteen minutes later, Adnan arrived on the scene. The factory was ablaze, and the eighty or so factory workers who lived about thirty meters away had evacuated their residences. The fire was not extinguished until the next evening, and even then, smoke continued to billow from the factory until the third day. The fire department was stretched thin and late in responding, recalled Adnan, because Coalition bombs had struck nearby Al-Muqbeli Warehouse on the same day. "There was no military camp or other site near us," said Adnan. "There was no justification for the airstrike."

The Saudi/UAE-led Coalition attack appears to have been indiscriminate. Mwatana found no evidence to suggest that Derhim Factory was producing military goods or otherwise being used for military purposes, or that there were any military targets in or near the factory at the time of the attack. Indiscriminate attacks carried out intentionally or recklessly are war crimes. Before conducting an attack, a party must do everything feasible to verify that the persons or objects to be attacked are military objectives and not civilians or civilian objects.

A weapons remnant recovered at the site of the attack on Derhim Industrial Factory was inscribed with Raytheon's Commercial

and Government Entity (CAGE) number, "96214."¹ According to weapons experts, the NATO Stock Number inscribed on the remnant, "NSN1325-01-5," is associated with the wing assembly for a guided bomb unit (GBU), possibly the Paveway IV.²

The Paveway IV is a laser-guided bomb that modifies the US-made, 227-kilogram (500-pound) Mk-82 general-purpose bomb.³ The Mk-82 contains 87 kilograms (190 pounds) of Composition H6, a highly explosive substance also used in the US Air Force's so-called "Mother of All Bombs."⁴ The Mk-80 series of low-drag, general-purpose bombs are typically used to inflict maximal blast and explosive damage.⁵ In August 2016, US defense contractor General Dynamics was awarded a multi-million dollar contract to supply Saudi Arabia and the UAE with Mk-82 bomb casings.⁶

Raytheon UK manufactures the Paveway IV bomb. In 2014, Raytheon UK secured its first international contract for the Paveway IV—estimated at £150 million (\$247 million) for 2,400 bombs⁷—after obtaining US congressional approval for the sale (needed because the bomb includes American components).⁸ The

1 96214, CAGE SEARCH (last visited Dec. 23, 2018), <http://www.govcagecodes.com/?code=96214&company=#results>.

2 Report of arms expert consulted by Mwatana for Human Rights, Report ref. IR_03052018-017 (May 3, 2018) (on file with Mwatana).

3 Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03052018-017 (May 3, 2018) (on file with Mwatana).

4 *Id.*; Yasmin Tayag, *The "Mother of All Bombs" Uses this Australian Underwater Explosive*, INVERSE (Apr. 14, 2017), <https://www.inverse.com/article/30368-mother-of-all-bombs-moab-h6-composition-explosive>.

5 *General Dynamics to Provide MK82 Bomb Casings To Saudi, UAE, France And Iraq*, DEFENSEWORLD.NET (Aug. 31, 2016), http://www.defenseworld.net/news/16953/General_Dynamics_To_Provide_MK82_Bomb_Casings_To_Saudi_UA.

6 *Id.*

7 Campaign Against Arms Trade, *Huge Increase in Value of Bombs and Missiles Licensed to Saudi Arabia by UK Since War in Yemen Began* (Nov. 8, 2017), <https://www.caat.org.uk/media/press-releases/2017-11-08>.

8 George Allison, *Raytheon Paves the Way for Export of Paveway IV*, UK DEFENCE JOURNAL (Mar. 27, 2014), <https://ukdefencejournal.org.uk/raytheon-paves-way-export-paveway-iv/>.

“There was no military camp or other site near us.
There was no justification for the airstrike.”

—Adnan Ali

60-year-old male
Deputy Director, Derhim Factory

identity of Raytheon UK’s first and only export customer—undisclosed by the defense contractor—was confirmed to be Saudi Arabia.⁹ In the third quarter of 2015, the UK approved £1 billion of export licenses to Saudi Arabia, a dramatic increase from the £9 million approved in the same period in 2014.¹⁰ These deals included Paveway IV bombs originally meant for the UK Royal Air Force but delivered instead to Saudi Arabia, which reportedly needed to restock its supply of the bomb for use in Yemen.¹¹ In 2017, then-director general of security policy at the UK Ministry of Defence, Peter Watkins, revealed that the UK has trained Saudi air force personnel in the use of the Paveway IV.¹²



Remnant of a likely UK-made Paveway IV bomb (used with a US-made Mk-82 warhead) found at the scene of the attack on Derhim Industrial Factory. The markings on the remnant indicate that it is likely part of the Paveway IV bomb’s wing assembly. The marking “96214” identifies Raytheon as the manufacturer.

9 Campaign Against Arms Trade, *supra* note 284.

10 Cahal Milmo, *Saudi Arabia’s Use of British Weapons in Yemen to Be Investigated by Parliamentary Commission*, INDEPENDENT (Mar. 10, 2016), <https://www.independent.co.uk/news/uk/politics/saudi-arabia-use-of-british-weapons-in-yemen-to-be-investigated-by-parliamentary-commission-a6922906.html>.

11 *Id.*

12 Billy Briggs, *Smart Bombs Made in Scotland Were Dropped in Yemen by UK-trained Saudi Air Force*, DAILY RECORD (Feb. 19, 2017), <https://www.dailyrecord.co.uk/news/scottish-news/smart-bombs-made-scotland-were-9848386>.

Date of strike: September 12, 2016
Location of strike: Bani Al-Harith District, Amanat Al-Asimah Governorate
Object(s) struck: Al-Senidar Factory Complex
Weapons remnants ID: **UK-made** Paveway IV laser-guided bomb with **US-made** Mk-82 warhead
Weapons manufacturer: Raytheon



“The incident caused my wife to panic so much that she has often not been able to stand since the attack because of her trembling feet.”

—Ali Al-Zafiri

40-year-old male
Survivor of attack and security guard, Al-Senidar Factory Complex

Just after midnight on Monday, September 12, 2016, the Saudi/UAE-led Coalition dropped four bombs on Al-Senidar Factory Complex in Bani Al-Harith District, Amanat Al-Asimah Governorate. Within about five minutes, the bombs struck three different factories in the complex and damaged at least one house nearby. The Coalition used a Raytheon-manufactured Paveway IV bomb in the attack.

The nearest military site identified was a base located about 500 meters away from Al-Senidar complex. Ali Al-Zafiri, 40, is a security guard for the Kaprari pump factory, one of the factories in the complex. At about 12:30 a.m. on the day of the attack, Ali was standing guard at the main gate of the pump factory when he heard the sound of an airplane overhead. “Moments later,” he recalled, “I heard the sound of a bomb falling, but I did not know where it was headed. My wife told me that the bomb hit the tile and brick factory. I told her to open the windows and doors of our house because of the pressure from the explosion, since my house is located in front of the tile and brick factory.” A few minutes later, reported Ali, two bombs struck the pipe factory in Al-Senidar complex. Finally, a fourth bomb fell on the Kaprari pump factory. “The incident caused my wife to panic so much that she has often not been able to stand since the attack because of her trembling feet,” said Ali. “Also, the attack damaged my house and broke the doors and windows.”

Massoud Aazzan, 70, is a security guard for the tile and brick factory that was struck first. “On the night of Eid al-Adha, September 12, 2016, after midnight,” Massoud recalled, “my colleagues and I were sitting on top of a crane truck and talking. We heard the sound of a plane and then we heard the sound of a bomb falling on the tile and brick factory that I guarded. Because we were terrified, we ran away to the outside of the factory and hid behind its wall. A few minutes later, we heard the sound of the second

bomb falling.” Massoud reported that he did not hear the third and fourth bombs explode because he was in a fugue (disassociative) state, unable to register or process anything.

The Saudi/UAE-led Coalition attack appears to have been indiscriminate. Researchers and witnesses did not identify any military targets in or near the complex at the time of the attack. Indiscriminate attacks carried out intentionally or recklessly are war crimes.

The Coalition’s Joint Incidents Assessment Team (JIAT) reviewed attacks on Al-Senidar Complex on September 13 and September 21, 2016.¹ Without providing sufficient details to enable independent verification, JIAT claimed that the Coalition had tracked three trucks accompanied by an armed military vehicle into the complex and that the Coalition attacked the complex twice because it was being used for military purposes.²

Mwatana found no evidence to suggest that the complex was producing military goods or otherwise being used for military purposes. The UN Panel of Experts, which also investigated the attacks on Al-Senidar, did not identify a military target at the site. Similarly, Mwatana could not confirm the presence of a military vehicle in the vicinity of the factory on September 12. Even if a military vehicle were present, an attack on the vehicle would have had to be proportionate to expected civilian harm. Before conducting an attack, a party must do everything feasible to verify that the persons or objects to be attacked are military objectives and not civilians or civilian objects.

1 Saudi Press Agency, *JIAT Holds Press Conference* (Nov. 19, 2017), <https://www.spa.gov.sa/viewstory.php?lang=en&newsid=1689419>.

2 *Id.*



Remnants of a UK-made Paveway IV bomb found at the scene of the attack on Al-Senidar Factory Complex. As the remnant in the photo on the right indicates, a US-made Mk-82 warhead was mounted on the Paveway IV bomb. The marking “96214” on the remnant in the photo on the right identifies Raytheon as the manufacturer.

Mwatana researchers recovered a large remnant of a UK-made Paveway IV bomb at the site of the attack. The Paveway IV is a laser-guided bomb that modifies the US-made, 227-kilogram (500-pound) Mk-82 general-purpose bomb.³ The Mk-82 contains 87 kilograms (190 pounds) of Composition H6, a highly explosive substance also used in the US Air Force’s so-called “Mother of All Bombs.”⁴ The Mk-80 series of low-drag, general-purpose bombs are typically used to inflict maximal blast and explosive damage.⁵ In August 2016, US defense contractor General Dynamics was awarded a multi-million dollar contract to supply Saudi Arabia and the UAE with Mk-82 bomb casings.⁶

Raytheon UK manufactures the Paveway IV bomb. In 2014, Raytheon UK secured its first international contract for the Paveway IV—estimated at £150 million (\$247 million) for 2,400 bombs⁷—after obtaining US congressional approval for the sale (needed because the bomb includes American components).⁸ The

identity of Raytheon UK’s first and only export customer—undisclosed by the defense contractor—was confirmed to be Saudi Arabia.⁹ In the third quarter of 2015, the UK approved £1 billion of export licenses to Saudi Arabia, a dramatic increase from the £9 million approved in the same period in 2014.¹⁰ These deals included Paveway IV bombs originally meant for the UK Royal Air Force but delivered instead to Saudi Arabia, which reportedly needed to restock its supply of the bomb for use in Yemen.¹¹ In 2017, then-director general of security policy at the UK Ministry of Defence, Peter Watkins, revealed that the UK has trained Saudi air force personnel in the use of the Paveway IV.¹²

3 Report of arms expert consulted by Mwatana for Human Rights, Report ref. DR_03052018-017 (May 3, 2018) (on file with Mwatana).

4 *Id.*; Yasmin Tayag, *The “Mother of All Bombs” Uses this Australian Underwater Explosive*, INVERSE (Apr. 14, 2017), <https://www.inverse.com/article/30368-mother-of-all-bombs-moab-h6-composition-explosive>.

5 *General Dynamics to Provide MK82 Bomb Casings To Saudi, UAE, France And Iraq*, DEFENSEWORLD.NET (Aug. 31, 2016), http://www.defenseworld.net/news/16953/General_Dynamics_To_Provide_MK82_Bomb_Casings_To_Saudi_UA.

6 *Id.*

7 Campaign Against Arms Trade, *Huge Increase in Value of Bombs and Missiles Licensed to Saudi Arabia by UK Since War in Yemen Began* (Nov. 8, 2017), <https://www.caat.org.uk/media/press-releases/2017-11-08>.

8 George Allison, *Raytheon Paves the Way for Export of Paveway IV*, UK DEFENCE JOURNAL (Mar. 27, 2014), <https://ukdefencejournal.org.uk/raytheon-paves-way-ex>

port-paveway-iv/.

9 Campaign Against Arms Trade, *supra* note 293.

10 Cahal Milmo, *Saudi Arabia’s Use of British Weapons in Yemen to Be Investigated by Parliamentary Commission*, INDEPENDENT (Mar. 10, 2016), <https://www.independent.co.uk/news/uk/politics/saudi-arabia-use-of-british-weapons-in-yemen-to-be-investigated-by-parliamentary-commission-a6922906.html>.

11 *Id.*

12 Billy Briggs, *Smart Bombs Made in Scotland Were Dropped in Yemen by UK-trained Saudi Air Force*, DAILY RECORD (Feb. 19, 2017), <https://www.dailyrecord.co.uk/news/scottish-news/smart-bombs-made-scotland-were-9848386>.

Date of strike:	September 23, 2015
Location of strike:	Bani Matar District, Sana'a Governorate
Civilian casualties:	One killed and two injured (including a child)
Object(s) struck:	Radfan Ceramics Factory
Weapons remnants ID:	UK-made "Hakim" A series precision guided munition (PGM)
Weapons manufacturer:	GEC-Marconi Dynamics

On the morning of Wednesday, September 23, 2015, four Saudi/UAE-led Coalition bombs struck the Radfan Ceramics Factory in the Matna area of Bani Matar District, Sana'a Governorate. In addition to killing one civilian and injuring two—including a child—the attack destroyed the factory and, with it, the livelihoods of hundreds of workers. Mwatana researchers recovered remnants of a UK-made bomb at the site of the airstrike.

Ghalib Ahmed Al-Swari, 40, General Director of the Radfan Ceramics Factory, recalled the heavy presence of Coalition airplanes on the day of the attack. "That was normal for us because we saw the jets every day since the Coalition began its shelling campaign in Yemen," he said. "But we were shocked when our factory was

completely destroyed by four bombs. It is devastating to see your efforts and twenty years of your family's hard work collapse in minutes."

According to Radfan's management, a prominent Yemeni business family founded the ceramics factory in 1993 and employed 700 workers. The factory was one of the largest civilian industrial facilities in Yemen's capital city of Sana'a. As Ghalib said, "700 workers became jobless, and those who benefited from the factory's services in the area are suffering too. We are all living through painful times—words cannot describe how I feel. We lost everything in the blink of an eye. We are not affiliated with any political party or involved in politics—we are just bystanders."



Remnants of a UK-made "Hakim" A series precision guided munition (PGM) recovered at the scene of the attack on Radfan Ceramics Factory. According to Armament Research Services, the solid rocket motor venturi on the cinder block in the top right of the photo on the left is consistent with the Hakim PGM bomb. The markings on the remnant in the photo on the right identify GEC-Marconi Dynamics as the manufacturer.

“700 workers became jobless...We are all living through painful times—words cannot describe how I feel. We lost everything in the blink of an eye.”

—Ghalib Ahmed Al-Swari

40-year-old male
General Director, Radfan Ceramics Factory

The Radfan Ceramics Factory does not appear to have been located near any potential military targets—the nearest military site identified was the Subaha military camp about fifteen kilometers away. Jamil Qatran, 40, lives about thirty meters to the east of the factory. “I was with my family washing clothes in the yard of our house on the morning of the attack,” he recalled. “We suddenly heard the explosion of the first bomb but did not see the aircraft. As the second and third bombs struck, we heard the sound of the aircraft and I saw the aircraft with my own eyes. Residents in the neighboring area were fleeing their homes.” Yahiya Abdul Karim, 30, was killed in the attack. Hussein Taher’s 15-year-old daughter suffered shrapnel injuries to her feet and 55-year-old Ali Fakih suffered shrapnel injuries to his abdomen.

The Saudi/UAE-led Coalition attack appears to have been indiscriminate. Mwatana found no evidence to suggest that the Radfan Ceramics Factory was producing military goods or otherwise being used for military purposes, or that there were any military targets in or near the factory at the time of the attack. Indiscriminate attacks carried out intentionally or recklessly are war crimes. Before conducting an attack, a party must do everything feasible to verify that the persons or objects to be attacked are military objectives and not civilians or civilian objects.

After analyzing photographs of weapons remnants found at the site of the attack, arms experts concluded that at least one of the bombs used was a UK-made “Hakim” A series precision guided

munition (PGM) manufactured by GEC-Marconi Dynamics.¹ Mwatana has submitted written evidence containing the arms experts’ findings to the UK Parliament’s Committees on Arms Export Controls.² Hakim munitions are rocket-assisted bombs equipped with either 500-pound (A series) or 2000-pound (B series) warheads.³

The 500-pound Hakim PGM used in the attack on Radfan was most likely dropped by a United Arab Emirates (UAE) Air Force plane—either the Dassault Mirage 2000-9 or F-16E/F “Desert Falcon” fighter.⁴ The UK delivered 1,750 Hakim A and B series munitions to the UAE between 1989 and 1998.⁵

1 Armament Research Services, *United Arab Emirates employ British Hakim A series precision guided munitions in Yemen* (Nov. 26, 2015), <http://armamentresearch.com/united-arab-emirates-employ-british-hakim-a-series-precision-guided-munitions-in-yemen/>.

2 Written Evidence from the Mwatana for Human Rights (UKY 11) to Committees on Arms Export Controls, UK Parliament (Mar. 2016), <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/committees-on-arms-export-controls/use-of-ukmanufactured-arms-in-yemen/written/31059.html>.

3 *Id.*

4 *Id.*

5 *Id.*

SEPT 2, 2016 ATTACK ON GOVERNMENT CULTURAL CENTER



Date of strike: September 2, 2016
Location of strike: Al-Mina District, Hudaydah Governorate
Civilian Casualties: One killed and five injured
Object(s) struck: Cultural Center
Weapons manufacturer: Raytheon



21-year-old Tareq Hussein, who suffered shrapnel wounds to his head, arm, back, and leg in the attack. Tareq's colleague, 19-year-old Dirham Al-Amiri, died at the scene.

“One of my friends who had taken me to the hospital told me that everything [at the scene of the strike] was out of place except for the thermos with water in it, which remained on the concrete block it was left on. The only thing that changed in it was that it was red from Dirham’s blood.”

–Tareq Hussein

21-year-old male
Wounded in attack

At around 2:15 a.m. on Friday, September 2, 2016, the Saudi/UAE-led Coalition dropped two bombs on the Cultural Center in Al-Mina District, Hudaydah Governorate—one bomb on the administration building and another on the celebration hall. The strike killed one civilian and wounded another five. A remnant of a bomb manufactured by US defense contractor Raytheon was recovered at the site of the attack.

The Yemeni Ministry of Culture owns the Cultural Center, where government celebrations and graduations are often held. The nearest military objective identified was a Houthi-controlled security administration office about 200 meters away. On the early morning of the attack, 21-year-old Tareq Hussein, mechanic for the privately-owned electricity generators in the backyard of the Center, had just had dinner at the cafeteria with his 19-year-old colleague Dirham Al-Amiri, the generator security guard. Tareq and Dirham were lying down and resting in the backyard next to the generators, close to the Cultural Center’s administration building.

Tareq described the ensuing moments: “I did not hear anything, and I only felt the strike. I crawled a short way away, but I could not feel anything. I was bleeding and I could not continue trying

to escape. I passed out until they came and took me away for treatment. Both of my hands were broken and I could not move them because of a problem with the arteries, and I also had shrapnel in my head and back.” Dirham died on the scene; a piece of shrapnel had penetrated his back and emerged from his chest, leaving a gaping hole, and one of his legs had been severed.

“One of my friends who had taken me to the hospital told me that everything [at the scene of the strike] was out of place except for the thermos with water in it, which remained on the concrete block it was left on,” recalled Tareq. “The only thing that changed in it was that it was red from Dirham’s blood.”

92-year-old Muhammed Qassim, the Cultural Center security guard, suffered shrapnel wounds to his head in the attack. “I do not remember anything,” he reported. “I was asleep, under the building, and I woke up bleeding out of my head. I was screaming until my colleagues came and took me to the hospital.”

When the bombs struck, three contractors hired by the Cultural Center were settling down to sleep on-site after a night of work organizing books at the Center library. Najeeb Al-Ward, 45, reported that the explosions sent him flying about five meters. The



Remnant of a Raytheon-manufactured guided bomb unit recovered at the scene of the attack on the Cultural Center. The marking “96214” refers to US defense contractor Raytheon’s CAGE number.

darkness, dust, and dirt that enveloped Najeeb—in addition to his psychological state—disoriented him in the explosions’ aftermath, and he did not know where he was. “Instead of leaving the Cultural Center, I crawled into it,” recalled Najeeb. “I was yelling the names of my colleagues and looking for them.” After about five minutes, Najeeb was rescued from the scene along with the security guard, Muhammed Qassim. He lost consciousness and later awoke at the hospital. Najeeb suffered shrapnel wounds to his eye, damaging his retina.

Nabeel Al-Qubati, 45, was lying on his back. When he felt and heard the earth-shattering explosions, Nabeel turned around to protect his face and covered his head with his hands. Shrapnel hit his left hand as he was moving, and he suffered severe damage to his eardrum.

The third contractor, 45-year-old Fahd Zaywar, also recalled the sound and force of the explosions. The windows shattered and Fahd was soon covered in glass shards. “I thought that I had died and that I would be buried under the rubble,” he said. “I did not move. I stayed in the same place until I heard Nabeel’s voice and the other men leaving the Center. I expected that there would be another strike, so I took control of myself and got out.” Fahd suffered shrapnel injuries to his fingers, leg, and back.

The Saudi/UAE-led Coalition attacked civilians and a civilian

object—a government administration building and celebration hall. The attack appears to have been indiscriminate. Mwatana researchers and witnesses did not identify any military targets in the area at the time of the attack. Indiscriminate attacks carried out intentionally or recklessly are war crimes. Before conducting an attack, a party must do everything feasible to verify that the persons or objects to be attacked are military objectives and not civilians or civilian objects.

Mwatana researchers recovered a remnant of what appeared to be a Raytheon-manufactured guided bomb unit (GBU) at the site of the attack on the Cultural Center.¹ The remnant was inscribed with the marking, “96214 ASSY 83.” “96214” is Raytheon’s Commercial and Government Entity (CAGE) number.²

1 Report of arms expert consulted by Mwatana for Human Rights, Report ref. IR_05062018-023 (June 5, 2018) (on file with Mwatana).

2 96214, CAGE SEARCH (last visited Dec. 23, 2018), <http://www.govcagecodes.com/?code=96214&company=#results>.

“When we got outside, we thought it was the Day of Judgment because of the darkness in the middle of the day. Gunpowder and sand were flying all around us.”

—Najeeb Al-Kawl

Wounded in Sana’a Governorate
September 2015



Scene from aftermath of September 2015 airstrike on Wālan Agricultural Complex in Bilad Ar-Rus District, Sana'a Governorate

APPLICABLE INTERNATIONAL AND US LEGAL STANDARDS



A. Violations of International Law by the Saudi/UAE-led Coalition

The Saudi/UAE-led Coalition and Yemeni government are engaged in a non-international armed conflict against the Houthi armed group. The law applicable to this conflict includes Common Article 3 to the Geneva Conventions of 1949, Additional Protocol (II) to the Geneva Conventions of 1977, and customary international humanitarian law. International law limits the targets that parties to a conflict may attack and the means they can use. States have a responsibility to train their forces on these limits and to investigate violations.¹ The airstrikes documented in this report provide strong evidence of a pattern of flagrant violations of the laws of armed conflict by Coalition forces. The Saudi/UAE-led Coalition has consistently failed to take the required measures to minimize harm to civilians. The laws of war require that states investigate alleged war crimes carried out by members of their armed forces or others within their jurisdiction, and appropriately prosecute those responsible. Individuals credibly implicated in war crimes could also be prosecuted in third states under the principle of universal jurisdiction.

1. State responsibility for attacks against civilians and civilian objects

International humanitarian law (IHL) requires that parties to an armed conflict adhere to the principles of distinction and proportionality during combat.² Warring parties must distinguish between combatants and civilians and between military objects and civilian objects.³ The parties to a conflict can legally target only military objectives—combatants and military objects.⁴ Civilians and civilian objects are not legitimate targets of attack.

Military objectives are those that “by their nature, location, purpose or use make an effective contribution to military action and whose total or partial destruction, capture or neutralization, in the circumstances ruling at the time, offers a definite military advantage.”⁵ This determination can be difficult and must be made based on the facts of each situation. In each case of doubt about the status of an object, according to the International Committee of the Red Cross (ICRC) customary international humanitarian law handbook, “a careful assessment has to be made under the conditions and restraints governing a particular situation as to whether there are sufficient indications to warrant an attack... This is also consistent with the requirement to take all feasible precau-

tions in attack, in particular the obligation to verify that objects to be attacked are military objectives liable to attack and not civilian objects.”⁶ Moreover, even when a military target is present, the use of explosive weapons with wide-area effects in populated areas makes the likelihood of harm to civilians and civilian infrastructure extremely high, to an extent that may violate IHL principles of distinction and proportionality.⁷

A party to a conflict may not use a means or method of combat that is, by its nature, indiscriminate—that is, one that cannot be directed at a specific target or whose effects cannot be constrained by the principles of IHL.⁸ Combatants must consider the possible loss of civilian life and the relative value of the military objective before launching any attack. Although some collateral civilian deaths in an attack directed at a military target are permissible under the laws of war, an attack that disproportionately harms civilians relative to its military advantage is prohibited.

Parties to a conflict must also take precautions to minimize harm to civilians.⁹ They must do everything “feasible” to ensure that their targets are military objectives, take all feasible precautions in their choice of means to minimize incidental loss of civilian life, and refrain from attacks expected to cause disproportionate loss of civilian life or damage to civilian objects.¹⁰ In addition, warring parties must give the civilian population “effective advance warning” of attacks if circumstances permit.¹¹

All parties must also endeavor to remove civilians from the vicinity of military objects, refrain from locating military objectives in densely populated areas, and otherwise protect the civilian population under their control against the dangers of military operations.¹² The requirements of IHL apply regardless of wrongful conduct by opposing parties.

IHL provides special protection for objects indispensable to the survival of the civilian population, such as food, crops, agricultural areas, drinking water, and irrigation.¹³ Attacking these objects for the purpose of denying the civilian population or adverse party

6 ICRC, CUSTOMARY IHL, *supra* note CIH, rule 10.

7 The ICRC has noted that parties to a conflict should avoid using explosive weapons with a wide impact area in densely populated areas due to the significant likelihood of indiscriminate effects. U.N. Security Council, Report of the Secretary-General on the Protection of Civilians in Armed Conflict, U.N. Doc. S/2012/376, ¶ 37 (May 22, 2012), http://www.ineo.org/wp-content/uploads/2015/02/s_2012_376.pdf.

8 ICRC, CUSTOMARY IHL, *supra* note CIH, at rule 11.

9 ICRC, CUSTOMARY IHL, *supra* note CIH, at rule 15-21.

10 ICRC, CUSTOMARY IHL, *supra* note CIH, at rule 15-21.

11 ICRC, CUSTOMARY IHL, *supra* note CIH, at rule 20.

12 ICRC, CUSTOMARY IHL, *supra* note CIH, at rule 22-24.

13 ICRC, CUSTOMARY IHL, *supra* note CIH, at rule 54.

1 JEAN-MARIE HENCKAERTS ET AL., INTERNATIONAL COMMITTEE OF THE RED CROSS, CUSTOMARY INTERNATIONAL HUMANITARIAN LAW, v. 1, rule 142 (2009) [hereinafter ICRC, CUSTOMARY IHL].

2 ICRC, CUSTOMARY IHL, *supra* note CIH.

3 ICRC, CUSTOMARY IHL, *supra* note CIH, at rules 1-10.

4 ICRC, CUSTOMARY IHL, *supra* note CIH, at rules 1, 7.

5 ICRC, CUSTOMARY IHL, *supra* note CIH, at rule 8.



Damage from August 2015 airstrike on civilian homes in Al-Dhibar District, Ibb Governorate

the benefit of their sustenance value is forbidden.¹⁴ Although targeting such an object may be permissible if an opposing party is using the object in direct support of military action, any attack that is expected to result in starvation or forced displacement of the civilian population is prohibited.¹⁵

[The Coalition attacks documented in this report violate international humanitarian law](#)

Evidence strongly suggests that the Saudi/UAE-led Coalition airstrikes documented in this report—on homes, schools, businesses,

farms, a health clinic, a government administration building, and a celebration hall—violate IHL's requirements of distinction and proportionality. The twenty-seven airstrikes documented above killed at least 203 people and injured at least 749. At least 122 children and at least 56 women were among the dead and wounded.

In most of the twenty-seven incidents, the objects attacked neither appeared to have been used for military purposes nor were in the vicinity of legitimate military targets. The attacks on these objects likely violated the principle of distinction. In the few instances in which Ansar Allah (Houthi) fighters were near or at the site of the attack, the resulting foreseeable harm to civilians and civilian infrastructure appears to have been out of proportion to any apparent military advantage. In each case, Coalition forces failed to

¹⁴ *Id.*

¹⁵ ICRC, CUSTOMARY IHL, *supra* note CIH, at rule 53-56.

warn civilians of an impending attack and do not appear to have taken feasible precautions to minimize civilian harm.

The cases documented here reinforce prior evidence demonstrating that the Coalition is failing to fulfill its legal obligations while waging war in Yemen. Widespread civilian casualties and other devastating civilian harm are the predictable results.

The Houthis have violated IHL and committed human rights abuses as well—by indiscriminately shelling civilians, laying anti-personnel landmines, impeding humanitarian supplies, arbitrarily detaining individuals, committing acts of torture, and conscripting child soldiers.¹⁶ Individuals responsible for war crimes should be held responsible. Under international standards, neither Houthi violations nor Saudi/UAE-led Coalition violations excuse those committed by the other side.

2. Individual responsibility for war crimes

Some of the attacks documented in this report may be war crimes. Under customary international law, serious violations of the law of armed conflict committed with criminal intent are war crimes.¹⁷ An attack that kills civilians indiscriminately or disproportionately can be a war crime if its perpetrator engages in the attack intentionally, with the purpose of killing civilians, or recklessly, with the knowledge that the attack is likely to indiscriminately or disproportionately kill civilians.¹⁸

Under customary international law, states have an obligation to investigate war crimes allegedly committed by their armed forces, on their territory, or within their jurisdiction and to appropriately prosecute those responsible.¹⁹ States also have the right to vest

16 Mwatana for Human Rights et al., Submission to the United Nations Universal Periodic Review of Yemen, Third Cycle, Human Rights Council, 32nd Session, Jan.-Feb. 2019 (July 11, 2018), <http://mwatana.org/wp-content/uploads/2018/10/UNIVERSAL-PERIODIC-REVIEW-OF-YEMEN-2.pdf>. See also, MWATANA FOR HUMAN RIGHTS, WOES OF “ARABIA FELIX”: SITUATION OF HUMAN RIGHTS IN YEMEN 2017 (May 15, 2018), <http://mwatana.org/wp-content/uploads/2018/08/The-Woes-of-Arabia-Felix-English-Version-1.pdf>; MWATANA FOR HUMAN RIGHTS, PRESS IN YEMEN FACES EXTINCTION (June 2017), <http://mwatana.org/wp-content/uploads/2017/10/Press-report-En.pdf>; MWATANA FOR HUMAN RIGHTS, CONCEALED KILLER: FALL OF CIVILIANS BY THE LANDMINES LAID BY THE ANSAR ALLAH ARMED FORCES (THE HOUTHIS) AND SALEH FORCES (Apr. 2017), <http://mwatana.org/wp-content/uploads/2017/10/Concealed-Killer-Report-En.pdf>; MWATANA FOR HUMAN RIGHTS, CHAPTERS FROM HELL: VIOLATIONS OF THE INTERNATIONAL HUMANITARIAN LAW IN THE ARMED GROUND CONFLICT IN TAIZ (Nov. 2016), <http://mwatana.org/wp-content/uploads/2018/08/Chapter-from-hell.pdf>; MWATANA FOR HUMAN RIGHTS, THEY ARE NOT HERE: INCIDENTS OF ARBITRARY DETENTION AND ENFORCED DISAPPEARANCE UNDER THE DEFACTO AUTHORITY OF THE HOUTHI ARMED GROUP IN YEMEN (May 2016), http://mwatana.org/wp-content/uploads/2017/10/They-are-not-here-E_2.pdf.

17 ICRC, CUSTOMARY IHL, *supra* note CIH, at 568-69.

18 Ryan Goodman, *Explainer: What Mental State is Required to Commit a War Crime?*, JUST SECURITY (Sept. 1, 2016), <https://www.justsecurity.org/32644/explainer-mental-state-required-commit-war-crime/>.

19 ICRC, CUSTOMARY IHL, *supra* note CIH, at 607, rule 158.

their courts with universal jurisdiction over war crimes, meaning that persons who commit war crimes can be tried in any state that chooses to prosecute them, regardless of their nationality or the place of the crime.²⁰

Failure of the Coalition states to credibly investigate potential war crimes

Although it is difficult to judge if a war crime has been committed in any particular case based solely on public information, on the whole, it is clear that the Saudi/UAE-led Coalition has repeatedly committed serious violations of the laws of armed conflict. It is likely that, in at least some cases, individuals acted willfully or recklessly. States members of the Coalition are obligated to investigate credible allegations of war crimes committed by members of their armed forces, on their territory or in their jurisdiction and, if appropriate, prosecute the perpetrators. To initiate an investigation, there is no requirement that a concrete suspect be known—only that there is reliable and credible information that a violation may have occurred. If Coalition countries spurn their duty to investigate and prosecute these crimes, this is in and of itself a violation of the laws of war. Other states may choose to investigate potential war crimes and their perpetrators under the principle of universal jurisdiction.

3. Failure of Joint Incidents Assessment Team investigations to promote state and individual accountability

In response to international pressure over its conduct in Yemen, the Saudi/UAE-led Coalition set up the Joint Incidents Assessment Team (JIAT). The JIAT, announced in August 2016, is a joint effort of Saudi Arabia, the United Arab Emirates, and other Coalition countries.²¹ It is supposed to investigate Coalition airstrikes and provide reports and recommendations. Human Rights Watch analyzed JIAT’s public investigation results over a two-year time period and discrepancies between JIAT and Human Rights Watch investigations, finding “a general failing by JIAT... to provide credible, impartial, and transparent investigations into alleged coalition laws-of-war violations.”²²

Under international law, states must investigate alleged laws of war violations and alleged war crimes committed by their forces and appropriately prosecute the perpetrators. JIAT has fulfilled neither of these obligations. JIAT was primarily intended as an operational learning tool, but it is empowered only to make recommendations, not to require changes.²³ The Coalition has

20 ICRC, CUSTOMARY IHL, *supra* note CIH, at 604, rule 157.

21 HUMAN RIGHTS WATCH, HIDING BEHIND THE COALITION 1 (Aug. 24, 2018), <https://www.hrw.org/report/2018/08/24/hiding-behind-coalition/failure-credibly-investigate-and-provide-redress-unlawful>.

22 *Id.*

23 Larry Lewis, *Grading the Pompeo Certification on Yemen War and Civilian Protec-*



A US-made BLU-63 submunition found at the scene of an attack that killed fifteen civilians, including nine children, in Midi District, Hajjah Governorate (see Section II). BLU-63 submunitions are generally released from the CBU-58 cluster bomb, which disperses 650 of the submunitions widely and indiscriminately.

failed to operationalize solutions JIAT recommends.²⁴ Moreover, JIAT has investigated a small portion of the incidents that human rights organizations and international bodies have identified as likely violations of international humanitarian law, including only a small fraction of the 27 apparently unlawful attacks documented in this report.²⁵ Publicly released JIAT investigation results absolve Coalition members of responsibility in the vast majority of attacks—contrary to the results of independent fact-finding.²⁶ JIAT has failed to investigate certain alleged IHL violations altogether and made no effort to determine individual criminal responsibility for war crimes.²⁷ In the few cases in which JIAT has recommended further investigation or compensation for victims, there is no evidence of credible follow-up by Coalition states on the recommendations.²⁸ As currently constituted, this body does not meet the standards necessary to fulfill Coalition countries' requirements

tion: *Time for Serious Reconsideration*, JUST SECURITY (Sept. 18, 2018), <https://www.justsecurity.org/60766/grading-pompeo-certification-yemen-war-civilian-protection-time-reconsideration/>.

24 *Id.*

25 HUMAN RIGHTS WATCH, *HIDING BEHIND THE COALITION*, *supra* note HBC, at 4.

26 *Id.* at 2-3.

27 *Id.* at 5.

28 *Id.*

to credibly investigate alleged war crimes.

4. Saudi/UAE-led Coalition use of cluster munitions

Cluster munitions are bombs or rockets containing submunitions—small bomblets or grenades—that disperse widely in mid-air and are intended to explode above or on the ground.²⁹ Cluster munitions, which may release anywhere from a few bomblets to hundreds, are banned internationally by a growing number of countries due to their indiscriminate nature and the unacceptable humanitarian consequences of their use. Bomblets from cluster munitions often disperse widely and with indiscriminate effects: a single cluster weapon commonly covers a target area of 500 square meters, and some release submunitions over an area the size of several football fields.³⁰ In addition, bomblets often fail to explode immediately and may injure civilians later—especially children, who can mistake the bomblets for toys.³¹

There is a growing global consensus to ban the production and use of cluster munitions.³² This is exemplified by the 2008 Convention on Cluster Munitions (CCM), which prohibits use, production, and stockpiling of cluster munitions, with the exception of weapons with fewer than ten submunitions and a list of technical features to avoid the indiscriminate effects of standard cluster munitions.³³ The CCM has 104 State Parties and 16 signatories that have yet to ratify.³⁴ 144 states voted in favor of a December 2018 UN General Assembly resolution urging states to consider acceding to the Convention and expressing concern about allegations of cluster munition use around the world.³⁵ Even the United States, which claims that the use of cluster munitions is appropriate under some circumstances, has acknowledged the danger these

29 Arms Control Association, *Cluster Munitions at a Glance* (Dec. 2017), <https://www.armscontrol.org/factsheets/clusterataglance>; Cluster Muniton Coalition, *What is a Cluster Bomb?*, <http://www.stopclustermunitions.org/en-gb/cluster-bombs/what-is-a-cluster-bomb.aspx>.

30 HUMAN RIGHTS WATCH, *TICKING TIME BOMBS: NATO'S USE OF CLUSTER MUNITIONS IN YUGOSLAVIA PT. III* (1999), <https://www.hrw.org/reports/1999/nato2/nato995-02.htm>; Cluster Muniton Coalition, *supra* note WCB.

31 Amnesty Int'l, *Yemen: Children Among Civilians Killed and Maimed in Cluster Bomb 'Minefields'* (May 23, 2016), <https://www.amnesty.org/en/latest/news/2016/05/yemen-children-among-civilians-killed-and-maimed-in-cluster-bomb-minefields/>.

32 See, e.g., Arms Control Association, *Cluster Munitions at a Glance*, *supra* note CMG; Cluster Munitions Coalition, <http://www.stopclustermunitions.org/en-gb/home.aspx>.

33 Convention on Cluster Munitions, May 30, 2008, 2688 U.N.T.S. 39, entered into force Aug. 1, 2010.

34 Cluster Muniton Coalition, *Treaty Status* (last accessed Nov. 30, 2018), <http://www.stopclustermunitions.org/en-gb/the-treaty/treaty-status.aspx>.

35 U.N.G.A. res. 73/54, U.N. Doc. A/RES/73/54 (Dec. 12, 2018), <http://www.clusterconvention.org/wp-content/uploads/2018/10/ADOPTED-RESOLUTION.pdf>; Convention on Cluster Munitions, *UNGA Votes on 2018 CCM Resolution* (Dec. 10, 2018), <http://www.clusterconvention.org/2018/12/10/UNGA-VOTE-ON-2018-CCM-RESOLUTION/>.

weapons pose to civilians, banned countries that purchase US cluster munitions from using them in civilian areas, and limited the types of cluster munitions that can be used.³⁶

It is extremely difficult, if not impossible, for cluster weapons to be used in compliance with international humanitarian law. IHL prohibits means and methods of warfare that, by their nature, cannot be constrained by the principles of distinction and proportionality.³⁷ Cluster munitions disperse submunitions over a wide area, and these submunitions are almost always unguided.³⁸ It is extremely difficult, if not impossible, to avoid civilian casualties and damage to civilian infrastructure if using cluster munitions near civilians or civilian objects. Even if civilians are not killed in the attack, they may suffer death or injury from unexploded submunitions—akin to de facto landmines—months or years later.

Saudi Arabia and the UAE are not parties to the CCM, but both countries voted in favor of UN General Assembly and Human Rights Council resolutions condemning the use of cluster munitions in Syria.³⁹ This suggests recognition by Saudi Arabia and the UAE that at least some uses of cluster weapons violate international humanitarian law. All Coalition members are obligated to observe the IHL principle of distinction.

[Use of cluster munitions in the Coalition attacks documented in this report violate international law](#)

The Saudi/UAE-led Coalition has used cluster munitions in Yemen, as documented by multiple human rights organizations.⁴⁰ Live, unexploded submunitions left behind after these attacks have killed and injured civilians.⁴¹ The Coalition has repeatedly appeared to have violated the IHL principles of distinction and proportionality in these attacks.

This report documents five incidents in which the Coalition used cluster munitions to attack civilian structures, including homes, a farm, and a fishing boat. Researchers found no evidence of a mil-

itary target in any of these cases. Civilian casualties are the likely and foreseeable result of the use of such weapons in civilian areas. These five attacks killed 29 civilians, including 15 children, and injured 24 others, including 6 children. The attacks also destroyed homes, a farm, and a fishing boat, displacing civilians and destroying infrastructure on which civilian livelihoods depended. The Coalition's use of cluster bombs may have also subjected civilians to danger from unexploded submunitions in the aftermath of the airstrikes.

B. Violations of International Law by the United States and European Countries

Under customary international law as reflected in Article 16 of the International Law Commission's Articles on State Responsibility, the United States, the UK, and other countries supporting the Saudi/UAE-led Coalition may also bear responsibility for aiding or assisting the Coalition's indiscriminate and disproportionate attacks. These supporting countries are likely also in violation of their treaty obligations to respect and ensure respect for the Geneva Conventions. In addition, it is possible that individual supporting country officials or members of their armed forces could be responsible for aiding and abetting war crimes under international law. Evidence presented in this report suggests that the UK and Italy are also in violation of treaty obligations under the Arms Trade Treaty. The US and UK should be particularly concerned about the Coalition's use of cluster munitions manufactured in their countries. While the US has stated that it has attempted to improve the behavior of the Saudi/UAE-led Coalition (as described below), Coalition countries continue to manifest blatant disregard for international humanitarian law. Countries that continue to support the Coalition campaign in Yemen through the provision of arms should make no mistake about the ongoing international law violations to which they risk contributing, in addition to civilian death and injury, blocked humanitarian aid, and near-famine.

1. State responsibility for aiding or assisting laws of armed conflict violations

The International Law Commission's draft Articles on Responsibility of States for Internationally Wrongful Acts reflect the progressive development of the rules of international law on state responsibility.⁴² The International Court of Justice declared Article 16 to reflect customary international law in *Bosnia and Herzegovina v. Serbia and Montenegro*.⁴³ Under Article 16, "[a]

36 See US Dep't of Defense, Press Release No. 577-08, Cluster Munitions Policy Released (July 9, 2008), <http://archive.defense.gov/releases/release.aspx?release-id=12049>; Human Rights Watch, *US Embraces Cluster Munitions* (Dec. 1, 2017), <https://www.hrw.org/news/2017/12/01/us-embraces-cluster-munitions>.

37 Protocol 1, *supra* note PL1, at art. 51(4).

38 HUMAN RIGHTS WATCH, DEATH FROM THE SKIES: DELIBERATE AND INDISCRIMINATE AIR STRIKES ON CIVILIANS (Apr. 10, 2013), <https://www.hrw.org/report/2013/04/10/death-skies/deliberate-and-indiscriminate-air-strikes-civilians>.

39 Landmine & Cluster Muniton Monitor, *Saudi Arabia: Cluster Muniton Ban Policy* (updated Aug. 8, 2016), <http://www.the-monitor.org/en-gb/reports/2016/saudi-arabia/view-all.aspx#0ftn2>; Landmine & Cluster Muniton Monitor, *United Arab Emirates: Cluster Muniton Ban Policy* (updated July 9, 2018), <http://www.the-monitor.org/en-gb/reports/2018/united-arab-emirates/cluster-muniton-ban-policy.aspx>.

40 Amnesty Int'l, *supra* note YCC; Human Rights Watch, *Technical Briefing Note: Cluster Muniton Use in Yemen*, *supra* note TBN.

41 *Id.*

42 INTERNATIONAL LAW COMMISSION, DRAFT ARTICLES ON RESPONSIBILITY OF STATES FOR INTERNATIONALLY WRONGFUL ACTS, WITH COMMENTARIES (2001); Ryan Goodman & Miles Jackson, *State Responsibility for Assistance to Foreign Forces (aka How to Assess US-UK Support for Saudi Ops in Yemen)*, JUST SECURITY (Aug. 31, 2016), <https://www.justsecurity.org/32628/state-responsibility-assistance-for-foreign-forces-a-k-a-assess-us-uk-support-saudi-military-ops-yemen/>.

43 Application of the Convention on the Prevention and Punishment of the Crime of Genocide (*Bosnia and Herzegovina v. Serbia and Montenegro*), Judgment, 2007

State which aids or assists another State in the commission of an internationally wrongful act by the latter is internationally responsible for doing so if: (a) that State does so with knowledge of the circumstances of the internationally wrongful act; and (b) the act would be internationally wrongful if committed by that State.⁴⁴ Provision (b) is clearly met here. All countries are obligated to follow customary international law prohibiting indiscriminate or disproportionate attacks.⁴⁵ A State's assistance does not need to be necessary to the act to render the State internationally responsible; the ILC commentary requires only that the assistance "contributed significantly" to the act.⁴⁶ Provision of arms, intelligence, and logistical support likely each qualify as significant contributions.⁴⁷

Provision (a) requires the assisting State to know that the act is internationally wrongful and intend to facilitate the act.⁴⁸ The countries assisting the Coalition almost certainly intend to facilitate the military campaign, despite knowledge that the Coalition has persistently violated international humanitarian law.⁴⁹ The exact mental element required is subject to debate among international law scholars, but given the increased evidence in the public domain regarding the repeated use of a particular state's weapons in unlawful attacks, a strong case could be made that, under a knowledge standard, provision (a) is also met for certain states, including the US and UK.

Assisting countries can reduce their liability under international law by implementing mitigation measures. Upon re-initiating assistance to the Saudi/UAE-led Coalition in June 2017, for example, the US requested and received assurances from Saudi Arabia that the Coalition would take increased measures to prevent IHL violations.⁵⁰ More recently, US Secretary of State Michael Pompeo outlined measures the US and the Coalition were taking to address civilian casualties in a memorandum to Congress in September 2018.⁵¹ These included the use of a no-strike list, changes to the rules of engagement, establishment of the Joint Incident Assessment Team (JIAT), and commitment to additional training by US forces on the laws of armed conflict and targeting.⁵²

Most of these steps are not new, and none serve as sufficient mitigation measures at this point, given the Coalition's demonstrated failure to comply with the laws of war even after many of these steps were undertaken earlier in the conflict. The no-strike list has existed since the beginning of the conflict but is not always used in so-called "dynamic strikes"—strikes that are not preplanned but instead responsive to events occurring in real time—according to a former US advisor to the Coalition.⁵³ After minor changes to the Rules of Engagement were suggested by the US and implemented in late 2015, abuses continued.⁵⁴ The US has been providing training since 2015.⁵⁵ JIAT's insufficiencies are outlined above. Given the ongoing pattern of indiscriminate and disproportionate airstrikes by the Saudi/UAE-led Coalition even after many of these steps were adopted, the Coalition's repetition of the same assurances is not sufficient.⁵⁶ In light of these insufficient assurances and ongoing credible reporting on Coalition violations of the laws of war, it would be extremely difficult for states like the US to credibly argue at this point in the conflict that they lack knowledge that the Coalition will likely continue to commit IHL violations.⁵⁷

The countries supporting the Saudi/UAE-led Coalition have also failed in their treaty obligations under the Geneva Conventions. Common Article 1 of the Geneva Conventions requires that parties "undertake to respect and ensure respect" for the provisions of the Conventions.⁵⁸ According to the International Committee of the Red Cross (ICRC) commentaries, Common Article 1 commits parties to both a negative obligation not to encourage or assist violations of the Conventions and a positive obligation to prevent such violations.⁵⁹ Providing support to the Saudi/UAE-led Coalition despite knowledge of the Coalition's IHL violations constitutes a breach of both obligations. In *Republic of Nicaragua v. United States of America*, the International Court of Justice found that the US violated Common Article 1 by providing support to the contras despite knowledge of allegations that the contras were violating international humanitarian law—knowl-

I.C.J. 43, ¶ 420 (Feb. 26); see also Goodman & Jackson, *supra* note RGM.

44 INTERNATIONAL LAW COMMISSION, *supra* note RSI, at art. 16.

45 Oona Hathaway et al., *State Responsibility for US Support of the Saudi-led Coalition in Yemen*, JUST SECURITY (Apr. 25, 2018), <https://www.justsecurity.org/55367/state-responsibility-u-s-support-saudi-led-coalition-yemen/>.

46 See INTERNATIONAL LAW COMMISSION, *supra* note RSI, at art. 16, Commentary, ¶ 5; *id.*

47 Hathaway et al., *State Responsibility for US Support of the Saudi-led Coalition in Yemen*, *supra* note SRU.

48 *Id.*

49 *Id.*

50 *Id.*

51 Lewis, *supra* note GPC.

52 *Id.*

53 *Id.*

54 *Id.*

55 *Id.*

56 See Section II, *supra*; Hathaway et al., *State Responsibility for US Support of the Saudi-led Coalition in Yemen*, *supra* note SRU.

57 *Id.*

58 See, e.g., Geneva Convention Relative to the Protection of Civilian Persons in Time of War, art. 1.

59 International Committee of the Red Cross, *Convention (I) for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field*. Geneva, 12 August 1949: Commentary of 2016: Article 1: Respect for the Convention (2016), [hereinafter ICRC, *Article 1 Commentaries*] <https://ihl-databases.icrc.org/applic/ihl/ihl.nsf/Comment.xsp?action=openDocument&documentId=72239588A-FA66200C1257F7D00367DBD>; Oona Hathaway et al., *Common Article 1 and the US Duty to Ensure Respect for the Geneva Conventions in Yemen*, JUST SECURITY (Apr. 26, 2018), <https://www.justsecurity.org/55415/common-article-1-u-s-duty-ensure-respect-geneva-conventions-yemen/>.



Man sorts through rubble after April 2018 airstrike on wedding in Bani Qais District, Hajjah Governorate.

edge that rendered future violations foreseeable.⁶⁰ According to the ICRC Commentaries, the positive obligation to “ensure respect” for the Conventions requires a due diligence process to mitigate or prevent violations when providing assistance to a warring party.⁶¹ The Coalition’s repeated use of weapons provided by the US and European countries for attacks in violation of IHL, and the continued provision of weaponry despite the failure of attempted mitigation measures, indicate that these supporting States are violating their obligations to respect and ensure respect for the Geneva Conventions.

[Countries that export arms to Coalition members may share responsibility for IHL violations](#)

Each Saudi/UAE-led Coalition attack documented in this report appears to have violated the laws of war and substantially harmed civilians and civilian objects. Mwatana researchers recovered remnants of likely US-made weapons in twenty-five cases and likely UK-made weapons in five cases. In violation of their IHL

obligations, the US and UK governments have continued to approve sales of similar weapons despite the Coalition’s repeated use of these weapons in unlawful attacks. If these weapons were transferred after Coalition violations of the laws of war became clear, the countries providing weapons could share responsibility for the apparently unlawful attacks. To avoid risking complicity in future violations, the US, the UK, Italy, and other states should immediately halt arms sales to Saudi Arabia, the UAE, and other Coalition countries for use in Yemen.

[2. Individual responsibility for aiding and abetting war crimes](#)

The officials and individuals in the armed forces of the countries supporting the Coalition may be liable for aiding and abetting war crimes. Given the level of support the US is providing to Coalition military operations, officials in the United States are most likely to face this risk.⁶² Under customary international law, there are three elements to a charge of aiding and abetting a war crime: (1) a war crime committed by a principal actor; (2) an act by another actor that had a substantial effect on the commission

60 Hathaway et al., *Common Article 1 and the US Duty to Ensure Respect for the Geneva Conventions in Yemen*, *supra* note CA1.

61 ICRC, *Article 1 Commentaries*, *supra* note A1C, at ¶ 150; *see also id.*

62 *See* Section I, *supra*, for details of US support.

of the war crime; and (3) knowledge of the non-principal actor that the act was substantially likely to assist the commission of the war crime.⁶³ This “knowledge” standard does not require the accomplice to desire the commission of the war crime.⁶⁴ The Rome Statute governing the International Criminal Court requires the aiding act to be committed “for the purpose of facilitating the commission of such a crime,” but this “purpose” standard is not required by customary international law.⁶⁵ The United States has used the knowledge standard in its own prosecutions.⁶⁶

[US and UK personnel may be liable for aiding and abetting war crimes in Yemen](#)

As outlined above, individuals fighting on behalf of the Saudi/UAE-led Coalition have likely committed war crimes. The Coalition has carried out scores of serious violations of international humanitarian law, including repeated indiscriminate and disproportionate attacks and the use of widely banned weapons in civilian areas. Assistance including arms sales, provision of intelligence, and logistical support would have a substantial effect on the commission of these crimes. The well-publicized, repeated pattern of these violations since 2015 means that the countries and officials continuing to provide these types of support almost certainly knew that continued assistance was substantially likely to assist in the commission of war crimes.

[3. State responsibility under the Arms Trade Treaty and EU Common Position on military exports](#)

Recognizing the harm wrought by an unconstrained international arms trade, states created the Arms Trade Treaty (ATT) to regulate conditions for arms transfers. Under Article 6.3 of the treaty, “[a] State Party shall not authorize any transfer of conventional arms ... if it has knowledge at the time of authorization that the arms or items would be used in the commission of genocide, crimes against humanity, grave breaches of the Geneva Conventions of 1949, attacks directed against civilian objects or civilians protected as such, or other war crimes as defined by international agreements to which it is a Party.”⁶⁷

63 Prosecutor v. Charles Ghankay Taylor, Case No. SCSL-03-01-A, Judgment (Sept. 26, 2013), <http://www.rscsl.org/Documents/Decisions/Taylor/Appeal/1389/SCSL-03-01-A-1389.pdf>; Ryan Goodman, *The Law of Aiding and Abetting (Alleged) War Crimes: How to Assess US and UK Support for Saudi Strikes in Yemen*, JUST SECURITY (Sept. 1, 2016), <https://www.justsecurity.org/32656/law-aiding-abetting-alleged-war-crimes-assess-uk-support-saudi-strikes-yemen/>.

64 *Id.*

65 Rome Statute of the International Criminal Court, July 1, 2002, 2187 U.N.T.S. 3, art. 25.

66 Government Supplemental Filing at 4, United States v. Khalid Shaikh Mohammed et al. (Military Commissions Trial Judiciary Oct. 18, 2013), <https://www.justsecurity.org/wp-content/uploads/2015/12/KSM-AE120B-Govt-Supp-Brief-10182013.pdf>.

67 Arms Trade Treaty, Dec. 24, 2014, art. 6.3.

European Union Member States have also adopted a legally binding Common Position on “control of exports of military technology and equipment.”⁶⁸ The EU Common Position outlines eight criteria against which Member States must evaluate applications for arms export licenses.⁶⁹ Member States must, for example, assess “respect for human rights in the country of final destination as well as respect by that country of international humanitarian law” and deny an export license “if there is a clear risk that the military technology or equipment to be exported might be used in the commission of serious violations of international humanitarian law.”⁷⁰

[Arms sales for Coalition use in Yemen violate the Arms Trade Treaty and EU Common Position](#)

The United States is a signatory to the ATT, though it has not ratified the treaty.⁷¹ Under international law, a signatory who has not ratified a treaty must not undermine the treaty’s “object and purpose.”⁷² The object and purpose of the ATT include “[e]stablish[ing] the highest possible common international standards for regulating or improving the regulation of the international trade in conventional arms” and “reducing human suffering.”⁷³ Commitment of arms to the Saudi/UAE-led Coalition—when the US knows there is a substantial risk that these arms will be used unlawfully—does not meet these standards. Even critics of arms treaties have conceded that the US is obliged to apply the ATT’s standards to its policies and has a track record of using treaties it has not ratified as a guide to its arms trade policy.⁷⁴

The UK and Italy are parties to the ATT.⁷⁵ In violation of their obligations under the ATT and EU Common Position on military exports, these states continue to sell Coalition countries arms for use in Yemen.⁷⁶ The Campaign Against the Arms Trade brought

68 Council Common Position 2008/944/CFSP of 8 December 2008 Defining Common Rules Governing Control of Exports of Military Technology and Equipment, 2008 O.J. (L 335), <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:335:0099:0103:EN:PDF>.

69 *Id.* at art. 2.

70 *Id.* at art. 2.2.

71 UN Treaties Collection, *Arms Trade Treaty*, https://treaties.un.org/Pages/showDetails.aspx?objid=08000002803628c4&clang=_en.

72 Vienna Convention on the Law of Treaties, May 23, 1969, 1155 U.N.T.S. 331, art. 18.

73 Arms Trade Treaty, *supra* note TTT, at art. 1.

74 Theodore Bromund, *Why the US Must Unsign the Arms Trade Treaty in 2018*, HERITAGE FOUNDATION (Feb. 22, 2018), <https://www.heritage.org/global-politics/report/why-the-us-must-unsign-the-arms-trade-treaty-2018>.

75 All EU states are parties to the ATT. UN Treaties Collection, *Arms Trade Treaty*, *supra* note UTT.

76 Meanwhile, a number of other European countries—Germany, Denmark, the Netherlands, Finland, Austria, Belgium, Switzerland, and Norway—have imposed extensive arms trade restrictions or virtual arms embargoes on Saudi Arabia and/or the UAE in response to civilian deaths in Yemen. *France Avoids Question on Saudi*

a case against the UK to halt arms sales to Saudi Arabia for use in Yemen. The case assessed compliance with the “Consolidated EU and National Arms Export Licensing Criteria,” which is based on the EU Common Position and includes reference to the Arms Trade Treaty.⁷⁷ The UK Court of Appeal, slated to hear the case this year,⁷⁸ should find that the Saudi/UAE-led Coalition’s record of ongoing war crimes in Yemen prohibits arms sales to Saudi Arabia under the ATT and consolidated licensing criteria.

4. Provision of cluster munitions to the Saudi/UAE-led Coalition

The Saudi/UAE-led Coalition has used cluster munitions made in the US, the UK, and Brazil in its aerial bombing campaign in Yemen.⁷⁹ In contravention of the IHL principle of distinction, the Coalition has regularly used these weapons in civilian areas, killing civilians and destroying civilian homes and businesses.⁸⁰ The unexploded submunitions left behind by these weapons have injured and killed Yemeni civilians, including children who mistake the bomblets for toys.⁸¹ All countries should cease the production and transfer of these widely-banned, indiscriminate weapons.

The UK is a state party to the 2008 Convention on Cluster Munitions (CCM).⁸² The Convention prohibits use, production, and stockpiling of cluster munitions, with the exception of weapons with fewer than ten submunitions and a list of technical features to avoid the indiscriminate effects of standard cluster munitions.⁸³ Both Saudi Arabia and the United Arab Emirates are known to possess stockpiles of cluster munitions manufactured in the UK in the 1970s.⁸⁴ The Coalition has used at least one of these types of

UK-made cluster weapons in Yemen.⁸⁵ While UK sales of cluster munitions before 2008 do not violate the CCM, the UK should not provide Coalition countries with arms of any kind as long as the Coalition continues to use cluster munitions that the UK has banned due to their inherently indiscriminate nature.

Although the US is not a state party to the CCM and has defended the use of cluster munitions under some circumstances, US policy acknowledges the particular danger of these weapons and restricts their use. A Department of Defense (DOD) policy directive on cluster munitions issued in July 2008 required the US to remove from its stockpile any cluster munitions that result in more than 1% unexploded ordnance by the end of 2018.⁸⁶ The policy prohibited the US from using or exporting cluster munitions that do not meet this standard, beginning in 2019.⁸⁷ Another DOD policy directive issued in 2017 indefinitely suspended the deadline for removing munitions that do not meet the standard from the US stockpile.⁸⁸ However, the directive retained restrictions on US exports of cluster munitions, which not only limit these exports in accordance with the 1% standard but also require a commitment from the recipient of the cluster munitions to refrain from using them in civilian areas.⁸⁹ Amnesty International has found sufficient unexploded ordnance in Yemen from US-made cluster munitions to show that the US is failing to meet its 1% unexploded ordnance standard for exports.⁹⁰ Concerns about civilian casualties in Yemen led the Obama administration to block sales of cluster munitions to Saudi Arabia in 2016.⁹¹ However, Congress included a provision in the 2017 defense appropriations act to lift the ban because certain Congress members did not want to “stigmatize” the weapon.⁹²

Export of cluster munitions for Coalition use in Yemen violates international law and US policy

This report documents five apparently unlawful attacks in which the Coalition used US-made cluster munitions in violation of US export rules as well as the IHL principle of distinction. The civilian deaths and injuries that resulted from these attacks—

Arabia Weapons Sales, REUTERS (Oct. 22, 2018), <https://www.reuters.com/article/us-saudi-khashoggi-france/france-avoids-question-on-saudi-arabia-weapons-sales-idUSKCN1MW1TP>; Darin Graham, *Denmark Suspends Arms Sales to Saudi Arabia — but which European Countries Continue to Supply It?*, EURONEWS (Nov. 22, 2018), <https://www.euronews.com/2018/11/22/denmark-suspends-arms-sales-to-saudi-arabia-but-which-european-countries-continue-to-suppl>.

77 Riccardo Labianco, *UK-Saudi Arabia Arms Trade before the High Court: Questions Following the Judgment*, OpinioJuris (Sept. 13, 2017), <http://opiniojuris.org/2017/09/13/uk-saudi-arabia-arms-trade-before-the-high-court-questions-following-the-judgment/>.

78 Campaign Against Arms Trade, *Saudi Arabia – Legal Challenge* (July 27, 2018), <https://www.caat.org.uk/resources/countries/saudi-arabia/legal-2016>.

79 Amnesty Int’l, *supra* note YCC; Human Rights Watch, *Technical Briefing Note: Cluster Munition Use in Yemen*, *supra* note TBN.

80 See Section II, *supra*.

81 Amnesty Int’l, *supra* note YCC; Human Rights Watch, *Technical Briefing Note: Cluster Munition Use in Yemen*, *supra* note TBN.

82 UN Treaty Collection, *Convention on Cluster Munitions* (Jan. 12, 2018), https://treaties.un.org/Pages/ViewDetails.aspx?chapter=26&lang=en&mtdsg_no=XX-VI-6&src=TREATY.

83 Convention on Cluster Munitions, 2688 U.N.T.S. 39.

84 Amnesty Int’l, *supra* note YCC.

85 *Id.*

86 US Dep’t of Defense, Press Release No. 577-08, Cluster Munitions Policy Released (July 9, 2008), <http://archive.defense.gov/releases/release.aspx?release-id=12049>; see also Human Rights Watch, *US Embraces Cluster Munitions* (Dec. 1, 2017), <https://www.hrw.org/news/2017/12/01/us-embraces-cluster-munitions>.

87 *Id.*

88 Human Rights Watch, *US Embraces Cluster Munitions*, *supra* note UCM.

89 *Id.*

90 Amnesty Int’l, *supra* note YCC.

91 Jonathan Broder, *Yemen Civil War: US Lawmakers Raise Alarm Bells About Pentagon’s Role in ‘World’s Worst Humanitarian Crisis’*, NEWSWEEK (Aug. 7, 2018), <https://www.newsweek.com/yemen-humanitarian-crisis-civil-war-lawmakers-humanitarian-crisis-pentagon-1059212>.

92 *Id.*



Man walks through rubble after September 2016 airstrike on Al-Senidar Factory Complex in Bani Al-Harith District, Amanat Al-Asimah Governorate.

which struck civilian structures, including homes, a farm, and a fishing boat—were foreseeable. The US should adhere to its own policy directives, a growing international consensus against cluster munitions, and IHL prohibitions on indiscriminate attacks and reinstate a ban on the export of cluster munitions to Saudi/UAE-led Coalition countries.

C. Violations of United States Law

The United States' ongoing provision of support to the Saudi/UAE-led Coalition despite the Coalition's pattern of international humanitarian law violations in Yemen contravenes US domestic law. The Foreign Assistance Act prohibits security assistance to a country that persistently and grossly violates human rights. The Arms Export Control Act prohibits the sale of arms for use in illegitimate attacks. Members of Congress have argued that US involvement in the conflict in Yemen without Congressional approval violates statutory and Constitutional requirements.

Although the US administration recently announced an end to

mid-air refueling of Coalition planes, the ability of Coalition forces to handle this task themselves means that cessation of refueling will not, on its own, alleviate Congressional concerns about US involvement in Coalition violations. Measures opposing US arms sales and military assistance to the Coalition have garnered increasing support in Congress. Since the October 2018 murder of US-based journalist Jamal Khashoggi by Saudi operatives, there has been a resurgence of Congressional concern about US support for the Saudi government and the US role in civilian death, injury, starvation, and disease in Yemen. Statements by President Trump confirm that he is uninterested in revisiting the US relationship with Saudi Arabia, no matter its domestic and international legal implications.⁹³ Congress should act now to withdraw all remaining US support for the Saudi/UAE-led military campaign in Yemen.

⁹³ See, e.g., Mark Landler, *In Extraordinary Statement, Trump Stands with Saudis Despite Khashoggi Killing*, N.Y. Times (Nov. 20, 2018), <https://www.nytimes.com/2018/11/20/world/middleeast/trump-saudi-khashoggi.html>.



Destruction from airstrikes on Sheikh Ahmed Al-Faza Primary School in At-Tuhayat District, Hudaydah Governorate

1. Violations of statutes governing arms sales

US law restricts arms sales to states violating human rights and humanitarian law. An American Bar Association assessment concluded that US arms sales to Saudi/UAE-led Coalition countries for use in Yemen violate the Foreign Assistance Act (FAA) and Arms Export Control Act (AECA). By their terms, these statutes apply to both foreign military sales—agreements between governments—and direct commercial sales of weapons by US companies.⁹⁴

Foreign Assistance Act

The FAA prohibits provision of “security assistance” to any

⁹⁴ Professor Michael Newton, A.B.A., *An Assessment of the Legality of Arms Sales to the Kingdom of Saudi Arabia in the Context of the Conflict in Yemen* 16 (May 19, 2017) [hereinafter A.B.A. Assessment] However, the ABA found that in practice the State Department does not conduct vetting of direct commercial sales under the FAA.

country that engages in “a consistent pattern of gross violations of internationally recognized human rights.”⁹⁵ Security assistance includes military assistance and sales of defense articles or services.⁹⁶ The Secretary of State must submit an annual report on the human rights practices of any proposed recipient of security assistance.⁹⁷ Notably, this report should include information on war crimes, severe violations of religious freedom, extrajudicial killing, and torture.⁹⁸ The FAA also prohibits provision of security assistance to any country that directly or indirectly restricts the transport or delivery of US humanitarian assistance⁹⁹ and prohibits security assistance to any unit of a foreign security force “if the Secretary of State has credible information that such unit has committed a gross violation of human rights.”¹⁰⁰

US export of arms for Coalition use in Yemen violates the Foreign Assistance Act

As shown above, IHL violations by the Saudi/UAE-led Coalition in Yemen are severe and consistent enough to amount to “gross violations of internationally recognized human rights.” Not only has the Coalition repeatedly engaged in apparently unlawful attacks on civilians and civilian infrastructure, but UAE forces have also operated a network of secret prisons in southern Yemen, where they subjected detainees to extreme forms of torture.¹⁰¹ Detainees were tied to spits and spun over fire, flogged with wire, and sexually assaulted, according to the Associated Press.¹⁰² Additionally, the United States’ own human rights reports conclude that

⁹⁵ 22 U.S.C. § 2304(a)(2). An exception applies if “that extraordinary circumstances exist warranting provision of such assistance and issuance of such licenses” as certified in writing by the President to the Speaker of the House of Representatives and the chairman of the Committee on Foreign Relations of the Senate. This notification has not occurred. *Id.*

⁹⁶ 22 U.S.C. § 2304(d).

⁹⁷ 22 U.S.C. § 2304(b).

⁹⁸ *Id.*

⁹⁹ 22 U.S.C. § 2378-1(a).

¹⁰⁰ 22 U.S.C. § 2378d(a).

¹⁰¹ Maggie Michael, *In Yemen’s Secret Prisons, UAE Tortures and US Interrogates*, AP (June 22, 2017), <https://www.apnews.com/4925f7f0fa654853bd6f2f57174179fe/In-Yemen%27s-secret-prisons,-UAE-tortures-and-US-interrogates>; Human Rights Watch, *Yemen: UAE Backs Abusive Local Forces* (June 22, 2017), <https://www.hrw.org/news/2017/06/22/yemen-uae-backs-abusive-local-forces>. See also Human Rights Council, 39th Session, Situation of Human Rights in Yemen, Including Violations and Abuses since September 2014, Report of the United Nations High Commissioner for Human Rights Containing the Findings of the Group of Independent Eminent International and Regional Experts and a Summary of Technical Assistance Provided by the Office of the High Commissioner to the National Commission of Inquiry, U.N. Doc. A/HRC/39/43, ¶ 65-80 (Aug. 17, 2018); AMNESTY INT’L, “GOD ONLY KNOWS IF HE’S ALIVE:” ENFORCED DISAPPEARANCE AND DETENTION VIOLATIONS IN SOUTHERN YEMEN (2018), <https://www.amnesty.org/download/Documents/MDE3186822018ENGLISH.PDF>.

¹⁰² *Id.*

Saudi Arabia¹⁰³ and the UAE¹⁰⁴ consistently and flagrantly engage in gross human rights violations domestically, in the areas that the FAA singles out. This serves as an independent ground for the US to stop assistance under the FAA.

The Saudi/UAE-led Coalition has also maintained a naval blockade of Yemeni ports that restricts US provision of humanitarian assistance, bombed a bridge that the US put on a no-strike list because it was essential to the provision of humanitarian assistance, and otherwise impeded the ability of the US to remedy the severe food shortages and starvation in Yemen.¹⁰⁵ The FAA bans security assistance to countries involved in limiting the US's ability to deliver humanitarian aid. There is little information in the public record about the specific Saudi or UAE military units that have committed gross human rights violations, but US training missions should enable the US to obtain this information and stop assistance to those units as required by the FAA. Assistance may be restored under this provision if the recipient government takes effective measures to hold those responsible for violations to account, but as described above, Coalition investigations have proven inadequate thus far.¹⁰⁶

[US export of arms for Coalition use in Yemen violates the Arms Export Control Act](#)

The AECA governs arms sales by the US government and US companies, allowing arms sales for enumerated purposes only. According to the ABA, the only plausible permitted purpose for

military aid to Saudi Arabia is “for legitimate self-defense.”¹⁰⁷ The Saudi/UAE-led Coalition claims to be acting in Yemen as part of a collective self-defense effort at the request of the Yemeni government. However, self-defense under international law must be necessary and proportional to the threat. Since widespread attacks on non-military targets—like those documented in this report—are not necessary nor can they be proportional to the threat, such actions cannot constitute legitimate self-defense.¹⁰⁸ US sales of weapons used in these attacks are therefore prohibited by the AECA.

The administration's failure to comply with the AECA and FAA is not the end of the story. These laws both have provisions allowing Congress to disapprove arms sales. Under the FAA, either house of Congress can request a report on the human rights practices of any recipient of security assistance, and Congress may adopt a joint resolution terminating security assistance thereafter.¹⁰⁹

Under the AECA, Congress can bring a privileged joint resolution of disapproval up to 30 days after the notification of any planned arms deal.¹¹⁰ Congressional opponents of the last weapons sale to Saudi Arabia in June 2017 fell four votes short of blocking the sale in the Senate under the AECA.¹¹¹ This represented a substantial increase in support from September 2016, when a vote against a tank sale to Saudi Arabia garnered only 27 votes from US senators.¹¹² In October 2018, Senator Chris Murphy declared his plan to introduce a resolution of disapproval upon Congressional notification of the next arms sale to Saudi Arabia. He predicts increased support for such a resolution in light of continued civilian casualties in Yemen and Saudi operatives' high-profile murder of US-based journalist Jamal Khashoggi.¹¹³ Senate rules also allow

103 The 2017 State Department country report on Saudi Arabia's human rights practices found credible allegations of widespread violations, including: unlawful and politically motivated killings; torture; arbitrary arrests and detention, including of lawyers, human rights activists, and political prisoners; and restrictions on freedoms of peaceful assembly, association, movement, and religion. Saudi law criminalizes the public practice of any non-Muslim religion, challenges to the religion of the King, and “any attempt to cast doubt on the fundamentals of Islam.” Saudi Arabia has executed people for allegedly violating these laws. The Saudi regime's disregard for human rights, as documented in the 2017 State Department report, is consistent with the findings of reports from previous years. US Dep't of State, Bureau of Democracy, Human Rights and Labor, Country Reports on Human Rights Practices for 2017, Saudi Arabia, <http://www.state.gov/j/drl/rls/hrrpt/humanrightsreport/index.htm?year=2017&dclid=277263>; A.B.A. Assessment, *supra* note MNA, at 10.

104 The 2017 State Department country report on the UAE's human rights practices found credible allegations of disappearances; torture; arbitrary arrests and detention, including of political prisoners; denials of fair trials; and restrictions on freedoms of speech, assembly, and association. UAE law forbids conversion from Islam and limits public practice of non-Muslim religions. Acts that the government considers blasphemous or insulting to religions are criminal offenses. US Dep't of State, Bureau of Democracy, Human Rights and Labor, Country Reports on Human Rights Practices for 2017, United Arab Emirates, <http://www.state.gov/j/drl/rls/hrrpt/humanrightsreport/index.htm?year=2017&dclid=277269>; US Dep't of State, Bureau of Democracy, Human Rights and Labor, International Religious Freedom Report for 2017, United Arab Emirates, <http://www.state.gov/j/drl/rls/irf/religiousfreedom/index.htm?year=2017&dclid=281010>.

105 A.B.A. Assessment, *supra* note MNA, at 15.

106 *Id.*; Human Rights Watch, *Hiding Behind the Coalition*, *supra* note HBC.

107 22 U.S.C. § 2754; A.B.A. Assessment, *supra* note MNA, at 17.

108 A.B.A. Assessment, *supra* note MNA, at 18; Oona Hathaway et al., *The Legality of US Arms Sales to Saudi Arabia for Use in Yemen*, JUST SECURITY (Mar. 7, 2018), <https://www.justsecurity.org/53449/u-s-arms-sales-saudi-arabia-yemen/>.

109 Under the FAA, either house of Congress or its committee on foreign relations can request a report from the Secretary of State on any recipient of security assistance. The report must describe the human rights practices of the recipient government; steps the US has taken to promote respect for human rights in that country and disassociate itself from any practices inimical to human rights; extraordinary circumstances, if any, that necessitate continuation of security assistance; and whether “it is in the national interest of the United States to provide such assistance.” The report is considered in the Senate. If the Secretary of State fails to transmit the report to Congress within thirty days of the request, no security assistance can be delivered to the named country until the report is transmitted. Once the report is transmitted, “Congress may at any time thereafter adopt a joint resolution terminating, restricting, or continuing security assistance for such country.” 22 U.S.C. § 2304(c).

110 22 U.S.C. § 2776(b). *See also* A.B.A. Assessment, *supra* note MNA, at 23.

111 Elana Schor, *Senate Blocks Weapons Sales to Saudi Arabia*, POLITICO (June 13, 2017), <https://www.politico.com/story/2017/06/13/saudi-arabia-weapons-sales-senate-approves-239505>.

112 Jeff Abramson, *Arms Sales to Saudi Arabia and Bahrain Should be Rejected*, ARMS CONTROL ASSOC. (May 2017), <https://www.armscontrol.org/issue-briefs/2017-05/arms-sales-saudi-arabia-bahrain-should-rejected>.

113 Elana Schor, *Senators Push Vote to Block Saudi Arms Sales After Khashoggi Dis-*

any Senator to put a unilateral temporary hold, requiring a cloture vote to lift, on an arms deal. Senator Bob Menendez exercised this option in late June, calling the situation in Yemen “the world’s worst humanitarian crisis.”¹¹⁴

2. Constitutional implications of US involvement in Yemen

The US Constitution gives Congress the powers “to declare War,” “make Rules for the Government and Regulation of the land and naval forces,” and appropriate funds.¹¹⁵ The President has independent power as the Commander in Chief of the military.¹¹⁶ The 1973 War Powers Resolution requires termination of any engagement of US armed forces in hostilities without approval by Congress after sixty days, with limited exceptions.¹¹⁷ The scope of the executive power to use armed force without Congressional approval has been hotly debated for most of US history. Unsurprisingly, Presidents tend to take a broad view of their own powers, while members of Congress often take a more restricted view.¹¹⁸ Courts have refused to address the question.¹¹⁹

The War Powers Resolution debate in Congress

The US has justified its use of force against Al Qaeda and ISIS in Yemen based on the 2001 Authorization for Use of Military Force (AUMF) against the perpetrators of 9/11. However, there has been no Congressional authorization of any kind for involvement in conflict with the Houthi armed group.¹²⁰ Members of Congress from both parties have castigated the executive’s unilateral commitment of US weapons and military support to the Saudi/UAE-led Coalition, arguing that US involvement in Yemen violates the Constitutional requirement for Congress to declare war.¹²¹

appearance, POLITICO (Oct. 11, 2018), <https://www.politico.com/story/2018/10/11/senators-saudi-arms-sales-khashoggi-895341>.

114 Jonathan Broder, *Yemen Civil War: US Lawmakers Raise Alarm Bells About Pentagon’s Role in ‘World’s Worst Humanitarian Crisis’*, NEWSWEEK (Aug. 7, 2018), <https://www.newsweek.com/yemen-humanitarian-crisis-civil-war-lawmakers-humanitarian-crisis-pentagon-1059212>.

115 US Const. art. I, § 8-9.

116 US Const. Art. II § 2.

117 50 U.S.C. § 1541-1549.

118 See, Library of Congress, *War Powers*, <https://www.loc.gov/law/help/war-powers.php>.

119 *Campbell v. Clinton*, 203 F.3d 19 (D.C. Cir. 2000) (holding that members of Congress did not have standing to challenge presidential violations of the War Powers Resolution in court).

120 Oona Hathaway & Aaron Haviland, *The Legality of US Support for the Saudi-Led Campaign in Yemen*, JUST SECURITY (Mar. 1, 2018), <https://www.justsecurity.org/53226/legality-u-s-support-saudi-campaign-yemen/>.

121 Mike Lee, Bernie Sanders & Chris Murphy, *Why Congress Must Vote on the United States’ Role in Yemen*, WASH. POST (Feb. 28, 2018), https://www.washingtonpost.com/opinions/why-congress-must-vote-on-the-united-states-role-in-yemen/2018/02/28/2ce853b4-1cc8-11e8-9de1-147dd2df3829_story.html?utm_term=.43865df0ad55 (making Constitutional and War Powers Resolution arguments); Rand Paul, *Rare Op-Ed: The US Should Not Fund Saudi Arabia’s War on Yemen*, RARE

Members of Congress also argue that US Armed Forces’ provision of targeting assistance and other support to the Saudi/UAE-led Coalition for longer than 60 days without Congressional approval violates the War Powers Resolution.¹²²

In September 2017, a group of members of Congress introduced a resolution in the House of Representatives directing the President to withdraw from hostilities in Yemen pursuant to the War Powers Resolution.¹²³ In response, a letter from the Acting General Counsel of the Department of Defense, William Castle, claimed that “US forces do not currently command, coordinate, accompany, or participate in the movement of coalition forces in counter-Houthi operations” and therefore US forces are not engaged in hostilities.¹²⁴ This claim was patently inconsistent with publicly available facts about refueling operations as well as DOD statements about

(Apr. 23, 2017), <https://rare.us/rare-politics/issues/foreign-policy/rand-paul-the-u-s-should-not-fund-saudi-arabias-war-on-yemen/> (making a Constitutional argument).

122 Hathaway & Haviland, *supra* note OHA. Specifically, the Members claim that the assistance violates Section 8(c) of the Resolution, which defines the term “introduction of United States Armed Forces” to include “the assignment of members of such armed forces to command, coordinate, participate in the movement of, or accompany the regular or irregular military forces of any foreign country or government when such military forces are engaged, or there exists an imminent threat that such forces will become engaged, in hostilities.” 50 U.S.C. § 1547(c).

123 Directing the President Pursuant to Section 5(c) of the War Powers Resolution to Remove United States Armed Forces from Unauthorized Hostilities in the Republic of Yemen, H.R. Con. Res. 8, 115th Cong. (2017); Ro Khanna, Mark Pocan & Walter Jones, *Stop the Unconstitutional War in Yemen*, Op-ed, N.Y. Times, (Oct. 10, 2017), https://www.nytimes.com/2017/10/10/opinion/yemen-war-unconstitutional.html?_r=0.

124 Letter from William S. Castle, Acting Gen. Counsel of the Dep’t of Defense, to Mitchell McConnell, Majority Leader, US Sen. (Feb. 27, 2018); see also Hathaway & Haviland, *supra* note OHA.



Destruction from October 2016 airstrike on funeral in As-Sabain District, Amanat Al-Asimah Governorate

the presence of 50 US personnel in Saudi Arabia as of February 2018—personnel tasked with providing advice and logistical support in the anti-Houthi campaign.¹²⁵

The 2017 House resolution did not come to a vote. The House instead passed a non-binding resolution noting that Congress had not specifically authorized use of force against parties in the Yemeni civil war not covered by the 2001 AUMF or the AUMF on Iraq.¹²⁶ In February 2018, 14 Senators introduced another



Destruction from April 2015 airstrike on civilian home in Dar Sa'ad District, Aden Governorate

resolution to end US involvement in unauthorized hostilities in Yemen.¹²⁷ The Senate voted 55 to 44 to table the resolution.

Congress finally acted to reign in US support for the Saudi/UAE-led Coalition in August 2018. Congress included a provision in the 2019 National Defense Authorization Act (NDAA) requiring the Secretary of State to certify within 30 days that Saudi Arabia and the United Arab Emirates were taking steps to end the civil war in Yemen, alleviate the humanitarian crisis, and reduce the harm of their military operations to civilians and civilian infrastructure.¹²⁸ If the Secretary could not certify that Saudi Arabia

and the UAE were undertaking such measures, the NDAA provision stopped expenditure of funds for in-flight refueling of Coalition planes, with a few exceptions.¹²⁹ Members of Congress proposed the provision after CNN reported that a Coalition attack on a school bus that killed dozens of children involved a US-made bomb.¹³⁰ Senator Chris Murphy, a supporter of the NDAA provision, explained its purpose in a press release, saying “[e]ither the Pentagon should be 100% certain that US weapons and funding aren’t being used to commit war crimes in Yemen, or we should cut off US support right now. [More than forty] innocent kids are now dead, joining the thousands of other civilians who have been murdered by the Saudi-led coalition in Yemen.”¹³¹

In accordance with the NDAA provision, Secretary of State Michael Pompeo provided a certification to Congress in September 2018, describing the four mitigation measures outlined above.¹³² As argued above, these mitigation measures are unconvincing. The certification failed to present a plausible US administration plan to help ensure that Coalition violations of the laws of war ceased.

On November 9, 2018, the US and Saudi Arabia announced that the US would cease refueling Coalition planes.¹³³ The countries ascribed the change to the Coalition’s enhanced capacity to handle its own refueling. However, observers have suggested that the announcement was a symbolic response to the murder of US-based journalist Jamal Khashoggi and increasing Congressional opposition to the war.¹³⁴ Although ending refueling assistance is a positive step toward US disengagement from the conflict and ful-

claimed this and other provisions only applied when notification was “feasible and consistent” with his “exclusive constitutional authorities as Commander in Chief and as the sole representative of the Nation in foreign affairs.” Scott R. Anderson, *What to Make of Trump’s NDAA Signing Statement*, LAWFARE (Aug. 23, 2018), <https://www.lawfareblog.com/what-make-trumps-ndaa-signing-statement>. This wide conception of the President’s sole foreign affairs power is in line with claims of previous presidents but is at odds with the Constitutional provisions giving Congress power in this area. *Id.*

129 H.R.5515, 115th Cong., § 1290(a)(1).

130 Human Rights Watch, *Yemen: Coalition Bus Bombing Apparent War Crime* (Sept. 2, 2018), <https://www.hrw.org/news/2018/09/02/yemen-coalition-bus-bombing-apparent-war-crime>; Nima Elbagir et al., *Bomb that Killed 40 Children in Yemen was Supplied by the US*, CNN (Aug. 17, 2018), <https://www.cnn.com/2018/08/17/middleeast/us-saudi-yemen-bus-strike-intl/index.html>. Based on its rigorous methodology, Mwatana could not positively identify the bomb used in the school bus attack.

131 Sen. Chris Murphy, Press Release, *Murphy Amendment Cuts Off Funds for War in Yemen until Pentagon Certifies Saudi-Led Coalition Is Not Violating International Law and US Policy* (Aug. 17, 2018).

132 Lewis, *supra* note GPC.

133 Deirdre Shesgreen, *Trump Administration to Curtail Military Support for Saudi-led War in Yemen*, USA Today (Nov. 9, 2018), <https://www.usatoday.com/story/news/world/2018/11/09/trump-administration-curb-military-support-saudi-led-yemen-war/1949821002/>.

134 Sam Kiley, *US Decision to Stop Refueling Saudi Jets Attacking Yemen ‘Means Nothing’*, CNN (Nov. 12, 2018), <https://www.cnn.com/2018/11/11/middleeast/us-end-airborne-refueling-saudi-arabia-analysis-intl/index.html>.

125 Blanchard, *supra* note CRS, at 22, n. 66.

126 H.R. Res. 599, 115th Cong. (2017); *see also* Forum on the Arms Trade, *Yemen War Powers Resolution - H.Con.Res 81 Resources*, <https://www.forumarmstrade.org/hconres81.html>.

127 A Joint Resolution to Direct the Removal of United States Armed Forces from Hostilities in the Republic of Yemen that Have Not Been Authorized by Congress, S.J.Res.54, 115th Cong. (2018).

128 John S. McCain National Defense Authorization Act for Fiscal Year 2019, H.R.5515, 115th Cong. § 1290(c) (2018). President Trump’s signing statement

fills the terms of the 2019 NDAA, it is not sufficient in isolation, given the Coalition’s reported ability to now refuel its own aircraft.¹³⁵ The US continues to provide arms, intelligence, targeting assistance, and maintenance and logistical support to Coalition operations in Yemen.¹³⁶ Furthermore, the administration is free to resume refueling assistance at any time. In order to ensure that US assistance is not used in future Saudi/UAE-led Coalition violations, Congress should immediately enact legislation withdrawing US support for the Coalition’s ongoing military campaign in Yemen, which has and is continuing to wreak devastation.

Members of Congress are ready to take action. On February 13, 2019, the House of Representatives passed a historic resolution to rescind US military support for the Coalition military campaign, marking the first time in US history that the House has voted to end military involvement in a conflict under the War Powers Resolution.¹³⁷ The Senate is expected to vote on a parallel resolution in the next month.¹³⁸ Congress should pass this resolution and continue building support to overcome a potential presidential veto.

In the last few months, the humanitarian crisis in Yemen has worsened and the Saudi/UAE-led Coalition has continued to kill and maim civilians. The House has taken a crucial step toward halting US involvement, and the Senate should follow suit as soon as possible to make clear that Congress is not willing to risk US complicity in any more unlawful Coalition attacks.

D. Failure of Weapons Manufacturers to Abide by Human Rights Responsibilities

Businesses, including weapons manufacturers, have a responsibility to avoid contributing to or causing human rights abuses. According to a growing body of international principles, companies are expected to consider and respond appropriately to the human rights impacts of their business activities.

The United Nations Guiding Principles on Business and Human Rights (UNGPs) were enacted by a unanimous Human Rights Council resolution in 2011.¹³⁹ The UNGPs recognize the responsibilities of businesses to respect human rights¹⁴⁰ by requiring that

135 *Id.*

136 See Section I, *supra*; Shesgreen, *supra* note DST.

137 Patricia Zengerle, *US House Backs Measure to End US Support for Saudis in Yemen War*, REUTERS (Feb. 13, 2019), <https://www.reuters.com/article/us-usa-saudi-yemen/u-s-house-backs-measure-to-end-u-s-support-for-saudis-in-yemen-war-idUSKCN1Q230A>.

138 *Id.*

139 Human Rights Council Res. 17/4, U.N. Doc. A/HRC/17/4 (June 16, 2011).

140 Guiding Principles on Business and Human Rights: Implementing the United Nations ‘Protect, Respect and Remedy’ Framework, U.N. Doc. A/HRC/17/31, General Principles (2011) [hereinafter UNGPs].



Remnants of a Raytheon-manufactured bomb recovered at the scene of a Coalition attack on a civilian factory complex (see Section II). The marking “96214” refers to Raytheon’s CAGE number.

businesses both “avoid infringing on the human rights of others” and “address adverse human rights impacts with which they are involved.”¹⁴¹ These responsibilities exist independently of States’ abilities or willingness to fulfill their human rights obligations.¹⁴² In situations of armed conflict, businesses are expected to respect international humanitarian law.¹⁴³

Businesses are not only responsible for the human rights impacts

141 *Id.* at principle 11.

142 *Id.* at commentary on principle 11.

143 *Id.* at commentary on principle 12.



View of destroyed exterior of Asma'a bint Abi Bakr School in Al-Mansuriyah District, Hudaydah Governorate after August 2015 airstrike

of their own activities, but also expected to “seek to prevent or mitigate adverse human rights impacts that are directly linked to their operations, products or services by their business relationships...”¹⁴⁴ Each business is expected to put in place an ongoing due diligence process to identify, prevent, and mitigate adverse human rights impacts.¹⁴⁵ When a business identifies adverse human rights impacts connected to its activities, it is expected to take appropriate action, such as using its leverage to cease or mitigate the adverse impact¹⁴⁶ or ending its business relationship.¹⁴⁷ If a business finds that it has “caused or contributed to adverse impacts,” it is expected to provide for or cooperate in the remediation of these impacts.¹⁴⁸

The OECD Guidelines for Multinational Enterprises are recommendations addressed to companies operating in OECD states, including the United States.¹⁴⁹ Like the UNGPs, the OECD Guidelines require a human rights due diligence process. The Guidelines also establish a system of National Contact Points (NCPs) to help resolve disputes. In 2016, human rights organizations brought a complaint to the US NCP against Boeing and Lockheed Martin, arguing that these defense contractors sold arms to Saudi Arabia without undertaking a human rights due diligence

144 *Id.* at principle 13.

145 *Id.* at principles 15, 17.

146 *Id.* at principle 19.

147 *Id.* at commentary on principle 19.

148 *Id.* at principle 22.

149 OECD Guidelines for Multinational Enterprises (2011), <http://mneguidelines.oecd.org/guidelines/>.

process or measures to prevent their products from contributing to human rights abuses in Yemen.¹⁵⁰ The NCP declined to provide mediation in this case because mediation would require scrutiny of state conduct, which is outside the NCP’s mandate. However, the NCP noted that under the Guidelines, “companies in every sector should carry out human rights due diligence and avoid causing or contributing to adverse human rights impacts.”¹⁵¹

[Arms sales for Coalition use in Yemen violate businesses’ responsibility to respect human rights](#)

If many of the companies supplying Saudi Arabia, the UAE, and other Coalition countries with arms were undertaking reasonable human rights due diligence processes, they would find that their products are being used to kill and maim Yemeni civilians in attacks that violate IHL’s proportionality and distinction requirements. These arms suppliers would also find that, after four years of conflict, the Coalition has failed to end its unlawful attacks.¹⁵² This record of repeated abuse is the basis for a criminal complaint brought in Italy against the Italian arms company RWM Italia S.p.A., which supplied the suspension lug for a US-made bomb used in a 2016 Coalition airstrike that killed a family of six (see Section II, *supra*).¹⁵³

Companies supplying arms should take steps to mitigate adverse human rights impacts—by, for example, engaging with the Coalition about how weapons are used. However, given the US’s lack of success in purported attempts to improve the Coalition’s behavior, such mitigation measures are not sufficient to ensure that weapons will be used lawfully. Arms suppliers should therefore end sales to Saudi Arabia, the UAE, and other Coalition countries altogether. In addition, companies whose products have contributed to adverse human rights impacts—including Raytheon and Boeing, as documented in this report—should actively engage with grievance mechanisms and provide victims with remediation.¹⁵⁴

At a minimum, arms dealers should end sales of weapons that are particularly unlikely to be used in compliance with legal standards. The use of cluster munitions, for example, is increasingly viewed as a per se violation of international law. In contravention of the IHL principle of distinction, the Coalition has regularly used these weapons in civilian areas, killing civilians and destroy-

150 US National Contact Point for the OECD Guidelines for Multinational Enterprises, Final Statement, Specific Instance between European Centre for Democracy and Human Rights, Defenders for Medical Impartiality, and Arabian Rights Watch Association, and The Boeing Company and Lockheed Martin Corporation (Nov. 18, 2016).

151 *Id.* at 2.

152 See Section II, *supra*.

153 See European Center for Constitutional and Human Rights, *European Responsibility for War Crimes in Yemen*, <https://www.ecchr.eu/en/case/european-responsibility-for-war-crimes-in-yemen/>; See also Wilcken, *supra* note PWA.

154 UNGPs, *supra* note GPP, at principle 22.

ing civilian homes and other civilian objects.¹⁵⁵ The unexploded submunitions left behind by these weapons have killed and injured civilians in Yemen, including children.¹⁵⁶ The inherently indiscriminate nature of cluster munitions makes it particularly difficult, if not impossible, to mitigate their human rights impacts. Companies should immediately cease producing, transferring, and selling cluster munitions as well as call on Coalition members to cease using any cluster munitions already in their possession.

Finally, unlike many State-based laws concerning transnational arms sales, the UNGPs apply to transnational companies that open subsidiaries in Saudi Arabia and produce weapons domestically.¹⁵⁷ Under the UNGPs, both the subsidiary and transnational parent company are responsible for the negative human rights impacts of their business relationships.¹⁵⁸

Companies should disengage from business relationships that violate their responsibility to respect human rights. Raytheon, Boeing, and other arms suppliers whose weapons have caused or contributed to Coalition violations in Yemen should end arms sales to Saudi Arabia, the UAE, and other Coalition countries and remediate victims of apparently unlawful attacks in which their products were used.

155 See Section II, *supra*.

156 Amnesty Int'l, *supra* note YCC; Human Rights Watch, *Technical Briefing Note: Cluster Munition Use in Yemen*, *supra* note TBN.

157 See Wilcken, *supra* note PWA for Raytheon Saudi Arabia's plans for domestic production.

158 UNGPs, *supra* note GPP, at principle 13.

“After this destruction of the school that was right in front of our house, where will our children study?”

—Ahmed Ali Hassan

Eyewitness to attack in Taizz Governorate
June 2015



Scene from aftermath of June 2015 airstrike on Uqba bin Nafie School and Al-Masnah Health Clinic in At-Tā'iziyah District, Taizz Governorate

RECOMMENDATIONS



TO SAUDI ARABIA, THE UAE, AND OTHER COALITION MEMBERS:

- Assess Coalition military operations for compliance with international humanitarian law and ensure compliance.
- Abide by the prohibition on attacks that do not discriminate between civilians and military objectives, and that cause civilian harm disproportionate to the expected military benefit.
- Ensure that entire cities or neighborhoods are never declared or considered military targets.
- If there is doubt about the status of a person or object, presume that the person or object is civilian, in line with international law.
- Cease the use of inherently indiscriminate weapons, including munitions banned under the Convention on Cluster Munitions, and accede to the Convention without delay.
- Cease the use of explosive weapons with wide-area effects in populated areas.
- Conduct pattern of life analyses before carrying out attacks and refrain from launching attacks on military targets adjacent to populated areas, roads, and highways during working hours when such venues are likely to be congested.
- Take all feasible measures to minimize harm to civilians, including by issuing effective warnings to civilians before attacks.
- Conduct credible, impartial, and transparent investigations of all the incidents featured in this report and all other Coalition attacks that are credibly alleged to have violated the laws of war.
- Appropriately prosecute military personnel, including as a matter of command responsibility, who are responsible for war crimes.
- Review and update targeting procedures regularly to ensure that they are consistent with international humanitarian law and to minimize civilian harm.
- Provide prompt and adequate compensation for all civilian victims of unlawful strikes, including for deaths, injuries, and property damage, and adopt a mechanism to provide condolence payments for civilian victims of military operations, regardless of the attacks' lawfulness.
- Publicly release information regarding civilian casualties and the intended military targets of attacks that resulted in civilian deaths or injuries and disclose the states that participated in such attacks.
- Accept and cooperate fully with investigations by international bodies, like the United Nations, into alleged Saudi/UAE-led Coalition violations, including by granting unimpeded access to international investigators.

- Accede to the Arms Trade Treaty without delay.
- Accede to the Rome Statute, the founding treaty of the International Criminal Court (ICC), without delay.

TO THE INTERNATIONALLY RECOGNIZED GOVERNMENT OF YEMEN:

- Condemn the Coalition's violations of international humanitarian law and demand that it comply with IHL during ongoing military operations in Yemen.
- Demand that the Coalition cease the use of cluster munitions in Yemen and accede to the Convention on Cluster Munitions without delay.
- Deliver needed medical and humanitarian assistance to victims of Coalition attacks.
- Work with the Coalition to ensure prompt and adequate compensation to civilian victims of unlawful attacks and condolence payments to civilians who suffer losses, regardless of the attacks' lawfulness.
- Demand that the Coalition publicly release information regarding civilian casualties, the intended military targets of attacks that resulted in civilian casualties, and the actors who participated in such attacks.
- Cooperate fully with and grant unimpeded access to international investigators.
- Accede to the Arms Trade Treaty without delay.
- Accede to the Rome Statute, the founding treaty of the International Criminal Court (ICC), without delay.

TO THE UNITED STATES:

- Immediately halt arms transfers to Coalition countries for likely use in the military campaign in Yemen, including by passing legislation to halt current transfers of arms and defense services to Coalition countries and disapproving any future transfers notified to Congress.
- Immediately halt all other forms of assistance to the Coalition military campaign in Yemen.
- Pass legislation to prevent resumption of arms sales and assistance to Coalition countries for use in Yemen.
- Demand credible investigations into alleged violations by the Saudi/UAE-led Coalition, including violations in which the Coalition used weapons supplied by the US or in which US assistance or forces may have contributed to the attack, and contribute to redress for victims of unlawful attacks where US arms, assistance, or forces contributed.

- Conduct investigations into any airstrikes for which there is credible evidence that the laws of war may have been violated and that the US participated.
- Publicly clarify the US role in the conflict, including what steps the US has taken to minimize civilian casualties in air operations and to investigate alleged violations of the laws of war in which US forces may have participated.
- End exports of munitions banned under the Convention on Cluster Munitions and accede to the Convention without delay.
- Ratify the Arms Trade Treaty without delay.
- Support the ongoing work of the UN Group of Eminent Experts into abuses by all parties to the conflict.
- Ratify the Rome Statute, the founding treaty of the International Criminal Court (ICC), without delay.

TO THE UNITED KINGDOM, ITALY, AND OTHER EUROPEAN STATES:

- Immediately halt arms transfers to Coalition countries for use in Yemen.
- Abide by obligations under the Arms Trade Treaty.
- Ensure respect for the “Consolidated EU and National Arms Export Licensing Criteria,” including by improving domestic export authorization processes to prevent arms transfers when there is a clear risk that arms may be used to commit IHL violations.
- Demand credible investigations into alleged IHL violations by the Saudi/UAE-led Coalition, including violations in which the Coalition used weapons supplied by European states, and contribute to redress for victims of unlawful attacks where European arms contributed.
- Support the ongoing work of the UN Group of Eminent Experts into abuses by all parties to the conflict.

TO THE ANSAR ALLAH (HOUTH) GROUP:

- Abide by the laws of war, including the prohibition on using human shields.
- Avoid placing military objectives in populated areas and take steps to remove civilians from areas under attack.
- Refrain from using civilian areas as depots for military equipment and from deploying or sheltering troops in populated civilian areas.

- Clarify to affiliated forces that they should never deploy or take shelter in schools or other civilian objects.
- Investigate alleged Houthi violations of the laws of war, including the incidents featured in this report.
- Cooperate fully with and grant unimpeded access to international investigators.

TO WEAPONS MANUFACTURERS:

- Put in place a due diligence process to identify, prevent, and mitigate negative human rights impacts from operations, including from past arms sales.
- Cease the production and sale of cluster munitions.
- Cease the sale of munitions to countries likely to use them in violation of international humanitarian law, including Saudi Arabia, the UAE, and other Coalition members.
- Set up grievance mechanisms and cooperate to provide remediation to victims of the adverse human rights impacts of products used in Yemen.
- Investigate whether it is possible to mitigate the likely human rights impacts of opening weapons manufacturing subsidiaries in Coalition countries with poor human rights and international humanitarian law records, such as Saudi Arabia, and disengage from any business relationship with adverse human rights impacts that cannot be mitigated.

TO THE UNITED NATIONS HUMAN RIGHTS COUNCIL:

- Support the Group of Eminent Experts on Yemen in their mandate to investigate allegations of abuses committed by all sides in the conflict, to identify perpetrators, and to issue recommendations, including to non-parties—such as assisting states and weapons manufacturers—potentially contributing to violations.
- Renew and strengthen the mandate of the Group of Eminent Experts on Yemen at the Council session in September.

“When the bomb exploded, the light turned the night into daylight. The sound shook the house as if it were the Day of Judgment.”

—Khadija Saleh

Eyewitness to attack in Aden Governorate
April 2015

