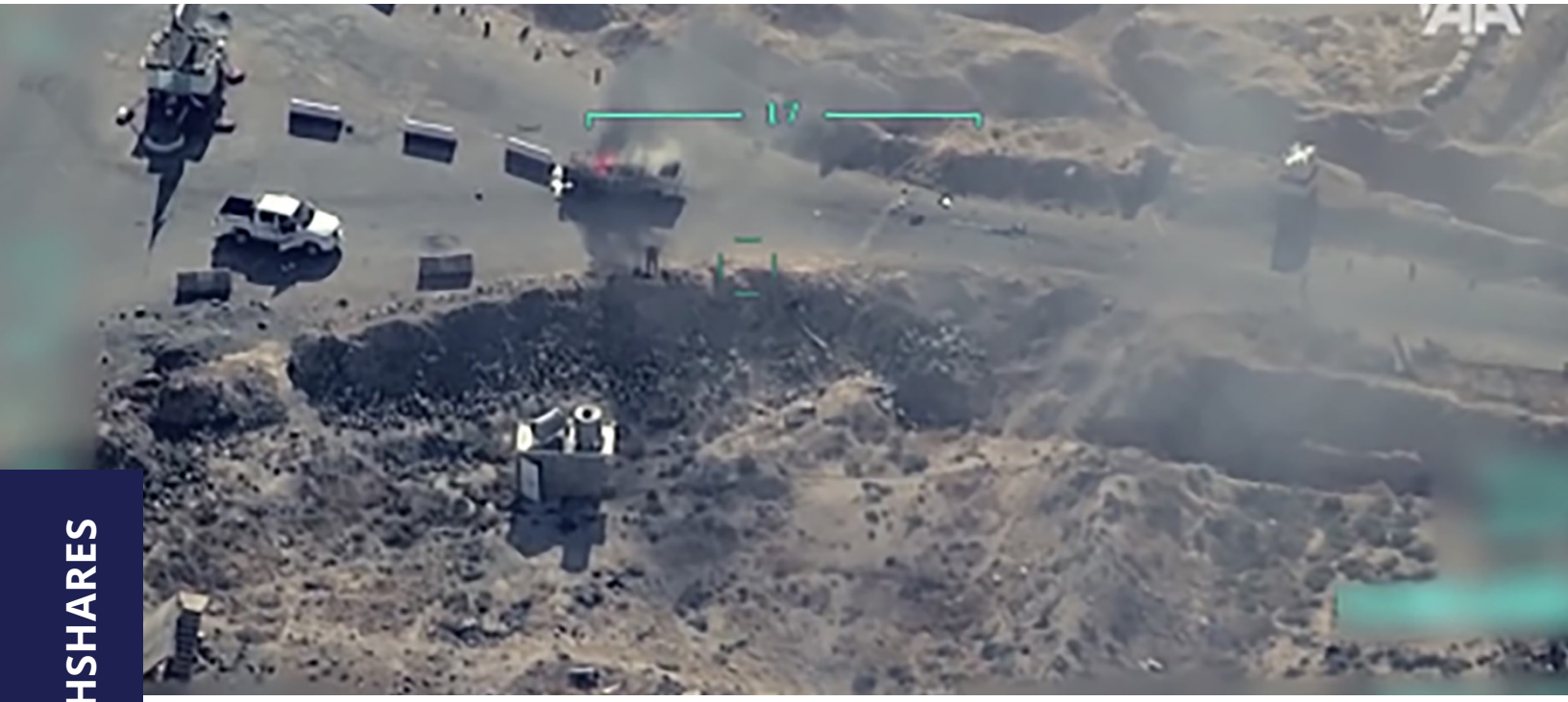
PLOUGHSHARES
SPECIAL REPORT

KILLER OPTICS

EXPORTS OF WESCAM SENSORS TO TURKEY – A LITMUS TEST OF CANADA'S COMPLIANCE WITH THE ARMS TRADE TREATY



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Killer Optics: Exports of WESCAM sensors to Turkey – a litmus test of Canada's compliance with the Arms Trade Treaty

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ACRONYMS AND ABBREVIATIONS

ATT	Arms Trade Treaty
CCC	Canadian Commercial Corporation
CIMT	Canadian International Merchandise Trade
EO/IR	Electro-Optical/Infra-Red
GAC	Global Affairs Canada
GNA	Government of National Accord (Libya)
HS	Harmonized System
IHL	International humanitarian law
ISTAR	Intelligence, surveillance, target acquisition, and reconnaissance
MALE	Medium-altitude long-endurance
PKK	Partiya Karkerên Kurdistanê (Kurdistan Workers' Party)
StatCan	Statistics Canada
THK	Türk Hava Kuvvetleri (Turkish Air Force)
UAV	Unmanned aerial vehicle

OVERVIEW

L3Harris WESCAM, the Canadian subsidiary of U.S. defence giant L3Harris, is one of the world's leading producers and exporters of Electro-Optical/Infra-Red (EO/IR) imaging and targeting sensor systems, with approximately 500-million CAD* in annual exports.[1] WESCAM is located in Burlington, Ontario.

Like most Canadian-based weapons manufacturers, WESCAM exports most of what it produces.[2] Its products are used in more than 80 countries on more than 190 platforms,[3] primarily to perform intelligence, surveillance, target acquisition, and reconnaissance (ISTAR).

Since 2017, Turkey has been a major customer for WESCAM products, second only to the United States. During this time, the Turkish military has not only been active in trying to put down an insurgency in southeast Turkey, but has become increasingly involved in armed conflicts in Syria, Iraq, and Libya.

Based on an analysis of Canada's international obligations, domestic arms controls, and an evaluation of Turkey's recent conduct during warfare, Canada's export of WESCAM sensors to Turkey poses a substantial risk of facilitating human suffering, including violations of human rights and international humanitarian law. Canadian officials are obligated by international and Canadian law to mitigate the risks of such transfers, including through the denial of export permits, when such risks are apparent from the outset—which appears to be the case with WESCAM exports to Turkey.

Project Ploughshares has collected evidence in government and public records, media reports, academic sources, accounts from credible human-rights monitors, and open-source data that strongly indicates that WESCAM EO/IR sensors, mounted on unmanned aerial vehicles (UAVs), have been used extensively by Turkey in its recent military activities. Such use raises serious red flags, as it has been alleged that Turkey's military has committed serious breaches of international humanitarian law (IHL) and other violations, particularly when conducting airstrikes.

It appears that Turkey has also exported UAVs equipped with WESCAM sensors to armed groups in Libya, a blatant breach of the nearly decade-old UN arms embargo.

The dramatic rise in exports of WESCAM systems to Turkey has persisted despite Canada's 2019 accession to the Arms Trade Treaty (ATT), the first binding framework that aims to regulate the international trade and transfer of weapons, and reduce the human suffering posed by their proliferation. The export of WESCAM sensors to Turkey constitutes a troubling case study of the way in which Canada is complying with its obligations under the ATT. If they are an indication of future Canadian practice in authorizing arms exports, the outlook is hardly promising.

* Unless otherwise noted, all values are 2020 constant Canadian dollars.

WESCAM EO/IR SENSORS

At their most basic, EO/IR systems are cameras that capture images across varying spectrums of light. EO/IR sensors are commonly fixed to vehicles and relay a live video feed to an operator. Also used in law enforcement, search and rescue, and media production, most are found in military applications. The increasing use of UAVs, which require EO/IR sensors to operate, has bolstered the EO/IR market.[4]

MX-15

WESCAM's most popular product line is the "MX" EO/IR series. The MX-15, used by militaries to conduct ISTAR, is a particular favourite. By November 2019, WESCAM had sold 2,500 MX-15s worldwide.[5]

The MX-15 is 419 millimetres (mm) wide and 495 mm high, weighing approximately 48.7 kilograms (kg).[6] Each unit is modular and can be configured to meet the needs of the buyer. The sensor offers a suite of functionalities, including full day- and night-vision capability, haze penetration, infrared imaging, and high magnification-zoom.

Fig. 1: WESCAM MX-15D. Source: Baykar Technologies[7]

The MX-15D model (Fig. 1), which possesses all base functionality, includes a laser designator, the critical component that directs smart munitions to targets. These munitions, such as laser-guided bombs or precision missiles, are either launched from a UAV equipped with the WESCAM system, or from other platforms working in tandem, such as Turkey's F-16 Fighting Falcon. While EO/IR systems such as the MX-15D do not 'shoot' at targets, many modern airstrikes would be impossible without them.

THE RELATIONSHIP BETWEEN WESCAM AND TURKEY

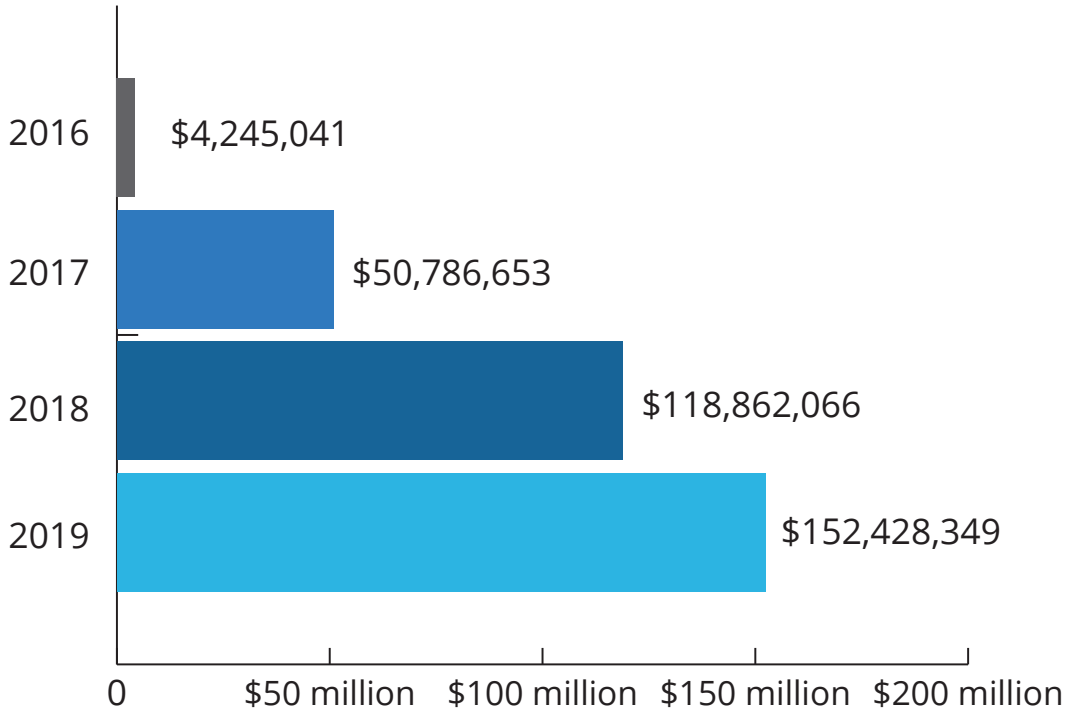
Photos taken at arms fairs and in conflict zones commonly display Turkish UAVs fitted with WESCAM products, usually the MX-15D, the favourite of the Turkish Air Force (Türk Hava Kuvvetleri or THK).[8] This model is easily identifiable when mounted to an airframe.

Baykar, the manufacturer of Turkey's most popular UAV, the TB2, has publicly lauded WESCAM systems and lists WESCAM as their sole EO/IR provider.[9] WESCAM now has an authorized service centre at the Baykar site in Istanbul.[10]

EXPORT TRENDS

Only in recent years has Turkey become a major customer for Canadian military goods (see Fig. 2). In 2016, Canadian arms exports to Turkey were worth only $4.2-million.[11] Then, in 2017, exports rose to $50.7-million, making Turkey Canada's sixth-largest export destination for arms.[12] In 2018, Turkey rose to fourth place ($118.8-million).[13] And in 2019, Turkey reached third place, purchasing $152.4-milion in Canadian weapons.[14] This ranking does not factor in exports to the United States, which are largely unreported by the government of Canada.

Fig. 2: Total Canadian military exports to Turkey, 2016-2019



WESCAM's share of Canadian arms exports to Turkey is not clear, but it is substantial. Some information can be found in the Global Affairs Canada (GAC) annual *Report on Exports of Military Goods from Canada*, in which weapons exports are organized by destination over 22 categories from Group 2 of Canada's Export Control List.[15]

As Project Ploughshares has frequently noted, these categories are so broad that it can be difficult to determine exactly what was exported to a given country. However, past contracts have shown that WESCAM EO/IR units are exported under classification 2-15, which includes "imaging or countermeasure equipment, … specially designed for military use, and specially designed components and accessories"; and more precisely, "recorders and image processing equipment, … cameras, photographic equipment, … image intensifier equipment, … infrared or thermal imaging equipment," and so forth. As WESCAM has no viable large-scale competitors in Canada, most of these exports would appear to be WESCAM sensors. Exports for 2019 that fall into category 2-15 to Turkey amount to $116,813,150.19. Total 2017-2019 exports of 2-15 to Turkey were worth $326,322,111.74.

However, WESCAM EO/IR sensors and, in particular, the MX-15D, may also be captured under classification 2-5, "fire control, and related alerting and warning equipment, and related systems, test and alignment and countermeasure equipment, … specially designed for military use, and specially designed components and accessories." This category includes "target acquisition, designation, range-finding, surveillance or tracking systems." As a main function of the MX-15D is target designation, it could fall under this category. Total 2019 exports of 2-5 to Turkey were valued at $60,226,103.20.

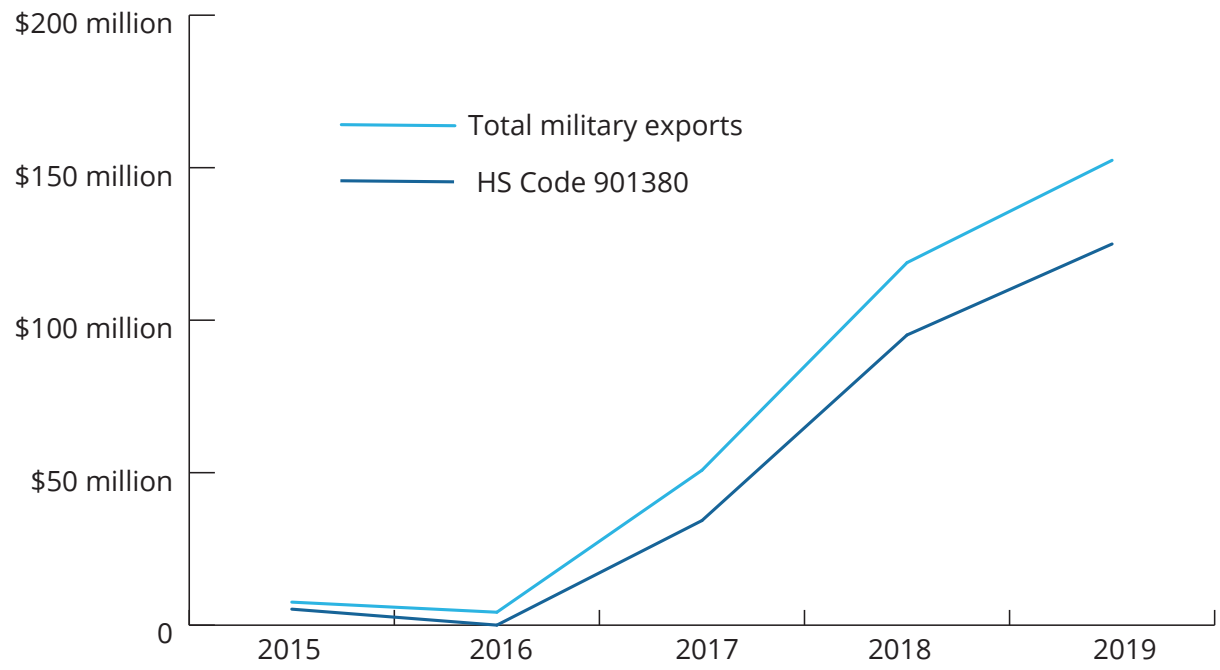
Readers might have noticed that GAC's export values don't add up. The total reported value of all military exports to Turkey in 2019 was $152,428,349.90. The combined total of 2-5 and 2-15 sales to Turkey, also for 2019, comes to $177,039,253.39, a total greater by almost $25-million.

The discrepancy appears to relate to a longstanding and problematic GAC practice of double-counting exports that can fit into more than one category. In this case, it appears that exports to Turkey that fall into both classifications 2-5 and 2-15 have been counted twice—since 2017, when such exports began trending upwards. As a result, the actual export values remain unknown.

Another way to gain an understanding of export values is through Statistics Canada's (StatCan) Canadian International Merchandise Trade (CIMT) Database, which reports the exports of Canadian goods to foreign destinations. Project Ploughshares estimates that the Harmonized System (HS) Code 901380, relating to "optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus; parts and accessories thereof," includes EO/IR systems and, therefore, WESCAM exports.

Total exports to Turkey of goods that fall under HS Code 901380 closely match Canada's increased sales in military goods, as noted in the *Report on Exports of Military Goods from Canada* (Fig. 3). In 2019, total exports of 901380 to Turkey were $124,985,733.00. It is important to note that exports of between $7-million and $15-million a month dropped to almost zero for this category soon after Ottawa's announcement of a freeze on arms exports to Turkey in October 2019. HS Code 901380 began trending upward once again in Spring 2020.

Fig. 3: Exports of HS Code 901380 vs. total Canadian military exports to Turkey, 2015-2019



A CRACK IN THE RELATIONSHIP

In October 2019, Canada joined Germany, France, and the United Kingdom in an arms embargo against Turkey in response to Turkey's unilateral invasion of Syria, which GAC deemed could risk "undermining the stability of an already fragile region, exacerbating the humanitarian situation and rolling back progress achieved by the Global Coalition Against Daesh."[16] In April 2020, the Canadian arms embargo was indefinitely extended. The principled and proactive freeze on Turkish-bound exports was seen as a positive example of Canada's arms-control regime working as it should.

In response, Turkish officials frantically pressured Ottawa to allow an exemption, explicitly for WESCAM sensors, which have become essential to the operation of its UAVs. Turkey's President Recep Tayyip Erdoğan personally called Prime Minister Justin Trudeau to request that the export freeze be reversed, emphasizing the "utmost importance to the import of the optics and surveillance systems from the Canadian firm Wescam [sic] for its military drones," which were being used in Syria and Libya.[17]

This past June, media reports indicated that GAC had granted a special exemption for WESCAM products, despite the continuing embargo against Turkey.[18] The Canadian government has yet to offer a reason for the decision.

WESCAM SENSORS ON TURKISH UAVS

In the last decade and more, Turkey has become increasingly determined to build a domestic military industry to reduce reliance on foreign companies. An indigenous UAV industry now supplies most UAVs operated by Turkish security forces and also exports to other countries.

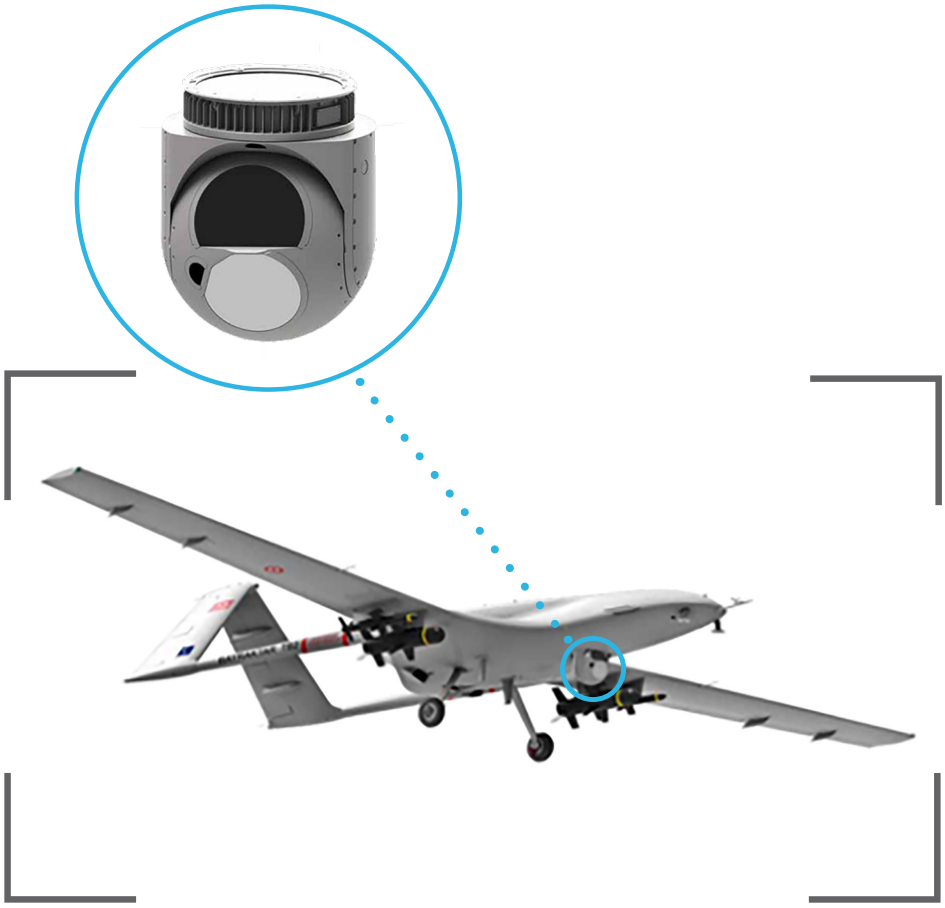
Turkish manufacturers, such as Aselsan, have also begun developing their own EO/IR systems. For the moment, however, most of what is being produced is reportedly too heavy to be used by most Turkish UAVs. It is expected to be several years before Turkish systems can begin to be used in place of WESCAM EO/IR units.[19]

What follows is a partial list of Turkish UAVs that use WESCAM products. Not discussed in this report is, for instance, WESCAM's MX-GCS EO/IR imaging system for ground vehicles, which has reportedly been integrated into the Belgian-made John Cockerill turret of the Turkish FNSS Kaplan armoured fighting vehicle.[20] Many other vehicles used by the Turkish armed forces, such as the Beech 350 King Air or Cobra series helicopters have frequently been fitted with WESCAM sensors by other militaries.[21]

KALE-BAYKAR BAYRAKTAR TB2

WESCAM system used: MX-15D (Fig. 4)

Fig. 4: Bayraktar TB2 pictured with MX-15D. Adapted from image by Baykar Technologies[22]



The Bayraktar TB2 is a medium-altitude long-endurance (MALE) UAV that can perform autonomous takeoff, flight, and landing.[23] Designed and built in the mid-2000s and first flown in 2009, the TB2 entered service with the Turkish air force in 2014.[24] Testing of its armed variant began the following year.[25] The TB2 comes in both surveillance and armed variants, with the latter Turkey's primary combat UAV. This UAV appears to rely exclusively on WESCAM targeting hardware.[26]

The Turkish armed forces currently has 94 TB2s, the flagships of its fleet.[27] In 2019, Turkey began exporting these UAVs.[28]

KALE-BAYKAR AKINCI

WESCAM system used: Pictured with MX-15D (Fig. 5)

First flown in December 2019 but not yet deployed, the Akıncı is a high-altitude long-endurance UAV. With a wingspan of 20 metres and weighing 5.5 tonnes, it dwarfs other Turkish-made UAVs.[29] The Akıncı can carry a host of munitions, including cruise missiles,[30] and can autonomously take off, fly, and land.

Fig. 5: Akıncı with MX-15D visible at Teknofest 2019. Adapted from image by Wikimedia user Ceegee[31]

Like the TB2, the Akıncı is a source of Turkish national pride. Its development was the subject of a documentary developed by the manufacturer. Released on May 24, 2020, by July the film had been viewed nearly three million times on YouTube.[32]

VESTEL DEFENCE INDUSTRY'S KARAYEL

WESCAM systems used: MX-15D[33] (Fig. 6), MX15Di[34]

The Karayel is a MALE UAV made by Turkey's Vestel Defence Industry, a subsidiary of Vestel, which specializes in consumer appliances and electronics. The Karayel was developed in 2007 and first took flight in 2010.[35] The THK first tested it in 2016.[36] The Karayel can perform fully autonomous takeoff, flight, and landing.[37]

Fig. 6: Vestel Karayel UAV with MX-15D visible on the underside. Adapted screenshot from Vestel Defence Industries promotional video.[38]

TURKISH AEROSPACE INDUSTRIES' (TAI) ANKA

WESCAM system used: MX-15D[39] (Fig. 7)

Fig. 7: Anka UAV pictured with MX-15D. Adapted TAI image published by AIN Online[40]

The Anka ("phoenix" in Turkish) family of MALE UAVs developed by TAI are the newest UAVs to be deployed by the THK. The Anka was built to replace the Israeli Heron UAV after relations between Israel and Turkey broke down in 2010 following the Mavi Marmara incident.[41]

With a payload capacity of 90 kg—more than that of any other deployed Turkish UAV in its class—the Anka can carry a diversified arsenal of deployable munitions and hardware, including EO/IR systems. It can perform autonomous takeoff, flight, and landing.

The newest variant, the Anka-S, is Turkey's first UAV to be satellite-enabled, with greatly expanded areas of operation. In December 2018, it executed Turkey's first satellite-enabled airstrike.[42]

COMBAT ZONES IN WHICH TURKEY HAS USED WESCAM SYSTEMS

Turkey has deployed WESCAM-equipped UAVs to several active conflict zones, and appears to have sent systems to allies in one other. The Turkish military's demonstrated dependence on WESCAM's EO/IR sensors, particularly on the Bayraktar TB2, makes it highly likely that Canadian EO/IR systems played a key role in the following operations.

TURKEY

Since the 1970s, the Kurdistan Workers' Party (Partiya Karkerên Kurdistanê or PKK) has been engaged in an insurgency against the Turkish government.

In 2015, conflict heated up once again between Turkish security forces and the PKK in southeastern Turkey. In this latest round of violence, the security forces have increasingly relied on UAV-launched airstrikes. As of December 2019, Turkish UAVs had "participated in airstrikes against Kurdish organizations in at least 11 provinces in southeast Turkey."[43]

The Bayraktar TB2, equipped with the WESCAM MX-15D, has become essential to Turkey's domestic counterinsurgency operations. As *The Intercept*'s Umar Farooq stated in May 2019, Turkish UAVs have been a "near constant presence in the skies in the country's southeast. Nearly every day, a Turkish drone, usually a TB2, either fires on a target or provides the location of a target that is subsequently bombed by an F-16 or attack helicopter."[44]

Between July 2015 and October 2019, 713 persons, including 490 civilians, were killed in the violence.[45]

SYRIA

Operation Olive Branch

Operation Olive Branch began in early 2018 as a Turkish incursion into the de facto autonomous Kurdish region in Afrin, northwest Syria, part of the larger autonomous region known as Rojava. While Turkish forces primarily targeted the Syrian Democratic Forces and the Kurdish People's Protection Units (supposedly affiliated with the PKK),[46] they also attacked civilians and civilian infrastructure, including markets and a UNESCO world heritage site.[47]

According to reports largely corroborated by open-source investigation group Bellingcat, Afrin's main hospital was bombed, resulting in between 15 and 37 civilian casualties.[48] In at least two instances, civilian vehicle convoys attempting to flee Afrin were hit by airstrikes, with 20 killed and 30 injured in an event in the Al-Mahmoudiyah neighbourhood.[49]

Fig. 8: "Turkish airstrike on convoy near Afrin" during Operation Olive Branch. Originally released by the Turkish Ministry of Defense and later published on YouTube by Ruptly.[50] Despite heavy obfuscation, video feed appears to include clear elements of WESCAM's graphical overlay.

According to Baykar, "90 percent" of all flights in the operation were conducted by the Bayraktar TB2,[51] which was involved in 382 sorties, dropping explosives on 42 occasions. On another 680 occasions, a TB2 designated targets for Turkish airstrikes.[52] According to reports released by the Turkish government, Operation Olive Branch killed approximately 1,129 militants.[53]

Operation Peace Spring

In October 2019, Turkey, along with allied militias under its command, launched Operation Peace Spring in northern Syria. The primary targets were the Syrian Democratic Forces and Kurdish People's Protection Units in Rojava (see Fig. 9). Turkey was condemned by the European Union for this "unilateral military action"[54] and many countries, including Canada, imposed a weapons embargo on Turkey.

UN experts estimated that approximately 180,000 people, most Kurds, were displaced in the operation's first two weeks, to be replaced by Sunni Arabs.[55] A number of experts, including U.S. diplomats, characterized the apparently organized displacement as ethnic cleansing.[56] By Christmas, Airwars—an organization that records civilian casualties—reported that a conservative estimate of civilian casualties was between 172 and 225 killed and between 419 and 553 wounded from airstrikes, artillery, and other attacks by Turkey and its allies.[57] Turkey has also been accused of offensive use of white phosphorus against civilians, which some call a war crime.[58]

Fig. 9: October 2019 Turkish airstrikes on "PKK / PYD-YPG" militants during Operation Peace Spring. Image originally published by the Turkish Ministry of Defence.[59] Video feed appears to include WESCAM graphical overlay.

Since the operation began, civilian infrastructure, schools, and hospitals have been repeatedly targeted, although Turkish authorities "have either denied involvement in or indicated that they have no record of these incidents."[60] In one instance, the THK attacked a civilian convoy of nearly 400 vehicles, killing six civilians, including a journalist, and injuring 59.[61]

According to the Turkish government, both the TB2 and Anka-S have been deployed in Operation Peace Spring.[62]

Operation Spring Shield

Turkey's fourth incursion into Syria since 2016 began in February 2020, in retaliation for the killing of 34 Turkish soldiers by Syrian government forces. Unconfirmed reports from the Turkish government claim that the Turkish armed forces destroyed more than 100 tanks and armoured vehicles, killing three top generals and more than 2,200 Syrian soldiers.[63]

This operation has been characterized as the first time that Turkey relied on UAVs as the dominant offensive tool,[64] employing "dozens" of each of the TB2 and Anka-S (see Fig. 10 and 11).[65]

Fig. 10: Cellphone video of the video feed of a Turkish airstrike during Operation Spring Shield, with WESCAM graphical overlay unobscured. Published by Turkish broadcaster TRT Haber.[66]

Fig. 11: Image of inverted MX-15D in the wreckage of a downed Turkish Anka UAV, reportedly near Idlib, Syria, February 2020. Coupled red and white WESCAM laser warning stickers visible on the sensor housing. Screenshot from news report by Syria Alikhbaria[67]

IRAQ

Operation Claw

Since 2017, the THK has sporadically attacked Kurdish groups in Iraq, despite repeated condemnations by the Iraqi government.[68] In May 2019, these activities were formally assigned to one operation, Operation Claw, which targets the PKK and allied Kurdish groups. Among those attacked have been the Kurdish Peshmerga,[69] although it is not clear if such attacks were deliberate.[70]

The aerial element of Operation Claw, June 2020's Operation Claw-Eagle, reportedly made repeated use of Bayraktar TB2s. The aerial campaign led to the evacuation of 118 of the 264 villages in the affected areas. According to Kurdish media, five civilians were killed by airstrikes in the opening days of the offensive.[71]

In 2018, Turkey began the practice of targeted killings in Iraq, becoming only the second country in the region, after Israel, to undertake extraterritorial targeted killings.[72] Many academics and analysts claim that targeted killings frequently contravene international law.

In August, senior PKK member İsmail Özden was targeted and killed with the help of a TB2, as was widely reported in Turkish media.[73] Partial footage of the attack, published by the Turkish government, could be found in WESCAM's online media library until Spring 2020, when most if not all mention of the Turkish military was removed (Fig. 12).

Fig. 12: Screenshot from video feed of the targeted killing of PKK member İsmail Özden in August 2018, with WESCAM graphical overlay visible. Video originally published by Turkish public broadcaster Anadolu Agency.[74]

In June of this year, the Turkish Ministry of Defence claimed that it had hit "more than 500 PKK targets" in 36 hours.[75] On July 2, the office of Iraqi president Barham Salih called for Turkey to cease "its repeated violations of Iraq's airspace that have resulted in civilian casualties" after an airstrike on an Iraqi store injured several non-combatants.[76]

LIBYA

Libya has experienced almost constant internal conflict since 2011 and has become the site of a regional proxy war that numbers Turkey among its players. Currently, the two most prominent factions in Libya's second civil war are the Tripoli-based and UN-recognized Government of National Accord (GNA), and the Tobruk-based Libyan National Army. Both have been accused of serious breaches of IHL that could constitute war crimes.[77]

Turkey has been the "primary sponsor" of arms to the GNA[78]—including, since 2019, TB2 UAVs.[79]

According to a UN Panel of Experts on Libya, by November 2019, at least 13, but likely more, Bayraktar TB2s and possibly one Karayel had been exported from Turkey to Libya.[80] The panel determined that hangars had been purpose-built at the Misrata air academy to house TB2s, but were later destroyed by the Libyan National Army.[81] According to other reports, Turkey has also sent Ankas to the GNA.

It can be reasonably assumed that the UAVs shipped to the GNA were equipped with WESCAM units, due to the platform's reliance upon these sensors, and the apparent absence of any replacements in Turkey or Libya.[82] And, indeed, social media photos and videos of downed GNA TB2s display WESCAM units (Fig. 13).

Fig. 13: Amended image of downed TB2 reportedly supplied to the GNA outside of Tripoli, December 2019. MX-15D visible in underside of the vehicle.[83]

Turkey's provision of weapons to the GNA, including the re-exporting of WESCAM sensors, is in direct violation of the arms embargo called for in United Nations Security Council Resolution 1970 (2011).[84] The embargo covers not only conventional weapons and ammunition, "but also military vehicles and equipment, such as drones and armoured vehicles."[85] In its sanctions on Libya, GAC expressly prohibits "the export, sale, and other provision of arms and related materials to Libya."[86] When asked about providing weapons to the GNA, President Erdoğan "did not deny having violated the arms embargo and expressed full support for the GNA."[87]

It is known that, in 2020, Turkey began conducting its own airstrikes with approximately a dozen TB2s fitted with WESCAM MX-15D units.[88] Because the UAVs are frequently lost or damaged in combat, they must frequently be replaced, which could partly explain the ballooning exports of Canadian EO/IR systems to Turkey[89] (see Fig. 14).

Fig. 14: Amended image of wreckage from reports of a Turkish-flown TB2 downed in Tarhouna, Libya, April 2020. Inverted housing of MX-15D visible in the debris.[90]

CANADIAN ARMS CONTROL AND WESCAM EXPORTS

Under the ATT, Canada has an obligation to assess the potential that weapons exported abroad could pose a substantial risk for human-rights violations under international humanitarian law or international human-rights law, could contribute to gender-based violence, or threaten regional peace and security.[91] Canadian officials apply the "substantial risk test" to determine the likelihood that an export "would result in any of the negative consequences referred to in the ATT assessment criteria."[92] To meet its international obligations, Canada must also assess the potential that weapons exported abroad could be diverted to an illicit end use or end user.[93]

As outlined in earlier sections and shown below, a substantial risk appears to exist that WESCAM EO/IR systems exported to Turkey could be or have been involved in breaches of IHL and the subversion of regional peace and stability, and that they have been diverted from Turkey to illicit third users.

INTERNATIONAL HUMANITARIAN LAW

During recent operations, Turkish security forces have been repeatedly accused of indiscriminate airstrikes and targeting of civilians and civilian sites such as hospitals, schools, cultural locations, and critical infrastructure.[94] Reports from international human-rights monitors show that recent Turkish operations demonstrate "an utterly callous disregard for civilian lives, launching unlawful deadly attacks in residential areas that have killed and injured civilians."[95] The United Nations Human Rights Council has recorded a number of allegations that the THK has launched airstrikes on civilian areas that have no legitimate military targets.[96]

Failure to discriminate between civilian targets and military targets, or failure to take the necessary precautions to minimize civilian harm when conducting airstrikes, is a breach of IHL and may constitute a war crime.

When both THK's reliance on WESCAM EO/IR systems and evidence of THK violations of IHL are considered, there is a clear and demonstrable substantial risk that the further export of WESCAM sensors to Turkey could cause harm to civilians and facilitate breaches of IHL.

REGIONAL STABILITY

As noted above, Turkey's most recent military operation in Syria displaced 180,000 people in mere days. Of the three million living in the affected region, "1.8 million were already dependent on aid," the provision of which was disrupted by military activity.[97] The replacement of local Kurdish populations with Arab populations also threatens the social fabric and stability of the region.

Turkey's occupation of northern Syria pits Turkey against other NATO member states and against Russia, which is propping up the Syrian regime. Both dynamics could have serious negative effects on regional stability.

The expanding network of Turkish bases in northern Iraq is in clear violation of Iraqi sovereignty and threatens the survival of the weak Iraqi state.[98]

Turkey's provision of weapons to the GNA and its more recent deployment of troops and

UAVs to Libya have further destabilized that failing state.[99] The UN considers both the "supply of military equipment from foreign governments" and the "inclusion of foreign armed groups" "destabilizing factors" in the Libyan conflict.[100]

With Turkish UAVs now ubiquitous in its military operations in the region, it is clear that the continued export of WESCAM sensors to Turkey poses a substantial risk to peace and security in the Middle East and North Africa.

DIVERSION

Turkey's export to Libya of TB2 UAVs—and therefore of WESCAM MX-15Ds—is of extreme concern. This textbook example of diversion is a clear violation of the UN Security Council's comprehensive arms embargo set forth in Resolution 1970, which, since 2011 has prohibited the "supply of arms and military equipment to and from Libya."

Under Article 11 of the ATT, all states parties (now including Canada) are obliged to stem the diversion of weapons to illicit end uses and/or end users. They must "assess risk and establish mitigation and prevention measures" and proactively "detect, investigate and enforce measures."[101] If a state's national control system detects a substantial risk that a given military export may be diverted, it must prevent the export.[102] In the case of the apparent diversion of WESCAM sensors from Turkey to Libya, Canada is obliged to investigate. If allegations prove credible, Canada must deny further exports of such systems to Turkey.

FINAL REPORT: REVIEW ON EXPORT PERMITS TO SAUDI ARABIA

In April 2020, Global Affairs Canada released its *Final Report: Review on Export Permits to Saudi Arabia*, in which it justifies easing the freeze on new weapons export permits to Saudi Arabia that was imposed following the assassination of Saudi journalist Jamal Khashoggi and mounting claims of IHL violations by Saudi security forces in Yemen.

The report argues that evidence of Saudi breaches of IHL primarily relate to airstrikes. Therefore, the continued export of Canadian light armoured vehicles—the main focus of the report—did not pose a substantial risk under Canada's assessment criteria and could resume.[103]

This understanding of risk is problematic, implying that substantial risk can only occur if there is clear and duplicated evidence that IHL violations were facilitated with the exact weapon system exported. However, GAC's assessment is significant in the case of Turkey, because the report supports the idea that aerospace exports pose a substantial risk when the recipient's air force is engaged in activities that violate international humanitarian law. Using this logic, it appears that the export of WESCAM systems to Turkey contributes to the violation of IHL and that these exports should thus be halted.

APPENDIX I: TURKISH AIRSTRIKE FOOTAGE AND WESCAM VIDEO FEEDS

Another way to develop a picture of Turkey's reliance on WESCAM systems is to analyze the footage of Turkish airstrikes posted online. The Turkish government frequently publishes recordings from the video feeds of UAV operations in Syria, Iraq, and Turkey on social media and Turkish media outlets.

These video feeds invariably appear to be captured from WESCAM EO/IR sensors. We know this to be true because the footage displays WESCAM's proprietary graphical overlay, which distinguishes the feed from those of competitors. The graphical overlay, which contains text, symbols, dials, and instruments in particular locations on the video feed, relays information to its operator, such as the date and time, the aircraft and target coordinates, tilt of the sensors, aircraft elevation, system alerts, and so forth.

Frequently, segments of the overlay are blurred in video feeds released by the Turkish government, likely to conceal exactly when a given operation took place, and the location of the target and aircraft. Yet the general aspect of the overlay usually remains visible, which helps to determine that a WESCAM system is being used. Where feeds are almost completely blurred, the size and positioning of the blurred elements match up with those graphical elements visible on unobscured WESCAM feeds, giving a high degree of certainty such video feeds were captured with WESCAM sensors.

Fig. 15: Amended screenshot from cellphone video of the video feed of a Turkish airstrike taken during Operation Spring Shield, with WESCAM graphical overlay unobscured. Published by Turkish broadcaster TRT Haber.[104]

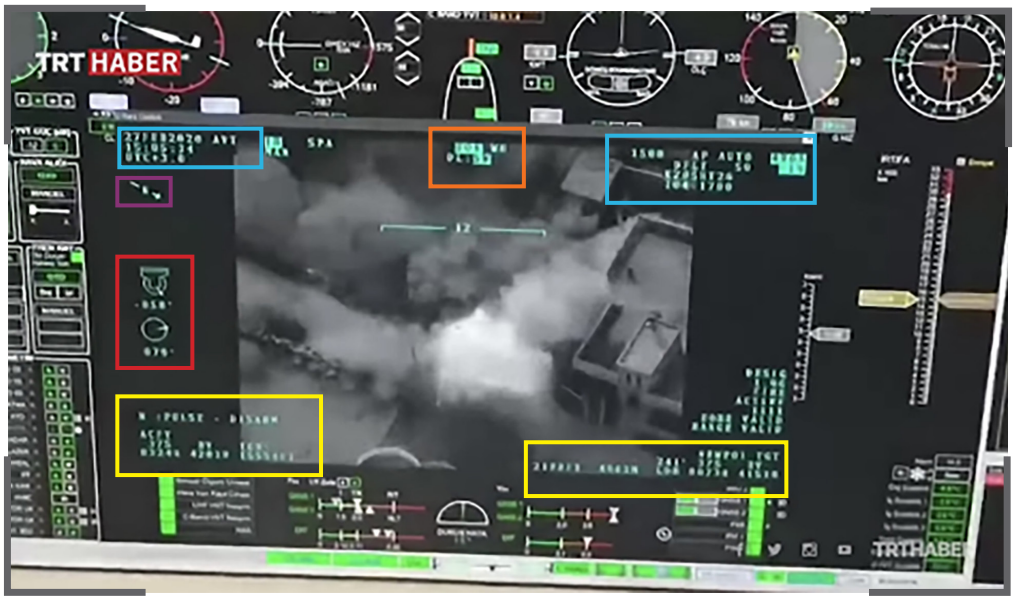
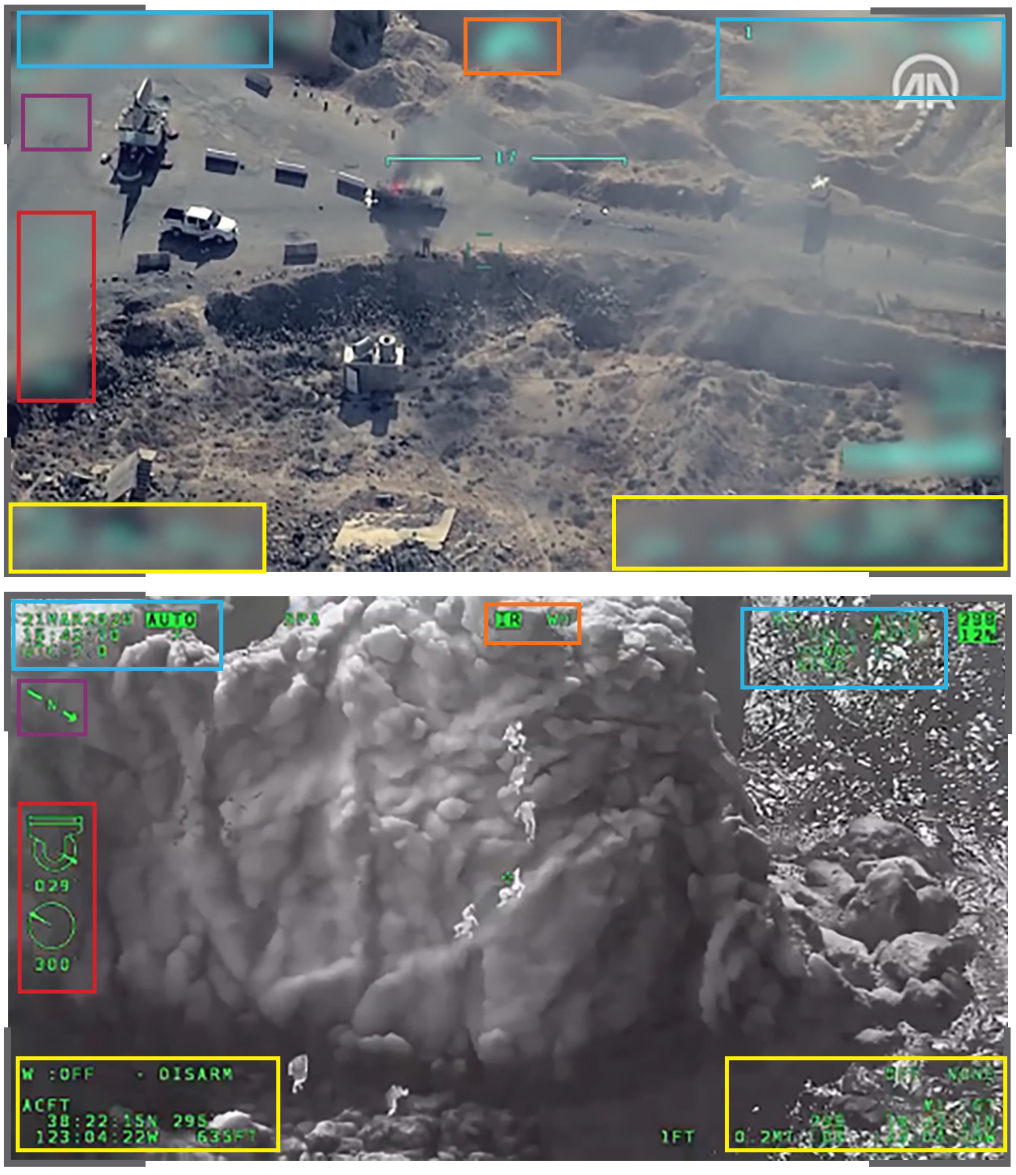


Fig. 16: Screenshot from "Sonoma County Sheriff's Office - monitor social distancing," dated March 2020. WESCAM media library.[105]

Elements of the graphical overlay are found in both Fig. 15 and Fig. 16, indicating that they are both MX-15 video feeds. Elements in blue include date and time (top left) and information on optics (top right); elements in yellow include the position of the aircraft (bottom left) and the position of the target (bottom right); elements in red include the aircraft heading and direction of the turret (left); elements in orange indicate the video feed currently in use (top middle); and the element in pink indicates true north (top left).

Fig. 17: WESCAM graphical overlay visible in a blurred video feed of İsmail Özden's targeted killing. Released by the THK, cross-analyzed with unobscured footage from Sonoma Country Sherriff's Office (below). The presence of near-identical signatures between the video feeds, despite varying levels of visibility, strongly indicates that a WESCAM EO/IR sensor was used in the Turkish operation.



Not all examples of WESCAM video feeds match exactly. The overlay is customizable, and only displays the information pertinent to the current operation and/or relevant to the MX-series sensor. For instance, the MX-15 'base model' will not include graphics containing information on laser designation, which is applicable to the MX-15D.

Turkish media has published many of these videos. They not only provide further evidence of the THK's heavy reliance on Canadian EO/IR systems, but offer a rare and largely unfiltered look at how Canadian weapons systems are being used abroad.

APPENDIX II: WESCAM EXPORT FIGURES

When trying to get accurate information on particular military exports, the Canadian International Merchandise Trade Database can be more useful than the *Report on Exports of Military Goods from Canada*. For example, under HS Code 871000, "Tanks and other armoured fighting vehicles, motorised, and parts." the CIMT database gives more precise detail on Canadian light armoured vehicles exported to Saudi Arabia (and other destinations) over smaller increments of time. However, other exports don't seem to match up well with HS Codes, especially those that apply to many different military goods.

Project Ploughshares contacted StatCan to find out which HS Codes would be applied to EO/IR sensors, which were described as "airframe and ground-vehicle mounted gyro-stabilized camera systems." In later correspondence, Ploughshares provided further details. StatCan staff listed a series of HS Codes which could pertain to EO/IR systems. However, all but "901380: Optical devices, appliances and instruments" had export values much lower than known WESCAM exports and were therefore not considered applicable by Ploughshares.

Certain WESCAM export values were determined by analyzing records of WESCAM exports to the United States found in Canadian Commercial Corporation (CCC) documents obtained through Access to Information requests. These records list annual WESCAM exports to the United States in the hundreds of millions of dollars, making 901380 the only viable candidate in the CIMT database.

The trend in Canadian military exports to Turkey, which we believe to be primarily WESCAM sensors, strongly correlates with the trend in exports of HS Code 901380 (see Fig. 3).

However, CIMT data does not always exactly correspond to the known exports of WESCAM systems to certain destinations. For instance, in the case of the United States, the CIMT database records exports of 901380 for fiscal year 2018 valued at $358-million, while U.S.-bound WESCAM exports reported in CCC records were valued at $148-million. The reason for this discrepancy is unclear and, because of the special trade relationship in military goods between Canada and the United States, few details are made public.

It is likely that the difference between the two figures could be explained by the inclusion of all other possible export goods found under the broad category of HS Code 901380, which would also contain many commercial applications. However, the discrepancy would be much more pronounced in Canada-United States trade data than in Canada-Turkey trade data. This is due to Canada's much larger trade relationship with the United States, which would include non-WESCAM goods classified under 901380 in the CIMT Database.

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