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THE *USS VINCENNES* INCIDENT

A case study involving Autonomous Weapon Systems

DOI: [10.35926/HDR.2020.2.6](https://doi.org/10.35926/HDR.2020.2.6)

ABSTRACT: *The objective of the paper is to introduce the facts of the USS Vincennes incident in 1988 and examine how the deployment and use of an Autonomous Weapon System has influenced military decision-making in the specific case. As a result of misidentification of the contact and confusion on board, Vincennes (a Ticonderoga-class guided missile cruiser outfitted with the Aegis Combat System) fired two radar-guided missiles and shot down a civilian airliner from Iranian territorial waters (in Iranian airspace) only minutes after the airliner's take-off. Not one from the 290 passengers and crew on board survived. Several contradictory articles have been written on the incident from legal, political and scientific vantage points and this article attempts to strip these accounts of the emotional tone and look into the facts in order to establish how personnel and machine interacted during the events that eventually led to the tragedy and how similar incidents involving AWS could be avoided.*

KEYWORDS: *International Law, Law of Armed Conflicts, Autonomous Weapon Systems, case study, scenario fulfilment, responsibility*

INTRODUCTION

Today we can witness a lively, although not always well-informed debate on the deployment of lethal Autonomous Weapon Systems (AWS) during international armed conflicts (IACs). Their supporters and opponents are invoking various arguments regarding their use, but more often than not they tend to focus on the analysis of the Law of Attack¹ as contained in the Law of Armed Conflict (LOAC), most notably in Protocol I additional to the 1949 Geneva Conventions² (Additional Protocol I), while paying less attention to the assessment of NATO documents and national military manuals on targeting, although these can be regarded as the direct translations of the Law of Attack into the language of daily target selection and engagement.

¹ Law of Attack is an artificial expression coined by military legal advisors referring to those rules of Additional Protocol I that deal with how to conduct hostilities.

² "Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I)". 8 June 1977. <https://www.ohchr.org/EN/ProfessionalInterest/Pages/ProtocolI.aspx>, Accessed on 15 February 2021.

Specific cases based on attacks carried out by resorting to a special type of weaponry (including AWS) in breach of LOAC have so far rarely reached the registries of international courts, the notable exceptions are *Prosecutor v. Martić*³ or the USS *Vincennes* incident. (Although often referenced in scholarly articles, *Banković et al*⁴ deals with jurisdictional issues⁵ and not with a specific means or method of warfare used in the particular case.⁶)

The objective of present writing is to introduce the facts of the USS *Vincennes* incident (resulting in the death of 290 civilians) and examine whether the deployment and use of an AWS has influenced military decision-making positively or negatively in the specific case. Several contradictory articles have been written on the incident from legal, political and

³ In *The Prosecutor v. Milan Martić*, the Trial Chamber established that the M-87 Orkan (a non-guided high dispersion projectile) was fired on 2 and 3 May 1995 from the Vojnić area, near Slavsko Polje, between 47 and 51 kilometers from Zagreb in an attack against Zagreb. The Trial Chamber noted that the weapon was fired from the extreme of its range and considering the characteristics of the weapon, the M-87 Orkan was incapable of hitting specific targets. For these reasons, the Trial Chamber found that the M-87 Orkan is an indiscriminate weapon, the use of which in Zagreb resulted in the infliction of severe casualties. The fact that military targets were also present in Zagreb is irrelevant in light of the nature of the weapon. (“462. The M-87 Orkan is a non-guided projectile, the primary military use of which is to target soldiers and armoured vehicles. Each rocket may contain either a cluster warhead with 288 so-called bomblets or 24 anti-tank shells. The evidence shows that rockets with cluster warheads containing bomblets were launched in the attacks on Zagreb on 2 and 3 May 1995. Each bomblet contains 420 pellets of 3mm in diameter. The bomblets are ejected from the rocket at a height of 800-1,000m above the targeted area and explode upon impact, releasing the pellets. The maximum firing range of the M-87 Orkan is 50 kilometers. The dispersion error of the rocket at 800-1,000m in the air increases with the firing range. Fired from the maximum range, this error is about 1,000m in any direction. The area of dispersion of the bomblets on the ground is about two hectares. Each pellet has a lethal range of ten metres.”) In: “The Prosecutor v. Milan Martić: Judgment”. Case No. IT-95-11-T. International Criminal Tribunal for former Yugoslavia (ICTY). 12 June 2007. <https://www.icty.org/x/cases/martic/tjug/en/070612.pdf>, Accessed on 15 February 2021., para 461-463. See also Schmitt, M. N. and Widmar, E. W. “On Target: Precision and Balance in the Contemporary Law of Attack”. *Journal of National Security and Policy* 7. 2014. 398. According to the authors, indiscriminate weapons are rare but SCUD missiles employed by Iraq against major cities in Israel and Saudi Arabia were insufficiently accurate.

⁴ “European Court of Human Rights, Grand Chamber Decision as to the Admissibility of Application no. 52207/99 by Vlastimir and Borka Banković, Živana Stojanović, Mirjana Stoimenovski, Dragana Joksimović and Dragan Suković against Belgium, the Czech Republic, Denmark, France, Germany, Greece, Hungary, Iceland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Spain, Turkey and the United Kingdom”. 12 December 2001. <http://hudoc.echr.coe.int/eng/?i=001-22099>, Accessed on 15 February 2021.

⁵ At the heart of the case lies the question whether the relatives of those deceased as a result of the NATO bombing of the Radio Televizije Srbije (Radio-Television Serbia, RTS) headquarters in Belgrade as part of NATO’s air strikes against the Federal Republic of Yugoslavia (FRY) during the Kosovo conflict (an extraterritorial act) on 23 April 1999 could still fall within the jurisdiction of the respondent states.

⁶ In the case, the Court was satisfied that the jurisdictional competence of a state is primarily territorial (according to the ordinary meaning of Article 1 of the European Convention on Human Rights) and the suggested bases of extraterritorial jurisdiction (“including nationality, flag, diplomatic and consular relations, effect, protection, passive personality and universality”) are defined and limited by the sovereign territorial right of the other relevant states (para 59). The Court’s case law demonstrates that its recognition of extraterritorial jurisdiction by a state is exceptional: “it has done so when the respondent State, through the effective control of the relevant territory and its inhabitants abroad as a consequence of military occupation or through the consent, invitation or acquiescence of the Government of that territory, exercises all or some of the public powers normally to be exercised by that Government” (para 71). The Court also added that other instances of extraterritorial jurisdiction by a state include cases concerning the activities of its diplomatic or consular agents abroad and on board aircraft and vessels registered in that state, but not cases of taking control of the airspace even if it is limited in scope (para 73). The Court concluded that there was no “jurisdictional link between the persons who were victims of the act complained of and the respondent States” (para 82).

scientific vantage points and this article attempts to strip these accounts of the emotional tone and look into the facts in order to establish how personnel and machine interacted during the events that led to the tragedy and how similar incidents involving AWS could be avoided.

A SHORT SUMMARY

USS *Vincennes* CG-49 (named after the Battle of *Vincennes* during the American Revolutionary War in 1779) was a Ticonderoga-class⁷ guided missile cruiser outfitted with the Aegis Combat System⁸ in service with the US Navy in 1988.

In the protracted Iraq-Iran war (1980-88), hundreds of attacks had been carried out against third-country oil tankers in the Persian Gulf both by the Iraqi and Iranian forces. Iran's attacks on Gulf states' tankers propelled the United States and other states to position warships in the Persian Gulf "to ensure the flow of oil to the rest of the world."⁹ Behind the scenes, the United States provided support for Iraq and later in the war intervened to protect Iraqi oil tankers.¹⁰ USS *Vincennes* was dispatched to the Persian Gulf in order to protect tankers carrying oil to and from Kuwait.¹¹ What appears to be certain is that on the day of the tragic incident, 3 July 1988, *Vincennes*, under the command of Captain William C. Rogers III, was on patrol when Iranian Revolutionary Guard gunboats had attacked a vessel (either a Liberian tanker¹² or a Pakistani merchant vessel¹³). *Vincennes* deployed one of her helicopters north to investigate the reported incident. The helicopter had followed the gunboats into Iranian waters but came under gunfire from the Iranians. Upon reporting the fire, Captain Rogers decided to attack the gunboats and *Vincennes* entered Iranian territorial waters.

At the same time, *Vincennes*'s radars picked up a contact taking off from the nearby Bandar Abbas airport. The object was an Iran Air Airbus A300 civil airliner (Iran Air Flight 655) heading for Dubai. As a result of the misidentification of the contact and confusion on board,

⁷ The Ticonderoga class are equipped with the Aegis Combat System, which integrates the ship's electronic sensors and weapons systems to engage anti-ship missile threats. The Aegis system has a federated architecture with four subsystems – the AN/SPY-1 multifunction radar, the command and decision system, Aegis display system and the weapon control system. "Ticonderoga Class Aegis Guided-Missile Cruisers". Naval Technology. <https://www.naval-technology.com/projects/ticonderoga/>, Accessed on 13 May 2020.

⁸ An Autonomous Weapon System introduced in the 1980s to help defend navy ships against air and missile attacks.

⁹ "Iraq-Iran War". Encyclopaedia Britannica. <https://www.britannica.com/event/Iraq-Iran-War>, Accessed on 13 August 2020.

¹⁰ Riedel, B. "How the Iran-Iraq war shaped the trajectories of figures like Qassem Soleimani". *Brookings*. 9 January 2020. <https://www.brookings.edu/blog/order-from-chaos/2020/01/09/how-the-iran-iraq-war-shaped-the-trajectories-of-figures-like-qassem-soleimani/>, Accessed on 13 August 2020. and "Iraq-Iran War". History.com. 24 August 2018. <https://www.history.com/topics/middle-east/iran-iraq-war>, Accessed on 13 August 2020.

¹¹ Barry, J. and Charles, R. "Sea of Lies". *Newsweek*, 7 December 1992. <https://www.newsweek.com/sea-lies-200118>, Accessed on 13 May 2020.

¹² Barry and Charles. "Sea of Lies".

¹³ Fogarty, W. "US Department of Defense, Investigation Report, Formal Investigation into the Circumstances Surrounding the Downing of Iran Air Flight 655 on 3 July 1988". U.S. Navy Judge Advocate General's Corps. 19 August 1988. 2. <https://www.jag.navy.mil/library/investigations/VINCENNES%20INV.pdf>, Accessed on 13 May 2020. and McCarthy, J. D. "U.S.S. Vincennes (CG 49) shootdown of Iran Air Flight #655: A Comprehensive Analysis of Legal Issues Presented by the Case concerning the Aerial Incident of 2 July 1988 (Islamic Republic of Iran v. United States of America)". 30 September 1991. https://archive.org/stream/ussvincennescg4900mcca/ussvincennescg4900mcca_djvu.txt, Accessed on 13 May 2020.

Vincennes fired two radar-guided missiles and shot down the airliner from Iranian territorial waters (in Iranian airspace) only minutes following the airliner's take-off. Not one from the 290 passengers and crew on board survived.

THE FACTS OF THE INCIDENT

In the following, I will summarize what happened (and went wrong) aboard USS *Vincennes* on that day that led to mistaken a civilian airliner (a civilian object) for a military object. Although the United States had provided support for Iraq during the Iraq-Iran War, it was not party to the armed conflict. However, notwithstanding the lack of international armed conflict between the United States and Iran, this case serves with valuable details regarding how the United States employed and utilized an AWS supposedly in compliance with the established principles of *jus ad bellum* (necessity and proportionality).

At the time of the incident, the assessed AWS, the Aegis Combat System¹⁴ was operating on a semiautomatic mode¹⁵ leaving it to the crew to make targeting decisions (the Aegis computer system can be overridden on any of its operating modes). The Aegis was utilized to track multiple targets and guide the ship's defensive weapons against them. "The system was composed of the Aegis anti-aircraft weapon system itself, plus the Phalanx Close-In Weapon System, and a Vertical Launch System that employed additional missiles, all of which were semi-autonomous."¹⁶

On the day of the incident, two aircraft took off in close sequence from Bandar Abbas Airport:¹⁷ the Iran Air Flight 655, which was scheduled to start her weekly journey¹⁸ and was climbing on a consistent course (inside the commercial air corridor) and speed, broadcasting a radar and radio signal that showed it to be a commercial airliner.¹⁹ Not much later, an Iranian F-14 fighter also departed from Bandar Abbas. Aboard *Vincennes*, after noticing the contact

¹⁴ Aegis came with four modes: semiautomatic (the human interfaced with the system to judge when and at what to shoot); automatic special (human controllers set the priorities, e.g. to destroy bombers before fighter jets, but the computer then decided how to do it); automatic (data went to human operators in command, but the system worked without them); casualty (system just does what it thinks best to keep the ship from being hit). Singer, P. W. *Wired for War: the robotics revolution and conflict in the twenty-first century*. New York: Penguin Books, 2010. 124-125.; Aegis has four modes of operation (or doctrines): manual setting (most human control); Semi-Auto (part of the engagement process is automated, final decision authority is withheld by operator); Auto SM (larger part of the engagement process is automated than in Semi-Auto, but human is still in the loop); Auto-Special (human on the loop: Aegis automatically firing against threats meeting the predefined parameters). Doctrine statements "can mix and match these control types against different threats". Scharre, P. *Army of None: autonomous weapons and the future of war*. New York: W. W. Norton & Company, 2018. 163-164.

¹⁵ Singer. *Wired for War*. 125.

¹⁶ Solis, G. D. *The Law of Armed Conflict: International Humanitarian Law in War*. Cambridge: Cambridge University Press, 2016. 562.

¹⁷ Scharre. *Army of None*. 169.

¹⁸ This was missed by *Vincennes*'s Combat Information Centre Officers confused by the four different time zones in the area.

¹⁹ This is confirmed by the report of ICAO fact-finding investigation, see: "Excerpts From Report of ICAO Fact-Finding Investigation Pursuant to Decision of ICAO Council of 14 July 1988". *American Journal of International Law* 83/2. 1989. 333. DOI: 10.2307/2202744 and by the account of David Carlson who served as a Commanding Officer on USS *Sides* at the time of the incident. Carlson, D. R. "The *Vincennes* Incident". U.S. Naval Institute. *Proceedings* 115/9/1039. 1989. 87. <https://web.archive.org/web/20080229003110/http://www.geocities.com/csafdari/Proceedings.pdf>, Accessed on 13 May 2020.

(Iran Air Flight 655) on the radar screens, several attempts were made by the crew, facilitated by the Aegis Combat System, to positively identify the object.

The civilian airliner was climbing at the time of detecting, and her IFF transponder²⁰ was on civilian code (IFF Mode III) as opposed to the purely military mode (IFF Mode II), as was duly recorded by Aegis. The original IFF reading for Iran Air Flight 655 correctly displayed Mode III. This reading was recorded at a track gate at Bandar Abbas Airport (a box that is being monitored for signals) but later this box was not moved by the operators on *Vincennes*, and the Aegis picked up another (Mode II) signal by the same track gate from the dual-use airport (the F-14 fighter), which was thought to belong to the original object that had already passed by and was on her normal route at the time of detecting the second object.²¹

Vincennes issued warnings to the airliner, but these were transmitted on military channels (military air distress frequency) that were not accessible by the airliner pilot and on the international civil aviation distress frequency.²² The flight crew of the airliner was not equipped to monitor the *military* air distress frequency and even though they were instructed to monitor the civilian emergency frequency (used by USS *Vincennes* in the attempt to reach the airliner), the Iran Air Flight 655 crew was either not monitoring it in the early stages of climb, or they did not realize that their flight was challenged by *Vincennes*.²³

Not far from USS *Vincennes*, USS *Sides* (FFG-14), an Oliver Hazard Perry class guided-missile frigate, was also closely following the events, *Sides* was equipped with a special data link to exchange tactical information with *Vincennes* in real time and watch (and assess) the same information as the crew aboard USS *Vincennes*.²⁴ Yet, based on the exact same information, the captain of *Sides* came to a different conclusion than Captain Rogers, and identified the object as a civilian airliner (although the *Sides*' captain admitted later that since *Sides* was not equipped with Aegis, he thought *Vincennes* may have more or more detailed and better-quality information than what his crew at *Sides* had²⁵). What is important to note here is that although all combat and navigational data of Aegis indicated a no-threat, Captain Rogers decided to shoot it down allegedly on the basis of a mistaken call-out of crew members (that the object was a possible F-14 fighter jet).²⁶

²⁰ Identification, friend or foe (IFF) is an identification system designed for command and control. It enables military and civilian air traffic control interrogation systems to identify aircraft, vehicles or forces as friendly and to determine their bearing and range from the interrogator.

²¹ Schwartz, L. "Overwhelmed by Technology: How did user interface failures on board USS *Vincennes* lead to 290 dead?". Stanford Computer Science. 2001. <http://xenon.stanford.edu/~lswartz/vincennes.pdf>, Accessed on 13 May 2020.

²² Hammond, J. R. "The 'Forgotten' US Shootdown of Iranian Airliner Flight 655". *Foreign Policy Journal*, 3 July 2017. <https://www.foreignpolicyjournal.com/2017/07/03/the-forgotten-us-shootdown-of-iranian-airliner-flight-655%C2%AD/>, Accessed on 13 May 2020.

²³ "Excerpts from Report of ICAO Fact-Finding Investigation...". 333.

²⁴ Evans, D. "Vincennes: A Case Study". U.S. Naval Institute. *Proceedings* 119/8/1. 1993. <https://www.usni.org/magazines/proceedings/1993-08/vincennes-case-study>, Accessed on 13 May 2020. and Carlson. The "*Vincennes*" Incident.

²⁵ Carlson. The "*Vincennes*" Incident. 89.

²⁶ "For whatever reason, in the minds of the sailors in Vincennes's combat information center, the tracks of the two aircraft on their radar screens became confused." Scharre. *Army of None*. 169.

SCENARIO FULFILMENT

The case seems to be a prime example of *scenario fulfilment* where a commanding officer with effective command and control over his subordinates, in the position of tactical decision-making, evaluated the available information within his own predetermined (and biased) scenario of an imminent, coordinated Iranian attack against the United States, which led to the death of 290 civilians.²⁷ *Scenario fulfilment* refers to the situation when decision-makers interpret and use new information to fit their existing “belief patterns”.²⁸ Verlinden refers to the phenomenon as having a “tunnel vision” under stress that enables an individual only to act according to the already existing scenario he has in mind.²⁹ Beliefs and convictions are inherently human traits and one may argue that the tragic incident could have been avoidable when acting upon the data received from AWS which lacks human emotions that may influence decision-making. A prime example of *scenario fulfilment* is the downing of Iran Air 655 by USS *Vincennes* in 1988 where the captain of the ship incorrectly believed that Iranians chose to escalate the engagement and the ship was under threat although raw sensory data indicated otherwise.³⁰

FOLLOW-UP

Just a few days following the incident, speaking to a meeting of the Farm Bureau Association, Vice President Bush said, “I can’t wait to get up there to defend the policy of the United States government.” He said that “efforts to second-guess the captain of that ship will be rebuffed.”³¹ (Less adamant to loudly defend the US policy, President Reagan apologized for shooting down the airliner in a diplomatic note on 5 July.³²) Before the United Nations Security Council on 14 July 1988, the Vice President emphasized that USS *Vincennes* acted in self-defence, against the background of unlawful Iranian attacks against the US armed forces and merchant shipping and with the failure of the Iranian authorities to divert Iran Air Flight 655.³³ On 4 August 1988, the Legal Advisor of the Department of State³⁴ underlined in his statement before the Defense Policy Panel of the House Committee on Armed Services that Captain Rogers, given the hostile context at the time of the incident, “evidently believed

²⁷ Fogarty. “US Department of Defense, Investigation Report”. 3.

²⁸ Foy, J. “Autonomous Weapons Systems: Taking the Human Out of International Humanitarian Law “. Social Science Research Network. 20 April 2013. 12. DOI: 10.2139/ssrn.2290995, Accessed on 13 May 2020.

²⁹ Verlinden, N. “To feel or not to feel!? Emotions and International Humanitarian Law” University of Leuven. December 2016. 10. <https://lirias2repo.kuleuven.be/bitstream/id/418989/?jsessionid=CE53E525CBF0616F4E06FF6A1B48D910>, Accessed on 13 May 2020.

³⁰ For more on the incident see Marchant et al. “International Governance of Autonomous Military Robots”. *The Columbia Science and Technology Law Review* 12. 2011. 280. <https://doi.org/10.7916/D8TB1HDW> and Scharre. *Army of None*. 170.

³¹ Johnson, J. “Bush to Speak At U.N. Debate On Iran’s Plane”. *The New York Times*, 14 July 1988. <https://www.nytimes.com/1988/07/14/us/bush-to-speak-at-un-debate-on-iran-s-plane.html>, Accessed on 13 May 2020.

³² Moore, M. and McAllister, B. “Reagan Apologized to Iran for Downing of Jetliner”. *The Washington Post*, 6 July 1988. https://www.washingtonpost.com/archive/politics/1988/07/06/reagan-apologized-to-iran-for-downing-of-jetliner/9523c6dc-a244-4b3b-90e9-054168d98c79/?noredirect=on&utm_term=.e63ef15befbd, Accessed on 13 May 2020.

³³ Nash Leich, M. “Denial of Liability: Ex Gratia Compensation on a Humanitarian Basis”. *American Journal of International Law* 83/2. 1989. 320-321.

³⁴ Abraham D Sofaer.

that his ship was under imminent threat of attack from a hostile aircraft, and he attempted repeatedly to identify or contact the aircraft before taking defensive action. Therefore, the United States does not accept legal responsibility for this incident and is not paying “reparations,” a word which implies wrongdoing and is often associated with wartime activities. Instead, the President has decided to make an *ex gratia* payment as a humanitarian gesture to the families of the individuals who were on #655.³⁵ On 19 August 1988, the Pentagon issued its own report on the incident and according to Kaplan, “though the text didn’t say so directly, it found that nearly all the initial details about the shoot-down – the “facts” that senior officials cited to put all the blame on Iran Air’s pilot – were wrong. And yet the August report still concluded that the captain and all the other *Vincennes* officers acted properly.”³⁶

The Iranian government emphasized that *Vincennes* knowingly shot down the civilian aircraft in an unjustified action³⁷ and pointed out that owing to the very short time frame and the quick escalation, there was no real chance of actually informing the airport and the airliner about the nearby events.³⁸ (It is also part of the picture that – marking the end of the armed conflict – Iran accepted a cease-fire with Iraq effective on 20 July 1988, in less than 3 weeks following the incident.) Iran took the case to the ICJ but in 1996, the governments agreed to conclude a settlement agreement concerning the incident whereby the United States had to pay a settlement amount of USD 131,800,000 including USD 61,800,000 for the legatees and heirs of the Iranian victims. The agreement included that Iran shall “indemnify and hold harmless the United States [...] against any claim, counterclaim, action or proceeding that Iran [...] may raise, assert, initiate or take against the United States with respect to, arising out of, in connection with or relating to the I.C.J. case.”³⁹

There are contradictory accounts regarding the incident: according to Schwartz,⁴⁰ the Aegis picked up the signal of the F-14 fighter, whereas Hammond states that unlike what has been indicated by the captain and some of the crew (being threatened by an F-14 fighter), the ship’s radar has not picked up anything other than the Iran Air Flight 655.⁴¹ During the investigation, no one was able to find out who called out in the erratic situation that the incoming aircraft was an F-14 fighter jet.⁴²

THE ICAO INVESTIGATION

Compared to the concerning United States statements and Pentagon report, the ICAO’s (International Civil Aviation Organization) report seems much more factual. The ICAO investigation found that following take-off, “the aircrew climbed straight ahead en-route and the climb

³⁵ Nash Leich. “Denial of Liability”. 322.

³⁶ Kaplan, F. “America’s Flight 17: The time the United States blew up a passenger plane – and tried to cover it up”. *Slate*, 23 July 2014. http://www.slate.com/articles/news_and_politics/war_stories/2014/07/the_vincennes_downing_of_iran_air_flight_655_the_united_states_tried_to.html?via=gdpr-consent, Accessed on 13 May 2020.

³⁷ “Memorial submitted by the Islamic Republic of Iran: Vol. I”. International Court of Justice. 24 July 1990. 66. <https://www.icj-cij.org/files/case-related/79/6629.pdf>, Accessed on 13 May 2020.

³⁸ “Memorial...”. 84.

³⁹ “Settlement Agreement on the Case concerning the Aerial Incident of 3 July 1988 before the International Court of Justice”. 9 February 1996. <https://www.icj-cij.org/public/files/case-related/79/11131.pdf>, Accessed on 15 February 2021.

⁴⁰ Schwartz. “Overwhelmed by Technology”.

⁴¹ Hammond. “The ‘Forgotten’ US Shootdown of Iranian Airliner Flight 655”.

⁴² Barry and Charles. “Sea of Lies”.

profile was normal”⁴³. Among the reasons for the misidentification of the Airbus, the Report lists *inter alia*

- the association of the Airbus radar contact with an unrelated IFF Mode II response labelled as an F-14 fighter jet;
- the lack of response from the contact to the challenges and warnings on the frequencies used by USS *Vincennes*;
- no detection of civil weather radar and radio altimeter emissions from the contact;
- the availability of intelligence on Iranian F-14 deployment to Bandar Abbas;
- the expectation of hostile activity; and most importantly;
- “reports by some personnel aboard USS *Vincennes* of changes in flight profile (descent and acceleration) which gave the appearance of maneuvering into an attack profile; and the radar contact was tracked straight towards [...] USS *Vincennes* on a course slightly diverging from the centerline of airway A59.”⁴⁴

The Report concludes that the “USS *Vincennes* AEGIS system contained and displayed correctly the IFF mode and code, and the altitude and speed information of the contact (IR655). The AEGIS system recorded a flight profile consistent with a normal climb profile of an Airbus A300.”⁴⁵

CONCLUSIONS

Many opposers of AWS regard these systems as evil technological advancements with the inherent ability to make life and death decision. Yet, the USS *Vincennes* incident highlights that keeping the human in the decision loop works only if the crew is properly trained in operating AWS in contested environments and understands how the system works in-depth and what sort of information can be reliably delivered by it. Sadly, the crew of *Vincennes* had been exercising threatening scenarios for months before the incident, but had never anticipated the chance of a “harmless passage of a civilian airliner” which undoubtedly “contributed to their misperceptions.”⁴⁶ In latter case, acting upon the raw data provided by the Aegis Combat System could have led to a completely different outcome of events, saving not only innocent lives but also disgrace to the US Navy, not to mention the millions of dollars paid to the victims’ families.

Although many factors contributed to the incident, unquestionably the most important one was human error. In this peculiar case, a wider degree of autonomy (more freedom to act) given to the AWS (by a different operating mode) might have helped to avoid the death of civilians. As Scharre notes, “just as automation could help shoot down incoming missiles in a saturation scenario, it could also help *not fire* at the wrong targets in an information-overloaded environment.”⁴⁷ This tragedy also underlines that keeping a man in the decision loop is not a cure-all in scenarios where “it may be difficult to distinguish civilians and civilian objects from combatants and military objectives.”⁴⁸

⁴³ “Excerpts from Report of ICAO Fact-Finding Investigation...”. 333.

⁴⁴ “Excerpts from Report of ICAO Fact-Finding Investigation...”. 334.

⁴⁵ “Excerpts from Report of ICAO Fact-Finding Investigation...”. 335.

⁴⁶ Hables Grey, C. *Postmodern War: The New Politics of Conflict*. London: Routledge, 1997. 67.

⁴⁷ Scharre. “*Army of None*”. 170.

⁴⁸ Schmitt, M. N. and Thurnher, J. S. “Out of the Loop: Autonomous Weapon Systems and the Law of Armed Conflict” *Harvard National Security Journal* 4. 2013. 248-249.

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