



ISSN: 0976-3376

Available Online at <http://www.journalajst.com>

ASIAN JOURNAL OF
SCIENCE AND TECHNOLOGY

Asian Journal of Science and Technology
Vol. 10, Issue, 03, pp.9520-9527, March, 2019

RESEARCH ARTICLE

THE MH370: WHY IT IS NOT PILOT MURDER-SUICIDE - OUR POSTULATES

^{1,*}Meer Ahmad, A. M., ²Mohamed Hussain Habil and ³Zahari Bin Jusoh

¹Community Medicine Department, MAHSA University, Malaysia

²Department of Psychiatry, MAHSA University, Malaysia

³RMAF Institute of Aviation Medicine, Malaysia

ARTICLE INFO

Article History:

Received 28th December, 2018

Received in revised form

15th January, 2019

Accepted 07th February, 2019

Published online 30th March, 2019

Key words:

MH370, Pilot murder-suicide,
Cabin-depressurization,
Air accident investigation,
Suicide-risk

*Corresponding author: Meer Ahmad,

ABSTRACT

Aim: The aim of this article is to discuss unbiasedly and objectively why the disappearance/crash is not due to pilot-suicide. **Method:** The authors present their own postulates as to why the disappearance/crash is not a pilot murder-suicide, besides briefly discussing relevant aspects of the safety investigation report. The authors also make reference to other related articles and news reports. **Results:** The evidence contradicts claims that it was a pilot murder-suicide "meticulously planned" by either of the pilots – the route could not have been planned by the captain and the 'hijacking-pilot' could not have killed everybody else by causing cabin-depressurization, and consequent hypoxia, before deliberately crashing. The flight-path of the MH370 do not resemble the path of eight previously ascertained commercial-airliner pilot-suicides, while it resembles the path of nine previous suicides in which it was hijackers who were flying the plane. Usual psychiatric suicide-risk assessment of both the pilots prior to the flight did not reveal any suicide-risk, and revealed that they were stable socio-economically, physically and mentally. **Conclusion:** The disappearance/crash of the MH370 is not due to pilot (mass) murder-suicide.

Citation: Meer Ahmad, A. M., Mohamed Hussain Habil and Zahari Bin Jusoh, 2019. "The MH370: why it is not pilot murder-suicide - our postulates", *Asian Journal of Science and Technology*, 09, (03), 9520-9527.

Copyright © 2019, Meer Ahmad et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

The Malaysia Airlines jet, a Boeing 777- 200ER (9M-MRO), was on a routine flight from Kuala Lumpur to Beijing on 8 March 2014 with 239 people on board when it disappeared. The disappearance is considered one of the greatest, if not the greatest, aviation mysteries (Simon Calder, 2018; Safety Investigation Report, 2014; Stephanie Bedo and Reuters, 2018; FMT Reporters, 2018; Ryan Gados, 2018; Flight MH370, 2016). Analysis of satellite-data indicates it crashed in the Indian Ocean, west of Australia, thousands of miles from its intended destination – and, this has been confirmed when small parts of the broken-airliner was found washed up in several locations on the Eastern African coast (Simon Calder, 2018; Safety Investigation Report, 2014; Stephanie Bedo and Reuters, 2018; FMT Reporters, 2018; Ryan Gados, 2018; Flight MH370, 2016). Many, including several aviation-experts, wish to pin-point the cause of the disappearance and subsequent crash to a meticulously-planned (mass) murder-suicide on the part of the Airliner-Captain (Pilot-in-Command, PIC) Zaharie Ahmad Shah – even after the Safety Investigation Report (Simon Calder, 2018; Safety Investigation Report, 2014; Stephanie Bedo and Reuters, 2018; FMT Reporters, 2018; Ryan Gados, 2018; Flight MH370, 2016). The main part of the aircraft has still not been found even after an extensive under-water search, including the Flight Data Recorder (FDR) and the Cockpit Voice Recorder (CVR) – the so-called 'Black Boxes', which would throw considerable light on the cause.

On 2nd July 2018, The Malaysian ICAO Annex 13 Safety Investigation Team for MH370, comprising of local and foreign experts, including medical/human factors experts, issued its Final Safety Investigation Report. The Team concluded that it was not able to determine the cause of the disappearance/crash – but, it ruled out pilot murder-suicide (Safety Investigation Report, 2018).

METHODS

Here, the Authors present their own postulates as to why the disappearance/crash is not a pilot murder-suicide, besides briefly discussing relevant aspects of the Safety Investigation Report. The Authors endeavor to remain focused on the pilot-suicide question of the disappearance/crash, and nothing more.

DISCUSSION

On 14th May 2018, a News Report in The Independent by Simon Calder states that "the Captain of flight MH370 deliberately crashed the plane, investigators concluded (not the Official Investigation sanctioned by the Government of Malaysia and ICAO), including the man who spent two years heading the search, who now says Captain Zaharie Ahmad Shah carefully planned a murder-suicide mission." (Simon Calder, 2018). The News Reports quotes one "Captain Simon Harvey, a British pilot who has flown the 777 widely in Asia",

that the mission was "planned meticulously to make the aircraft disappear. If you were commissioning me to make a 777 disappear, I would do exactly the same thing." (Simon Calder, 2018). "Shah somehow managed to cut all communication systems and then dip in and out of Malaysian and Thai airspace and eventually went over his own hometown, Penang", Boeing 777 pilot and instructor Simon Harvey said (Simon Calder, 2018). "It did the job because we know, as a fact, that the military did not come and intercept the aircraft," Harvey said, adding that he believed someone was in control of the plane until the end (Simon Calder, 2018). It further states "The seabed search was led by Martin Dolan, who told a special edition of the "60 Minutes Australia" programme: "This was planned, this was deliberate, and it was done over an extended period of time." (Simon Calder, 2018). "Six days after the plane disappeared, their homes in the Malaysian capital were searched and computer equipment was taken away. It contained evidence suggesting Captain Zaharie had used flight-simulation software to prepare for diverting the aircraft." (Simon Calder, 2018). It also states, "A Canadian air-crash investigator, Larry Vance, said he believed that Captain Zaharie put on an oxygen mask before depressurizing the plane to render the passengers and crew unconscious: "There is no reason not to believe that the pilot did not depressurize the cabin to incapacitate the passengers (Simon Calder, 2018). Yet this Figure 1 below, from the Final Safety Investigation Report, shows that for half of the route across the North of the Malay Peninsula, the airliner was not flying along the Malaysia-Thai border. Also, MH 370's track across the North of the Malay-peninsula from the Last Secondary-radar Contact (Waypoint IGARI) till Penang Island, as off-and-on 'blips', was not only noted by the Malaysian Military Radar (Primary Radar), but also by Kota Bahru (North-east coast) ATC and Kuala Lumpur ATC (Safety Investigation Report, 2018). The Report says that "the Military radar system recognized the 'blip' that appeared west after the left turn over IGARI was that of MH370. Even with the loss of SSR data, the Military long range air defense radar with Primary Surveillance Radar (PSR) capabilities affirmed that it was MH370 based on its track behavior, characteristics and constant/continuous track pattern/trend." (Although the next two Figures here would not actually show a "constant/continuous track pattern/trend"). "Therefore, the Military did not pursue to intercept the aircraft since it was 'friendly' and did not pose any threat to national airspace security, integrity and sovereignty" (Safety Investigation Report, 2018).

The final Safety Investigation Report says, "There is no evidence to indicate that MH370 was evading radar" (Safety Investigation Report, 2018). Fig. 2 and Fig. 3 appear to indicate that the pilot in control of the airliner along the route from IGARI to Penang Island not only switched off the transponder, he also seems to have ascended the airliner to an altitude above its ceiling 43,000 feet to cause hypoxia to the remaining occupants of the flight, and thus kill them. Switching off the transponder not only erases the SSR Code on radar-observation, it also disallows the Secondary Radar from ascertaining the airliner's speed and altitude along its route. The Military Radar, although a Primary Radar, had an intrinsic inaccuracy in ascertaining altitude and speed (Safety Investigation Report, 2018).

The Boeing 777-200ER Specifications are as follows 8:

Typical cruise speed: Mach 0.84 (554 mph, 892 km/h, 482 knots) at a cruise altitude of 35,000 ft (11,000 m)

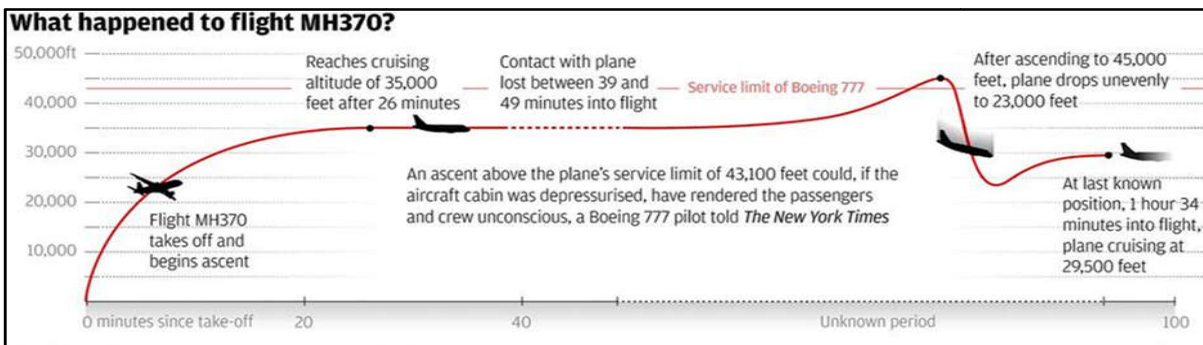
Maximum speed: Mach 0.89 (587 mph, 945 km/h, 510 knots) at a cruise altitude of 35,000 ft (11,000 m) Service ceiling: 43,100 ft (13,140 m). Maximum range is 7,700 nautical miles (14,300 km). Sustained-flight exceeding maximum-speed can damage the airframe of the plane, including vital control-parts – and, the Captain is well aware of that. There is also argument that the airliner's gross-weight at IGARI would not have allowed it to climb above 39,000 feet. Besides, the Safety Investigation Team attempted seven times to fly the airliner at the altitudes and speed shown in Fig. 3 in a simulator, but could not (Safety Investigation Report, 2018). Again, some of the speed and altitude noted of the airliner were beyond the capability of a Boeing 777-200ER. Also, in the one minute from 1800.59 to 1801.59 the airliner seems to have changed altitude from 58,200 feet to 4,800 feet which is practically a vertical-dive, not likely to have been recoverable by the pilot-in-control. From Fig. 2, it could be noted that the airliner appears to have exceeded its specified-ceiling to an altitude of about 45,000 feet for about three minutes. While in Fig. 3, it appears to have exceeded twice – first, from 1737 to 1745 UTC (8 minutes) to an altitude ranging from 43,000 feet to 47,500 feet (very briefly), and secondly very briefly again for about 3.5 minutes to an altitude ranging from 43,000 feet to 58,200 feet. Even if the Military Radar was not inaccurate in discerning such altitude, and the aerodynamics at such altitude did support flight of the 777, it would not have caused complete loss of cabin-pressure –rather, at its peak-altitude at 58,000 feet, the cabin-pressure would only have fallen to add 15,000 feet (at peak-altitude - the other altitudes accordingly) to the usual 8,000 feet cabin-pressure i.e 23,000 feet fleetingly at 58,000 feet.

The Time of Useful Consciousness at 23,000 feet is about 7 minutes, while the passenger-oxygen supply would have dropped down lasting another 22 minutes (Safety Investigation Report, 2018; Hypoxia and hyperventilation, 1988; The pressure cabin, 1988). Thus, the passengers and cabin-crew would not have become hypoxic, leave alone become killed. It must be borne in mind that the matter raised by these experts is not whether the pilot deliberately depressurized the airliner completely, but that the pilot flying the airliner at that time ascended the plane to altitudes above its maximum, thus causing hypoxia – and, since the issue is not complete-depressurization, the matter of decompression-sickness and frost-bite/hypothermia do not come in (The pressure cabin, 1988). Frost-bite/hypothermia would also have set in on the pilot flying the plane (after purportedly having killed the rest of the occupants of the plane) for the duration he was flying at those above-limit altitudes with complete depressurization of the plane, although not incapacitating-symptoms of decompression-sickness. Hypothermia would have very quickly killed the pilot at that altitude. Complete-depressurization of the airliner would also require the pilot flying the plane above 40,000 feet, while on supplemental personal-oxygen (to avoid hypoxia) to pressure-breathe, which his personal-oxygen system does not have the capability for, nor the pilots trained to use pressure-breathing oxygen-equipment. (Prevention of hypoxia, 1988; Oxygen equipment and pressure clothing, 1988) In a News-Report by Stephanie Bedo and Reuters carried in the news.com.au on 23rd May 2018, Senior Boeing 777 pilot and instructor Simon Harvey is quoted to have said, "MH370 was used in a murder-suicide mission by Captain Zaharie Ahmad Shah, who deliberately flew the aircraft over his hometown of Penang for an "emotional goodbye", before ditching it in the Southern Indian



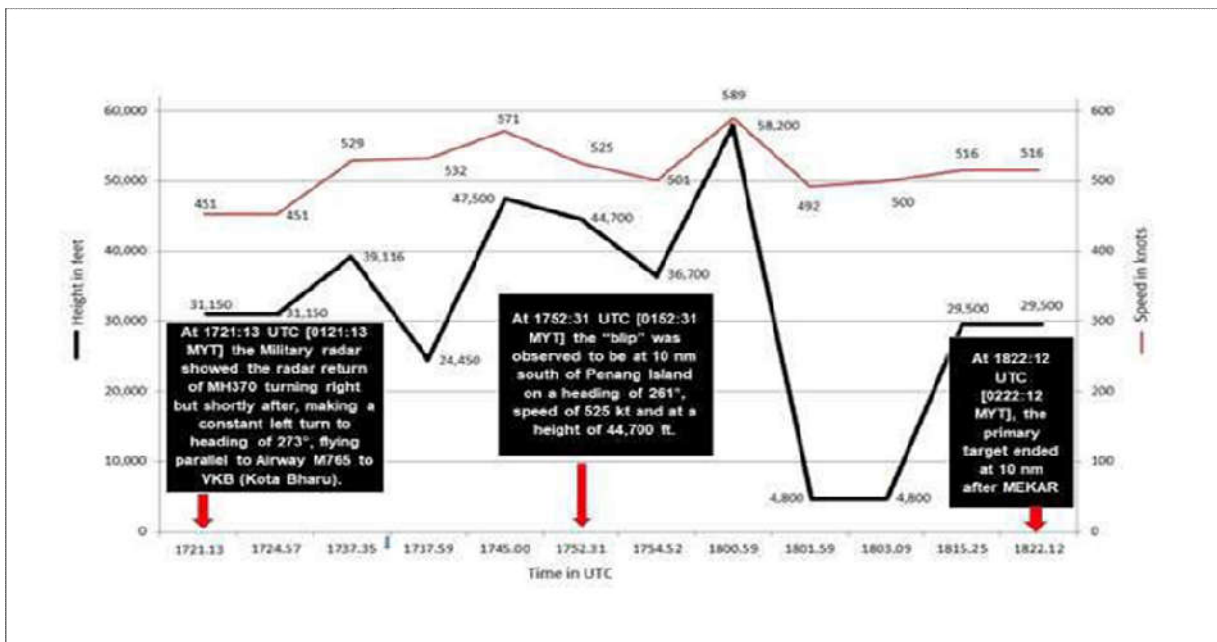
Source: Special Investigation Report 2nd July 2018

Fig 1. MH 370 Known Flight Path



Source: Malaysian Govt.; Skyvector

Fig 2. Radar-tracked route of MH370



Source: Special Investigation Report 2nd July 2018

Fig 3. Route of MH370 as tracked by Military Radar (Primary Radar) 2

Ocean “where it could never be found” (Stephanie Bedo, 2018). In an opinion piece published in *The Australian* (reported in the *Free Malaysia Today News-portal* on 14th August 2018), Mike Keane, a senior commercial airline and fighter pilot, is quoted to have said “the investigation into the matter seemed to clear the MH370 pilots from suspicion by suggesting third-party involvement instead” (FMT Reporters, 2018). “The Malaysian investigation, to my mind, has failed on all of these criteria (to make the report credible) and has not provided justice to the victims and families (FMT Reporters, 2018). The one factor that has not been adequately addressed in the main report of 450 pages and another 1,000 pages of appendices is pilot involvement” (FMT Reporters, 2018). He is further quoted to have said “he believed the MH370 tragedy was not an accident but the deliberate destruction of the aircraft, resulting in the deaths of 239 innocent victims” (FMT Reporters, 2018). And, Keane was adamant “that pilot hijack by the captain was the only realistic scenario that fits with the known facts. Zaharie had made a “lazy turn” and routed the aircraft to Penang, where he was born and went to school. The 10 nautical miles displacement to the south of the island would have provided him with a good view from the left seat of the aircraft. This could be interpreted as a last, emotional farewell.” (FMT Reporters, 2018). Fox News by Ryan Gados on 14th May 2018 said that “the captain of doomed Malaysia Airlines Flight 370 selected a route that would effectively render the plane invisible on radar in order to commit suicide, experts said Sunday. The suspicion that MH370 Captain Zaharie Ahmad Shah was attempting suicide was agreed upon, aviation experts said in a panel discussion on 9 News Australia” (Ryan Gados, 2018). Fox News quotes Larry Vance, as a former senior investigator with the Transportation Safety Board of Canada, as having said, “He was killing himself; unfortunately, he was killing everybody else on board, and he did it deliberately” (Ryan Gados, 2018).

The claim that the Captain brought the plane to fly near to Penang in “an emotional last look and farewell” is mere assumption and conjecture. There is no evidence from the Investigation to indicate that the pilot dropped a wing near Penang to have a better look. A previous Air France Flight from Brazil to France crashed into the deepest Atlantic Ocean, and was subsequently found after an intensive search. Thus, it is unlikely that Captain Zaharie had wished to hide the crashed-plane in the deepest ocean-waters. Also among our postulates is, an airliner-Captain who purportedly “meticulously planned this route to bring the plane to a location to commit murder-suicide” would have known the presence of the military-radar (presumably at Western Hill, Penang Island) with Primary Radar Capabilities, and would not have assumed that the Military would not intercept the plane that was not displaying the SSR Code. The *Daily Intelligencer* on a News Report dated 22nd July 2016 had said “New York has obtained a confidential document from the Malaysian police investigation into the disappearance of Malaysia Airlines Flight 370 that shows that the plane’s captain, Zaharie Ahmad Shah, conducted a simulated-flight deep into the remote southern Indian Ocean less than a month before the plane vanished under uncannily similar circumstances (Flight MH370, 2016). “The revelation, which Malaysia withheld from a lengthy public report on the investigation, is the strongest evidence yet that Zaharie made off with the plane in a premeditated act of mass murder-suicide.” (Flight MH370, 2016).

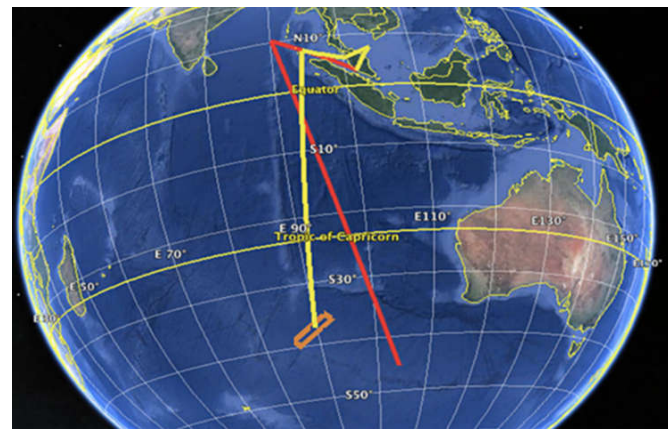


Fig. 4. The route apparently flown in the simulator is drawn here in red – the presumed MH370 route in yellow

According to the Safety Investigation Report, “the Royal Malaysia Police (RMP) seized the PIC’s home flight simulator from the residence of the PIC (Pilot-in-Command) on 15 March 2014. The RMP Forensic Report dated 19 May 2014 documented more than 2,700 coordinates retrieved from separate file fragments and most of them are default game coordinates” (Safety Investigation Report, 2018). It was also discovered that there were seven ‘manually programmed’ waypoint-coordinates, “that when connected together, will create a flight path from KLIA to an area south of the Indian Ocean through the Andaman Sea. These coordinates were stored in the Volume Shadow Information (VSI) file dated 03 February 2014.

The function of this file was to save information when a computer is left idle for more than 15 minutes. Hence, the RMP Forensic Report could not determine if the waypoints came from one or more files” (Safety Investigation Report, 2018). “The RMP Forensic Report on the simulator also did not find any data that showed the aircraft was performing climb, attitude or heading manoeuvres, nor did they find any data that showed a similar route flown by MH370” (Safety Investigation Report, 2018). The RMP Forensic Report concluded that there were no unusual activities other than game-related flight simulations (Safety Investigation Report, 2018). The Authors also wish to observe that no one seems to be concerned about when that simulator-route was flown, the period-lapse between the simulator-flight and the actual MH370 Flight, besides ascertaining the number of other routes flown on the simulator during that period. It would also be imperative to ascertain whether anyone else flew in that simulator because family-members may have used that simulator, since not only pilots use home-based PC-based flight-simulators, non-pilots also do, including youngsters. One of the Authors here himself flies many types of fixed-wing aircraft on the Microsoft Flight Simulator X.

Besides those postulates, it is important to remember that there were eight other previous pilot-suicides involving commercial-airliners (Suicide by pilot, Wikipedia):

- a. Japan Airlines Flight 350 (McDonnell Douglas DC-8-61) crashed on 9 February 1982 resulting in 24 fatalities. 15
- b. Japan Airlines Flight 350 (McDonnell Douglas DC-8-61) crashed on 9 February 1982 resulting in 24 fatalities. (Japan Airlines Flight 350, *Wikipedia*)

- c. Royal Air Maroc Flight 630 on 21 August 1994 which crashed killing all 44 passengers and crew on board. (Royal Maroc Flight 630, *Wikipedia*)
- d. SilkAir Flight 185 (Boeing 737-300), that crashed (disputed as pilot-suicide) on 19 December 1997 killing all 97 passengers and seven crew. (SilkAir Flight 185, *Wikipedia*)
- e. The 1999 Air Botswana incident when a Botswana airline-pilot, killed himself by crashing a plane 18(1999 Air Botswana ATR crash, *Wikipedia*)
- f. EgyptAir Flight 990 on October 31, 1999, (Boeing 767) crashed (disputed as pilot-suicide) into the Atlantic Ocean killing all 217 passengers and crew on board. (Egypt Air Flight 990, *Wikipedia*)
- g. LAM Mozambique Airlines Flight 470 that crashed on 29 November 2013 killing all 27 passengers and 6 crew members. (LAM Mozambique Airlines Flight 470, *Wikipedia*)
- h. Germanwings Flight 9525 on 24 March 2015 (Airbus A320-211), crashed killing all 144 passengers and six crew members. (Germanwings Flight 9525, *Wikipedia*)
- i. On August 10, 2018, a Horizon Air Bombardier Dash 8 Q400 was stolen and crashed, killing the pilot-thief. (2018 Horizon Air Q400 Incident, *Wikipedia*).

In these, all eight previous commercial-airliner pilot-suicides were within 100 miles of the airport, all after take-off but one before-landing – or, along the routine planned-route. Even the stolen-aircraft episode was only one hour along a straight-route. No complex “meticulous” pre-meditated planning; no complex flight-activity preceding the crashes. In contrast, in the previous nine commercial-airliner pilot-suicides in which the airliner deviated from its initial planned routine-route, including the four 9/11 airliner-incidents in the USA, the pilots were hijackers from among the passengers (Pacific Southwest Airlines Flight 1771, *Wikipedia*; Federal Express Flight 705, *Wikipedia*; Air France Flight 8969, *Wikipedia*; American Airlines Flight 11, *Wikipedia*; United Airlines Flight 175, *Wikipedia*; American Airlines Flight 77, *Wikipedia*; United Airlines Flight 93, *Wikipedia*)

If the simulator-matter of a previous simulated-flight to the Southern Indian Ocean is cited, there actually is absolutely no reason for the Captain to (obsessively) select that particular location. It is not easy to plan a pilot-suicide – the involved flight-crew must either incapacitate the other pilot first, or lock him out (going to the toilet). Otherwise, it must be done together between them, which is a very remote possibility. In a packed-flight, it must be executed very quickly to enhance success. Cabin-crew and passengers can communicate with ground-stations using their mobile smart-phones (and cabin-radios) – as in this case, the First Officer’s phone did attempt a call out.

Cabin-crew will also routinely serve food and drinks to the flight-crew, and there will be SOPs if these are locked out, particularly over seven hours. If it is claimed by anyone that the Captain committed pilot-suicide because Mr. Anwar Ibrahim, the former Deputy Prime Minister, had just been jailed (as there has been such claims), that is an extremely remote possibility because in the 60 years of Malaysia, no one has committed suicide over the fate of their political-icons, unlike in other countries. No one else committed suicide over Mr. Anwar’s fate this time either – so, we should not thus implicate a successful and stable airliner-Captain here.

The suicide rate for Kuala Lumpur is estimated to be 7.4 per 100,000; Indians – 21.1 per 100,000; Chinese – 8.6 per 100,000 (elderly Chinese – 23.0); Malays – 2.6 per 100,000. Thus, suicide-rates even among urban Malays here is much lower than compared with the other races. The breakdown of the means of suicide: Poisoning – 39%; hanging – 34%; jumping from height – 22% (Hayati AN et al 1999). The low-rate among the Malays may be attributed to their culture forged very much by Islam which is their religion entirely. All Muslim scholars and clerics consider suicide forbidden. A verse in the Quran instructs (“Islam” in Religious views, *Wikipedia*):

"And do not kill yourselves, surely God is most Merciful to you."— Qur'an, Sura 4 (An-Nisa), ayat 29

The prohibition of suicide has also been recorded in statements of hadith (sayings of Muhammad); for example (“Islam” in Religious views, *Wikipedia*). Narrated Abu Huraira: The Prophet said, "He who commits suicide by throttling shall keep on throttling himself in the Hell Fire (forever) and he who commits suicide by stabbing himself shall keep on stabbing himself in the Hell-Fire." — Sahih al-Bukhari, 2:23:446. Risk factors in suicide in Malaysia include experiencing a significant negative life-event, physical and/or mental illness, past suicide-attempts, and family-history of suicide and mental-illness. About 1 in 3 individuals who commit suicide express their suicide intentions verbally or through writing (Suicide in Malaysia, 2018).

Analysis of medical/human factors issues by the safety investigation team: This section analyzed general human performance issues such as the medical history, professional qualifications, training, factors related to mental and physical fatigue, crew-to-ground communications, psycho-social events, and other relevant factors. Medical records from private health care facility and from MAS Medical Centre, and Interviews with MAS staff and several of the next of kin of the crew. The analysis attained from documentations, CCTV recordings and interviews were conducted ethically, based on professional assessments code of practice of the Team (Safety Investigation Report, 2018).

The analysis was done based on the following sources gathered from: Personal records/files of the PIC, FO and the cabin crew from MAS. These documents included the log book, certificates, licenses, medical records and any disciplinary/administrative actions; Investigation details from the Polis Di Raja Malaysia (PDRM) - Royal Malaysia Police. These were statements obtained from the next of kin and relatives, doctors/care givers, co-workers, friends and acquaintances; financial-records of the flight-crew, CCTV recordings at KLIA and analysis of the radio-transmission made between MH370 and ground Air Traffic Control (Safety Investigation Report, 2018).

General human performance issues: The Flight-crew’s medical-background and recent-activities were examined (Safety Investigation Report, 2018).

Specific human factors issues: In this section, the specific personal relationships, financial background, personal insurance coverage and benefits, past medical and medication history, as well as the recent behavior of the PIC, FO and all the cabin crew were examined (Safety Investigation Report, 2018).

Table 1. General Human Performance Issues 2

Area	Action	Finding
Medical-background	A. Medical files/medical records B. Interviews with medical/health-care professionals at MAS-organization, members of Family, and friends C. Medical-certification	A. No significant health-related matters B. PIC and FO were in good health and certified fit to fly at the time of the flight C. Both had valid, current medical-certification
Airman licenses	Check certificates and records	Both the PIC and FO held valid airman licenses. It was concluded that both were properly trained, licensed and qualified as required to conduct the flight.
Flying records	Checked from the Scheduling Officer	Both the PIC and FO were within duty-time limits and therefore were adequately rested before the flight.
Interpersonal relationship between the PIC and FO	Examined	1. No reports of any conflicts or problems between the PIC and FO prior to the flight or before the day of the flight. 2. This is the first time the PIC and FO have flown together after the latter completed his upgraded training to the B777. 3. The Team did not find any evidence of a strain in the relationship between the two.
FO's training	Examined	1. It was the FO's last Line Training flight before he was scheduled to be checked out. 2. The FO's training progress was within the performance of new FOs promoted to the B777 from the smaller fleet.

Table 2. Specific Human Factors Issues 2

Area	Action	Finding
Personal Relationships	Information obtained from family and friends	1. Of the PIC and FO and the cabin-crew, suggested no recent changes or difficulties in personal relationships. 2. There was nothing significant observed by the family and friends of the crew.
Pilot-in-Command (PIC)	Personal and professional career investigated	1. The PIC had flawless safety records with a smooth career pathway to his existing position as a Type Rating Examiner on the B777 2. Has been well respected throughout his flying career. 3. He was considered a leading pilot who was given privileges to be an instructor and examiner.
First Officer (FO)	Personal and professional career investigated	1. The investigation into the personal and professional career revealed that the FO had a good safety record with a smooth career pathway to his existing position as a Co-pilot under training on the B777-200ER. 2. The investigation into the FO's personal and professional history revealed no disciplinary records.
Cabin crew	Personal and professional career investigated	1. There is no evidence to suggest that any members of the cabin crew had experienced career-related incidents or mishaps resulting in major disciplinary records.
Financial Background and Insurance Coverage	Investigated	1. Information obtained on the financial background for the PIC, FO and all the cabin crew showed no evidence of financial-stresses or impending insolvency. 2. Analysis of the bank financial-statements did not reveal any incidents of unusual financial-transactions. 3. Based on the available data, investment or trading accounts owned by the PIC were mainly inactive or dormant. 4. The FO and cabin crew have no investment or trading accounts. 5. Insurance coverage records were unremarkable which include generally life insurance policy, motor vehicle insurance policy, medical insurance policy and personal accident policy. 6. There is no evidence of recent or additional insurance cover purchased by the PIC, FO or any members of the cabin crew.
Past medical and medication-history	Investigated	1. It was confirmed that the PIC sustained a spinal injury as a result of a paragliding accident in January 2007. 2. He was medically certified to have recovered from the injury, and there is no record of him being on long term medication for this, or other medical ailments. 3. Scrutiny of his credit card transactions failed to reveal a pattern of regular purchase of over-the-counter medication of any significance, either in local or overseas pharmacies. 4. The Team has further investigated the overseas over-the-counter prescriptions as there was no recorded transaction on the PIC's credit card on any medications purchased.
Mental/stress-related ailments	Specifically investigated of both	There is no medical record or other documentation of the PIC or FO having received psychiatric treatment or any other health-related matter
Recent behavior	1. Ascertained from family-members and work-associates 2. Ascertained from CCTV recordings	There were no behavioral-signs, observed of the PIC, the FO and the cabin-crew, of social-isolation, change in habits or interest, self-neglect, or involvement in drug or alcohol abuse on the day of the flight and on their most recent flights

Overall Comments

Evidence from the medical/human factors issues showed no unusual issues on the PIC, FO and cabin crew (Safety Investigation Report Malaysia Airlines Boeing B777-200ER (9M-MRO), 2014).

Summary of findings in Report

There is no evidence of irregularities of both the pilots in terms of their capability, performance and standard to assume command of a B777 and as First Officer respectively prior to the disappearance of MH370 (Safety Investigation Report Malaysia Airlines Boeing B777-200ER (9M-MRO), 2014). There is no evidence of irregularities in terms of Medical & Licensing Validity of both the pilots prior to the disappearance of MH370 (Safety Investigation Report Malaysia Airlines Boeing B777-200ER (9M-MRO), 2014). Kenedi *et al.* (2016) systematically reviewed suicide and homicide-suicide events involving aircraft. They noted that "In aeromedical literature and in the media, these very different events are both described as pilot suicide, but in psychiatry they are considered separate events with distinct risk factors." Kenedi *et al.* 2016 further note that homicide-suicide events occur only extremely rarely. They state: "There is evidence of clustering where pilot-suicides occur after media-reports of suicide or homicide-suicide. No single factor was associated with the risk for suicide or homicide-suicide. Factors associated with both events included legal and financial crises, occupational conflict, mental illness, and relationship stressors. Drugs and/or alcohol played a role in almost half of suicides, but not in homicide-suicides". Bills *et al.* (2005), during the 21-yr study period (1983 – 2003), found 37 pilots committed or attempted suicide by aircraft. All the cases were men and involved general aviation flights. Toxicological test results revealed that 24% of the cases had used alcohol and 14% had used other illicit drugs. Underlying factors included domestic and social problems (46%), legal trouble (40%), and pre-existing psychiatric conditions (38%). Compared with controls, suicide cases involved younger pilots ($p < 0.05$), were less likely to have another occupant ($p < 0.0001$) and were more likely to have occurred away from the airport ($p < 0.0001$). Laukkala *et al.* (2018) found that two years after the Germanwings incident, three out of 454 (0.66%) fatal incidents were aircraft-assisted suicides compared with six out of 1292 (0.46%) in the prior five years in the National Transport Safety Board (NTSB) database. But, here were no aircraft-assisted pilot suicides in the German database during the two years after or five years prior to the Germanwings crash. Six of the nine pilots who died by suicide had told someone of their suicidal intentions. Lewis *et al.* (2007) found that between 1993-2002 there were 3,648 fatal aviation-accidents of which the NTSB determined that 16 were aircraft-assisted suicides. All pilots involved in these aircraft-assisted suicides were male, with a median age of 40 years. Seven of the 14 pilots for which specimens were available were positive for disqualifying-substances. Unga (1994) writes that in the 9 pilot-suicides occurring in the US from 1979 to 1989, NTSB investigations identified evidence for important adverse psychological factors in most pilots. Panzack *et al.* (2013) found that perpetrators of homicide-suicides were older and more likely to be male and married to or separated from their victims than perpetrator of simple homicides or suicides. Influence of alcohol and a history of domestic violence or unemployment were less prevalent in homicide-suicides than

in homicides. Their results indicate that homicide-suicides represent a distinct entity, with characteristics distinguishing them both from homicides and suicides (Panzack *et al.*, 2013).

Conclusion and Recommendations

Thus, it can be proven that the MH370 disappearance/crash is not due to pilot murder-suicide. Allegations and insinuations of such are quite readily rebutted. The evidence does not support that the flight-path after waypoint IGARI was "meticulously planned by the captain or the co-pilot" including "wishing to hide the crashed-plane in the deepest ocean-waters", nor that the airliner was evading radar along the path. The airliner could not have been flown at some of the high-speeds and some of the high-altitudes flown by the plane along the path from IGARI till Penang – and, this can be attributed to intrinsic inaccuracies in the Military Radar which recorded the flight along the path. If aerodynamics supported the flight of the plane at those high-altitudes, it still would not have caused hypoxia to the remaining occupants of the Flight, leave alone death – as it is not likely that the pilot flying the plane at that time completely depressurized the plane. The simulator-path flown in the home of the flight-captain was thoroughly investigated and found not to be significantly associated with the disappearance/crash. The circumstances of this disappearance/crash is not congruous with previous pilot murder-suicides involving commercial airliner-flights. General human performance issues such as the medical history, professional qualifications, training, factors related to mental and physical fatigue, crew-to-ground communications, psycho-social events, and other relevant factors appear to have been thoroughly investigated subsequently and nothing abnormal was ascertained. Similarly, specific personal relationships, financial background, personal insurance coverage and benefits, past medical and medication history, as well as the recent behavior of the PIC, FO and all the cabin crew. The Recommendations made by The Malaysian ICAO Annex 13 Safety Investigation Team for MH370 are relevant, apt and timely.

Conflict of Interest: The Authors declare that they have no Conflict of Interest in writing this Article.

REFERENCES

- Simon Calder. MH 370 investigators say captain deliberately crashed the plane in murder-suicide. *The Independent*. May 14 2018
- SAFETY INVESTIGATION REPORT Malaysia Airlines Boeing B777-200ER (9M-MRO) 08 March 2014. *The Malaysian ICAO Annex 13 Safety Investigation Team for MH370*. MH370/01/2018. 02 July 2018
- Stephanie Bedo and Reuters. Australian Transport Safety Bureau investigators hit back at reports they ruled out MH 370 ditching. *News.com.au*. May 23, 2018
- FMT Reporters. Aviation expert slams MH370 investigators. *Free Malaysia Today News-portal*. August 19, 2018
- Ryan Gados. MH370 captain was suicidal, aviation experts say. *Fox News*. May 14, 2018
- Air France Flight 447. *Wikipedia*. https://en.wikipedia.org/wiki/Air_France_Flight_447
- Flight MH370: Exclusive – MH370 pilot flew a suicide-route on his home-simulator closely matching final flight. *Daily Intelligencer*. July 22 2016

- Boeing 777-200ER Long-range Wide-body Twin-jet Airliner. *The Skytamer Archive*. 1998 – 2016. http://www.skytamer.com/Boeing_777-200ER.html
- “Respiratory physiology” in *Aviation Medicine*. Ernsting J and King P. Second Edition. Butterworth Heinemann. 1988. Pp. 27 - 44
- “Hypoxia and hyperventilation” in *Aviation Medicine*. Ernsting J and King P. Second Edition. Butterworth Heinemann. 1988. Pp. 45 - 59
- “Prevention of hypoxia” in *Aviation Medicine*. Ernsting J and King P. Second Edition. Butterworth Heinemann. 1988. Pp. 60 - 71
- “Oxygen equipment and pressure clothing” in *Aviation Medicine*. Ernsting J and King P. Second Edition. Butterworth Heinemann. 1988. Pp. 72 - 111
- “The pressure cabin” in *Aviation Medicine*. Ernsting J and King P. Second Edition. Butterworth Heinemann. 1988. Pp. 112 - 126
- Suicide by pilot. *Wikipedia*. https://en.wikipedia.org/wiki/Suicide_by_pilot
- Japan Airlines Flight 350. *Wikipedia*. https://en.wikipedia.org/wiki/Japan_Airlines_Flight_350
- Royal Air Maroc Flight 630. *Wikipedia*. https://en.wikipedia.org/wiki/Royal_Air_Maroc_Flight_630
- SilkAir Flight 185. *Wikipedia*. https://en.wikipedia.org/wiki/SilkAir_Flight_185
- 1999 Air Botswana ATR crash. *Wikipedia*. https://en.wikipedia.org/wiki/1999_Air_Botswana_ATR_42_crash
- EgyptAir Flight 990. *Wikipedia*. https://en.wikipedia.org/wiki/EgyptAir_Flight_990
- LAM Mozambique Airlines Flight 470. *Wikipedia*. https://en.wikipedia.org/wiki/LAM_Mozambique_Airlines_Flight_470
- Germanwings Flight 9525. *Wikipedia*. https://en.wikipedia.org/wiki/Germanwings_Flight_9525
- 2018 Horizon Air Q400 Incident. *Wikipedia*. https://en.wikipedia.org/wiki/2018_Horizon_Air_Q400_incident
- Pacific Air Lines Flight 773. *Wikipedia*. https://en.wikipedia.org/wiki/Pacific_Air_Lines_Flight_773
- Delta Airlines Flight 523. *Wikipedia*. https://en.wikipedia.org/wiki/Samuel_Byck
- Pacific Southwest Airlines Flight 1771. *Wikipedia*. https://en.wikipedia.org/wiki/Pacific_Southwest_Airlines_Flight_1771
- Federal Express Flight 705. *Wikipedia*. https://en.wikipedia.org/wiki/Federal_Express_Flight_705
- Air France Flight 8969. *Wikipedia*. https://en.wikipedia.org/wiki/Air_France_Flight_8969
- American Airlines Flight 11. *Wikipedia*. https://en.wikipedia.org/wiki/American_Airlines_Flight_11
- United Airlines Flight 175. *Wikipedia*. https://en.wikipedia.org/wiki/United_Airlines_Flight_175
- American Airlines Flight 77. *Wikipedia*. https://en.wikipedia.org/wiki/American_Airlines_Flight_77
- United Airlines Flight 93. *Wikipedia*. https://en.wikipedia.org/wiki/United_Airlines_Flight_93
- Hayati AN, Salina AA, Abdullah AA, Eusni RT, Mansar AH. The pattern of completed suicides seen in Kuala Lumpur General Hospital 1999. *Med J Malaysia*. 2004 Jun; 59(2):190-8
- “Islam” in Religious views on suicide. *Wikipedia*. https://en.wikipedia.org/wiki/Religious_views_on_suicide
- Suicide in Malaysia. *Relate Mental Health Malaysia*. 2017 – 2018. <https://relate.com.my/suicide-in-malaysia/>
- Kenedi C et al. Suicide and Murder-Suicide Involving Aircraft. *Aerosp Med Hum Perform*. 2016 Apr;87(4):388-96.
- Bills CB, Grabowski JG, Li G. Suicide by aircraft: a comparative analysis. *Aviat Space Environ Med*. 2005 Aug; 76(8):715-9.
- Laukkala T et al. Copycats in Pilot Aircraft-Assisted Suicides after the Germanwings Incident. *Int J Environ Res Public Health*. 2018 Mar 11;15(3). pii: E491
- Lewis RJ et al. Aircraft-assisted pilot suicides in the United States, 1993-2002. *Arch Suicide Res*. 2007, 11(2):149-61.
- Ungs TJ. Suicide by use of aircraft in the United States, 1979-1989. *Aviat Space Environ Med*. 1994 Oct;65(10 Pt 1):953-6.
- Panzcak R et al. Homicide-suicides compared to homicides and suicides: systematic review and meta-analysis. *Forensic Sci Int*. 2013 Dec 10; 233(1-3):28-36
