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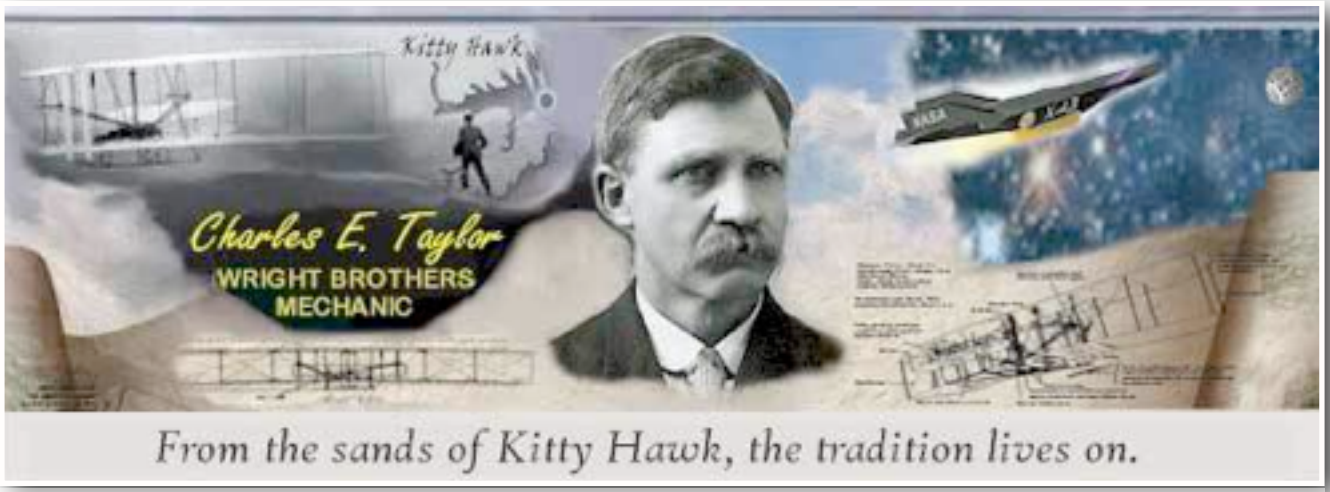

Hello all,
To subscribe send an email to: rhughes@humanfactorsedu.com
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Max Grounding Raises Questions about Int'l Cooperation

by John Goglia

As I write, many long-time aviation accident investigators like myself are reeling from the events of the last few days and weeks. Two tragic airline crashes with significant loss of life just a few months apart in brand-new aircraft are, of course, tremendously concerning. Usually, aviation experts quickly and methodically tackle the investigations of the accidents to determine what occurred and how to prevent it from occurring in the future.

That did not happen after the crash of Ethiopian Airlines Flight ET302 that followed five months after the Lion Air Flight 610. A breakdown in the normally orderly process of accident crash investigation was taking place before our eyes, along with an apparent dismantling of the usual cooperation among those crash investigators from around the world. Not only did China and other countries ground the Boeing 737 Max with seemingly little or no coordination with the U.S.—the country that issued the aircraft its type certificate—but it also did so with little analysis, or at least transparency, of the reasons for its grounding.

Other norms—such as securing the accident site—also seemed to have fallen by the wayside with reports of extensive looting before crash investigators could arrive. The importance of the on-scene investigation cannot be overstated since important clues can oftentimes be found in the wreckage itself or even in the wreckage pattern.

It was also troubling to see how long it took for the black boxes—once they were retrieved—to be sent for analysis. Although I understand the hesitancy in sending them to the U.S. because of its relationship to Boeing, it is disturbing nonetheless that it took so long to find a country willing and able to do the analysis. And that it still took several days for the recorders to actually be sent. Of course, after the aircraft were grounded, the concerns from a safety perspective may be less critical…if the crash was the result of an aircraft design or manufacturing flaw.

But if it was something else, then time remains important. If the black box data, for example, highlights a flaw in pilot training that's applicable across aircraft models, then reading the flight data recorders as soon as possible remains a priority.

Over the years, aircraft accident investigations, even when in the glare of the media, have generally proceeded in a deliberate manner to gather facts, analyze them, and reach conclusions about what occurred. Sure, there have been hiccups and behind-the-scenes disagreements, but for the most part decisions have been fact-based and meticulously analyzed. That's why complex investigations can seem excruciatingly long sometimes. The NTSB and its counterparts around the world have issued recommendations based on meticulous analyses and conclusions.

UNIFORMITY OF APPROACH

International aviation cooperation has a long and noble history. The process for international cooperation in aviation was hammered out in a groundbreaking agreement in 1944, known as the Convention on International Civil Aviation, more commonly referred to as the Chicago Convention because that is where the representatives from the original signatories met. Today, there are 192 signatories to the Chicago Convention who all agree to comply with the standards established by the International Civil Aviation Organization. Those standards cover aircraft, personnel, and air navigation and also include an entire section, or Annex, on accident investigations. The goal was to ensure the safety and efficiency of air transportation across international boundaries by setting up a framework for uniformity and standardization. While individual countries, or States as they are referred to by ICAO, retain their sovereign right to disagree with any ICAO standard, they are required to file their disagreements or differences with ICAO so that other member States are aware of them.

Annex 13, the section applicable to international accident investigations, has been the framework for working with other countries for as long as I have been an accident investigator, first as an airline employee, later as a member of the NTSB and most recently as an independent air safety consultant. The objective of accident investigations under ICAO is clearly stated and critical to bear in mind: *"The **sole** objective of the investigation of an accident or incident shall be the prevention of accidents and incidents. It is not the purpose of this activity to apportion blame or liability."*

It is very important to emphasize that the only objective is to determine what occurred, and why, in order to prevent future accidents or incidents. When I was at the NTSB, that was always the code under which we operated: to determine what happened to prevent the same or similar accidents from happening again. It was so well-known that that was how we conducted our investigations that I'm not even aware of any attempts by Congress or the Executive office to influence or change our accident reports.

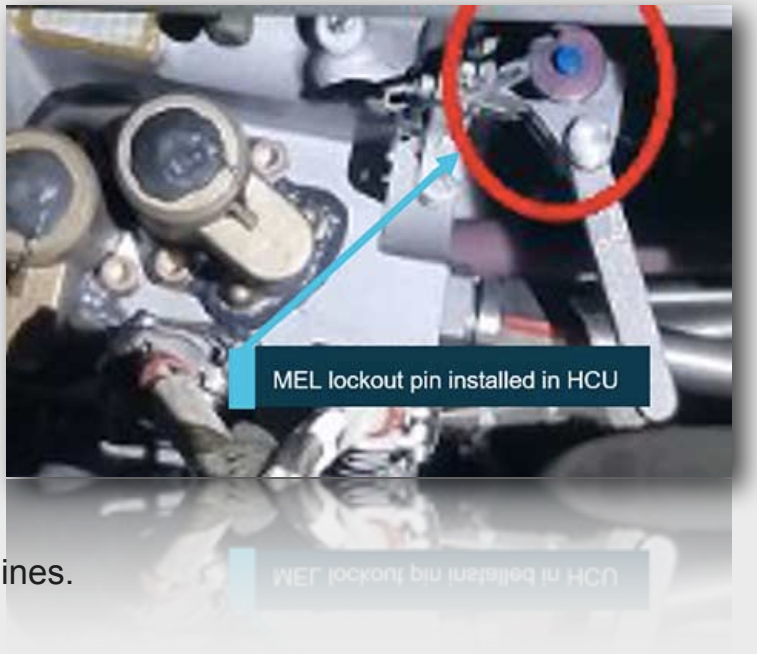
I concur with the statement issued by the Flight Safety Foundation, and I believe it bears repeating in full: "This globally haphazard approach to an important airworthiness issue was most unfortunate, but we understand the need to reassure the traveling public. We continue to believe, however, that global aviation safety is best served by timely, harmonized decisions based on facts and evidence, not conjecture, politics, or media pressure. Moving forward, we must allow aviation safety professionals—investigators, regulators, engineers, and pilots—to calmly and objectively analyze the data, collaborate, and implement permanent, corrective fixes to ensure a tragedy like this can never happen again."

Ultimately, the data may reveal that the Boeing 737 Max should have been grounded. But the process to arrive at that decision bears scrutiny for the future of aviation accident investigations. We have reached such a safe period in aviation travel that aircraft accidents—especially airline accidents with significant loss of life—garner 24/7 media and political attention. Those are often not the best circumstances for deliberative and thoughtful evidence-gathering and decision-making.

MAINTENANCE ERROR LEAVES JETSTAR PLANE WITHOUT THRUST REVERSERS

Operational pressures on maintenance engineers likely resulted in an error that saw a Jetstar Airbus A320 land in Sydney last September with its thrust reversers deactivated, an investigation has found.

A lock-out pin was not removed when engineers at the Qantas maintenance facility in Brisbane were working on the plane.



The pilots of the Jetstar flight were unaware that the thrust reversers were inoperative until they tried to use them after the plane landed in Sydney. Thrust reversers help slow the plane during the landing roll by redirecting the thrust from the engines.

The captain of the flight from Brisbane called “no reverse” and the first officer completed the landing using normal braking. There was no damage to the aircraft or injuries to the 184 passengers and crew.

The captain later recalled that pre-flight checks had not revealed any indications that the thrust reversers were de-activated.

Australian Transport Safety Bureau investigators later found a maintenance team had deviated from procedures, probably due to operational pressure.

Prior to the incident, the aircraft had undergone a three-day maintenance check during which engineers identified that the horizontal stabilizer actuator required replacement.

This added a half day of work to the schedule and to recover the lost time, the team was brought in to start work at 4 am the next day.

Adding to the pressure was the fact the aircraft departure time was brought forward, and the engineers were instructed to complete the maintenance by the end of first shift.

Many worked through their lunch breaks to ensure they could complete the maintenance on time, with some later reporting they were feeling tired and felt a responsibility and pressure to finish the work on time.

The thrust reversers needed to be deactivated so the engineers could perform engine leak tests.

To save time, they used a lock-out pin that did not have required “remove before flight” warning flags on them. They also did not put additional notices in the cockpit warning the thrust reversers were deactivated.

This meant the installed pins were missed after the engine leak test and the engine cowlings were closed with them still in place.

“While working under the compressed schedule, engineers deviated from the written procedures, and the incorrect lockout pin was installed and then not removed later,’’ the ATSB said.

“As a result, the aircraft was returned to service with the thrust reverser system inadvertently deactivated.”

Qantas conducted an internal review and said the engineers were working in compliance with an approved fatigue management framework but said awareness of certain safety precautions “was not as robust as it should be”.

The company took a number of actions as a result of the incident which included issuing an alert to staff, discussions with Jetstar aircraft-certifying staff and review of lockout pin management in Brisbane to ensure there were no systemic problems.

The ATSB said the safety message from the investigation was that functional checks were the last line of defense in maintenance work.

“Failure to follow procedures, such as functional checks, can result in unintended consequences,’’ it said. “Additionally, it is imperative that aircraft maintenance engineers feel empowered to stop a process when they observe procedural violations or foresee that an error is likely to occur.”

https://www.atsb.gov.au/

Automation of Planes Began 9 Years After the Wright Bros Took Flight—But It Still Leads to Baffling Disasters

Autopilot has existed since 1912. But some experts worry that too much plane automation introduces danger.

The first successful airplane pilot, Wilbur Wright, flew his 1903 craft by lying on his stomach, pushing and pulling levers as the wind swept over his head. Since then, piloting a plane has become a lot less physical thanks to automation and autopilot functions that do a lot of pilots’ work for them.

But there have also been serious accidents linked to this technological advancement—like in 2009, when automation technology failed on Air France Flight 447, and pilots weren't able to take control manually.Automating certain functions was necessary to making bigger and better planes. After all, Wright's plane couldn't fly as fast or far as jets today, let alone seat the number of people that a modern commercial plane can. Just nine years after Wright flew his plane at Kitty Hawk, North Carolina, a man named Lawrence Sperry created the first successful autopilot.

Sperry's invention was known as "gyroscopic automatic pilot," or "George," as many pilots nicknamed it; and its innovation was to automatically balance the plane in flight so the pilot didn't have to. Sperry's autopilots became popular during the 1920s and '30s. Howard Hughes installed one on the plane he used to set a world record (he flew around the world in 3 days and 19 hours), and American World War II planes had similar devices.

After the war came the boom in commercial air travel, and more demand for automation. In the 1950s, commercial planes had five crew members in the cockpit: a flight engineer, a radio operator, a navigator and two pilots. Over the next few decades, automation and improved technology made the first three jobs unnecessary—and saved airline companies a lot of money.

During the 1970s, airline companies started exploring automation using digital technology. At the time, studies showed that most plane accidents were caused by human error rather than mechanical error, so automation seemed like a way to make air travel safer (self-driving car developers also use this argument).

With these safety studies in mind, the aviation company Airbus set out to design a plane that even a bad pilot could safely fly. For this, the company developed a new "fly-by-wire system."

"Whereas autopilot just does what a pilot tells it to do, fly-by-wire is a computer-based control system that can interpret what the pilot wants to do and then execute the command smoothly and safely," explains *Slate*.

“For example, if the pilot pulls back on his or her control stick, the fly-by-wire system will understand that the pilot wants to pitch the plane up, and then will do it at just the right angle and rate.”

In the late 1980s, Airbus fully introduced this technology for the first time on its A320 plane, also known as the “Electric Jet.” Other aircraft carriers like Boeing adopted these fly-by-wire systems in the 1990s. But in the 21st century, this technology drew scrutiny after a series of accidents in which automation was a factor.

In a 2009, an Air France Flight 447 from Rio de Janeiro to Paris mysteriously crashed into the Atlantic Ocean, killing all 228 people aboard. Air traffic controllers lost contact with the Airbus A330-200 plane in the middle of a thunderstorm, and investigators didn’t discover the plane’s black box records for over two years. They concluded the autopilot and fly-by-wire functions had malfunctioned and turned themselves off, and the pilots were unable to take over the plane manually.

Journalist and former pilot William Langewiesche later wrote in *Vanity Fair* that because flying a commercial plane had become such an automated process, the pilots on Flight 447 didn’t have the experience necessary to take over in emergency conditions.

“To put it briefly,” he wrote, “automation has made it more and more unlikely that ordinary airline pilots will ever have to face a raw crisis in flight—but also more and more unlikely that they will be able to cope with such a crisis if one arises.” This was a problem the Future Aviation Safety Team had been warning airlines about since at least 2004.

The Flight 447 crash prompted calls to retrain pilots on how to manually fly a plane, but a decade later, concerns about pilots not having enough experience to take over a plane manually persist. Investigators are still determining what caused the Lion Air Flight 610 crash in October 2018 that killed 189 people and the Ethiopian Airlines Flight 302 crash in March 2019 that killed 157; but many suspect automation programs in the Boeing 737 Max plane may have played a role in these deadly disasters.

https://www.vanityfair.com/news/business/2014/10/air-france-flight-447-crash

https://gizmodo.com/aviation-experts-have-been-warning-us-of-the-dangers-of-1833419813

Flight Deck Automation after Indonesia and Ethiopia

After the Boeing 737 MAX 8 crashes in Indonesia and Ethiopia, the question is whether cockpit automation is working for pilots or pilots are working for the automation. We talk with the pilot of Qantas Flight 72, An Airbus A330 that pitched down without control input and without warning a decade ago. The pilot of that aircraft says of the MAX 8 accidents, "the road is different, but the destination is the same."

Our roundtable of pilots and aviation journalists looks at the growing complexity of flight deck automation, our increasing dependence on it and the lack of training available to pilots for cases in which the automation fails.

Participants:

- Capt. Kevin Sullivan, Qantas Flight 72, October 8, 2008
- Capt. Gary Rower, Airbus A330 international captain and cockpit resource management trainer
- Capt. Bill Palmer, Airbus A330 international captain and author
- Capt. Bert Botta, former international captain and flight crew trainer, now flying business aircraft
- Mark Phelps, executive editor, AIN Publications
- Matt Thurber, editor-in-chief, AIN Publications
- Rob Finfrock, aviation writer

LISTEN TO THE EPISODE

400 lives saved: BRS whole aircraft parachute rescue system achieves historic milestone

BRS Aerospace has documented the 400th and 401st life saved as a result of deploying the company's whole aircraft parachute rescue system, a notable milestone in aviation safety.

The whole aircraft parachute rescue system provides peace of mind to thousands of pilots, passengers and their families."This milestone and all of the lives saved is a testament to Boris Popov, who conceived the idea and whose vision for the company he founded overcame initial resistance to the very idea of aircraft parachutes from some naysayers," said BRS President/Director **Enrique Dillon**. "The concept's legacy are the pilots and passengers who survived to continue to live fruitful lives and the thousands of families who have enjoyed added peace of mind when their loved ones fly."

Most recent deployment over water with engine out

The milestone 400th and 401st lives were saved March 5, 2019 when the pilot of a Cirrus aircraft with engine out deployed the whole aircraft rescue system over water more than 20 miles from Grand Turk Island in the Turks and Caicos. Reportedly, both pilot and passenger were not injured and picked up by a cruise ship.

The BRS parachute system is deployed in life threatening situations by a rocket to slow the aircraft in the airstream and then lower it and occupants to the ground in a measured descent. The parachute and solid propellant ballistic rocket assembly are enclosed in a canister mounted inside the fuselage that is activated manually or automatically.

With more than 30,000 systems installed during the past 35 years on aircraft including experimental aircraft, sport aircraft, certified aircraft, and military trainers, approximately one of every 120 systems has been activated as a last resort for pilot and passenger safety in lethal situations.

"While we hope pilots never encounter a troubling situation, we salute BRS Aerospace for the 400 lives its parachute system has saved when something did go awry in the air," said GAMA President and CEO **Pete Bunce**. "I fly routinely with two different types of aircraft equipped with parachutes and I am a true believer in the safety benefit of these systems"

An ingenious invention

"In the chronicle of aircraft safety developments, the very idea of saving an entire aircraft through a deployable parachute system is an ingenious invention that deserves its place in the history of safer flight," said Richard McSpadden, Executive Director of AOPA Air Safety Institute. "BRS pioneered the concept in certified airplanes and deserves recognition for delivering on innovation proven to be a substantial milestone in the ongoing evolution of aviation safety."

NTSB: Unstabilized Approach Caused Teterboro Crash

The National Transportation Safety Board (NTSB) has determined that the fatal crash of a Learjet 35A near New Jersey's Teterboro Airport (TEB) on May 15, 2017, was caused by the pilot's "attempt to salvage an unstabilized visual approach."

According to the NTSB, the aircraft stalled while conducting a circle-to-land maneuver and crashed into a commercial building and parking lot about 0.5 NM south of the runway threshold. As previously reported on AVweb, the pilot-in-command and second-in-command were the only people onboard the aircraft, which was operated by Trans-Pacific Air Charter. Both were killed in the accident. No one on the ground was injured.

While the flight crew was properly certified, the NTSB found that the second-in-command was flying the aircraft at the time of the accident in spite of being prohibited by company policy from doing so based on his level of experience. The report (PDF) also noted that "the pilots' performance on the accident flight included deficiencies that were noted during their initial Trans-Pacific Jets training, but the company did not monitor the pilots' subsequent performance to identify and correct any continued deficiencies." Additional contributing factors included incomplete and inadequate preflight planning, the flight crew's lack of an approach briefing, Trans-Pacific's lack of safety programs "that would have enabled the company to identify and correct patterns of poor performance and procedural noncompliance," and ineffective FAA Safety Assurance System procedures "which failed to identify these company oversight deficiencies."

Based on the investigation, the board is recommending that the FAA require programs, additional oversight and corrective training for flight crew members with performance deficiencies or failures during training. It has also asked that guidance be developed for Part 135 operators on creating and implementing effective crew resource management training programs. Finally, the NTSB is calling for a review of the Learjet operators' manuals to determine whether they contain manufacturer-recommended approach speed wind additives. In addition to these safety recommendations, the NTSB also restated six previous recommendations regarding leadership training for upgrading captains, installation of flight data recorders and use of flight data monitoring programs for Part 135 operators, establishing safety management systems for Part 135 operators, and implementing procedures to identify Part 135 operators whose pilots do not comply with standard operating procedures.

Transport Canada Transports Canada

TP 185E
Issue 1/2019

AVIATION SAFETY LETTER

This is your Transport Canada e-Bulletin notification for ***TP 185, Aviation Safety Letter*** *(ASL). To*
go online to view and download this document, please click on the link below:

Title: Aviation Safety Letter (ASL)
Number: TP 185
Issue: 1/2019

http://www.tc.gc.ca/media/documents/ca-publications/ASL_01-2019_EN.PDF

FAA Moving To Make ASAP More Flexible

The FAA is updating the Aviation Safety Action Program (ASAP) conducted in concert with the Air Charter Safety Foundation (ACSF) to encourage even greater participation of Part 135 and 91 operators, said Randy McDonald, the ASAP program manager for the FAA's Air Carrier Training System and Voluntary Safety Programs branch. The program provides a mechanism for voluntarily reporting and mitigating safety issues in a "non-threatening" environment.

These changes are designed to make the partnership agreements less restrictive for participants, McDonald told attendees at this week's Air Charter Safety Foundation meeting. Currently, companies must sign a memorandum of understanding (MoU) with the FAA to participate, but this will change to a less restrictive partnership agreement. He characterized the current MoU as a nine- to 10-page document "filled with dos and don'ts." This will now be streamlined to a smaller document that focuses on about a handful of aspects of the partnership: roles and responsibilities, how it will function, how decisions will be made, guidance on managing data, and how the partnership could be terminated.

In addition, the FAA is committing to remove administration actions-meaning no letters of warning or correction-as long as a report is accepted into the program. He stressed that employees must be "incentivized" to come forward, but disciplinary actions only serve to chill such activity.

Other changes ahead include the timeliness of the ASAP reports and activities, he said, noting that should be left up to the company on what works best rather than a predetermined timeline.

The changes come as the ACSF-administered programs have now collectively generated 4,000 reports, 90 percent of them from a sole source.

Attempt to hand prop Luscombe alone ends fatally

The commercial pilot was found lying on the ground under the nose of the Luscombe 8F with a fatal head injury from a propeller strike.Normal engine start for this airplane required hand propping the engine.

The airplane was found with the left wheel chocked, and the magneto, throttle control, primer, and fuel tank selector settings as expected for an engine start.

It is likely that, during hand propping, the pilot inadvertently entered the path of the propeller.

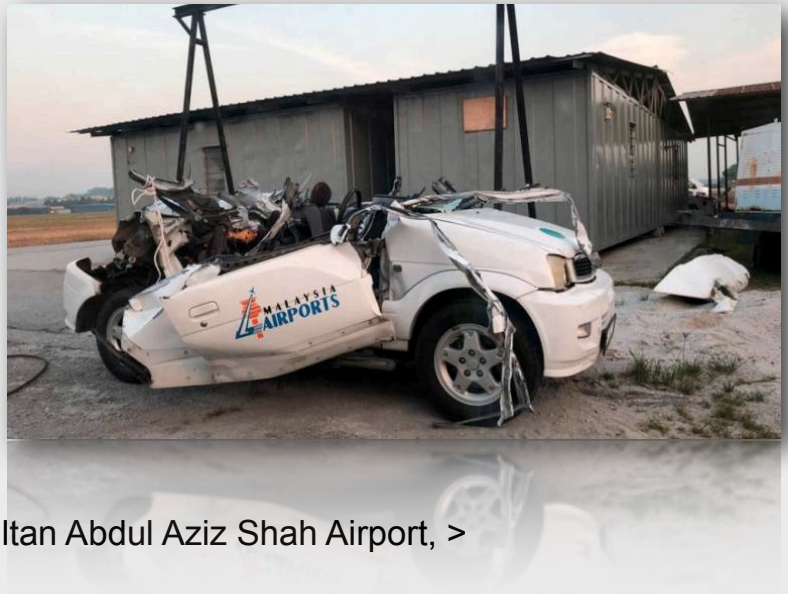
The FAA advises pilots that hand propping should only be attempted with two properly trained people, and the pilot was alone when he was fatally injured.

Probable cause: The pilot's inadvertent contact with the propeller while hand propping the engine, which resulted in a fatal injury.

NTSB Identification: CEN17LA135

This March 2017 accident report is provided by the National Transportation Safety Board. Published as an educational tool, it is intended to help pilots learn from the misfortunes of others.

Man hurt in aircraft, vehicle collision at runway



The wreck of a Perodua Kembara after the collision with a private aircraft at Sultan Abdul Aziz Shah Airport, Subang on March 18, 2019.

A Malaysia Airports Holdings Berhad (MAHB) staff was severely injured after a private jet aircraft slammed into a vehicle after landing on a runway at the Sultan Abdul Aziz Shah Airport, >

Subang today.It is learnt that the aircraft owned by a local aviation company was also damaged after hitting the MAHB vehicle.

The jet was returning from an unknown destination with its crew and passengers and had landed at the airport at about 3.20am.

However, upon touch down on the runway, the jet's pilots were shocked to see several people and a vehicle on the runway.

The pilots failed to stop the jet on time and the crash occurred.

It is learnt that several workers of a private contractor were re-painting the runway's centre line markings during the incident.

A supervisor who was overseeing the work was behind the wheels of the Kembara when it was hit by the jet.

The airport's fire and rescue services despatched two engines to the accident scene soon after before freeing the trapped supervisor from the vehicle.

The MAHB staff is reported to be in critical condition and is being treated at a private hospital not far from the airport.

MAHB said today that the passengers and air crew of the aircraft were unhurt in the incident.

It said that several flights were affected by the accident as the runway was closed for the process of clearing strewn debris from the accident.

It said flight operations resumed after the runway was re-opened at 9am.

MAHB also said that it has formed an investigations team and is working closely with the Civil Aviation Authority of Malaysia (CAAM) to ascertain the cause of the accident while the Transport Ministry is carrying out a separate probe on the case.

It is believed that the affected aircraft was chartered by an unknown party at the time of the incident.

It is learnt that the leading edge of the left wing of the aircraft was damaged in the accident.

Petaling Jaya police chief ACP Mohd Zani Che Din confirmed the case but declined to comment further.

List of global aircraft groundings in history

On March 13, 2019, all Boeing 737 MAX aircraft were temporarily grounded worldwide by relevant authorities and airlines. The MAX was not the first aircraft in aviation history to be grounded globally.

2019: Boeing 737 MAX

First aircraft in service: 2017
Grounding in effect: March 13, 2019 (some airlines and countries on March 11 and 12)
Regulatory action: FAA Emergency Order (other countries took own regulatory actions)
Grounding lifted: -
Reason for grounding: Fatal accidents involving Lion Air 601 and Ethiopian 302

2013: Boeing 787 Dreamliner

First aircraft in service: 2009
Grounding in effect: January 16, 2013
Regulatory action: Emergency AD
Grounding lifted: April 19, 2013
Reason for grounding: Two lithium ion battery failures on January 7 and January 16.

2000: Concorde

First aircraft in service: 1976
Grounding in effect: August 16, 2000
Regulatory action: Withdrawal of the Airworthiness Certificates of all Concordes
Grounding lifted: November 2001
Reason for grounding: Doubts about the fuel tank safety following the crash of Air France flight 4590.

1982: Yakovlev Yak-42

First aircraft in service: 1980
Grounding in effect: 1982
Regulatory action: unknown
Grounding lifted: October 1984
Reason for grounding: Design fault which caused horizontal stabilizer screw jack mechanism to fail on a Yak-42 on June 28, 1982, killing 132.

1979: McDonnell Douglas DC-10

First aircraft in service: 1971
Grounding in effect: June 6, 1979
Regulatory action: Emergency Order, suspending the Type Certificate
Grounding lifted: July 13, 1979
Reason for grounding: Doubt about the engine pylon assembly not meeting certification criteria following the crash of American Airlines flight 191 .

1954: de Havilland Comet

First aircraft in service: 1952
Grounding in effect: 1954
Regulatory action: Airworthiness Certificate was revoked
Grounding lifted: commercial flights resumed in 1958
Reason for grounding: Two in-flight break up accidents involving BOAC Flight 781 and South African Airways Flight 201.

1947: Douglas DC-6

First aircraft in service: 1947
Grounding in effect: November 11, 1947
Regulatory action: Voluntary grounding by airlines
Grounding lifted: after four months
Reason for grounding: Grounding following a series of inflight fires including the fatal crash of United Airlines Flight 608 on Oct 24, 1947

1946: Lockheed Constellation

First aircraft in service: 1945
Grounding in effect: July 12, 1946
Regulatory action: Government Order
Grounding lifted: August 23, 1946

Reason for grounding: Grounding following fatal in-flight fire accident of TWA Flight 513 on July 11, 1946

How the World Forgot to Sleep

Men's Health investigates the real cost of lost shut-eye and asks whether we can relearn how to rest easy.

Two-thirds of adults in developed nations are now falling short of the recommended eight hours a night. But while there has been a global rise in sleep disorders such as insomnia and sleep apnea, this is less a medical issue than a social one. Even those with the capacity to sleep well aren't doing enough of it.

In Japan, where the epidemic is at its most extreme, the average time spent asleep is just six hours and 22 minutes. There are even phrases in the language for falling asleep in public (*inemuri*) and dying from the exhaustion of overwork (*karōshi*).
The link between poor sleep and illness is far from casual. In one study, adults over the age of 45 who slept for less than six hours a night were 200% more likely to have a heart attack or stroke in their lifetime than those who slept seven or eight hours.

Get the full story at www.menshealth.com