Editor's Note

In December 1974, Trans World Airlines Flight 514, having departed from Indianapolis to Washington DC, crashed into Mount Weather, an accident that killed all 92 people on board. An investigation by the National Transportation Safety Board (NTSB) found that the main cause of the accident was a misunderstanding between the pilot and the controller due to a discrepancy in the terminology they were using, which neither of them had been aware of. It also was found that about 6 weeks prior, a pilot with another airline experienced a similar incident, which the pilot had reported through the airline's internal reporting program. But at that time, there was no way to promptly and broadly distribute and share aviation safety hazard information with pilots. In the wake of the Trans World Airlines Flight 514 accident, the United States launched the Aviation Safety Reporting System (ASRS) in earnest in 1976.

In Korea, similar regulations were established following a resolution made at the 2nd APEC Transportation Ministerial Meeting in Canada in June 1997 on the introduction of a confidential aviation safety reporting system to share information collected, and Korea Traffic Safety Authority started to operate the aviation safety reporting system in January 2000. The Korea Traffic Safety Authority promises to continue our efforts to build a voluntary aviation safety culture by identifying aviation hazards in advance and reporting them to relevant organizations to induce improvements. We hope for your interest and participation in the voluntary aviation safety reporting system to promote an advanced aviation safety culture.

In this issue, not only domestic cases but US ASRS report cases and UK CHIRP cases will be introduced in relation to failure in fuel management due to an inappropriate flight plan and situational judgment, unclear ATC communication, and slight crossing of the hold line. In addition to these, air communication terminology and relevant procedures as well as an expert's contribution that addresses aviation safety culture will be introduced.

Thank You.

*** How to submit an aviation safety report :** Visit [Voluntary Incident Report] at www.airsafety.or.kr, and then click [Voluntary Report] - [Submit Voluntary Incident Report]

KAIRS Report

Failure in fuel management due to inappropriate flight plan and situational judgment

〈Report content〉

On March 23, 2020 (Mon), myself and a trainee (○○○) in the instrument course at ▣▣○○○ professional training center arrived at ▣▣○○○ office at around 13:10, which was located in Muan-gun. We started to prepare for cross country instrument flight training, and were scheduled to make a round trip from Muan airport to Ulsan airport. At around 14:30, we arrived at Muan international airport, and then moved to HL○○○○ aircraft. At around 14:40, we arrived at HL○○○○ aircraft, walked around the aircraft as specified in the checklist and visually checked that both wings were fully fueled up. At around 14:50, we started the engine to depart to Muan airport. After takeoff, there was an easterly wind as forecasted. As we moved from west to east when we were headed for Muan, I expected a headwind so I adjusted the fuel mixing ratio and continued conducting mixture lean to reduce fuel consumption. At Ulsan airport, we performed touch & go and ascended to 10,000 feet. En route to Muan airport from Ulsan airport, I confirmed that about 36 to 40 gallons of fuel were left, and judged that this would be enough to return to Muan airport. At around 17:35, after passing APARU and approaching PSN, we encountered an unexpectedly strong downward headwind and turbulence, which made it difficult for me to maintain stability at an altitude of 10,000 feet and consequently caused more fuel consumption than expected. I asked Daegu ACC for help and descended to 8,000 feet as instructed. After that, the flight was cruising at 8,000 feet. Even en route to ANUBA FIX, the strong headwind and turbulence continued, so I cruised at a ground speed of 30 to 40 knots, which was less than the expected ground speed of 60 to 70 knots anticipated in the flight plan.

While stall alarms caused by power adjustment and nose up continuously sounded off faintly due to turbulence and headwind, at the approximate point where I passed ANUBA FIX on the V543 route, I judged that it would be difficult to make it to Muan airport due to the fuel shortage caused by wind direction and wind speed, and so I asked Daegu ACC for help and declared "MINIMUM FUEL". Under the guidance of Sacheon ACC, I decided to return to Yeosu airport. Although I approached Runway 17 at Yeosu airport under the guidance of Sacheon approach control and Yeosu airport ACC, the fuel status displayed on the instrument was 10 gallons on the left wing and 10 gallons on the right wing, totaling 20 gallons. Based on my judgment that I could make it to Muan airport, and under the guidance from Yeosu airport and Sacheon approach control, I switched to visual flight, ascended to 4,500 feet and maintained the course to Dongbaekje.

However, while cruising at a low altitude to Boseong past Dongbaekje, a strong downward headwind occurred and I had to reduce the speed to about 30 to 40 knots, as I had been required to do previously. Based on the distance to Muan airport displayed on the GPS, the distance left according to visual flight rules and the remaining fuel displayed on the instrument, I judged that it would be better to return to Yeosu airport, and I contacted the MCRC (Master Control and Reporting Center) and requested a clearance for my return to Yeosu airport. However, as Yeosu airport had already been closed, I called Muan airport ACC and told them I needed to land at Yeosu airport due to a heavy headwind. Muan airport ACC told me that they would let me know after contacting Yeosu airport. So, I cruised to A point near Yeosu airport until I received a call from them. I was in holding in the final 3NM section, and then landed at Yeosu airport at around 20:17 on March 23, 20020 according to the control instructions.

• KAIRS Comment :

The above report is a case of failure in fuel management that is attributable to the pilot's inappropriate flight plan and situational judgment. The pilot should have made a flight plan based on accurate weather information at the stage of preparing for flight, and considered additional fuel in preparation for bad weather on the route.

Although it appears that the aircraft, before departure, was filled with the required amount of fuel pursuant to Article 119 (Annexed Table 17) of the Enforcement Regulations of the Aviation Safety Act, it also seems that the pilot neglected to check on the weather conditions at the destination and on the route. Since the pilot declared "Minimum Fuel" and landed at Yeosu airport due to bad weather during flight, the pilot should have checked the amount of fuel required for the flight to Muan airport according to visual flight rules (amount required for the flight to the airport + amount required for 45 minutes of cruising flight), and fueled up the aircraft as required.

Minimum fuel vs Fuel Emergency

"Minimum Fuel" is a term used by pilots which means that the aircraft contains an amount of fuel that is barely sufficient to make it to the destination, and so any delay en route to the destination is not acceptable. This term means that the current situation is not an emergency, but can develop to emergency if a delay occurs. The state of Minimum Fuel is not a prioritized situation in air traffic. However, in the state of Minimum Fuel, a common sense judgment should be made, and as much coordination should be provided as possible. In the state of Minimum Fuel, where the pilot judges that priority is needed to ensure safe landing, he or she should declare an emergency at any time and calculate and report the remaining fuel on a minute by minute basis (Air Traffic Control Procedures 2-1-8).

"Fuel Emergency" occurs when the amount of fuel remaining is less than the amount that is estimated to be required for safe landing at the nearest airfield. In this case, the pilot should declare a fuel emergency by transmitting "MAYDAY MAYDAY MAYDAY FUEL" to the controller. This is an emergency situation, and the top priority should be given to this aircraft over other aircraft when it comes to landing order
(Section 4.2 of Standard Textbook for Pilot's Air Traffic Communication & Information Service).

In addition, the pilot should have checked the operating hours of Yeosu airport (22:00 to 10:50 UTC) and should have reported anything that occured during fight that may affect safety to the competent ACC or approach control rather than MCRC, as per Article 191 of the Enforcement Regulations of the Aviation Safety Act. MCRC is not a control agency in which certified civil air traffic controllers are handling tasks, but is an Air Force aviation control agency that is usually in charge of identifying aircraft in the ADIZ (Air Defense Identification Area) or controlling MOA (Military Operations Area).

Based on the comprehensive analysis of the reported incident, it appears that the pilot should have contacted Gwangju approach control and returned to Gwangju airport, and should have declared a "Fuel Emergency" as he had a problem with being issued a landing clearance.

KAIRS Report

Unclear ATC communication

〈Report content〉

We were assigned to a freighter mission on ▣▣○○○ flight from ATL (Atlanta) to ANC (Anchorage). After pushing back from the South Cargo at ATL airport and turning the engine on as normal, we started taxiing to the runway.

During taxiing, we were instructed "▣▣○○○ DEP RWY 09L TAXI L/H TURN TWY R TO END OF RWY 09R", and were instructed once again from GND control in the middle of taxiing but I didn't catch it properly, so I replied "Say Again". However, no further instruction was provided. The PIC immediately tried to contact the controller, saying "CONFIRM CROSS RWY 09R".

P: GND ▣▣○○○ CONFIRM CROSS RWY 09R
G: ▣▣○○○ CROSS RWY 09R AND blah blah.

P: Read back the instruction of "▣▣○○○ CROSS RWY 09R AND SAY AGAIN AFTER", but no reply was received.
Both the Captain and the first officer thought that it was a LINE UP instruction, so we read the instruction back.
P: Although we read back the instruction of "▣▣○○○ CROSS RWY 09R AND CONFIRM LINE UP RWY 09L", nothing was received from GND control.
Later, before we entered RWY 09L after crossing RWY 09R, we were instructed,
G: ▣▣○○○ GND MONITOR TWR 119.1

We read back the instruction of "▣▣○○○ LINE UP RWY 09L AND MONITORING TWR 119.1" to double-check the instruction of "Line Up Runway 09L", and then changed the frequency. While performing Line UP Runway 09L, we were cleared for takeoff from the tower controller, so we conducted rolling takeoff.

After takeoff, the tower controller asked us why we conducted Line Up, so we answered that we were instructed "CROSS Runway 09R" and "Line Up Runway 09L" from the ground controller. However, we were asked to call ATL TWR after landing at ANC. After landing at ANC airport, we called ATL Tower and were told that there had been no Line Up instruction from the Tower. We explained to them that we read back the instruction from the ground controller several times and continuously tried to confirm the instruction of "Line Up Runway 09L", but received no further instruction from the tower. We also told them that it was usual for Ground to give the Line Up instruction through single frequency control in the early morning before dawn. ALT Tower told us that since there was no approaching or taxiing aircraft when ▣▣○○○ took off and the incident appeared to be caused by a minor communication problem between the controller and the pilot in the early morning, they would consider it as a normal takeoff situation and would not take any further action.

* In particular, it should be noted that the accent of a controller in the Southern United States is much harder to understand, and controllers often don't reply to a pilot's request for confirmation in the early morning time. In addition, it should be always kept in mind that the control tower assumes responsibility for the aircraft entering the runway, and any instruction of Line Up from the Ground should be re-confirmed by the Tower.

• KAIRS Comment :
It has been shown in the above report that the controller did not reply properly to the pilot's "Say again" request, and did not fulfill his or her Hear Back obligation. On the other hand, the pilot proceeded to the takeoff procedure based on his speculation regarding the controller's instructions without any clear confirmation from them, which eventually led to a procedural/task performance-related communication hazard. Most importantly, a large-scale airport has a control frequency change point and the pilot should comply with the change procedure even during off-peak hours. In particular, as matters related to takeoff/landing clearance or entering the runway such as Line Up are subject to the local controller in the Tower, confirmation must be obtained from him or her before entering the runway.

(Chapter 3 of Air Traffic Control Procedures, Airport Traffic Control) 3-1-3 Use of Active Runways The primary responsibility for the operation on an active runway shall lie with the local controller. The local controller shall ensure complete control over the use of the applicable runway, and active coordination and control shall be carried out as follows (omitted).

D. All control over the movement on an active runway shall be vested in the local controller, and all aircraft shall be transferred to the local controller's communication frequency before entering the runway.

E. Notwithstanding the provision set forth in Paragraph D above, an exception may apply to operation as follows if there is any operational advantage. In this case, a mechanism to prevent confusion between the local controller and the ground controller shall be specified in the internal operational rules.

1) The ground controller shall obtain permission from the local controller before an aircraft or vehicle uses a certain area of or crosses an active runway. During coordination, point/crossway on a runway to be used must be included.
Control term: CROSS (Runway) AT (Point/Intersection)

2) The local controller shall verbally instruct using the term "Cross" when granting clearance for crossing an active runway to another controller, and specify the runway to cross and a point/crossway on the runway.
Control term: CROSS (Runway) AT (Point/Intersection)

If the controller issues a restriction for a certain reason or as necessary, the pilot should carefully listen to it.

In particular, for a pilot from a country that does not use English as its official language, the pilot should be actively prepared, and work from the assumption that a language-related problem can occur at any time.

Finally, at the time mentioned in the above report, since Atlanta airport was in off-peak hours, it appears that the ground controller was not able to hear the pilot's request for confirmation, as he was taking care of multiple tasks such as GROUND, CLEARANCE DELIVERY or receiving calls. It also appears that the local controller did not know what was happening, because no coordination was made with the ground controller. In such a situation, even though a single frequency is used, if the controller does not give an instruction of "REMAIN THIS FREQUENCY", the pilot should not enter the runway until confirmation is clearly made by changing the local frequency according to the specified procedures.

KAIRS Report

Slight Crossing of Hold Line

〈Report content〉
We were assigned to ▣▣○○○ freighter for a flight from HAN via CAN to ICN at 0150 (L) in the morning, and were about to take off on Runway 11R of Hanoi airport. Currently even in Hanoi airport, all parking ramps are fully occupied by aircraft due to the COVID-19 pandemic, and only Runway 11R is open, as about 5 flights are operated per day.

As to the weather condition, there was thin mist with 2,500 feet BROKEN. After starting the engine on parking ramp #12, I started taxiing according to the instructions from the ground controller.

GND: "TAXI S4-S1-HOLDING POINT 11R" As no communication was received from the Tower even when our aircraft passed S7, we tried to contact the Tower but both the captain and the first officer were not able to confirm, so we said "SAY AGAIN" but no reply was received. Then, we said "SAY AGAIN" once again.

TWR: As we were instructed "HOLD POSITION FINAL LANDING TRAFFIC", we stopped immediately (at this time, PIC was taxiing the aircraft and the final track was not identified).

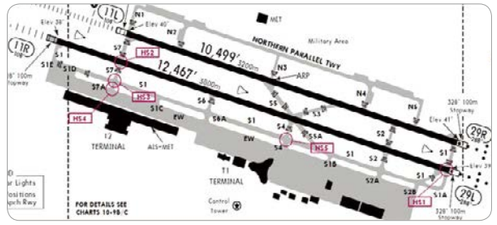
After stopping the aircraft, when we checked the current location and AMM of EFB (the current location was not identified as GPS was not available), it appeared that we had slightly passed the Runway 11R HOLDING POINT.

We immediately queried the Tower about whether it would be okay, as we thought we had slightly passed the holding point (the aircraft was just before turning to Runway 11R), and the Tower told us that it would be no problem and to hold our current position. We taxied ▣▣ Airline B747 aircraft onto Runway 11R. Then, we lined up the aircraft properly and took off from Hanoi airport.

* Runway 11R HOLDING POINT at Hanoi airport is located on the MAIN TAXIWAY S1 before turning to the runway direction (it is highly probable this point was passed, even if it is not mentioned in the captain's takeoff briefing), and is somehow difficult to identify in the night only with the ground painting without the holding point light system. Even more, as many aircraft are parked between TAXIWAY S7 and S1 due to the current COVID-19 crisis, captain has to pay more attention to left wing clearance when taxiing to the runway.

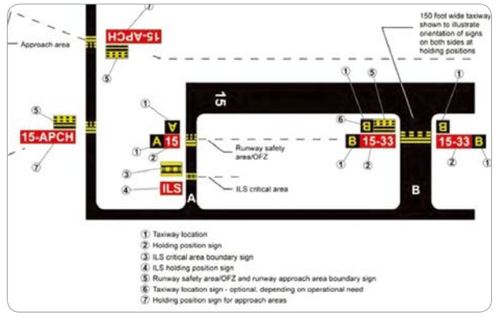
• KAIRS Comment :
The above report is about a case where a hazard originated not only from the pilot not being fully aware of the hold line and clearance limit, but also due to unclear aviation communication between the pilot and the controller, as well as insufficient ground briefing on the taxiing route.

〈Hanoi airport (AD) Chart〉



If the controller gives the instruction "Taxi to Holding Point 11R," it is highly probable that such instruction is intended for the protection of landing aircraft or ILS sensitive/critical area, and therefore, relevant control instructions should be complied with.

〈Holding Position Markings: ILS Critical Area〉



If it is reported that a ground aircraft has passed the hold short line, the control agency should make the landing aircraft go around, and the pilot is required to provide taxi briefing in more detail. In addition, to cross the hold line, the aircraft must be cleared by the Tower.

In many airports, depending on the conditions, pilots often fail to hear the control instructions or pay close attention. Although such problems may be addressed in the operational qualification assessment, since pilots can lose their concentration as the number of their flights increases, matters that need to be observed must be emphasized at the pre-flight briefing when taking off from or landing at an airport with a vulnerability.

The airport authority also needs to identify a measure that can be applied to improve its system if this is a recurring problem, such as re-doing the paint on the runway, or installing lighting or stop bar lights, even if they fully comply with relevant regulations regarding the hold line pursuant to Annex 14 (Aerodromes) such as wing tip clearance, or the brightness or measurements of the line.

“ Call Back ”

From NASA's ASRS (Aviation Safety Reporting System)

A Day in the Life of a Maintainer

Whether supporting commercial, military, or General Aviation (GA), Maintainers in the aviation industry are some of our most unsung heroes. They work diligently and strive to keep the nation's aircraft airworthy and mission capable. Aviation Maintainers are indispensable and a great tribute to the safest form of transportation in modern history.

ASRS does, however, receive reports suggesting Maintainers are vulnerable to similar types of threats that plague aircrew. Distraction, fatigue, confusion, inexperience, lack of teamwork, communication, or procedural discipline, documentation errors, and under staffing are but a few. Others do exist, and in today's environment, Maintainers face special challenges in preserving the many aircraft that have become temporarily grounded.

This month, CALLBACK shares reports that describe situations that a Maintainer or pilot could face daily. Rife with lessons and wisdom, the narratives afford insight into the Maintainer's world and provide an appreciation that…

"…when you see mighty jet aircraft
as they mark their way through the air,
the grease-stained man with a wrench in his hand
is the man who put them there."- Anonymous

ASRS Report (Call Back)

The Eleventh Hour

Shortly after the completion of a 100-hour inspection, this C172 pilot assumed that the aircraft was airworthy. Engine trouble and subsequent discoveries proved otherwise.

■ I was flying to see a friend and lost power at 9,500 feet. I had intermittent power, but not enough to maintain altitude. I ran through my checklist with no luck and requested priority handling. [ATC]… gave me vectors to ZZZ.… I kept fiddling with the fuel and leaning combinations but had time to take down a phone number for ATC, so I could call after landing. Then I switched to the UNICOM.… I checked the weather and made the airport with about 3,000 feet of altitude to spare. [I made a] spiral descent to downwind and landed without incident. There was a policeman waiting when we landed, and Mechanics [were] on duty.

I had eleven hours on the plane since a 100-hour inspection. The ignition harness had been replaced during that inspection. At the same time, a new electronic starter was installed. It was apparent to the Mechanic at ZZZ that the spark plugs had not been removed, cleaned, or replaced. One had ceased firing and was visibly oval shaped from wear. Another had corroded through the ceramic liner and was not firing properly.… All twelve had not been cleaned. There was visible rust on the exterior of two of the other ten. I'm not a Mechanic, but I read the 100-hour [inspection] checklist that mandates a close look at any rusty parts. If the spark plugs were not removed, they didn't do a compression test. The Cessna 100-hour [inspection] checklist calls for a compression test and an inspection of all engine systems.

According to the [Mechanic at ZZZ,] the ignition switch was replaced with a new ACS A-510-2K and matching door locks, and…an Annual Inspection, described under Title 14 CFR 43, Appendix D, was performed.… [The aircraft] was determined to be in an airworthy condition at this time.

ASRS Report (Call Back)

Nuts and Bolts of Maintenance

A B767 engine had been repaired. Training was being accomplished during the engine run test, and an apparent oversight resulted in significant damage to the engine.

■ [We three] Mechanics removed and replaced three fan blades and three opposites for weight purposes. Other blades underwent Non-Destructive Testing (NDT) for damage. After the blade replacement, I was asked to train for engine run qualification. [Two of us] were being trained. We did an engine run for vibration per the Airplane Maintenance Manual (AMM), test number six.… [Ground Operations] pushed us into location, and they were out front with communications with us and Tower.

The vibrations for the fan were out of limits high: We couldn't go above 76 percent. We then returned to the gate, and [the Trainer] called Maintenance Control. [The Trainer] said that they instructed him to have [the team of three] remove the spinner and run the engine again.We pushed back for more engine run training.… The Trainer was in the First Observer's seat.… Another Mechanic was in the doorway. Ground Operations was in front of the aircraft in a car, and all were in communications with Tower. We ran both engines up, and the vibrations were lower than before and closer to within limits. We taxied back to the gate and shut down. When we got out, the Mechanics on the ground informed us that, when we started to go to full power, they heard a noise. Neither Ground Operations nor Tower…informed us of this. We then looked at the engine and noticed the damage to the blades and cowling. We called Maintenance Control and informed them. The barrel nuts for holding the spinner on came out of their respective mounts and flew into the blades.

“ Cabin Crew Feed Back ”

From CHIRP(Confidential Human factors Incident Reporting Programme)

CHIRP Report (Feed Back)

The importance of a 'Just Culture'

A 'Just Culture'is key in safety reporting. It is a culture in which individuals are not punished for their actions, omissions or decisions taken by them which are commensurate with their experience and training; but where gross negligence, wilful violations and destructive acts are not tolerated. It is clear that some cabin crew don't seem to have confidence that the culture in their company is just. This has meant that they have not reported safety concerns or events for action and/or further investigation.

It is important for operators to be made aware of safety issues, even those which seem minor, so that they can take the appropriate action to prevent the repetition of such events and ensure a safe operation.

All cabin crew have a responsibility to report safety concerns whenever they occur. For a 'Just Culture'to exist, there needs to be a two-way trust between the reporter and the company.

CHIRP Report (Feed Back)

Non-Reporting Of Safety Concerns

When reporting to CHIRP, reporters are asked if they have already reported their concerns to the company. Of the 618 cabin crew safety reports received by CHIRP during 2019, 33% were not reported to the company. Is this due to the safety culture at their airlines?

For UK based cabin crew, there are several different reporting options. The company reporting programme, the Trade Union (if the company has representation and the crew member is a union member), CHIRP and the CAA Whistleblowing policy.

The first port of call should always be the company reporting programme, as this allows the company the opportunity to investigate events as required, trend monitor and analyse reports and also provide feedback to the reporters. If the concern is relating to industrial matters, these could be reported to the Trade Union for comment and possible investigation.

Should the reporter feel that they cannot report their concerns to their company or are not content with the action that has taken place, they can then choose to report via CHIRP or the CAA Whistleblowing process. Most companies have an internal escalation process too.

It is worth noting that CHIRP can only accept reports discussing safety related concerns, events or incidents, including errors, individual performance, regulatory issues and unsafe working practices.

Concerns that are reported to CHIRP are fed back de-identified to operators and the CAA at regular intervals and should a matter be reported that needs urgent action, we will confer with the relevant party as soon as possible to ensure that action is taken.

If crew members do not feel they can report safety concerns through the available reporting mechanisms, how many events have occurred which have not been reported and investigated further?

No one is perfect; everyone makes mistakes but what is important is how we learn from these mistakes and giving the company the opportunity to listen to the concerns and put measures in place to reduce risks. By continuing to report issues when they arise and by encouraging colleagues to do the same, we help to reduce risk and enhance safety. We all have a responsibility to keep aviation safe.

The reports included in this edition focus on the importance of querying procedures and decisions at the time the issue arises and the need to continue reporting safety concerns.

CHIRP Report (Feed Back)

Performing service duties during critical phases of flight

What happened?
High passenger loads on short flights. The service is still usually being cleared during final approach and gear down. Reported this several times to the company without any response. Having high passenger loads and being required to complete so many service tasks means that I'm usually sitting down after the landing gear has been lowered.

• CHIRP Comment :
The cabin crew member has previously reported this concern to their company but has not received a response. As we mentioned in the editorial, not receiving a response to a report could lead a reporter to choose not to report safety concerns in the future. There should be a positive reporting culture present and crew should be able to feed this kind of concern back to the company.

Operators manage safety in different ways depending on the incident reported; some reports are investigated and some may be reviewed or trend monitored. An individual response is not always given, but that does not mean that the concern has not been reviewed or that the company is not listening.

Some operators use social forums to discuss topics with their crew and these forums can be used by the crew to highlight issues that are occurring. However, the main reporting point must always be through the company reporting programme as it is only through safety reporting that a company will be able to accurately identify and track any issues. If crew are under pressure to complete multiple tasks during a short flight time, this must be fed back so that the company can review the service. Crew should make decisions on the day to ensure that safety is prioritised, which may mean that the full service cannot be completed. The company must be informed of the change in service and the reasons for doing so. Time management is key during shorter flights; good communication between all crew throughout the flight will assist with managing the workload. CHIRP analyses the reports we receive and provides regular updates to the operators concerned. In this case, we have notified the company of the reported concerns relating to specific routes.

Safety is paramount, so service tasks must not be completed when the aircraft is preparing to land.

CHIRP Report (Feed Back)

Inoperative Evacuation Alarms : Is it okay to depart with them not working?

What happened?
Upon boarding, I tested the Evac alarm. It sounded in the flight deck only, so I immediately informed the Captain who initiated a system reset. The dispatcher arrived and boarding was delayed whilst this was completed. I tested the alarm again but the same thing happened. The Captain called for an engineer who arrived and again initiated a full system reset.

The Captain came out of the flight deck and informed me it was OK to go with no Evac alarm working on this aircraft type. They asked me if I was okay with that, I said I wasn't but they were the Commander. They said if I had to evacuate, I should inform the crew over the PA. I informed the crew at the rear of the aircraft and they were also not happy with this decision. Two of the crew said that this had this happened before and it's a 'no-go'on this aircraft.

We were now past our departure time. Whilst the engineer was resetting the system the Captain gave the go ahead for boarding and pax started to embark the aircraft. The engineer then asked me to test the Evac alarm with pax on board. They told me to make a PA, I wasn't happy completing this with pax onboard and it made me feel very uncomfortable and unprofessional to be honest. Again, the alarm did not work so the engineer stuck an INOP sticker over the command button and left. Once the pax were boarded, we had a wait of 25 min with the pax onboard and the Captain closed the flight deck door which we felt was bad CRM and should remain open.

Lessons Learned:
1.There is no clarification in our training as to what we say to initiate an evacuation without the alarm over the PA without the Commander
2. The alarm is used to alert crew of unauthorised access to the flight deck
3. Is it a no go or not?
4. Flight deck door should remain open until push back

• CHIRP Comment :
The reporter indicated to CHIRP that they had not reported their concerns to the company but did not include why they had not done this. In this case, doing so would have provided the company an opportunity to answer the questions posed by the reporter relating to whether the aircraft was permitted to depart with an inoperative evacuation alarm. The company has confirmed that in accordance with the restrictions in the aircraft MEL (Minimum Equipment List), the aircraft is permitted to depart with the evacuation alarm unserviceable.

The procedures regarding pre-flight evacuation alarm checks are operator specific. The MEL and company Operations Manual detail the procedures for emergency situations, which all cabin crew are trained in. If unsure of the correct procedure, crew must always consult their Operations Manual or ask an appropriate person in their company. If an alternative procedure is not specified in the Operations Manual or MEL, the Captain and SCCM should agree on what action should be taken in case an evacuation be required and the SCCM should communicate this alternative procedure to the rest of the cabin crew before pushback.

The flight deck door being closed should not inhibit the cabin crew's ability to communicate with the flight crew. If you have questions regarding procedures or decisions that have been made, please speak with the flight crew. Concerns should be raised and discussed prior to departure where possible so that they can be clarified.

The reporter's understanding that the evacuation alarm is solely used to alert crew to unauthorised access to the flight deck is incorrect; the operator has other procedures in place for this eventuality. The company has confirmed that the testing of the evacuation alarm is performed by an engineer where time permits and when passengers are not onboard the aircraft.

In the situation detailed and where the engineer had already completed several tests to determine whether the evacuation alarm was operable before departure, it is deemed suitable for them to have tested the alarm with passengers onboard the aircraft, so long as an explanatory PA was made to the passengers so that they were aware it was a test.

Aviation Communication

Taxi back? Back taxi? Back track? Make 180 back at the end of the runway?

In the [Aviation Communication] section for this issue, the definitions and cases of terms used in backtrack will be covered. "Backtrack" is a procedure used in an airport that has low air traffic and whose taxiway is insufficient. While the International Civil Aviation Organization (ICAO) uses the term "backtrack", the US FAA refers to it as "backtaxi". Backtaxi or backtrack is a procedure in which part of an active runway for takeoff or landing is used as a taxiway in order to allow an aircraft to taxi on the runway in the opposite direction of the traffic flow.

〈Runway of Luton Airport in London, UK〉

A. Background of introduction
In an airport that provides air traffic control, unless otherwise specified in the air traffic control procedures, backtrack is not allowed on a runway at the time of takeoff or landing. In most cases, backtrack is used before taking off from or landing at an airport whose layout is limited for geographical, environmental or economical reasons, particularly when it does not have sufficient taxiways to vacate the runway. As both directions of the runway are used in the takeoff or landing phase, backtrack requires a much higher level of concentration and monitoring.

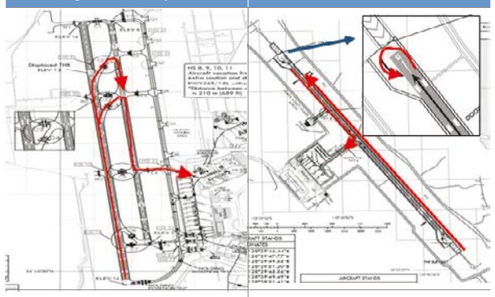
Classification	ATC terminology	Interpretation
Backtrack / Backtaxi	· Used when the taxi way cannot be laid out to be connected to the runway · Can be an efficient option for a local airport with low air traffic	· For an airport whose air traffic is maintained at a certain level, or in which controllers may be distracted with regard to see and avoid or clearance, backtrack can be a major hazard

B. Relevant regulations
(1) ICAO Doc 4444 (4.5.7.5 Readback of clearances)
4.5.7.5.1 The flight crew shall read back to the air traffic controller safety-related parts of ATC clearances and instructions which are transmitted by voice. The following items shall always be read back:
a) ATC route clearances
b) clearances and instructions to enter, land on, take off from, hold short of, cross, taxi and backtrack on any runway
c) runway-in-use, altimeter settings, SSR codes, level instructions, heading and speed instructions, and transition levels, whether issued by the controller or contained in automatic terminal information service (ATIS) broadcasts

(2) FAA 711.65 (Pilot-Controller Glossary)

BACKTAXI – A term used by air traffic controllers to taxi an aircraft on the runway opposite to the traffic flow. The aircraft may be instructed to back-taxi to the beginning of the runway or at some point before reaching the runway end for the purpose of departure or to exit the runway.
(Backtrack - This is a term used by air traffic controllers for an instruction to let an aircraft taxi on the runway in the opposite direction to the traffic flow. It means that an aircraft to depart taxis in the opposite direction to the takeoff direction until it reaches the end of the runway or a certain point on the runway, or a landing aircraft taxis on the runway in the opposite direction to the landing direction until it reaches a taxiway to open the runway.)

C. Backtrack usage procedure

On a runway out of no less than 2 runways Backtrack (e.g. Gimhae airport)	Single runway backtrack (e.g. Yangyang airport)
	
Land on the runway in Runway 36L direction and vacate Taxiway C4/ C3/C2 (communication example) ① Request from the pilot P : TOWER, HL1234, VACATED RUNWAY 36L P : HL1234, REQUEST BACKTRACK RUNWAY 36R ② Instruction from the controller C : HL1234, TOWER, BACKTRACK RUNWAY 36R AND CONTACT GROUND, 121.4	Land in Runway 33 direction, make a 180 degree turn at the turn around pad, taxi down and open the taxiway (communication example) (after landing on Runway 33) P : TOWER, HL1234, BACK TRACK RUNWAY 33 C : BACK TRACK RUNWAY 33, HL123

〈Hazards〉

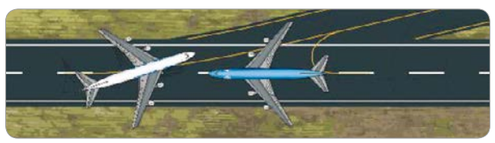
- As the aircraft has to taxi onto the runway, the pilot is required to acquire clearance and read back the controller's instructions.
- Attention should be paid in order to prevent the aircraft that has landed and is backtracking on the runway from encountering other aircraft taxiing on the runway for takeoff.
- In the case of Gimhae airport, if the pilot made a readback mistake (active runway 36L, but read back 36R), so he or she thinks 36R is the takeoff runway, an aircraft taxiing on the runway may encounter another aircraft that is back taxiing.
- When conducting backtrack after landing, if the aircraft performs landing roll too slowly, the delay in landing of an aircraft in a holding pattern may increase. For this reason, the pilot needs to vacate the active runway at a speed of no less than 35 knots during back tracking so as not to cause any unnecessary traffic flow delays for airport operation.
- The controller must keep in mind that there is an aircraft using the active runway at a low speed before setting up a plan for separation and issuing a clearance to an aircraft in the holding pattern or flow.
- In some cases, the turning direction at the turning pad is specified, so attention should be paid. Violating the turning direction may cause damage to the pavement condition or aircraft tire blowout, or may lead to an incident attributable to aircraft wake turbulence at the time of turning.

D. Incident cases

The most well-known incident caused by backtrack is the Tenerife airport disaster. At that time, Tenerife airport was congested with parked airplanes due to a number of unexpected diverted flights. The airport authority let aircraft park on the taxiway.

Although the pilots of the two B747 aircraft that were involved in the accident were highly experienced, the accident occurred due to a chain of safety hazards that led to the worst aircraft ground collision in aviation history. The hazards responsible for this incident include unexpected diverted flights due to a threat of terrorism, long delays, backtracking on a runway in poor condition in an airport where the pilots were not familiar with the backtrack procedures, and unclear communication between pilots and controllers due to the use of nonstandard terminology. The collision occurred when the KLM airliner (B747) initiated its takeoff roll without a takeoff clearance while the other airplane was still taxiing down the runway.

If a decision is made incorrectly or improperly, backtrack may cause a situation in which two aircraft collide with each other on the runway. Therefore, both the pilot and the controller should use caution while conducting backtrack.



Expert Contribution

An Essay on Aviation Safety Culture

Moon, Woochun at Incheon Industry – Academy Collaboration Institute

Before introducing my essay on "Aviation Safety Culture," let's first take a look at the word "Culture." Culture is "a product of the physical or mental process of changing nature by society, individuals or a group of human beings," and it means what is changed or newly created by human action applied on an object in a natural state. Given that culture is a symbol system on which interaction and communication are based, it is not just a product of mental action, but is an overall lifestyle that embraces a society's customs, values, norms, institutions, and traditions.

The next thing to think about is "Safety Culture." Safety culture is often expressed in a somewhat declarative manner as a concept representing the "attitudes, belief, awareness or values that are shared among workers in relation to safety" as a way for an individual or business entity to achieve the goal of 'safety' in the working environment, or a "way to establish safety." Since the Chernobyl disaster of 1986, management and human factors have stood out and been recognized as critical in achieving the goal of safety.

After the concept of a safety culture was established, people's interest in safety increased significantly. When 'Safety Culture' was first used in the initial report from International Nuclear Safety Group (INSAG) on the Chernobyl nuclear power plant incident, entitled "Summary Report on the Post-Accident Review Meeting on the Chernobyl Accident," the term was defined as 'a collection of organizational and individual characteristics and attitudes towards safety in the nuclear facilities,' and was regarded as the major premise required to achieve nuclear safety.

Summarizing what has been mentioned above, 'Safety Culture' can be described as the collection of customs, values, norms, institutions and traditions around an organization and individuals as well as the attitudes, belief, awareness and values of an organization and individuals that put the first priority on safety than anything else to achieve the goal of safety.

More specifically, safety culture can be defined as the collection of an organization's or individuals' customs, values, norms, institutions and traditions related to safety.

Korea Occupational Safety and Health Agency has segmented the categories of safety culture in greater detail, and has described as follows. Each member of an organization is fully indoctrinated in the value of safety first and such value is completely rooted in their consciousness and behaviors during their personal life or organizational activities. KOSHA has also sectionalized 'safety culture' into consciousness, institutions and infrastructure.

From this perspective, safety culture is a social and cultural product generated from the combination of consciousness that practices safety, institutions that encourage safety and infrastructure that ensures safety. 'Safety consciousness' is defined as a state in which the value of safety first is deeply rooted in personal lives or an organization's activities. 'Safety institutions' are regulations and institutions that encourage safe activities and enable setting up infrastructure.

'Infrastructure' refers to facilities intended to remove an unsafe state and social system that enables safe activities. In short, KOSHA has added the definition of 'infrastructure' as a social system to the aforementioned definition of safety culture, which is the collection of an organization's or individuals' customs, values, norms, institutions and traditions on safety. Given that the 4th industrial revolution has been developing towards the convergence of information and communication technologies, the importance of infrastructure seems to be growing.

According to the airline safety culture guideline from the Ministry of Land, Transport and Infrastructure, 'aviation safety culture' refers to the safety culture established based on the organizational culture in the aviation industry. The range of organizations in the aviation industries can be categorized mainly into 'industrial sector,' 'academic sector' and 'research sector.' The industrial sector can be categorized into aircraft manufacturing, aircraft transportation and MRO. Taking an extended perspective, 'government' and 'society' can be included in the range of organizations.

In conclusion, I'd like to argue that 'aviation safety culture' can be defined as the collection of all sorts of behaviors, mindsets and attitudes that not only the aviation organization but also individuals have in order to achieve the goal of safety by sharing such goal in a given environment on the basis of customs, values, norms, institutions, traditions and infrastructure as a social system.

GYRO | Korea Aviation voluntary Incident Reporting System

항공안전 자율보고제도 안내

"항공안전 자율보고"란 무엇인가요?

항공안전에 영향을 미칠 수 있는 모든 상황, 상태, 사건 등을 수집하여 항공안전 증진활동에 활용하기 위한 제도입니다.

회사에 보고된 자율보고 사항도 공유해 주세요.

위해요인의 신속한 개선조치, 정보전파 등을 위해 사내 자율보고에 보고한 내용도 공유해 주시기 바랍니다.

보고자의 신분은 보호되나요?

「항공안전법」제61조에 따라 보고자의 신분은 철저히 보호됩니다.

※ 보다 철저한 보고자 신분보호를 위 해 보고서 접수, 분석 및 전파에 관한 업무는 제3의 기관 (한국교통안전공단)에서 수행합니다.

어디에, 어떻게 공유하나요?

인터넷 및 모바일 홈페이지(www.airsafety.or.kr)를 통해 공유해 주시면 됩니다.

TS 한국교통안전공단 Korea Transportation Safety Authority

39660 경상북도 김천시 혁신6로 17 한국교통안전공단 항공안전처(항공안전자율보고제도 담당자)
전화 : 054-459-7391 팩스 : 054-459-7149 이메일 : kairs@kotsa.or.kr https://www.airsafety.or.kr
편집 : 김광중(한국교통안전공단 항공안전처 연구위원)