

EDITORIAL

This issue of the TACARE newsletter includes the following five cases:

- Flight Crew's Complaint for Increased Flight Duty
- Passenger Enter Crew Bunk while En-Route
- Taxiways Rename at Tao-Yuan Airport
- Time Pressure on Ground Handling
- ATC Communication Discipline

A section titled "National Aviation Safety Information" is also included in this issue to provide update information regarding ongoing domestic occurrence investigations.

It has always been the objective of TACARE to uphold the spirit of "voluntary, confidential, and non-punitive" so as to provide an open forum where information can be freely exchanged. Through the collection, analysis, and sharing of information, we aim to enhance Taiwan's aviation safety by gradually eliminating possible risk factors that may impede flight safety.



GIFT TO THOSE WHO CARE

We are happy to announce that an Electric Adapter will be provided to anyone who submit flight safety information and been accepted. The adapter provides 4 different configurations in one unit. It also comes with a built-in USB port and safety fuse, applicable to a range of 110V~240V.

We hope our readers will keep providing flight safety information and continue to make their contribution to increasing Taiwan's flight safety record.



Reporting Channels

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NATIONAL AVIATION SAFETY INFORMATION

Progress on Current Investigations

Recently Completed Investigations

Domestic government-owned Helicopter type UH-1H forced landing on riverbanks of Ma-Tai-An river in Hualien

- *The full investigation report is available for download at the ASC's website. (<http://www.asc.gov.tw>)*

On July 11th, 2008, the involved aircraft was conducting an annual pilot-in-command precision hovering training. The IP (Instructor Pilot) demonstrated the normal take-off. At an altitude of 20 ft above ground level, and a speed of approximately 15 knots, the engine low RPM aural warning sounded.

Simultaneously, the "RPM Limit" caution light and the "Master Caution" light illuminated. The IP checked engine was running at 6000 RPM and the RPM kept dropping. The aircraft then descend straight onto the ground and bounced forward for approximately 5 meters before a complete stop on the riverbank. All 7 crew onboard were safe, and the aircraft structure was damaged.

The investigation found the following facts: The clearance of fuel control rod between cockpit and engine was adequate and the fuel control rod was functioning normal. Result of power output on the test stand was normal. Fuel pressure was within the normal range, and the fuel sample contained no exotic substance. The manufacturer reviewed all related test results and came to the conclusion that mechanical malfunction can be excluded. The investigation team accepted their view and also has ruled out other factors such as bad weather condition and aircraft structure.

In regard to flight operation, the findings related to probable cause might be that the power was not set at full throttle during take-off. The aircraft was not required to equip with Flight Data Recorder, so there is no evidence to link the low engine RPM to the pilot's operation. Nevertheless, the cause of pilot operation cannot be ruled out. According to the interview with the crew, they followed the emergency procedure of engine failure at low altitude correctly, despite that the crew has not received such training on the UH-1H.

An excerpt from the full investigation report: There is no UH-1H simulator available, domestic or abroad, for flight crew to conduct training. Besides, because the UH-1H is a single engine aircraft, to simulate engine failure at low altitude on a real aircraft is at risk. Therefore for those pilots who neither receive training on a real aircraft nor in the simulator are under a much higher risk and pressure. The UH-1H can still find improvements on their management of flight safety.

Aviation Safety Council's recommendations are as

follows: Reinforce standard operating procedure to avoid less than full throttle position during take-off. Evaluate the current training program and resources of UH-1H fleet; establish the emergency procedure for engine failure at low altitude to enhance pilots' ability in that situation. Establish an independent, full scale, efficient Flight Safety Board to improve flight safety on government-owned aircraft.

Foreign Airline A330-300 Emergency Descent due to Temporary Loss of Cabin Pressure

On September 14th, 2008, the involved aircraft was en-route from Narita International Airport, Japan, to Honk Kong International Airport. As the aircraft descended through FL400 and at an altitude of 38,554 feet, the cabin air supply system was discontinued. The flight crew made an emergency descent for a landing at Taoyuan International Airport. Both the aircraft and people on board, consisted of two flight crew, eleven cabin crew, and 72 passengers were safe.

Before the aircraft took off, Engine No.1 bleed air valve was inoperative and secured in the closed position. Engine No.2 was the only source of bleed air when at high demand. When the aircraft began the descent, bleed air from the engine 8th stage compressor was replaced by 14th stage compressor, which can provide bleed air with higher pressure and temperature. Consequently, the temperature of the air passing through the pre-cooler are heated. Because the filter of the fan air valve temperature controller was clogged, decreasing the duct pressure activating the fan air valve to the full open position to supply enough cooling air. Eventually, the lack of enough cooling air caused compressor downstream to overheat; leading to the auto shut down of Engine No.2 bleed air valve, resulting in a total failure of air condition system. The aircraft lost its ability to control cabin pressure while it kept increasing.

Record shows that the No.1 bleed air system has had multiple malfunctions before the occurrence. Also, the

aircraft type has had many dual bleed air system malfunction records for the past six months. These show that the bleed air system on the aircraft post an inherent risk to flight safety.

Aviation Safety Council's recommendations to the Foreign Airline are as follows:

Before the filter on the fan air temperature controller has been re-designed or improved, considerations should be taken to shorten the interval between checks and repairs. For repetitive malfunction, especially those with multiple system shutdowns, careful evaluation should be made to the use of MEL; furthermore, MEL should be revised to prevent the risk of multiple systems shutdown in flight.

Aviation Safety Council also issued recommendations to Direction Générale de l'Aviation Civile (DGAC) that Airbus should be requested to redesign or improve the fan air temperature controller filter. Before the above are completed, considerations should be taken to shorten the interval between checks and repairs.

Investigation report also indicates that during the emergency descent, the involved aircraft misheard the radio call to other aircraft and changed frequency prior to instructed, the probable reasons are as follows: similar callsign in the airspace (ex. involved aircraft callsign XX521 vs. other aircraft callsign XX 5213), high pressure on the crew originated from the system malfunction, distraction and inability to follow radio communications protocol correctly; also, the pilots did not read back ATC instructions with their callsign. Worsened by blocked radio transmissions with other aircraft, the flight crew as well as the ATC controller failed to recognize the read back from the involved aircraft was not correct. Please refer to the full investigation report for other aspects involved in this occurrence such as ATC control.

National Airline Dash-8-300 Engine Fire During Take-off roll in Makung Airport, Penghu

On February 4th, 2009, the involved aircraft

commenced its take-off roll on Runway 02 at Makung Airport. The take-off power was set, and during the take off roll at a speed below V1, the flight crew heard unusual noises "Bang, Bang." Inter Turbine Temperature (ITT) was checked at 1,069 degrees Celsius. No.1 (Left side) engine fire warning showed on the cockpit display, and all the engine parameters are decreasing. At the same time Tower notified that smoke came out from the left engine. The captain reduced throttle to idle position slowly and brought the aircraft to a complete stop at approximately 5,100 feet before the end of the runway. Passengers were immediately evacuated to the upwind side and 100 meter away from the aircraft. One passenger received minor injuries.

There was an oversize shrinkage on the 1st stage rotor on the No.1 Engine. The shrinkage was a manufacturer deflection, resulting in fatigue crack during normal engine rotation. The crack propagated to the extent where the remaining structure integrity no longer supported the load, resulting in the rotor to shatter and go off-balance at higher engine RPM. The debris impacted the other 1st stage and 2nd stage turbo rotor at high speed, causing high vibration on the rotor under imbalance conditions. The separated rotor blades then stuck between the rotor and the stator, causing an immediate stop. The torque of turbo rotor transferred, bringing damage to the stator and bearing and causes distortion on the engine cowling. The mixture of fuel and engine oil discharged from the damaged engine, burning inside the engine compartment and activated the Fire Alarm due to over-temperature inside the engine compartment.

Canadian Engine Manufacturer Pratt and Whitney had issued service bulletin in regard to the No.1 stage blade shrinkage. However the bulletin does not cover the A2 blade involved in this accident. The x-ray examination procedure suggested by the manufacturer could not detect accurately all the defected blades.

The Aviation Safety Council recommended Transport

Canada to demand Pratt and Whitney Manufacturer to develop a procedure or practice for detecting the blade shrinkage on the No.1 stage turbo rotor of PW123 Engine.

National airline B747-400 Encounter Turbulence **En-route South-west of Manila**

On September 20th, 2008, the involved aircraft departed Tao-Yuan International Airport for Bali, Indonesia. The aircraft encountered severe turbulence near the waypoint LULBU on the M754 airway. The purser and two passengers were seriously injured while other three crew and nineteen passengers received minor injuries.

On the day of the occurrence, a low pressure cloud system was located at the South-China Sea. The thunderstorm was developing from the west to the east. To avoid the weather, 40~80 nm prior to the position of the occurrence, the aircraft deviated 10 nm to the west of M754 airway. From weather database and numerical analysis, the position of occurrence was located to the east end of the severe turbulence area. The vertical wind shear of that area is helpful to the formation of moderate turbulence or above. The cloud are thin and convection activity are low in the area east of M754 and below FL290. One hour prior to and after the occurrence, five aircrafts had passed through that area. 4 of them deviated 20nm~50nm to the east, one of them deviated to 10nm to the west, only that the thunderstorm had not developed in the west area at that time.

To detect the cloud top, the pilot switched between manual mode and auto mode on the weather radar. Reflections shown on the display under auto mode has a 38-second memory limitation. The pilot might exceed this time limitation when switching to manual mode. After switching back to auto-mode, the data were already erased, and the original information was no longer available. Before requesting for weather deviation, large area on the east side is showing green radar reflections. Due to low visibility and poor visual

contact, the aircraft deviated to the west, ending up in the east side of the thunderstorm and encountered the severe turbulence in that area.

At the time of the occurrence, the fasten seatbelt sign was on. The cause of the injuries was mostly due to fail to fasten seatbelt when encountering turbulence. Statistics show that there are 33 civil aviation non-fatal occurrences for the past ten years. Four of them are related to turbulence encounter. The ratio is 12.1 % but amount to 83.6 % of the injured persons in that category. A total of 58 cabin crew members are involved in the four occurrences, and half of them are injured. Probable causes for this outcome are as follows:

- After the fasten seatbelt sign is turned on, usually the probability of encountering severe turbulence is not high. Passengers and crew members will lower their alertness and vigilance, becoming negligent toward the FSB sign and the safety broadcast.
- Airlines fail to deliver warnings of past injury statistics report, regulations about crew responsibility and passenger obligation in regard to fastening seatbelt.
- Emphasizing the seriousness of turbulence by notifications usually has a short-term effect.

The Aviation Safety Council issued several recommendations for improvements to the airline involved, including:

- Improve and evaluate pilots' familiarity on weather radar's operation guide.
- Revise the regulations of pilot report on encountering significant weather inflight in Flight Operations Manual and demand pilots to follow strictly. Besides, re-examine the turbulence prevention and encounter procedure.

The Council also recommended CAA to take effective action to assure people onboard aircraft fasten

seatbelt as requested by regulation.

National Airline B747-400 Encounter Turbulence in Bangkok Airspace

On October 2nd, 2008, the involved aircraft was en-route from Hong Kong to Bangkok. When approaching Bangkok with a heading of 240, there was an isolated CB with a diameter of less than 10nm in the nine to twelve o'clock quadrant ahead of the aircraft. Weather radar display was showing red, yellow, and green reflections, and the CB has a cloud top of more than 40,000 feet. Under the prevailing condition, the pilot considered that the aircraft should clear the CB from the downwind side (right side), and the PIC left the cockpit to use the bathroom. Then ATC requested a heading of 210 for traffic separation. The first officer judged that the aircraft should clear the CB from the upwind side (left side) with the heading and commenced the turn. After the PIC returned to his seat, he decided that with the current speed and altitude the turn radius is too large and they would ended up too close to the CB. So he disconnected the auto-pilot and hand-fly with a larger bank to increase the clearance with the CB. According to the flight crew, at a heading of 190, the CB was already on the right side of the aircraft and there were no reflections on the weather radar display. The auto-pilot was then connected for one minute and then they encountered turbulence, bringing serious injuries to 4 passengers and one cabin crew member. The aircraft landed at Bangkok safely.

Looking into the relative position the original flight path, actual flight track, position of turbulence encounter, the size and position of the CB, the investigation showed that the original flight path and the actual flight track can not both meet the CB clearance regulation stated in the Flight Operations Manual. As a result, the aircraft experienced severe turbulence during the weather deviation. Failure to fasten the seatbelt might contribute to some injuries of the passengers and cabin crew members.

The Aviation Safety Council issued numerous recommendations to the involved airline, including:

Improving pilots' technique and judgment on CB deviation procedure.

Verify the cabin crew and passengers are well informed of the turbulence procedure and necessity to fasten seatbelt when turbulence warning is given.

Revise the standard operating procedure regarding turbulence deviation and encounter procedure in the related manual.

The Aviation Safety Council recommended CAA to inspect various airlines' turbulence prevention and encounter procedure, and verify they are practicable. Besides, evaluate the need for public education on turbulence to increase the self awareness of fastening seatbelt.

Ongoing Investigations

As of December 31st, 2010, there are 6 flight occurrences still under investigation, 2 occurrences is being investigated by other country's authorities with ASC's cooperation. Chronological sequences of the occurrences are listed in the following table. Detailed information can be acquired from ASC website.

	Information	Brief Description	Status
1	2008/02/23 B747-400 Bangkok International Airport	While deplaning, passengers discovered smoke seeping out of the left sidewall of seats 64A/65A. The smoke was suppressed by fire extinguisher after APU shutdown, no injury was reported.	Draft final report completed.
2	2008/08/15 A340-300 Tao-Yuan International Airport to In-Cheon International Airport Korea	Aircraft executed a missed approach due to reduced visibility prior to landing. The aircraft then performed an uneventful landing. A 20 cm crack on the left rear fuselage was discovered along with a damaged left center tire during post landing inspection.	Awaiting KARAIB of Korea to public final report.
3	2009.07.10 BK117 Sung-Shan	After completing a medical transportation flight, the Medivac helicopter returned	Draft final report completed.

REPORTS

Flight Crew's Complaint for Increased Flight Duty

According to the contributor (flight crew), for the recent months, the flight time of the flight crew are high. Although the roster is legal, the reduction of day-offs and frequent schedule changes are not favorite to crew's time management. The company had been informed of the situation, however there was no improvement. The contributor believes that accumulated-fatigue for flight crew is harmful to flight crew's health as well as flight safety. He suggested the TACARE to collect data of sick leaves and physically-grounded cases for the past year and coordinate the company to take the issue seriously.

TACARE Office

For the past year, economy has recovered strongly. The demand on cross-strait and regional market also increased substantially. As a result, there is a huge growth on both passenger and cargo flights. Worsened by other foreign airlines' recruitment with better salary and benefits, national airlines are unable to maintain a stable manpower. For the above reasons, the flight time of national airline pilots has increased though still within legal dispatch.

CAA has also noticed the high flight time of pilots recently. Apart from a closer examination on legal dispatch requirements, CAA has demanded airlines to change crew immediately once a crew fatigue report is filed. In addition, to comply with amendments of "ICAO Annex 6, Ninth Edition" regarding "Fatigue Management," CAA has commenced its revision of related regulations. Having numerous negotiations with airlines, CAA believed the revision will be completed shortly. The new regulation has a more specific definition for "flight duty period" and "duty period" (e.g. administration, training, positioning time, standby). Furthermore, previous regulation put emphasis on assuring enough post-flight rest time are

	Airport to Kiman Airport	to Kiman from Sung-Shang Airport. The control tower lost contact with the helicopter after its request for landing clearance. The helicopter crashed into the ocean approximately 1 mile south of the airport. The CM1 survived, and both CM2 and the onboard paramedic perished from the occurrence.	
4	2009.08.11 UH-1H Typhoon Human Relief Mission	The helicopter tookoff from Nei-Pu Senior High School on a human relief mission. While en-route to I-La village the helicopter crashed into the coast of the I-Liao North river northeast of the I-La Village. All three crewmember onboard perished.	Draft final report completed.
5	2010.03.04 B747-400F Anchorage Airport, USA to Tao-Yuan International Airport	The aircraft tail stuck and damaged during rotation in Anchorage Airport, USA, no casualties.	Draft final report completed.
6	2010.07.22 B737-800 Tao-Yuan International Airport to Hiroshima Airport, Japan	After take-off, the cabin pressure continued to rise to 14,000 feet. Oxygen masks were dropped. The flight crew declared "May-day" during emergency descent, followed by radar vector for an air turn back at Tao-Yuan airport. All people on board were safe.	Analysis.
7	2010.09.02 B747-400 Shanghai Pudong Airport to Tao-Yuan International Airport	During the landing roll the left main gear went off the runway to the grass and returned to the runway before making a right turn onto the taxiway. Post flight inspection showed that the tires on left main gear blew out; left inboard trailing edge flaps could not be retracted to the up position. All people on board were safe .	Analysis.
8	2010.11.23 B747-400F New York JFK Airport, USA to Seattle Airport	The landing roll of the involved aircraft didn't make a complete stop until the end of the runway. All people onboard were safe.	Cooperate with NTSB of USA.



given while the new amendments focuses on making sure pre-flight rest time are adequate.

Airlines replied that the current scheduling system has taken into account various factors such as flight time, duty time, rest time, jet lag, day/night take-off, day/night landing, number of landings, duty specifications, etc. Still, it is hard to satisfy every pilot's need. Company will do its best to adjust patterns that are reported to cause fatigue. If any crew feels he is not physically fit for flight duty due to fatigue or other reasons, he/she can a sick leave. The company will arrange another flight crew accordingly. Also, the company is recruiting new pilots to maintain enough manpower.

Currently the international aviation industry is developing a so called "Fatigue Risk Management System, or FRMS". The system is structured below Safe Management System, with an aim to manage the risk resulted from fatigue via different levels of fatigue control. Some aviation authorities have already completed the associated FRMS regulation and technical documents; while some airlines have begun its implementation of FRMS. Below is an example, suggested by Transport Canada, of different levels of fatigue controls:

- Level 1: Making sure scheduling gives employees adequate opportunity to sleep.
- Level 2: Making sure employees actually get sufficient sleep
- Level 3: Monitoring for symptoms that indicate employees are fatigued.
- Level 4: Strategies to ensure that fatigue in the workplace does not result in errors or incidents.
- Level 5: Determining the role of fatigue in workplace errors or incidents.

By providing the international aviation industry's new method to prevent fatigue, we hope the related departments can design their own strategy. Flight crew should optimize their time management within

the rest period provided by the company, and prepare themselves to be perfectly fit to perform flight duty.

The success of Fatigue Risk Management relies not only on the three components, CAA, Airline, and Flight Crew Members, to carry out their own task, but also the cooperation between them.



Passenger Enter Crew Bunk while En-Route

The contributor (cabin crew) heard that on a trans-oceanic flight of Airline A, the crew bunk door was unable to lock due to malfunction. As a result, a passenger sneaked into the bunk for rest and stayed in with other crew members for several hours before been found out. Such passenger behavior had threatened the safety of the crew member, but there was no penalty in the related aviation regulations. The loophole should be fixed immediately.

The contributor also pointed out that several aircrafts of the same fleet also have inoperative door lock. These locks are hard to lock or open, and have remained inoperative for several years without repair.

TACARE Office

Currently, there are "Crew Only" signs on the crew bunk door, warning the passengers not to enter. Security is maintained by asking crew to close the door carefully during entry and exit.

Having received the information and to improve safety, Airline A has ordered the maintenance to conduct a complete check on the entire fleet to check the availability of the door locks. The check was completed within the month of notification of the report, and found no inoperative door locks as described. Cabin crew management department has issued notification to all cabin crew members that during ground safety check, and inflight use of crew bunk, door must be closed and locked carefully to prevent accidental entry of passengers.

TACARE informed the contributor of the result. The contributor replied that although locks are operative, the door itself is hard to operate and require a certain angle and force to close completely; sometimes doors still remain partially open. Most cabin crew members will not report to the company nor will they log it on the Cabin Log Book. The contributor encourage all crew members to report problems to the company immediately so the corrective actions can be taken in due time.



Taxiways Re-name at Tao-Yuan Airport

The contributor (flight crew) suggested Tao-Yuan Airport simplifying two-alphabet taxiway names to one-alphabet system in order to lower the possibility of read backs mistake and reduce radio transmission occupancy.

TACARE Office

Flight Operations at Tao-Yuan Airport relied that the taxiways rename is included in the 2011 Tao-Yuan Airport Runway/Taxiway Renovation Project. The taxiways will mainly be named with one alphabet only and suffixed with a number when necessary.



Time Pressure on Ground Handling Staff

The contributor (ground staff) reported that recently there have been cases which aircraft -towing operation are delayed due to ground handling work (e.g. loading/off-loading). Should there be another inbound aircraft, airport flight operation office will ask them to tow the airplane away as soon as possible, which might compromise some safety regulations due to the time restriction. This situation has put the tow truck operator in a dilemma.

TACARE Office

The flight operations of the involved airport replied that although ground staffs are asked to complete towing

as soon as possible, the prerequisite is no safety regulation is compromised. If in the view of the towing operator the time slot cannot be met, he/she can inform the flight operator for further adjustment. For example, inbound aircraft can hold at taxiway, or be re-arranged to other parking spots.



ATC Communication Discipline

The contributor (flight crew) reported that flight crew of Airline B continuously questioned the controller with poor attitude and mean language on the approach frequency. These communications have put extra pressure on the preceding aircraft's flight crew and endanger flight safety.

TACARE Office

The information has been relayed to the involved approach control. TACARE office wants to take this opportunity to advise all flight crew to file a complaint letter through the official channel when not satisfying with the ATC service. It is not appropriate to use improper language inflight on the radio as it will influence other pilots.



Previous Issues

Articles from previous issues could be obtained via our website www.tacare.org.tw or a paper copy could be obtained by calling 0800-075-085 or 0800-TACARE (822-273).



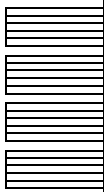

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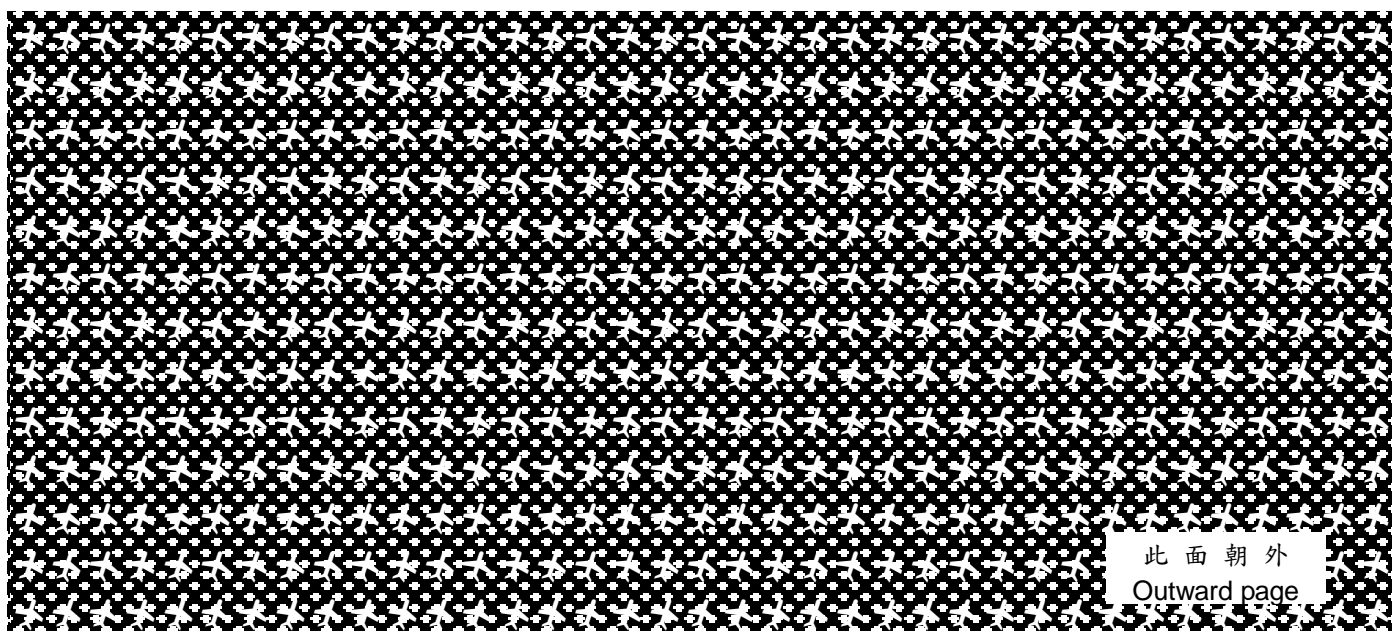
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摺疊線

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摺疊線



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Outward page