

## **Executive Summary**

On 5 February 2014, a Dornier-228 aircraft, registered B-55563, Daily Air Corporation flight DA7507, with two pilots and 19 passengers on board, took off from Taitung Airport (RCFN) at 1251 Taipei local time, operating on a scheduled passenger flight for Lanyu Airport (RCLY). The captain occupied the left seat in the cockpit as the pilot flying, and the first officer occupied the right seat as the pilot monitoring.

At 1302, the flight crew contacted with Lanyu control tower and was informed to use runway 31 for landing. At 1307, the aircraft was cleared to land after being informed of wind 070 degree/13 knots and gust to 22 knots. At 1309:34, the aircraft veered off to the right of runway 31 at the position of 1,900 feet from its threshold, rolled on the strips for about 338 feet, and returned to the runway pavement at 1309:36. The flight crew then decided to reject the landing and executed a go-around. After the aircraft became airborne, the flight crew noted that the landing gear handle was unable to be retracted normally, thus they decided to turn back to Taitung Airport. The aircraft landed at 1350 without further event. No personnel were injured, and the aircraft sustained minor damage.

The Aviation Safety Council (ASC) is an independent agency responsible for civil aviation, public aircraft and ultra-light vehicle occurrence investigation. According to the Republic of China Aviation Occurrence Investigation Act and referencing to the related content of Annex 13 to the Convention of International Civil Aviation Organization (ICAO), ASC launched an occurrence investigation by law. The organization or agency invited to join the investigation team included: Civil Aeronautics Administration of Ministry of Transportation and Communications (CAA), Daily Air Corporation, and the German Federal Bureau of Aircraft Accident Investigation (BFU).

The ‘Draft Final Report’ of the occurrence investigation was completed in July 2015 and then sent to relevant organizations and authorities for comments. After comments were collected and integrated, the investigation report was reviewed and approved by ASC’s 38<sup>th</sup> Council Meeting on 27 October 2015.

Based on the factual information gathered during the investigation and the results of analysis, 14 findings and 9 flight safety recommendations as stated below.

### **Findings as the result of this investigation**

### **Findings related to probable cause**

1. On the date of the occurrence, it was the first time for the Captain been paired with non-instructor pilots to conduct the flight duties to Lanyu Airport. While wind conditions were within limitations, the Captain's crosswind landing technique and deviation correcting maneuver were inadequate for the landing operation, and led the aircraft to veer off the runway after touchdown.
2. Daily Air neither provided proper initial route training required by its training manual to the Captain, nor dispatched him to carry out flight duties on the west-shore routes first after checkout for familiarization purpose according to the company's customary practices, which has caused the un-proficiency of Captain's landing technique. The instructor pilot's qualification check could not ensure that the pilots were competent to conduct flight duties to Lanyu Airport.

### **Findings related to risk**

1. Daily Air did not incorporate its safety ensuring measures such as the customary practice of "newly checkout Captain should be dispatched to carry out flight duties on the west-shore routes first for familiarization purpose" into related procedures with the aim of easier to manage and abide by.
2. Daily Air has no clear evaluation standards and procedures for instructor pilots to verify the competency of newly checkout Captains before dispatching them to conduct flight duties to special airports.
3. Due to shortage of manpower in the Flight Operations Division, the training procedures, standards, flight crew qualification, and risk management in Daily Air were not in place.
4. Daily Air did not conduct self-audit in accordance with its own procedures after it experienced the occurrence of landing without lowering the landing gears in December 2014.
5. When conducting the self-audit toward system safety of the flight operations, Daily Air did not certainly review the training that newly hired flight crew received conformed to company's requirements.
6. The pre-set values of risk indexes on Daily Air's "flight crew dispatch risk evaluation checklist" might not effectively reflect, identify and manage the duty risk.

7. Due to high workload, the CAA inspector did not conduct the on-scene inspections toward Daily Air. Several deficiencies like the noncompliance of Captain's route training, the insufficient manpower in training department of Flight Operations Division, and the improper risk assessment were not identified during the routine oversights.
8. Due to geographical restraint, Lanyu Airport is unable to conform to the recommendation in the "Civil Aerodrome Design and Operation Standards" addressing that the width of runway strips for a 1B non-instrument runway should be 60 meters. The declared width of runway strips in Lanyu Airport is 40 meters only, thus it was categorized as a special airport.
9. There are uncovered ditches, reinforced concrete fences and cliffs within the recommended runway strips and grading area in Lanyu Airport, thus it does not conform to the recommendation in the "Civil Aerodrome Design and Operation Standards" addressing that the width of runway strips for a 1B non-instrument runway should be 60 meters.

### **Other findings**

1. The qualifications of flight crew complied with current civil aviation regulations. No evidence showed that the flight crew were influenced by any drugs and alcohol during the flight.
2. No abnormal log entries were found after reviewing maintenance records for the previous month. All certifications and airworthiness complied with current regulations, and the weight and balance was within limitations. All systems were functioning normally prior to the occurrence. The damages to the landing gears were caused during the occurrence.
3. Though the absence of flight data recorder on Daily Air's Dornier-228 was approved by the CAA and therefore it conformed to the Aircraft Flight Operation Regulations, it deprived the operator of collecting routine operations data, and consequently caused the difficulty in ensuring safety management. It is also unfavorable for occurrence investigation if there is any.

### **Safety Recommendations**

#### **To Daily Air**

1. Enhance the training and checks on flight crew's techniques for

crosswind landing and deviation correction. Ensure all training provided to the flight crew conforms to company's manuals or regulations.

2. Incorporate safety ensuring measures and customary practices into appropriate procedures, and establish clear evaluation standards and rules for verifying the competency of flight crew conducting flight duties to special airports, so that it would be feasible to manage and abide by.
3. Review and evaluate the effectiveness of current flight crew dispatch risk assessment checklist and supervisory mechanism. Enhance routine flight crew evaluation and qualification check, and incorporate those assessments into company's self-audit plan with thorough implementation.

### **To CAA**

1. Supervise Daily Air to enhance the training and checks on flight crew's techniques for crosswind landing and deviation correction, as well as ensure all training provided to the flight crew conforms to company's manuals or regulations.
2. Supervise Daily Air to incorporate safety ensuring measures and customary practices into appropriate procedures, and establish clear evaluation standards and rules for verifying the competency of flight crew conducting flight duties to special airports, so that it would be feasible to manage and abide by.
3. Supervise Daily Air to review and evaluate the effectiveness of current flight crew dispatch risk assessment checklist and supervisory mechanism, as well as enhance routine flight crew evaluation and qualification check, and incorporate those assessments into company's self-audit plan with thorough implementation.
4. Review or revise the exemption rule in article 111 of the Aircraft Flight Operation Regulations, consider the differences in operating demands between transport category and general aviation, and recommend those national registered aircrafts with no flight data recorder (FDR) on board to install a FDR or a lightweight data recorder (LDR).
5. Review those special airports due to insufficient width of runway strips, enhance the flatness of runway facilities, restrict operational limitations according to aircrafts' characteristic, evaluate the feasibility of broadening the runway strips, and supervise the

operators to enhance flight crew's training with respect to the insufficient width of runway strips, so that the risk and damages of runway excursion occurrences can be reduced.

6. Enhance the inspection activities, and continue supervising Daily Air as well as its successors going to carry on the air transport services, so that the recommendations addressed in this report can be implemented, and the human resources, training and safety risk managements can be improved.