B-31127 Occurrence Summary Report

On November 22, 2015, a Bell 206B3 helicopter, registration number B-31127, operated by Emerald Pacific Airlines (EPA), performed the power line insulators cleaning operation. The helicopter took off at about 1042 Taipei local time from a temporary heliport site of Dong Ming Street, Linkou District, New Taipei City with one captain and one water cannon operator aboard, and the captain sat in the right seat of the cockpit as the pilot flying, the water cannon operator sat in the cabin seat as the water cannon operator, to conduct the insulators cleaning mission about 1,600 meters northeast of the temporary heliport. The helicopter arrived at the work area about 1.5 minutes after takeoff and started to conduct the insulators cleaning operation.

About 1058, the helicopter collided with the power cables nearby during maneuvering after finishing the insulators cleaning work at one of the power transmission tower, resulted in the main rotor and the tail section pulled off from the fuselage and crashed into the farm land. The helicopter sustained totally destroy and the flight crew on board were fatally injuries.

According to the Republic of China (ROC) Aviation Occurrence Investigation Act, and the content of Annex 13 to the Convention on International Civil Aviation, the ASC, an independent aviation occurrence investigation agency, was responsible for conducting the investigation. The investigation parties invited to participate in this investigation including: CAA (Civil Aeronautical administration, ROC), NTSB (National Transportation Safety Board, USA) and EPA.

The Draft Final Report was completed in July 2016. The report was submitted to the relevant parties for comments after being reviewed by the 48th council meeting on August 23rd, 2016. Upon compilation and

integration of comments from parties, the Final Report was approved by 51th ASC council meeting on 29th November, 2016. The Final Report was published on 9th December 2016.

There are a total of 9 findings from the draft Final Report, and 11 safety recommendations issued to the related organizations.

Findings as the result of this investigation

The ASC presents the findings derived from the factual information gathered during the investigation and the analysis of the occurrence. The findings are presented in three categories: **findings related to probable causes**, **findings related to risk**, and **other findings**.

The **findings related to probable causes** identify elements that have been shown to have operated in the occurrence, or almost certainly operated in the occurrence. These findings are associated with unsafe acts, unsafe conditions, or safety deficiencies associated with safety significant events that played a major role in the circumstances leading to the occurrence.

The **findings related to risk** identify elements of risk that have the potential to degrade aviation safety. Some of the findings in this category identify unsafe acts, unsafe conditions, and safety deficiencies including organizational and systemic risks, that made this occurrence more likely; however, they cannot be clearly shown to have operated in the occurrence alone. Furthermore, some of the findings in this category identify risks that are unlikely to be related to the occurrence but, nonetheless, were safety deficiencies that may warrant future safety actions.

Other findings identify elements that have the potential to enhance aviation safety, resolve a controversial issue, or clarify an ambiguity point

which remains to be resolved. Some of these findings are of general interests that are often included in the ICAO format accident reports for informational, safety awareness, education, and improvement purposes.

Findings related to the probable causes

1. After completion of the insulators cleaning work on Tower #24, the flight crew did not keep sufficient situation awareness to the condition of the obstacles near the operating environment. As a result, the aircraft collided with the nearby power transmission cable at the time of departure and crashed.
2. Standard operation procedures regarding the standard call and confirmation may not be followed by the flight crew during the operational and departure phase. The water cannon operator may also not assist the captain in inspecting nearby terrain and obstacles.

Findings related to the risk

1. The crew resource management (CRM) training of Emerald Pacific Airlines did not have the practical trainings which were based on standard operating procedures (SOP).

2. The Emerald Pacific Airlines flight manual did not specify the detailed procedures related to the entry and departure, operating techniques and the mission abort criteria of the insulator cleaning operations, which affected the safety of operation.

Other findings

1. The flight crew were certificated and qualified in accordance with Civil Aeronautics Administration (CAA) regulations and company

requirements. There was no evidence to indicate that the flight crew's performance might have been adversely affected by pre-existing medical conditions or alcohol during the occurrence flight.

2. There is no evidence to show that the accident was related to airworthiness and the weight and balance of the aircraft.
3. There was air turbulence in the accident area, which affected the work of insulators cleaning of Tower #26, but it did not affect the cleaning operation of Tower #24.
4. The operational risks are high if applying the helicopter to conduct the insulators cleaning operations in the case of multi power transmission cables passing through the insulators cleaning work area.
5. The accident helicopter is not required to install the flight data recorder and cockpit voice recorder. But it is not conducive to the feedback of routine training, the mission debriefing and occurrence investigation.

Safety Recommendations

To Emerald Pacific Airlines

1. Require the flight crew to carefully inspect the terrain and obstacle near by the operational area and be vigilant and comply with the standard calls and operating procedures at all phases.

2. To produce and integrate detailed information on obstacles in the work area for flight crew to facilitate task preparation, briefing and mission conduct.

3. To develop a complete CRM training program, and strengthen the practical part of the training to implement the relevant training issues.

4. Clearly define the detailed procedures related to the entry and

departure, operating techniques and the mission abort criteria of the insulator cleaning operations.

5. Consider the installation of a simplified flight recorder on aircraft or the installation of a cockpit video recorder in the cockpit to facilitate the review of training and operations, and occurrence investigation.

To Civil Aeronautics Administration

1. To supervise the Emerald Pacific Airlines flight crew to observe the terrain and obstacle near by the operational area carefully and to be vigilant, and should abide by the standard calls and operating procedures at all phases.

2. To implement the requirements for the mission preparation, briefing and the procedures of mission conduct in Emerald Pacific Airlines.

3. To supervise the integrity of the crew resource management training program and supervise the implementation of relevant training issues.

4. To supervise Emerald Pacific Airlines to set up detailed procedures related to the entry and departure, operating techniques and the abort criteria of the insulator cleaning operations and to ensure compliance.

5. To assist Emerald Pacific Airlines in assessing the feasibility of installing a simplified flight recorder on aircraft or installing a cockpit video recorder in the cockpit.

To Ministry of Economic Affairs

1. Consider the additional operation modes of insulators cleaning other than applying the helicopter to conduct the insulators cleaning operations in the case of multi power transmission cables passing through the insulators cleaning work area.