Executive Summary

On March 25, 2014, an Executive Aviation Taiwan Corporation (hereafter referred to as “Executive Aviation”) Hawker 400XP airplane, registration number B-95995, filed a flight plan for a chartered flight from Taipei Songshan Airport and routed Kinmen airport to the destination Matsu Nangan Airport. After the airplane landed at Kinmen airport and completed embarkation of passengers for the flight, the airplane departed for the destination Matsu Nangan Airport, and flight crew prepared for the LDA DME RWY 03 approach. During approach, the occurrence flight was cleared for GPS (RNAV) RWY 21 approach by Taipei approach. The occurrence flight requested LDA DME RWY 03 twice but was rejected. The flight crew on the occurrence flight changed the settings on the airplane to perform the GPS (RNAV) RWY 21 approach as prescribed on JEPPESEN charts. When the flight crew had runway in sight, the pilot flight disconnected the Autopilot, continued the approach visually, and landed the airplane on about 1028 hours Taipei local time. Subsequently, Beigang tower informed the flight crew where they actually landed.

The Aviation Safety Council (ASC) is an independent agency responsible for civil aviation, public aircraft and ultra-light vehicle occurrences 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), the ASC launched an occurrence investigation by law. The organization or agency been invited to join the investigation team also included: Civil Aeronautics Administration of Ministry of Transportation and Communications, Executive Aviation Taiwan Corporation.

In accordance with procedures of ASC , the draft investigation report was revised by the ASC Board members on January 27, 2015, in the 30th Board meeting. The draft report was then distributed to related organizations and agencies for comments. The draft investigation report was revised again and approved by the ASC Board members on March 31, 2015, in the 31st Board meeting.

Based on the factual information gathered during the investigation and the results of analysis, 24 findings and 25 flight safety recommendations are issued as stated below.

The Safety Council 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 the risk, and other findings.

Findings related to probable causes

1. B-95995 was authorized to operate into Nangan airport under VFR only, whereas such information was neither properly documented on the dispatch release of the flight, nor was filed in the flight plan in accordance with the regulations. Furthermore, the flight crew did not notify ATC that the occurrence flight were not allowed to accept instrument approach procedures, thereby the ATC vectored the occurrence flight for the RNAV RWY 21 instrument approach from the north of Nangan, at the end, the occurrence flight mistook the Beigang runway for the Nangan one and landed.
2. The flight crew did not conduct the approach briefing and standard callouts in accordance with the standard operating procedures, or properly crosscheck the information showed on the navigation display to verify the correct distance from Beigang and Nangan, or even

visually identify the correct runway. Besides, neither the tasks sharing and coordination between the flight crew were properly handled, nor the stabilized approach standards were followed to conduct a go around, causing the occurrence flight to land on the wrong runway.

Findings related to risk

1. The Executive Aviation B-95995 did not file an alternate airport in the flight plan from Kinmen to Nangan or carry such fuel for the alternate. CAA only authorized the Executive Aviation to conduct departure or arrival flights under visual flight rules, consequently such flights are not allowed to carry out the standard instrument procedures in Nangan, if the weather changed rapidly and was below the VFR minimum, the occurrence flight would be under the risk to operate without a suitable airport to land at.
2. In accordance with the body weight noted on the medical certificates of the flight crew, the total body weight of captain A and B exceeded the estimated total weight by 81 pounds, and the actual body weight of the other six passengers with their carry-on baggage might be heavier than the estimated body weight, therefore the aircraft takeoff weight may exceed the limitation of maximum takeoff weight.
3. Due to the limitation of weight and balance, the aircraft could not carry enough fuel to meet the legal requirement. If the fuel was loaded in accordance with the computer flight plan and dispatch release document, the takeoff weight would definitely exceed the maximum takeoff weight limitation.
4. Executive Aviation adopts the SIMCO Training Supplement as its standard operating procedures for Hawker 400XP, the deficiencies are as follows: the contents of manual lack introduction and guidance of

usage, additionally all the manual pages are printed with "FOR TRAINING PURPOSES ONLY", causing confusion; the normal checklists of the manual are also inconsistent with those in other relevant manuals; the stable approach criteria in the manual is almost completely different from those in the Flight Operations Manual.

5. The Flight Operations Manual of Executive Aviation does not clearly define task sharing between PF and PM, and inconsistency errors of the terminology used exist between the Flight Operations Manual and the other relevant manuals.
6. Hours of sleep of the captain B in three consecutive nights were apparently lower than needed, this might cause the captain B to be under the influence of fatigue during approach, result in lack of attention, focus on reminding the PF the aircraft was high on approach to land, ignore the need to check cockpit instrumentations, thus lead to the inability of captain B to realize the correct aircraft position.
7. The policy of Executive Aviation prohibits dispatchers from dispatching a flight against the law and pilots shall refuse those illegal duties, the Executive Aviation also established a checking mechanism to check the flight time and rest period before flight. Nonetheless, before the occurrence flight, there were two consecutive mistakes which the rest period for the flight crew was lower than the 10 hours legal requirement.
8. The Executive Aviation did not revised the definition for the duty time in accordance with the Aircraft Flight Operation Regulations. The control and record of the duty time was not in compliance with the regulations.
9. The Executive Aviation did not establish a recordkeeping system to completely retain the training records of the flight crew.

10. As the increase of flights and airplanes, the Executive Aviation did not reevaluate and increase manpower for the management of flight safety and flight operations subsequently in which it caused multiple systemic deficiencies.
11. The CAA inspectors did not properly follow the guidance in manuals to find the multiple systemic deficiencies in the flight crew training and duty recordkeeping systems of the Executive Aviation.
12. Before the practical test, the Executive Aviation did not actively provide the upgrade training records of captain B to CAA, and the inspector also did not properly verify whether the captain B completed the trainings in accordance to the training program. Thereby the captain B received and passed the type rating check, and received a BE-400 type rating certificate before completing required trainings.
13. Workload of CAA inspectors was heavy before the occurrence, therefore the amount of inspections conducted on the Executive Aviation were fewer, this lead to the incapability of finding the multiple systemic deficiencies in the flight crew training and duty recordkeeping systems of the Executive Aviation.
14. The air traffic controller of Taipei approach issued the RNAV RWY 21 approach to the occurrence flight without pilot's request or inquiring the pilots whether they were capable of using it, this was against the provision stated on the approach chart "ATC only issues this procedure upon pilot's request" .
15. With regard to Nangan, the AIP indicates that "the Civil aircraft owner or operator shall apply to CAA with relevant documents for authorization to use published instrument departure procedures and instrument approach procedures", but it is only noted as "CAA AUTHORIZATION REQUIRED." on the approach charts, which is

ambiguous and caused the misunderstanding of the flight crew.

16. The Beigang airport is located after the FAF of the approach to Nangan 21 runway, pilots would see the Beigang airport first before landing, and the orientation of both runway is identical, to those pilots who are not familiar with these two airports, they might land at the wrong airport by mistake.

Other findings

1. There was no evidence indicates that the flight crew were under the influence of alcohol and drugs during the occurrence flight. The airworthiness and maintenance of the occurrence airplane were in compliance with the current civil aviation regulations. And there was no entry of anomaly resulted from the Daily Check, Preflight Check and Scheduled Maintenance within one month prior to the date of occurrence.
2. The depiction for the manual inhibit push button light of the EGPWS on the Executive Aviation AFM's Supplemental page was not in consistency with the actual layout in the B-95995.
3. Part of annual recurrent training was conducted in the flight simulator of the SIMCOM training center without completing the relevant approval process.
4. B-95995 made a request to ATC to land at Nangan 03 runway, but neither of them clearly understood mutual intention.
5. Close to the final approach fix and 30 seconds before the loss of radar signal of the occurrence flight, the altitude shown on the SSR screen was lower than the associated instrument approach procedure altitude 1,900 feet, whereas the approach controller did not find the aforementioned altitude anomaly and warn the occurrence flight.
6. When the occurrence flight was out of the radar coverage, the approach controller did not inform the occurrence flight of the

termination of radar service.

Safety recommendations

Safety recommendations to the Executive Aviation

1. Require flight crew to follow instrument approach procedures, perform approach briefings and standard callouts, effectively use instrument information to verify the position of airplane, visually verify the runway, reinforce the task sharing and coordination between flight crew, and reinforce relevant trainings.
2. Require flight crew to comply with stable approach criteria.
3. Review company policy with regard to alternate airports and associated fuel quantity, to prevent a flight to be under risks without a suitable airport to land at when the weather minimum is below VFR.
4. Review the applicability of standard operating procedures for Hawker 400XP, task sharing between PF and PM in the flight operations related manuals and in which terminology used shall be unified.
5. Require flight crew and dispatchers to verify correctness of flight plans, weight and balance and dispatch release, receive reinforced relevant trainings.
6. Establish a recordkeeping system to completely retain training records of flight crew.
7. Reinforce management programs for flight duty time, rest period and fatigue of flight crew.
8. Reevaluate enough manpower for safety management and flight operations, which thereby will be reinforced.
9. Use FSF ALAR Briefing Notes 2.3 “Pilot-Controller Communication” as a guidance to improve flight radiotelephone training, make sure air traffic controllers understand intentions of pilots.

Safety recommendations to CAA

1. Supervise the Executive Aviation to require flight crew to follow instrument approach procedures, perform approach briefings and standard callouts, effectively use instrument information to verify the position of airplane, visually verify the runway, reinforce the task sharing and coordination between flight crew, and reinforce relevant trainings.
2. Supervise the Executive Aviation to require flight crew to comply with stable approach criteria.
3. Supervise the Executive Aviation to review its company policy with regard to alternate airports and associated fuel quantity, to prevent a flight to be under risks without a suitable airport to land at when the weather minimum is below VFR.
4. Supervise the Executive Aviation to review the applicability of standard operating procedures for Hawker 400XP, task sharing between PF and PM in the flight operations related manuals and in which terminology used shall be unified.
5. Supervise the Executive Aviation to require flight crew and dispatchers to verify correctness of flight plans, weight and balance and dispatch release, and receive reinforced relevant trainings.
6. Supervise the Executive Aviation to establish a recordkeeping system to completely retain training records of flight crew.
7. Supervise the Executive Aviation to reinforce management programs for flight duty time, rest period and fatigue of flight crew.
8. Supervise the Executive Aviation to reevaluate enough manpower for safety management and flight operations, which will be thereby reinforced.
9. Reinforce supervision of flight operations inspectors to properly follow the guidance in the flight operations inspection manual to find operators' multiple systemic deficiencies in flight crew training and

duty recordkeeping systems.

10. Further review type rating issuance process for flight crew to prevent issuing a type rating certificate by mistake.
11. Review workload and effective usage of manpower of current CAA aviation safety inspectors.
12. Supervise the Air Navigation and Weather Services to conduct air traffic services in accordance with Nangan airport instrument approach procedures.
13. Supervise the Air Navigation and Weather Services to adhere to the “air traffic procedure manual(ATPM)” to conduct radar surveillance to aircraft on final approach phase, and inform associated flights of the termination of radar service when they are out of radar coverage.
14. Reinforce the note “Request in advance” on Nangan airport instrument approach charts to prevent flight crew’s misuse of approach procedures.
15. Add additional caution notes on Nangan and Beigang instrument approach charts to remind pilots to verify the runway before landing.
16. Use FSF ALAR Briefing Notes 2.3 "Pilot-Controller Communication" as a guidance to improve flight radiotelephone training, hereby pilot intentions are clearly understood.