NINTH MEETING OF THE ASIA PACIFIC ACCIDENT INVESTIGATION GROUP (APAC-AIG/9)

(27-28 October 2021 on Virtual Platform at 11.00 hrs. Bangkok Time UTC+7)

Agenda Item 4: Enhancing Accident Investigation Capabilities

SHARING EXPERIENCE FROM A RECENT SEA SEARCH OPERATION

(Presented by Indonesia)

SUMMARY

This paper highlights the recent experience of Komite Nasional Keselamatan Transportasi (KNKT) of the Republic of Indonesia on the flight recorder recovery of the accident of B737-500, on flight number SJY182 that occurred on 9 January 2021.

Investigation preparedness by the investigation authority to have a good coordination with all available resources nearby including the States available resources shall be considered.

The budgeting system for major investigation including under water recovery also requires to be prepared.

1. INTRODUCTION

1.1 This information paper shares the Komite Nasional Keselamatan Transportasi (KNKT) of the Republic of Indonesia experienced in regard to the SJY182 accident flight recorder recovery.

1.2 The accident of the Air Asia A320 flight QZ8501, on 28 December 2014 and the Lion Air Boeing 737-8 (MAX) aircraft flight JT610, on 29 October 2018 had pushed the KNKT to some investigation experiences in regard the sea search operation including coordinating available resources during the process. These experiences, once again was put to the test during the accident of Sriwijaya Air Boeing 737-500 aircraft, flight SJ182 at Java Sea on 9 January 2021.

2. DISCUSSION

2.1 Under Water Search

2.1.1 KNKT has been through many occurrences involving accidents at sea. The golden time within the period of activation Under-water Locator Beacon (ULB) very important for the execution of recorder search. The sea search method utilizing several party resources play an important thing to be considered.

2.1.2 After received a report of the accident, the investigation initiated including the search of the flight recorder. Alongside the flight recorder search, the rescue operation was also being conducted. The coordination between search and rescue operation and recorder search teams in the early stage after the accident could be challenging. The situation could be more complicated in the water when the search and rescue divers and the recorder recovery divers working on the same area. Good coordination, of searching area, schedule, number of divers, and other issues required to be arranged.

2.1.3 The search of the flight recorders utilized triangulation method, to identify the location of the flight recorders. Based on the triangulation result, the possible location of the flight recorders could be determined and the search by divers initiated. During the operation, the Flight Data Recorder (FDR) Crash Survivable Memory Unit (CSMU) was recovered on 12 January 2021, along with both Under-water Locator Beacon (ULB) of the FDR and CVR. The search and rescue operation terminated on 21 January 2021.

2.1.4 The KNKT continued the CVR search operation. The search team established command post on the nearest island to ease the operation. The first diver's effort conducted by making the sea bed mapping, on the area around the FDR and CVR ULB were recovered. The area marked with ropes on an area of 50 x 50 meters. The marked area then divided into 4 sections of 25 x 25 meters and set up cross sectional ropes. The weather and water swelling hampered the operation processes and took almost 2 weeks to complete the marking. The KNKT utilized 5 divers in the first attempt and increased up to 25 divers.

2.1.5 During the diving operation, each diver carried a hollow metal square of 1x1 meter to mark the search area to ensure there was no space missed. The CVR search operation utilized underwater jet to clean the mud on the suspected area. However, due to the weather condition and the difficulties to manage the water jet hose underwater, the method was ceased.

2.1.6 After about 2.5 months of operation and had not gotten significant result, the operation was paused for about 10 days to provide the rest to the team and to find another method based on the condition.

2.1.7 The team came up to an idea of utilizing the Trailing Suction Hopper Dredger (TSHD) ship. The TSHD ship capable to suck mud and debris on area 90 x 90 meters and expected to include CVR CSMU. The TSHD had the mud container in the ship hull which can accommodate 8,000 meter cubic of mud. The TSHD equipped with 2 nozzles dredger and each of the dredger had the dimension about 80 × 170 centimeters. In order to collect the CVR CSMU, with estimated dimension was about 15 × 15 centimeters, the TSHD was modified by adding a basket container with the dimension about 200 × 200 centimeters. The basket container was reinforced with a metal mesh in dimension of 10 × 10 centimeters so that the CVR CSMU would be trapped in the basket container.

2.1.8 Prior to the TSHD operation, the divers prepared the area by cleaning up the sea bed from the aircraft debris especially for the heavy or large part that might block the TSHD nozzle. The clean-up operation utilized several metal baskets to collect the aircraft debris. The clean-up operation performed in 7 days and collected about 40% of the debris.

2.1.9 The TSHD ship operated by sweeping the predicted area based on the location of the FDR, FDR ULB and CVR ULB recovery. The TSHD ship has a capability to log the path that had been searched. After 5-day operation, the TSHD ship search on the area that were missed on the previous operation and successfully recovered the CVR CSMU in the good conditions, on 30 March 2021.

2.2 Recovery Expenses

2.2.1 The cost for the underwater flight recorder recovery consisted of the cost of ship rental, diving operation and equipment. The first mission was to locate the flight recorder by identifying under-water locator beacon signal. A rubber boat was used to locate the flight recorder by triangulation method. After the location suspected location of the flight recorder had been identified, the divers started to search on the suspected area. On a good weather condition, the diving operation could be done 6 - 7 times per day. The KNKT utilized 4 diver teams (2 divers each team) for dive operation of 40 minutes per dive operation. After 2 days of diving operation, the FDR was successfully recovered together with the ULB of the FDR and the CVR. The number of divers to support this operation was 80 divers. The cost to hire the professional divers including the equipment was 80 USD for 10 days operation. After 10 days of diving operation, the CVR CSMU had not been recovered and it cost about 88,000 USD excluding the utilization of the survey ship.

2.2.2 The search mission of the CVR continued. As the suspected location of the CVR was close to an island, the search mission was based on an island. The mission required a ship for the divers to get to the point close to the diving location and small boat to carry the divers. The operation utilized 25 divers. The cost of this operation was 3,000 USD/day consisted of rent room on the island, meals for all person involve, ships rental, and the cost of the divers and their equipment.

2.2.3 After 47 days of operation, the CVR had not been recovered. The operation utilized Trailing Suction Hopper Dredger (TSHD) ship. The cost to hire the ship was 25,000 USD/day. Before the operation of the TSHD ship, it was required to sweep the debris in the area of TSHD operation which cost about 15,000 USD in 5 days diving operation.

2.2.4 During the operation of the CVR recovery of the Boeing 737-8 (MAX) CVR, the investigation utilized survey vessel equipped with Dynamic Positioning System, working class ROV, and some other equipment. The cost for hire this vessel was 4.8 million USD for 10 days of operation.

2.2.5 The cost of operation maybe reduced by utilizing state resources such as Navy and search and rescue agency including the vessel and divers.

3. ACTION REQUIRED BY THE MEETING

3.1 Based on these experiences, the KNKT recommends the investigation authority to have a good coordination with all available resources nearby including the survey ship providers, divers and equipment providers to supporting under water operation. States available resources such as navy, or other institution can be considered.

3.2 The KNKT encourage investigation authority for arrange the budgeting system for major investigation including under water recovery.

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