

Observer Attachments to Indonesia NTSC and US NTSB

ITSA Meeting 2019
Quebec City, Canada

Introduction

- Air safety has improved greatly over the years, largely due to the good work of safety investigators
- Lesser exposure for new investigators
- Observer attachment is a great learning platform
- TSIB values such attachment opportunities

Attachment to NTSC

LionAir JT 610

Jakarta, Java Sea

29 Oct to 12 Nov 2018 / 7-17 Jan 19

LionAir B737 MAX8

- On 29 Oct 2018, a Lionair B737 MAX8 aircraft with 189 passengers was on route from Jakarta to Pangkal Pinang



Deployed on Day 1

- Requested for observer attachment to NTSC's search of flight recorders
- First wave of 3 investigators and equipment deployed on the same day & joined the NTSC's team onboard search vessel



Vessels

- Main search vessel – Baruna Jaya 1
- Other vessels involved
 - Navy vessels
 - Basarnas vessels
- Diver teams (up to 50 pax at one time)
 - Basarnas (SAR agency)
 - Navy Divers
 - Seal Divers (Navy)
 - Volunteer divers



The search

- 3 hours journey to last known aircraft position from port
- Avoided daily travel by stationing on site
 - Unable to drop anchor due underground pipelines
 - Made use of mooring vessel



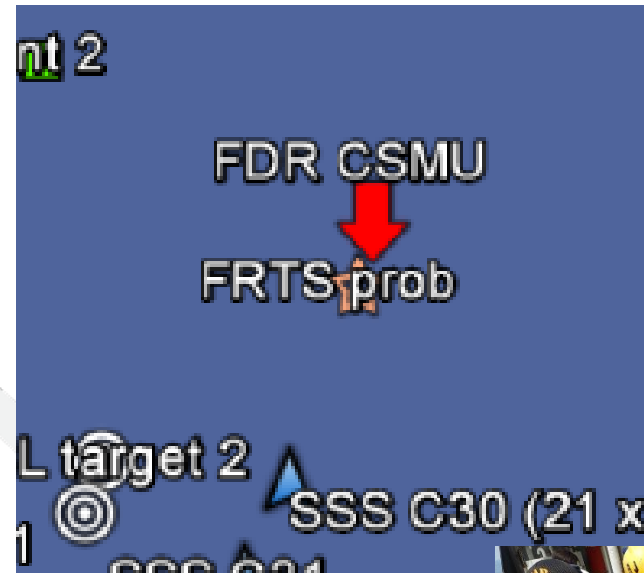
Search for flight recorders

- Initial search plan based on last known position
 - Flightradar24 provided additional info
- Sea state was relatively calm with occasional rain
- 2 pings were heard on the first day, subsequently only 1 ping was heard



Search for flight recorders

- FDR CSMU was recovered on Day 4 (1 Nov 18)
 - about 20m from estimated position
 - Fortunate that ULB still attached
- CVR CSMU was recovered in the next phase of search (14 Jan 19)



Recorder readout

- NTSC, TSIB, ATSB, Boeing participated in the downloading process – coordinated with NTSB recorders' specialists in Washington DC
- CSMU survived event as designed, ribbon cables damaged
- AIK and surrogate FDR (from Lion Air) ribbon cables were different from event FDR's
- Undocumented production changes
 - Orientation of J1 connector reversed in mishap board vs procedures

Lessons Learned

- Establish contacts of vessels and divers in advance
 - E.g. Navy, SAR agency, commercial
- Knowledge of impact point and pitch angle key in planning search area
- Besides ATC, Flightradar24 is a good resource
- Challenges in reading damaged flight recorders
 - Good to have independent parties to provide additional assistance

Lessons Learned

- Intra-day de-brief was not done after each dive
 - Investigators could not know what the divers encountered and saw
 - Investigators could not know if the divers used the ULB detector properly
- Although not detected, it was learnt that 8.8 kHz signals are transmitted 0.1Hz
 - Directional ULB detectors need to be rotated at a much slower rate
 - TSIB procured LF ULB to test functionality and operation of equipment

Attachment to NTSB

Atlas Air 3591

Trinity Bay, Houston

25 Feb – 6 Mar 2019

Attachment to NTSB



- **Atlas Air 3591** crashed into Trinity Bay, Houston, USA on 23 Feb 2019
- A **Boeing 767-300F (BCF)** carrying 2 pilots, 1 non-revenue pilot on the jump seat
- Miami to Houston
- 2 TSIB investigators travelled to Houston for attachment to NTSB's field investigation
- Attachment period: **25 Feb – 6 Mar 2019**

Lessons Learned

Command Centre

- Community Hall (approx. size of 3 TSIB conference room)
- Equipped with
 - Wireless Internet
 - Cable Phone
 - Microphone
 - Projector/projector screen
 - Snacks and beverage
- Administration & welfare support from County Judge Department



Lessons Learned

Environmental conditions at Crash Site

- Marshland
- Temperature: 0°C to 15°C, rain
- Attire:
 - Windbreaker
 - Fleece Jacket
 - Rubber Boots

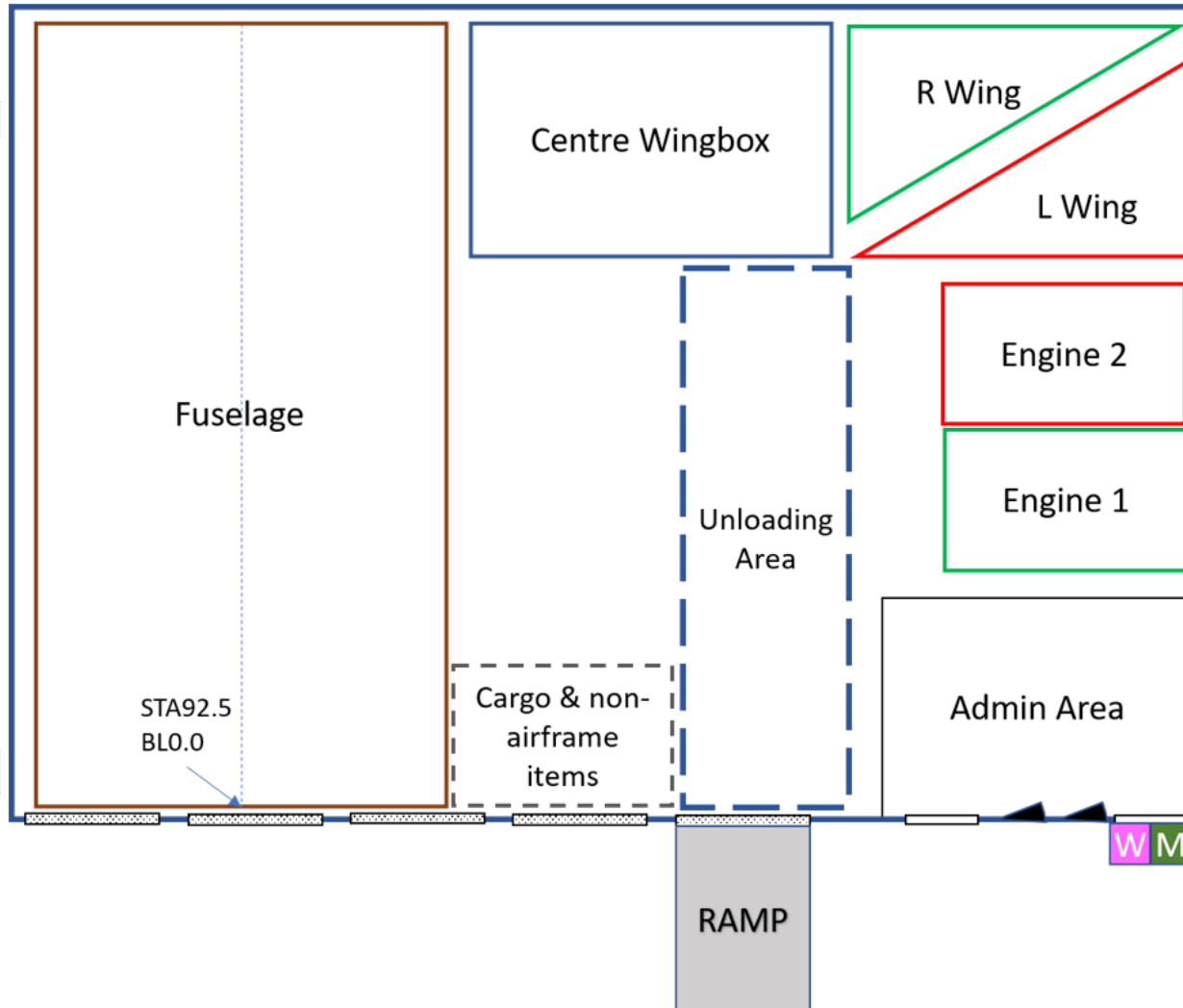
- Other equipment:
 - Hip waders
 - Life jackets
 - Gloves
 - Masks
 - Protective glasses
 - Hard hat/ bump cap
- Medic and ambulance onsite ready to respond

Lessons Learned

Wreckage Storage

- A hangar secured as temporary storage near the crash site (about 5mins drive away) for the storing of:
 - Debris/ personal effects sent by public
 - Small items that were recovered from crash site by the investigation team
- Brainstorming carried out among the stakeholders to decide on items needed.

Sorting of aircraft wreckage



Lesson Learned

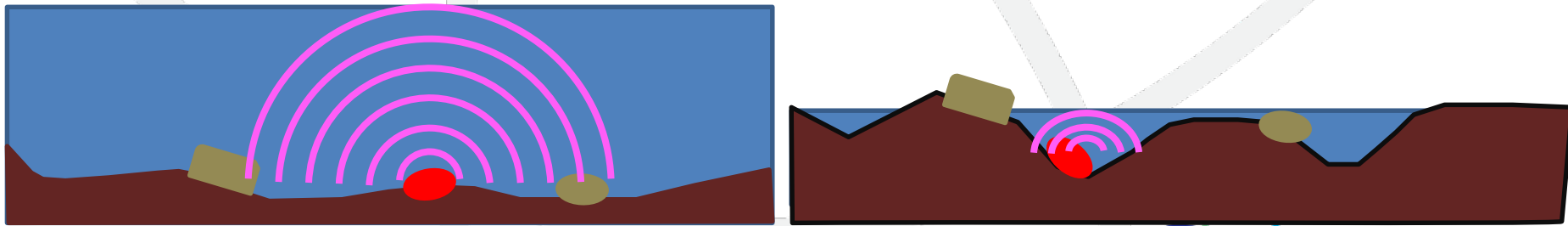
Media

- Difference in media coverage between a cargo flight and a passenger flight.
- NTSB uses:
 - Official press release
 - B-roll clips
 - Facebook, Twitter, Youtube

Flight Recorder

ULB Detection

- No ULB signal detected on first round of search using ULB detector – unsure if the ULBs were damaged or signals impaired by mud or debris
- To determine if ULB signal was affected by mud/debris:
 - 100m range with unsubmerged pinger
 - 20m range with submerged pinger:



Conclusions

- Different challenges faced in underwater search of flight recorders as well as:
 - Opportunity to hone our skill in the search of flight recorders,
 - Review our processes in underwater search of flight recorders as well in the readout of flight recorders;
- Onsite management of field investigation, to review our processes in the following areas:
 - Site security and the setting up of field command center
 - Handling of media,
 - Coordination with other agencies,
 - Arrangement for the recovery and storage of wreckage

Appreciations

TSIB would like to thank **Indonesia NTSC & US NTSB** for their graciousness in accommodating TSIB investigators for the attachment opportunities which **exemplified the spirit of international cooperation among investigation agencies.**

Q & A