



# Aviation Accident Investigation

Feb. 2020

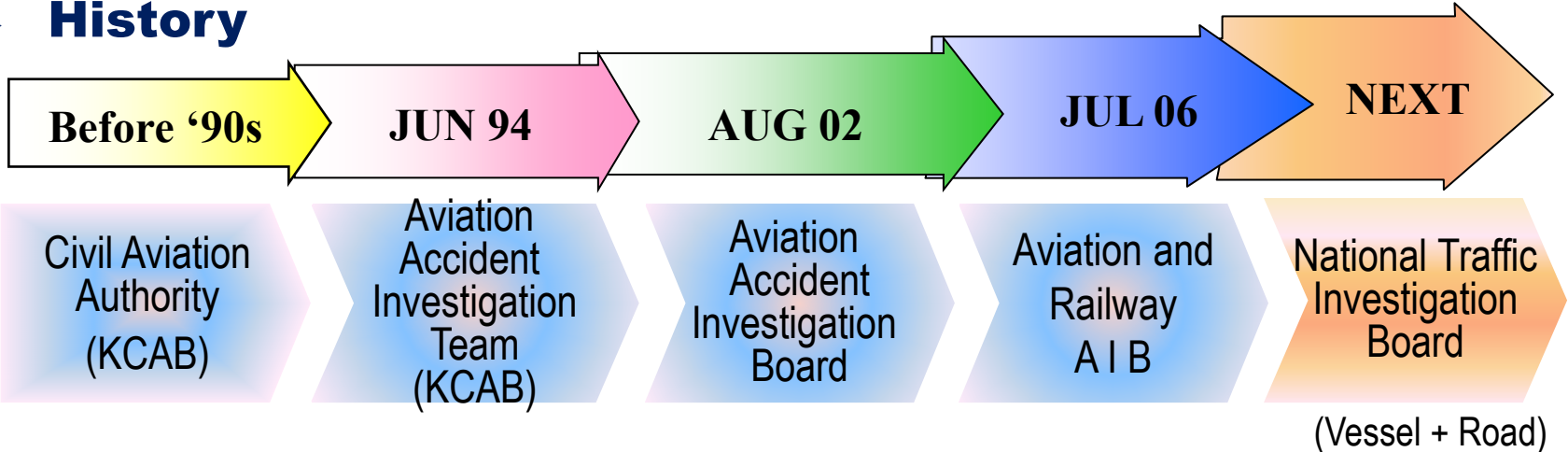
Choi Keun Seob  
Aviation Accident

# ARAIB

➤ **Aviation and Railway Accident Investigation Board**

➤ <http://www.araib.go.kr>

➤ **History**



# History



- JUN 2000 Assessment of compliance with international standards for aviation safety by **ICAO**
- MAY 2001 Assessment of Aviation Safety by **FAA**
  -  **Downgraded to Level 2 (17 Aug 01)**
- AUG 2002 Independent aviation accident investigation functions from CAA (KCAB)  
Established “Aviation Accident Investigation Committee”
- JUL 2006 Integration Aviation and Railway accident investigation (Enhance accident investigation system and capability)
  -  **“ARAIB”**

# Introduction



- The International Standards of Aviation Accident Investigation is contained in Annex 13.
- The Republic of Korea is applying international standards and also conducts the aviation accident investigation in accordance with Annex 13.
- Korea's aviation accident investigation is conducted according to the “Aviation Safety Act” and the “Aviation and Railway Accident Investigation Act”.
- Aviation accident investigation regulations and manual.
  - ✓ ARAIB Operational Provisions
  - ✓ ARAIB Accident Investigation Manual
  - ✓ ARAIB Investigator training Manual
  - ✓ ETCs

# Classification of accidents



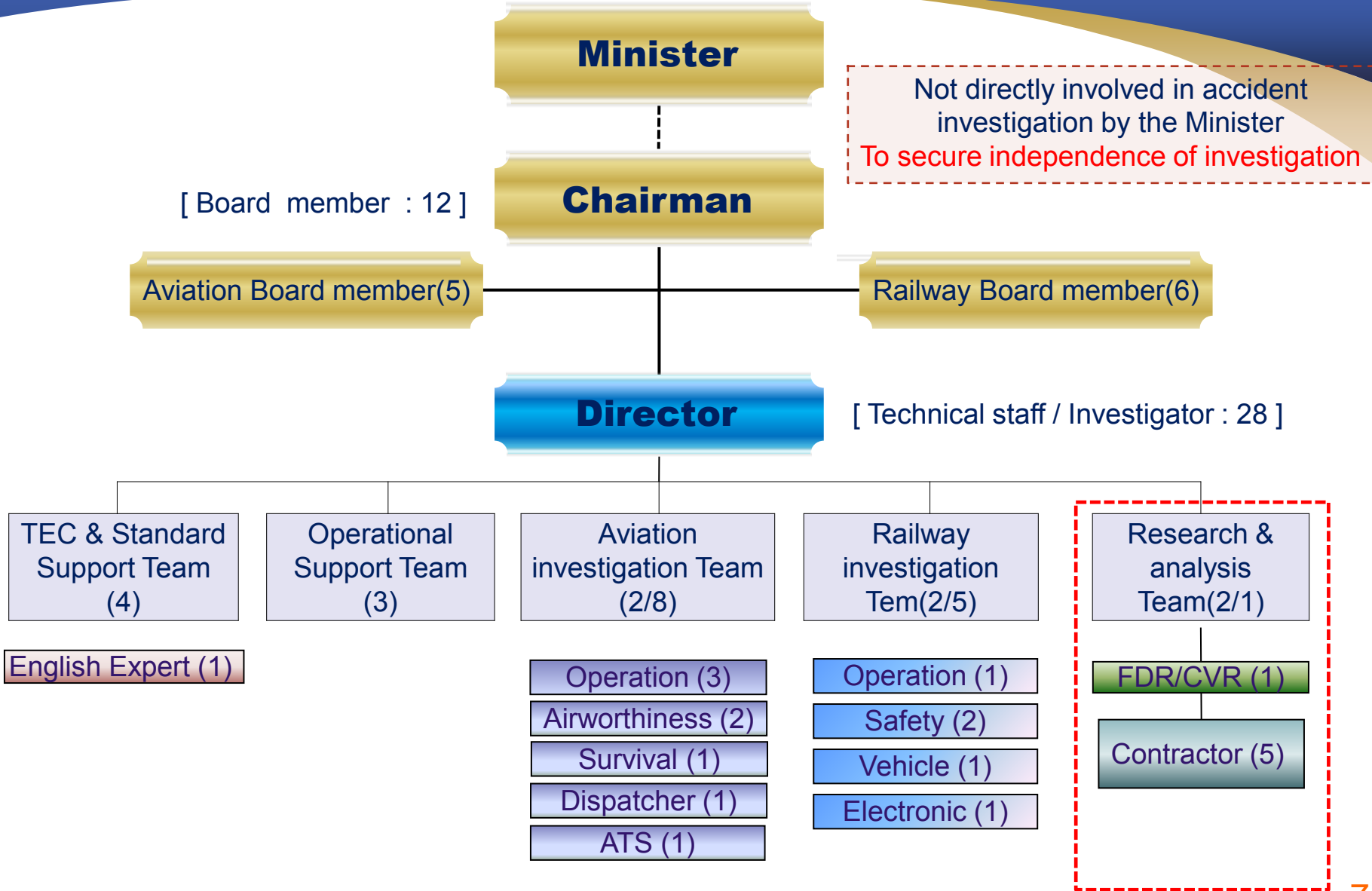
- The classification of accidents under the Aviation Safety Act is as follows.
  - ✓ Aircraft Accidents and Serious Incidents
  - ✓ Light Sports Aircraft Accidents
  - ✓ Ultra-Light Vehicles Accidents
  
- The Accident investigation performed by ARAIB
  
- Also, The factual investigation performed by Korea Office of Civil Aviation(KOCA)
  - ✓ Aviation incident & safety occurrence

# Definition of aircraft

According to the Aviation Safety Act,  
there are three types of aircraft, each of which is as follows:

- **Aircraft:** Any machine prescribed by MOLIT, that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. (airplane, helicopter, airship, glider, UAS: Weight more than 150kg)
- **Light Aircraft:** Any light flying machine other than Aircraft prescribed by MOLIT. (typically weight less than 600kg, and 2 seats - airplane, helicopter, gyroplane, powered parachute)
- **Ultra-Light vehicle:** Any flying machine other than Aircraft and Light Aircraft. (typically weight less than 115kg, and 1 seats - powered flying machines, hang gliders, paragliders, hot air balloons, unmanned aerial vehicles, etc.)

# Organization



# Facilities



Seoul dispatch  
Research & analysis room  
(Gimpo Airport)



(Gimpo & Incheon  
Airport)  
Wreckage storage



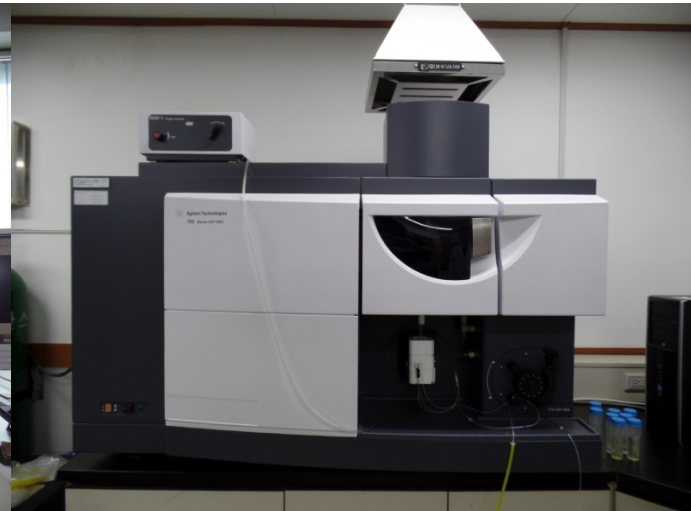
ARAIB (Government BLD)

# Equipment

## Analysis/Test equipment(32)

**Metallurgical  
Analysis Lab : 23**  
(Metal 7 / Chemical 6 /  
Support 10)

**Flight Recorder  
Analysis Lab : 9**  
(FDR4+CVR5)



# Purpose and Functions

## ➤ Purpose

Identification of causes of accidents, prevent accidents and prevent recurrence

✘ Does not identify responsibility, objection

## ➤ Function

- ✓ Independent and fair investigation of air and railway accidents
- ✓ Accurate identification of cause of accident
- ✓ Safety improvement recommendations
- ✓ Prevent recurrence of similar accidents

✘ Article 30 of the “Aviation and Railway Accident Investigation Act”  
(Separation from Other Procedures)

Exclusion of interference from judicial or administrative procedures for the investigation of accidents

# Aviation Accidents



## ➤ **Characteristics of aviation accidents**

Public-ness, internationality, enlargement, difficulty in identifying causes, influence of national credibility

## ➤ **Roles of the Board (ARAIB)**

- ✓ Fair investigation
- ✓ Exclusion from political pressure and interference
- ✓ Perform independent investigation

# Accident Investigation



## ➤ **Characteristics of accident investigation**

- ✓ Objectivity, Fairness, Transparency, Scientific, International, Expertise, Investigation of Resources Safety enhancement effect
- ✓ Independence
- ✓ Unlimited investigative rights (subject to safety recommendations)
- ✓ Functional independence from the Civil Aviation Bureau(CAB: responsible for operations, certification, maintenance, qualification, control, airport operations, etc
- ✓ Investigate with unlimited investigative authority are required

## ➤ **Scope of accident investigation**

- ✓ Occurs in the Republic of Korea
- ✓ Occurs in the jurisdiction of the Republic of Korea
- ✓ Airlines of the Republic of Korea originating in the territory of other ICAO Contracting Parties
- ✓ Airlines of the Republic of Korea originating from all countries outside the jurisdiction
- ✓ Chairman consider an accident investigation necessary
- ✓ Appointment of a new representative at the requesting country

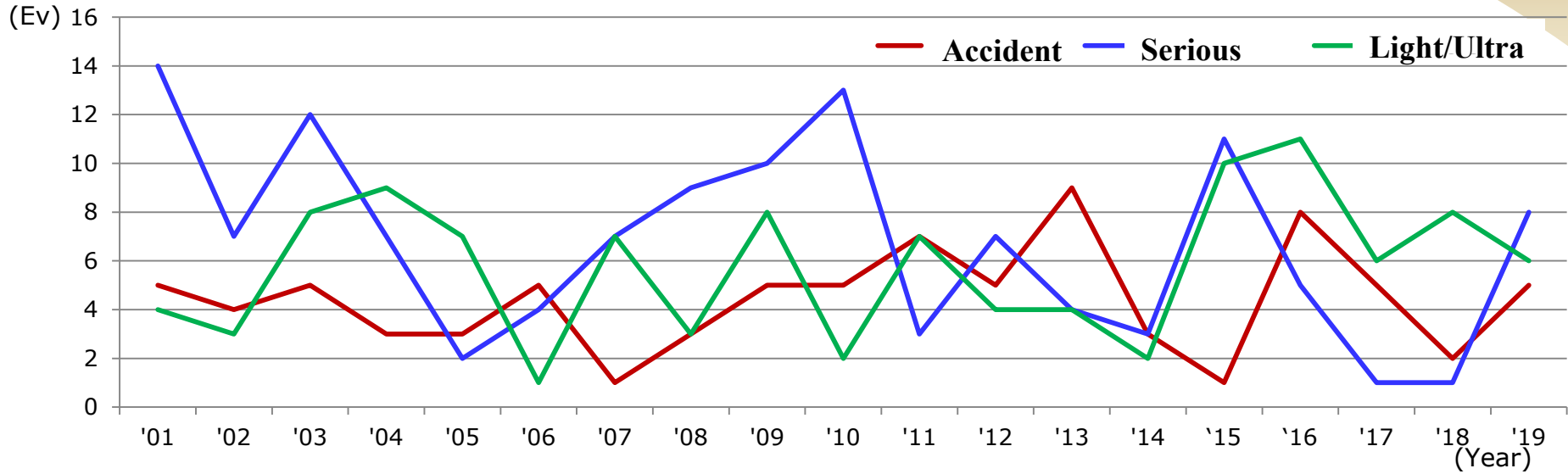
## ➤ **Interference disorder investigation (Article 35)**

- ✓ 3 years in prison or fine of 30 million(30,000\$) won/less
  - Failure to report on aircraft or railway accidents, etc.
  - False report
  - Those who refused / obstructed the submission of material without justifiable reasons

## ➤ **Penalties (Article 38)**

- ✓ Penalty of 10 million(10,000\$) won/less
  - Submission of materials related to air and railway accidents without proper reason Those who avoided or delayed
  - A person who avoids the inspection of related objects
  - Lack of attraction and access control refusal

# Aviation Accident



| Year        | '01 | '02 | '03 | '04 | '05 | '06 | '07 | '08 | '09 | '10 | '11 | '12 | '13 | '14   | '15   | '16   | '17   | '18   | '19    |
|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|-------|-------|-------|-------|--------|
| Accident    | 5   | 4   | 5   | 3   | 3   | 5   | 1   | 3   | 5   | 5   | 7   | 5   | 9   | 3     | 1     | 8     | 5     | 2     | 5      |
| Serious     | 14  | 7   | 12  | 7   | 2   | 4   | 7   | 9   | 10  | 13  | 3   | 7   | 4   | 3     | 11    | 5     | 1     | 1     | 8      |
| Light/Ultra | 4   | 3   | 8   | 9   | 7   | 1   | 7   | 3   | 8   | 2   | 7   | 4   | 4   | 2     | 10    | 11    | 6     | 8     | 6      |
| Total       | 23  | 14  | 25  | 19  | 12  | 10  | 15  | 15  | 23  | 20  | 17  | 16  | 17  | 8     | 22    | 24    | 12    | 11    | 19     |
| AC RGTR     | 282 | 293 | 290 | 293 | 297 | 326 | 420 | 447 | 477 | 514 | 550 | 590 | 623 | 655   | 724   | 760   | 795   | 836   | 853    |
| Light/Ultra |     |     | 274 | 297 | 354 | 394 | 411 | 494 | 605 | 684 | 733 | 651 | 733 | 1,014 | 1,852 | 3,211 | 4,935 | 7,652 | 11,780 |

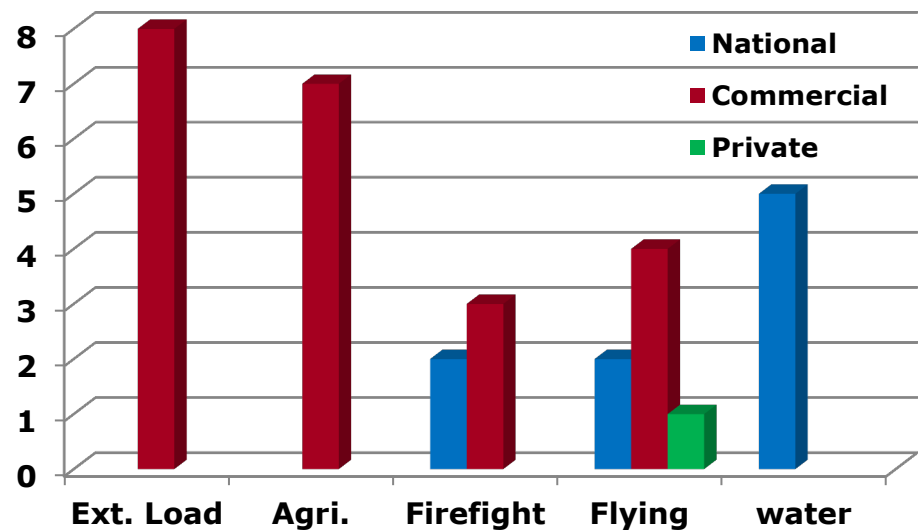
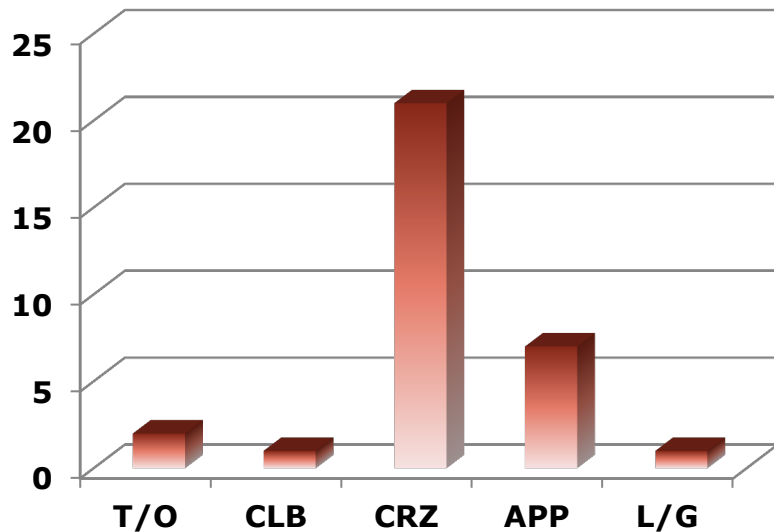
# Accident Investigation



## Helicopter Accident

| Phase        | T/O      | CLB      | CRZ       | APP      | L/G      | Total     |
|--------------|----------|----------|-----------|----------|----------|-----------|
| National     | 1        | 1        | 2         | 5        |          | 9         |
| Commercial   | 1        |          | 19        | 1        | 1        | 22        |
| Private      |          |          |           | 1        |          | 1         |
| <b>Total</b> | <b>2</b> | <b>1</b> | <b>21</b> | <b>7</b> | <b>1</b> | <b>32</b> |

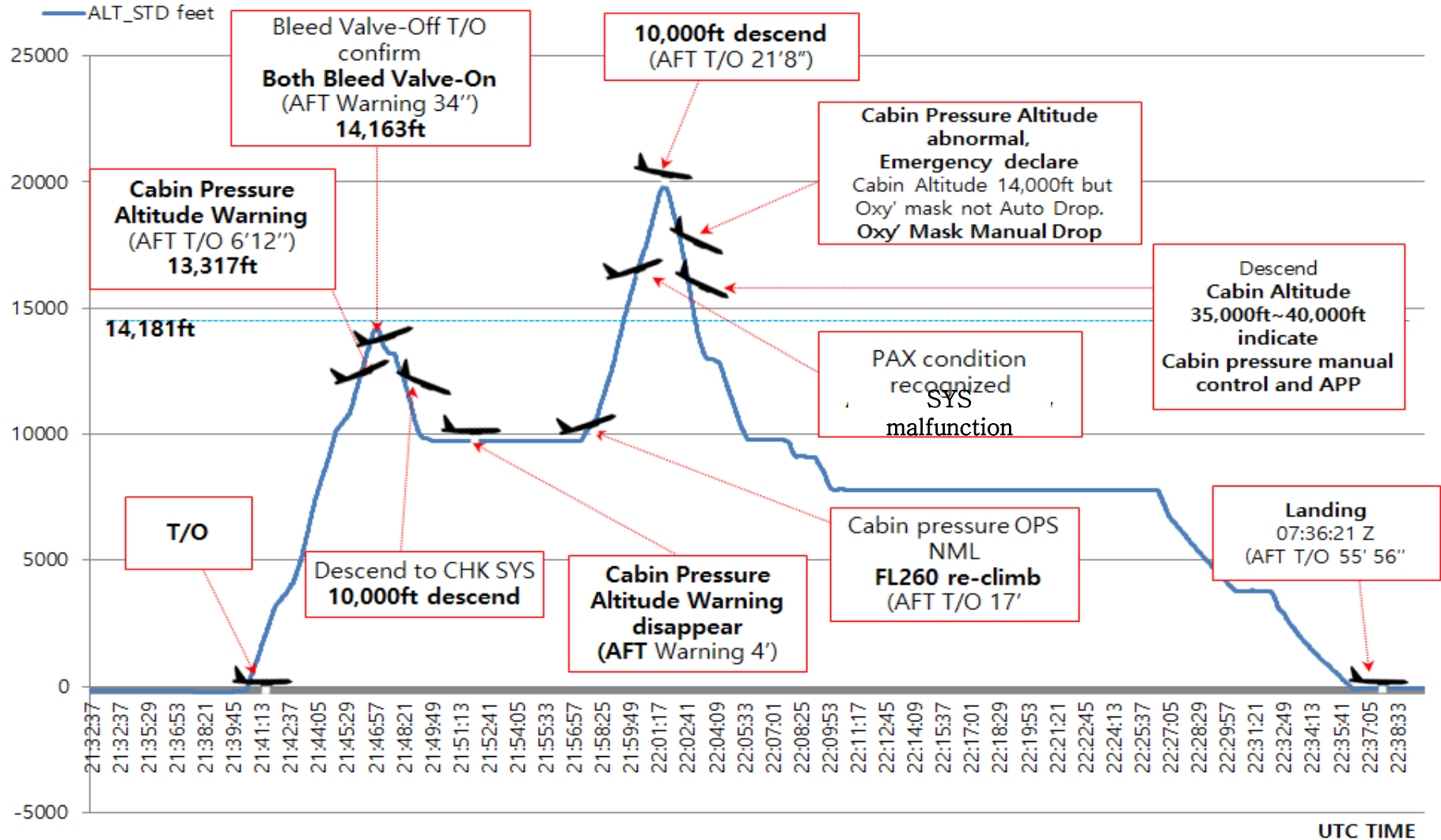
| Mission    | External Load                    | Agriculture | Fire fighting | Flying                           | Containing water |
|------------|----------------------------------|-------------|---------------|----------------------------------|------------------|
| National   |                                  |             | 2             | 2                                | 5                |
| Commercial | 8                                | 7           | 3             | 4                                |                  |
| Private    |                                  |             |               | 1                                |                  |
| -          | CRZ 5<br>T/O 1<br>APP 1<br>LDG 1 | CRZ 7       | CRZ 5         | CRZ 4<br>T/O 1<br>CLB 1<br>APP 1 | APP 5            |



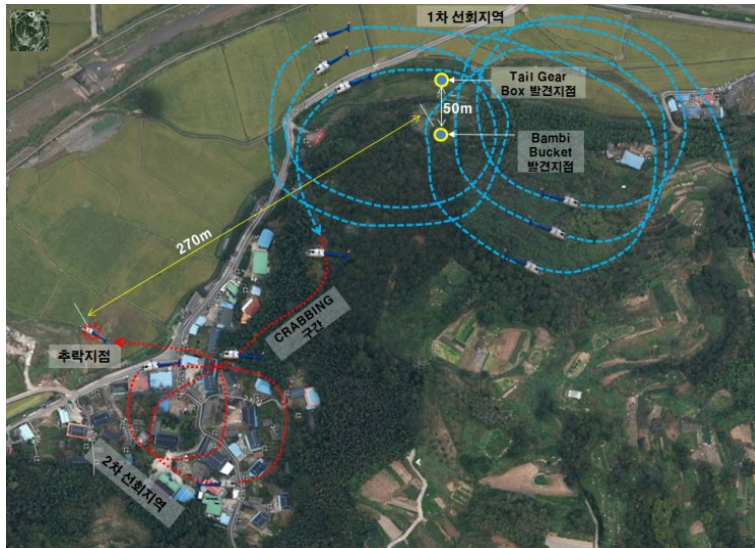
# Accident Cases



## HL8049 (2015.12.23)



# Accident Cases

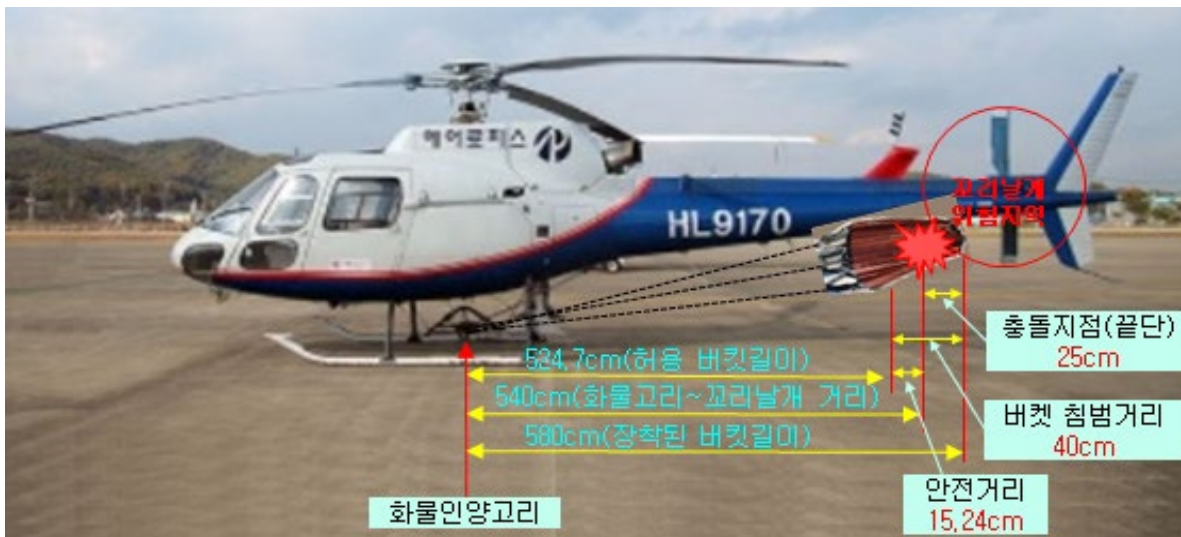


2017.11.16 16:40  
AS350B-2, HL9170

- Occurrence: Bambi bucket hit to the tail rotor
- Cause: Use longer lines than specified in the manual
- Fatal: 1

## Bambi bucket service manual Ver. G (2017.1)

- B/B, the long-line is at least 50' long
- Belly hook to the closest possible point on the tail rotor is at least six inches

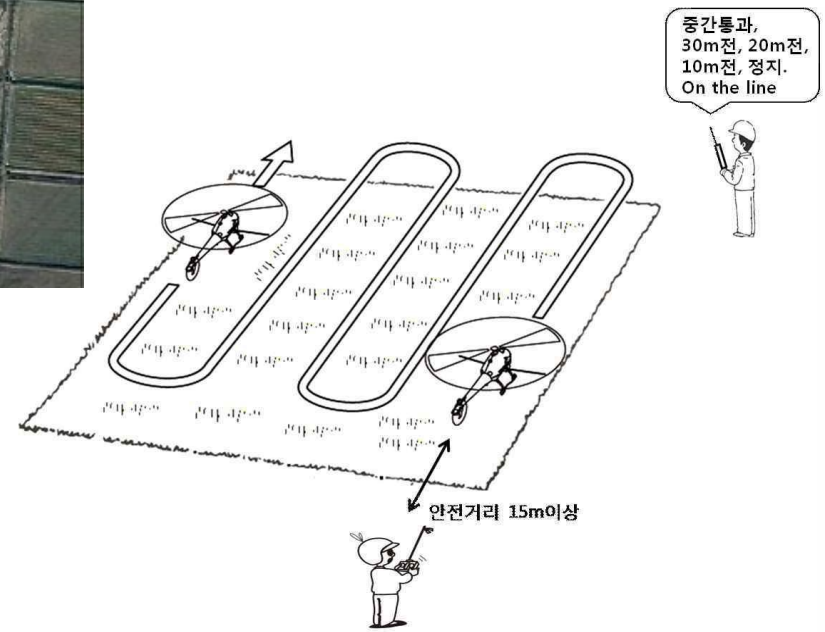


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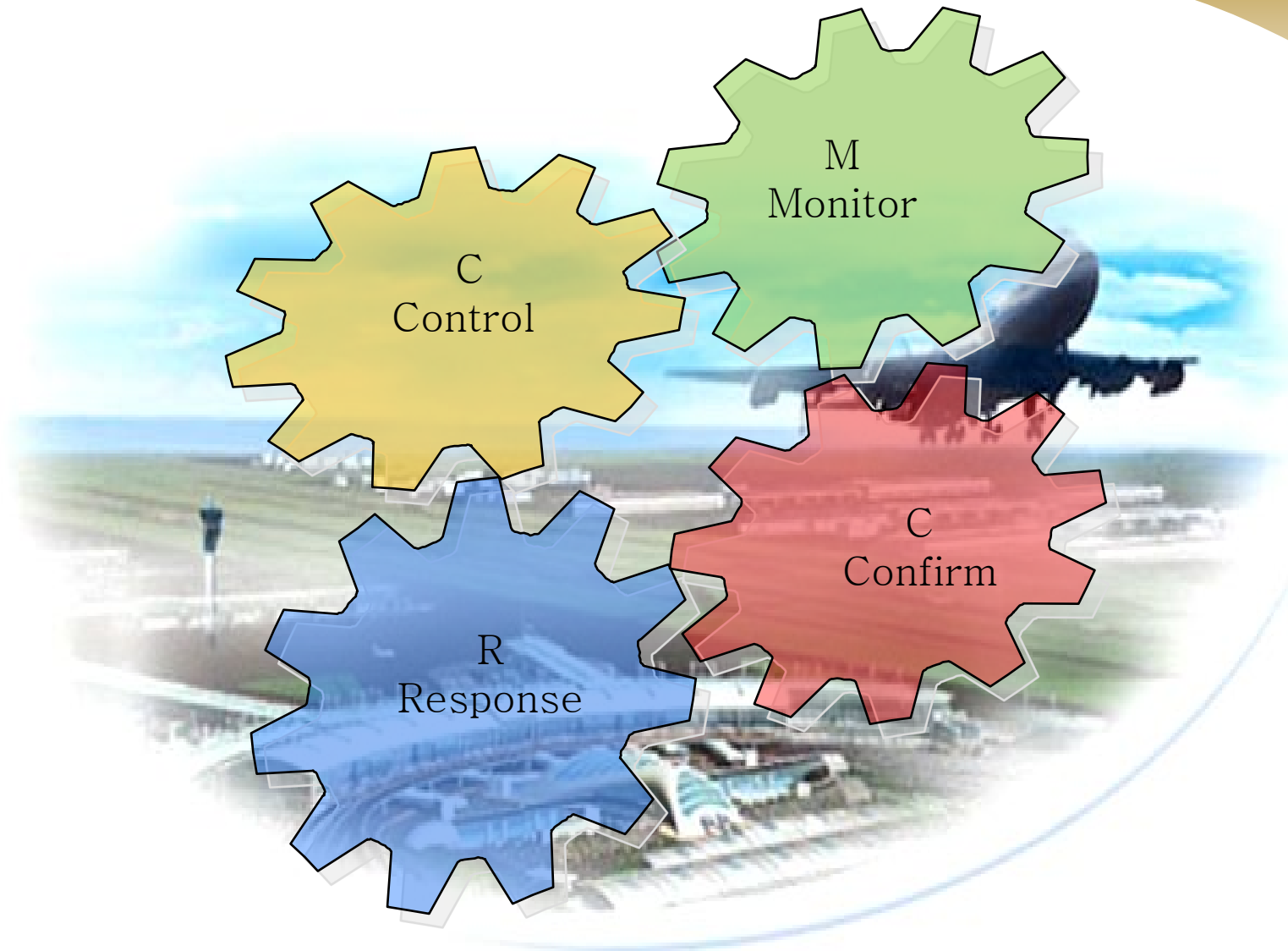


S7346  
REMO-H2 (Unmanned helicopter)  
2015.7.14 06:50

Fatal: 1



# Prevention





Aviation Accident Investigation is  
an essential element to prevent accidents  
recurrence by objectivity and reliability and  
identifying the cause for accidents