



BEA

Bureau d'Enquêtes et d'Analyses
pour la sécurité de l'aviation civile

**Wreckage site located in
mountainous terrain**

GWI18G example

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Senior Safety Investigator

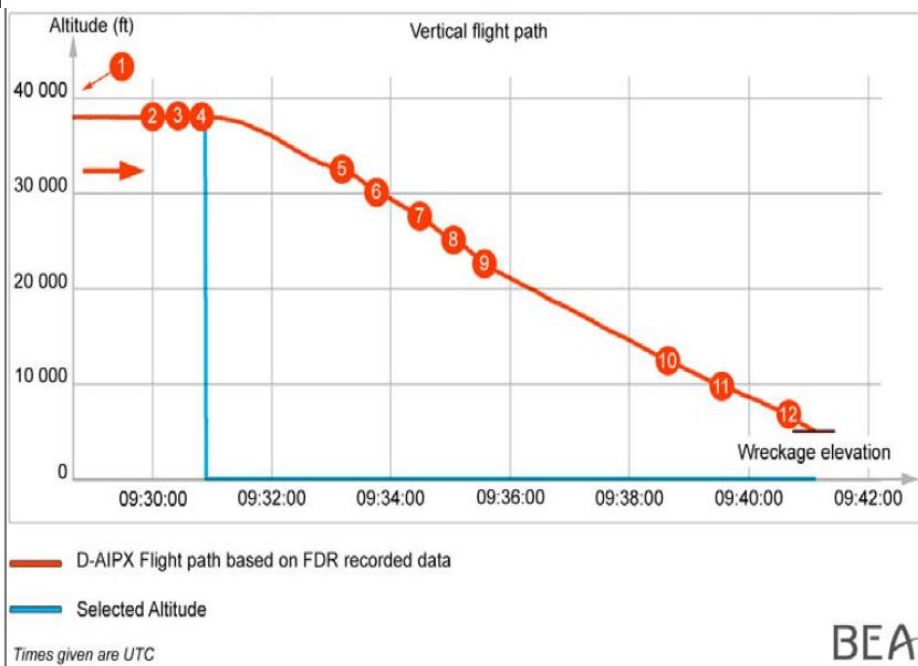
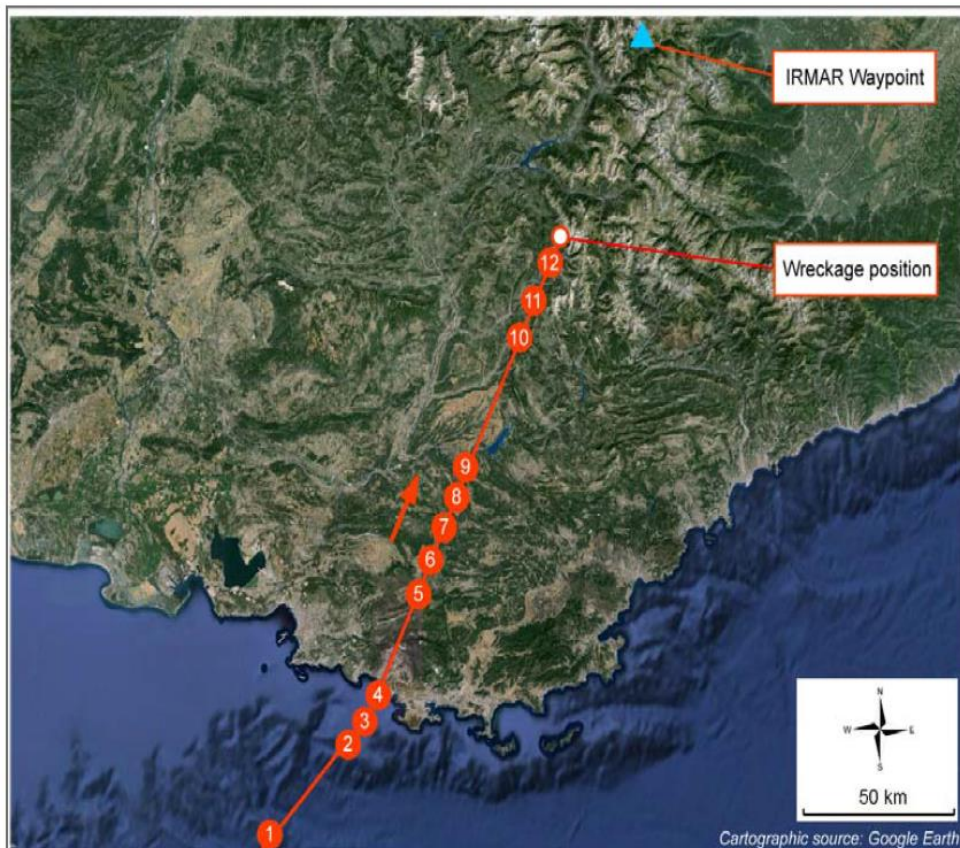
Accident site in mountainous area

- Factual information about the accident
- Human means and equipments
- Reducing on-site risks

Factual information about the accident

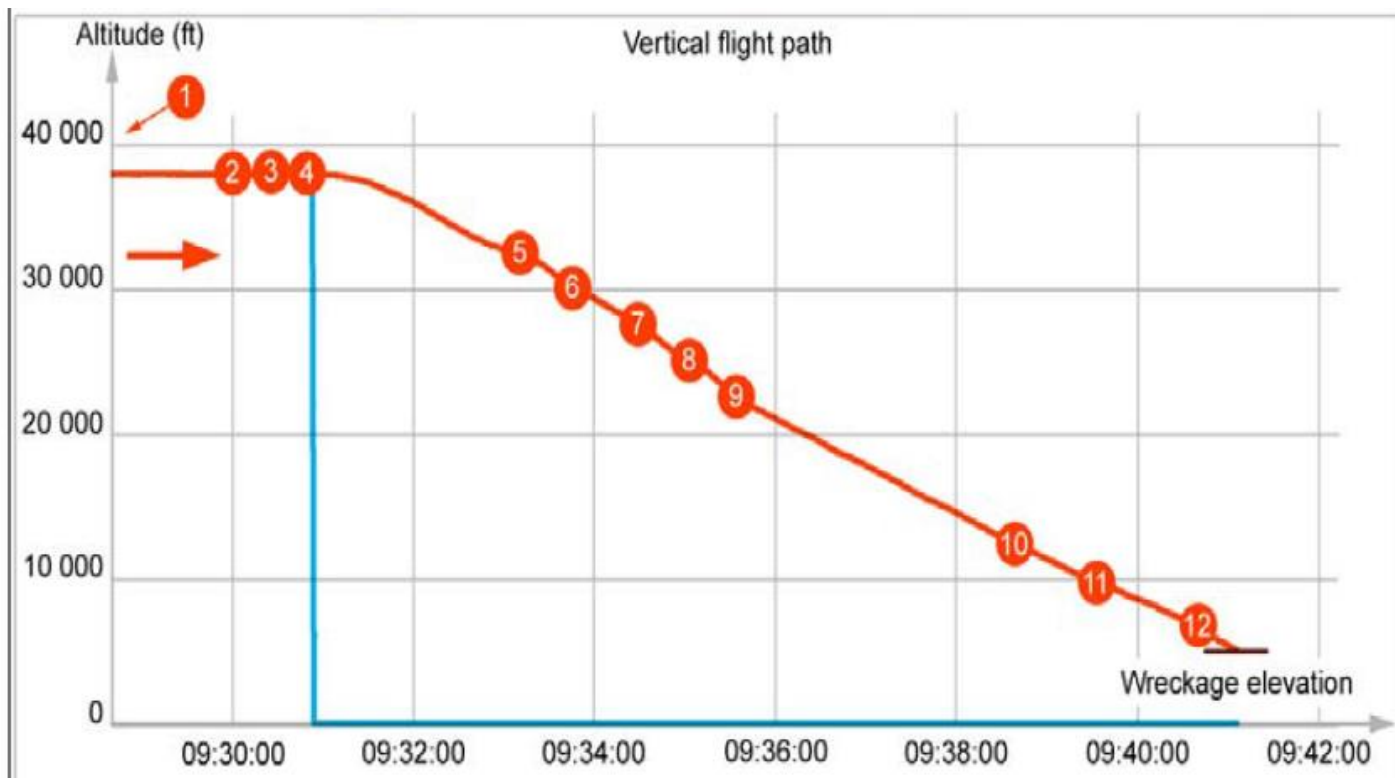
- On **24 March 2015**, **Prads-Haute-Bléone (Alpes-de-Haute-Provence, France)**, an **Airbus A320-211** registered **D-AIPX** operated by **Germanwings**
- Scheduled flight 4U9525 from Barcelona to Dusseldorf
- 2 flight crew and 4 cabin crew
- 144 passengers
- Copilot pilot flying

Factual information about the accident



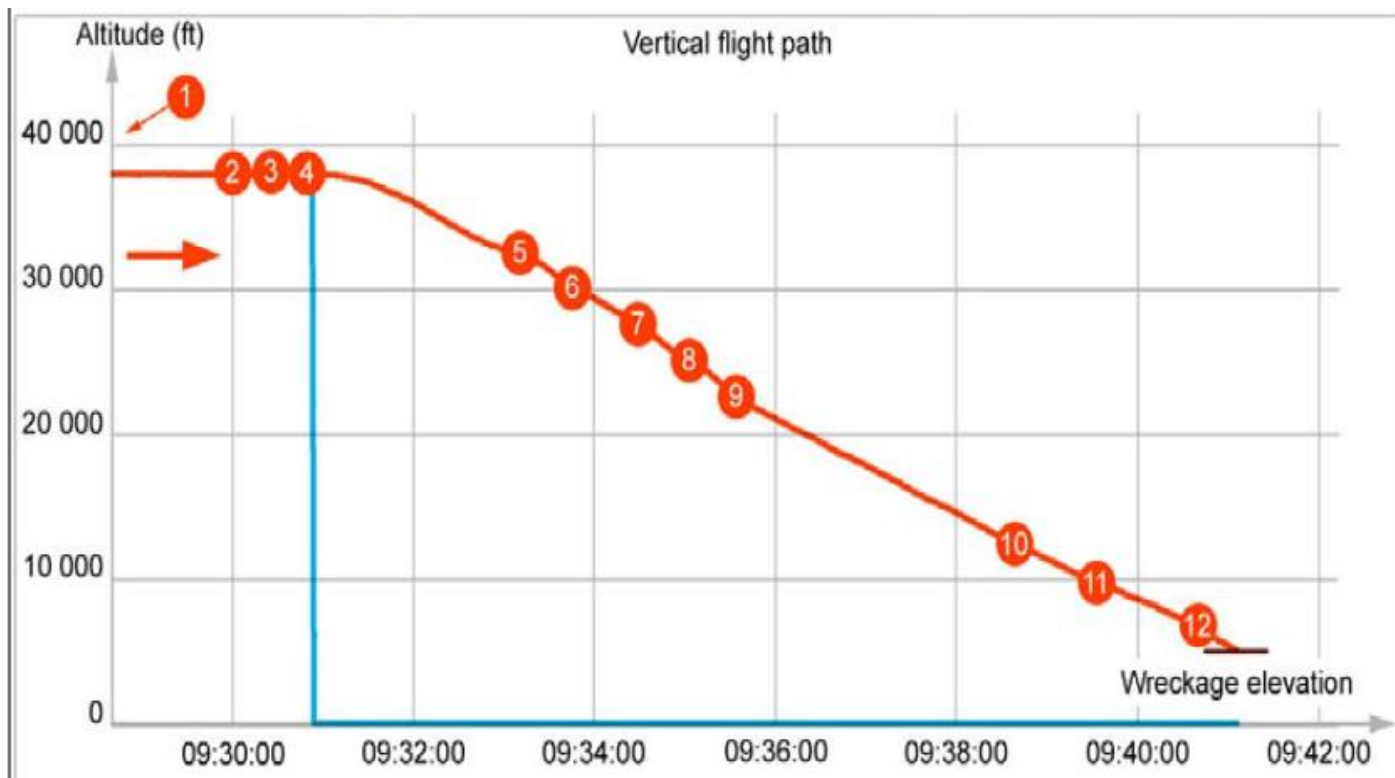
- 1 : Level off at FL 380
- 2 : Last communication with ATC from Captain (direct IRMAR)
- 3 : Captain quit cockpit
- 4 : selected altitude 38000 to 100 ft and A/P in OPEN DES mode

Factual information about the accident



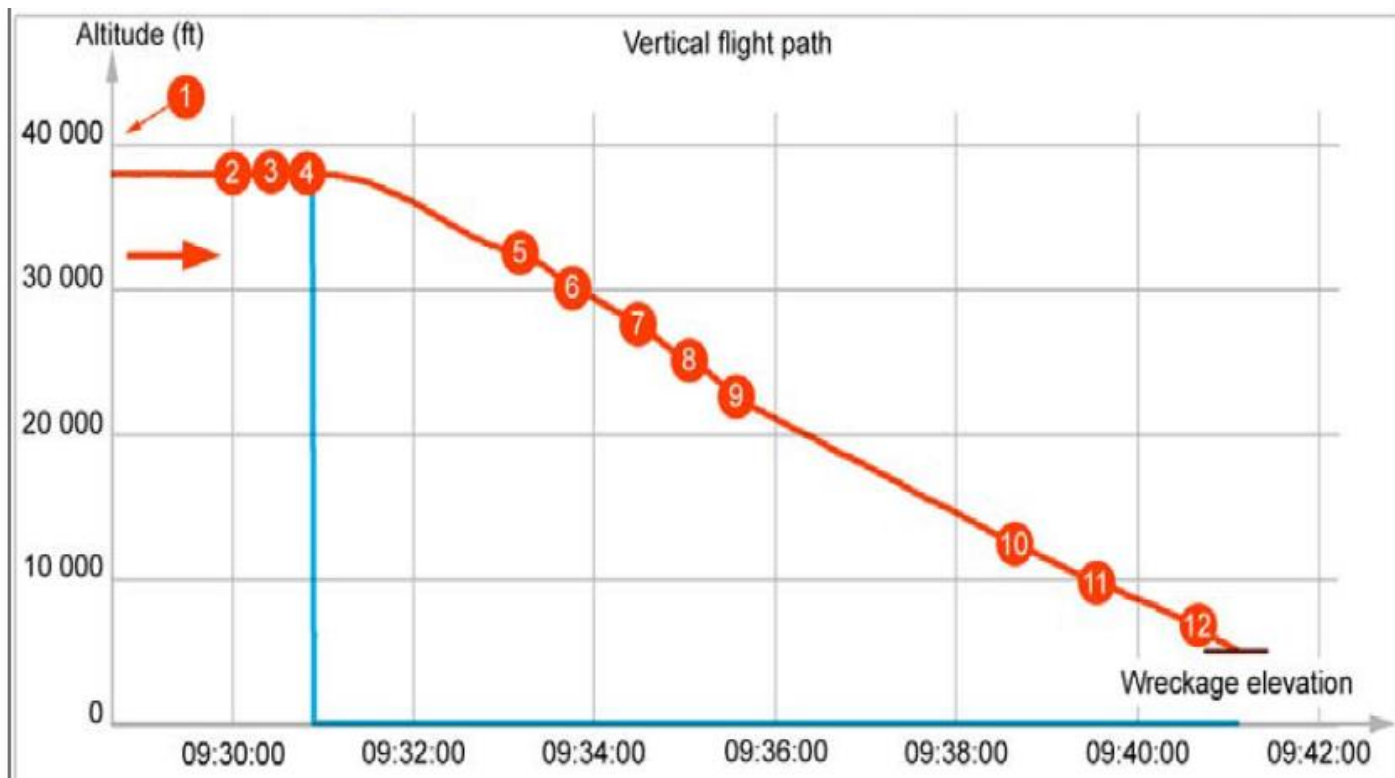
- 5 : selected speed 308 kt (from 273 kt)
- 6 : ATC ask to level, no answer
- 7 : buzzer requesting cockpit access
- 8 : selected speed 350 kt

Factual information about the accident



- Cockpit call signal from the cabin interphone (4 times between 9h35min04 and 9h39min27)
- 5 calls from ATC on 2 frequencies from 9h35min07 to 9h37min54, no answer
- 9 : knock at the door on 6 occasions until 9h39min02
- Muffled voices several times from 9h37min11 to 9h40min 48
- 10 : French Air Defense calls 3 times, no answer

Factual information about the accident

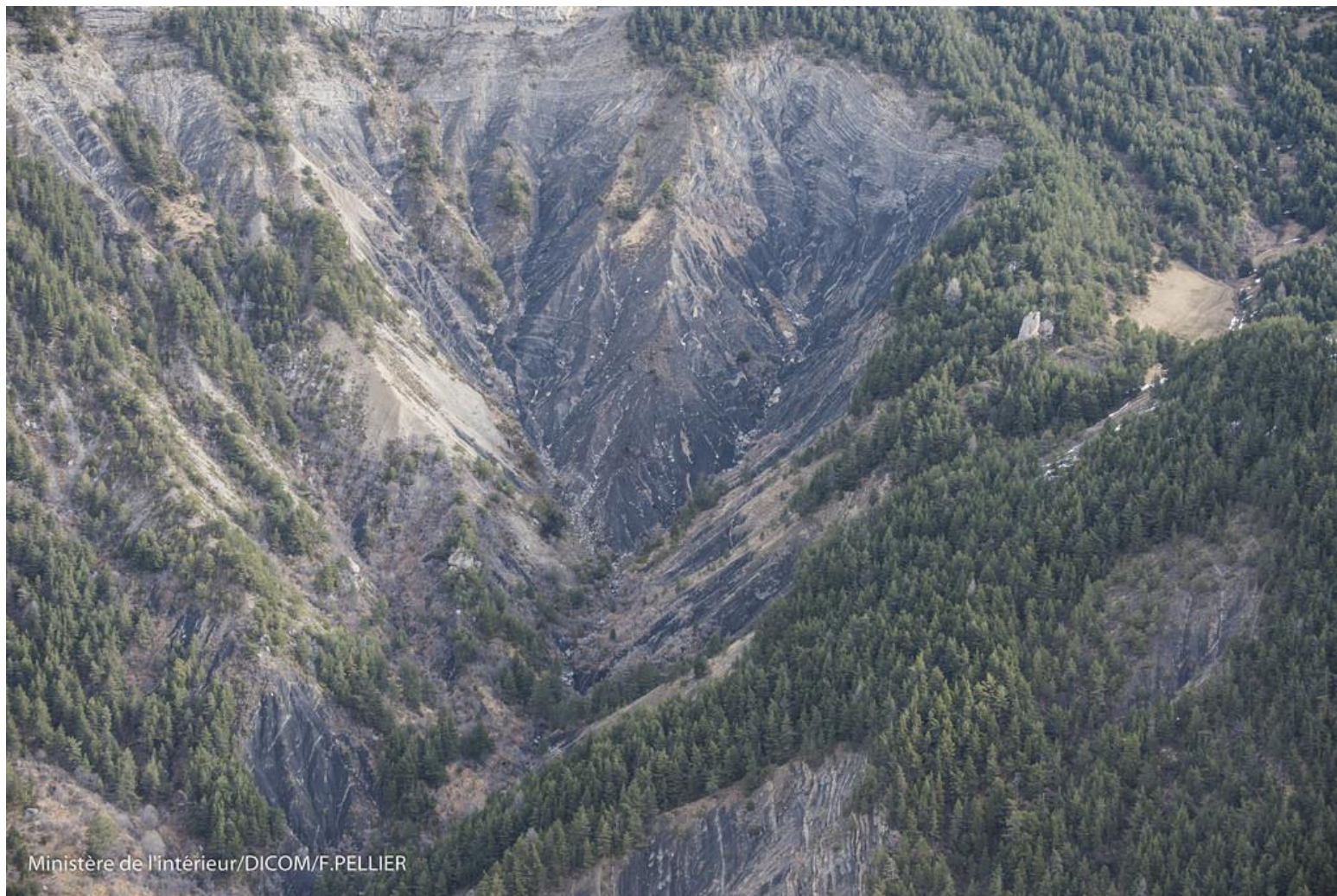


- 11 : noise of violent blows on the cockpit door (5 times)
- Low amplitude inputs of the copilot sidestick from 9h39min33 to 9h40min07
- Another aircraft tries to contact at 9h39min54, no answer
- 12 : GPWS « Terrain terrain pull up pull up »

Factual information about the accident

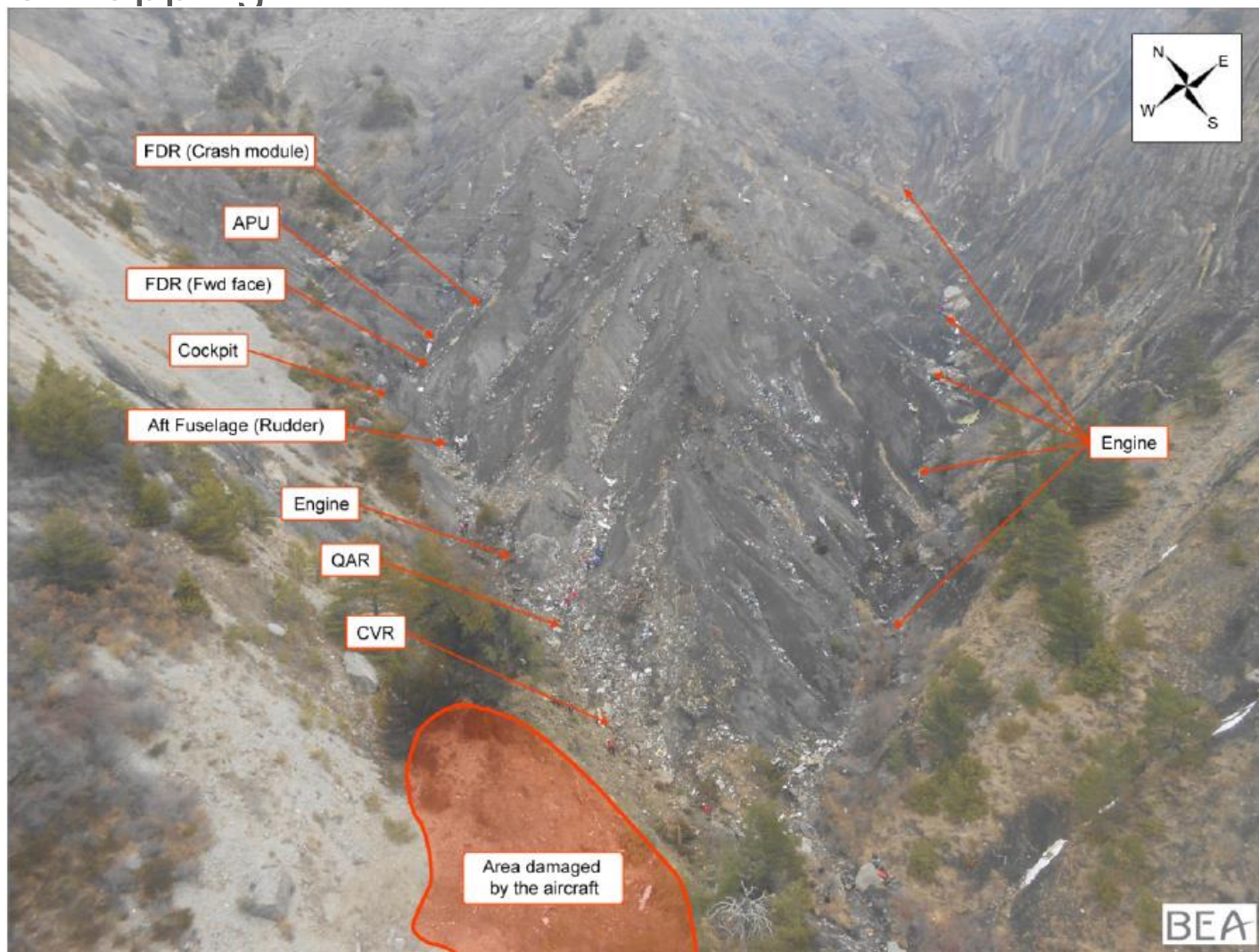
- Two main investigative orientations :
 - ➔ Medical aspects (how and why pilots in cockpit with intention to commit suicide) ?
 - ➔ Cockpit security (security vs flight safety – cockpit door locking and access and exit procedures)

Factual information about the accident

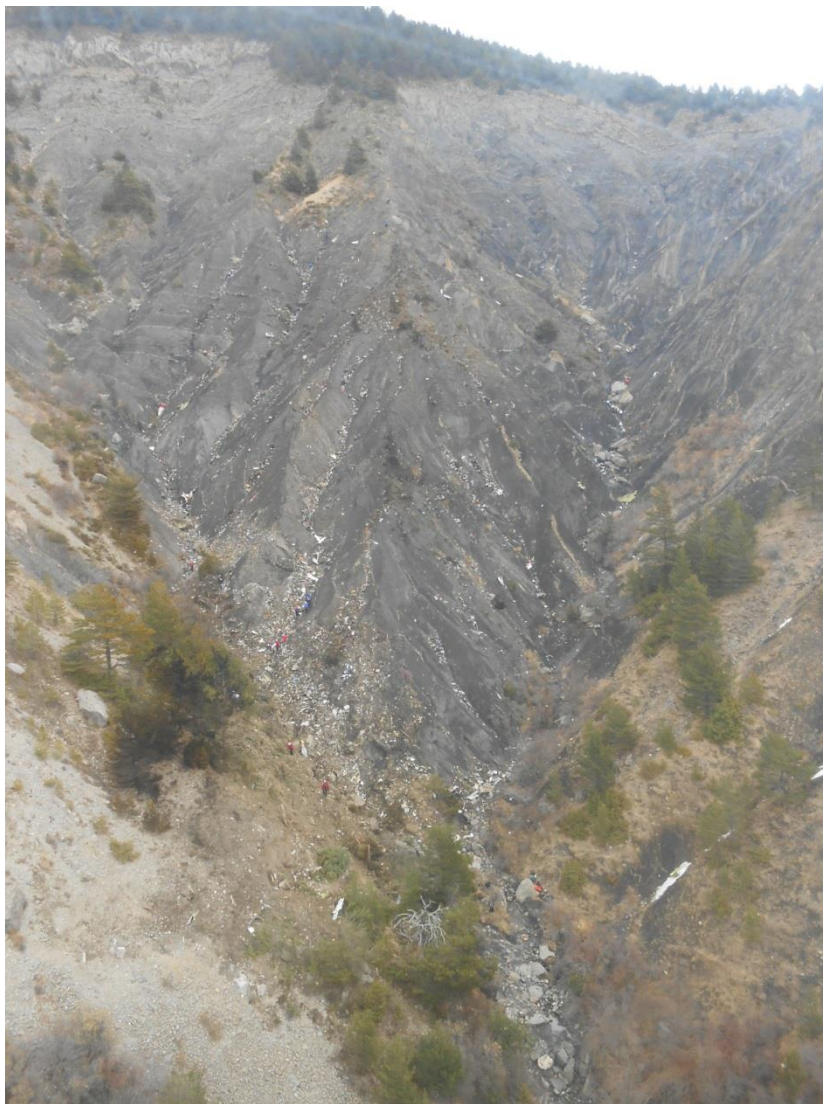


Wreckage site – general view

■ Site mapping



Factual information about the accident



Wreckage site – closer view

- Altitude = 1500 m
- Strong slope
 - ➔ Physical constraints
- Vast area
 - ➔ 10 acres (40 000 m²)

BEA One site, many people, many different missions

- Site safety management
- Bodies and personal belongings recovery
- Site access and no-fly zone
- Passenger relatives management
- Media management
- VIP management
- Judicial investigation
- Safety investigation

BEA ■ One site, many people, many different missions

- On site coordination
 - ➔ High level of stress, in particular political dimension
 - ➔ Daily coordination meeting BEA/Judicial authorities
 - ➔ On the wreckage site, 14 to 20 persons at the same time
- Safety investigation strategy
 - ➔ Complete site mapping until CVR and FDR recovery and readout (Day 1 = CVR / Day 5 = QAR / Day 10 = FDR)
 - ➔ relieved plan of action focusing on preliminary findings
 - ➔ After FDR readout : decision to stop on site operations

Human means and equipments

- More than 300 gendarmes and policemen on site (including high mountain specialists)
- 380 firemen
- French army
- Emergency physicians and psychologists
- 7 BEA investigators (including 2 wreckage and 2 recorders specialists)
- 3 BFU, 2 CIAIAC, 1 EASA, 10 GWI + LH, 6 Airbus, 2 SNECMA

Human means and equipments

- 5 helicopters from gendarmerie (on site operations)
- 1 plane for radiocommunications
- 13 helicopters from French Army (no-fly zone, SAR, VIP and specialits transport)
- 3 helicopters and 1 reco plane from firemen services



Many resources available = no need to use BEA's own means

Human means and equipments

- Hotel 30 min from base camp (Seyne les alpes A/D)
- Meeting room nearby village (wifi, photocopier, video projector)



Offroad trucks

Mobile Headquarters



Ministere de l'Interieur/DICOM/P. Chabaud

- Fatigue management
 - ➔ 2 Wreckage Specialists day 1 to 7
 - ➔ 2 WS + 2 Relief team day 8
 - ➔ Only relief team the following days
 - ➔ 8 am to 5 pm non stop (no restroom)
 - ➔ Lunch on site (quick snack)
 - ➔ Food at base camp offered by voluntary association

Reducing on-site risks

- Transportation (1h30 walking / average 45° slope)
 - ➔ Helicopter winching (days 1 to 3)
 - ➔ Helicopter sled drop and recovery due to wind (days 4 to 5)
 - ➔ Offroad truck and walking (days 6 to 7)
 - ➔ By road from day 8



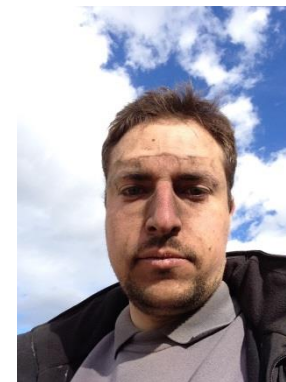
Reducing on-site risks

■ Safety on site

- ➔ FFP3 disposable mask (⚠ breathing)
- ➔ Protective footwear (crushing)
- ➔ Gloves (Kevlar + nitril + leather)
(cut + fluid + perforation)



During



After

- ➔ Helmet and harness

(provided by high mountain specialists)

- ➔ Team = 1 BEA + 1 specialist

(with rope + crampon + ice axe)



■ Dangers on site

- ➔ Poisoning by fuel (smell remaining during 8 days)
- ➔ Composite material (low risk – no massive fire)
- ➔ Psychological risk (body parts)
- ➔ Slippery surface more difficult going up (increasing slope and unsteady ground)



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Reducing on-site risks

- Conclusion

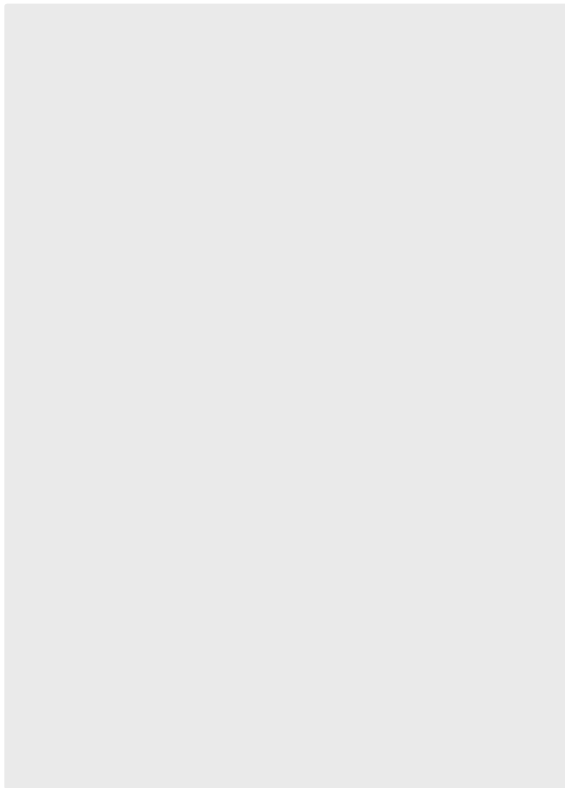
- ➔ No injury or damages except one investigator shoe





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Thank you for your attention

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