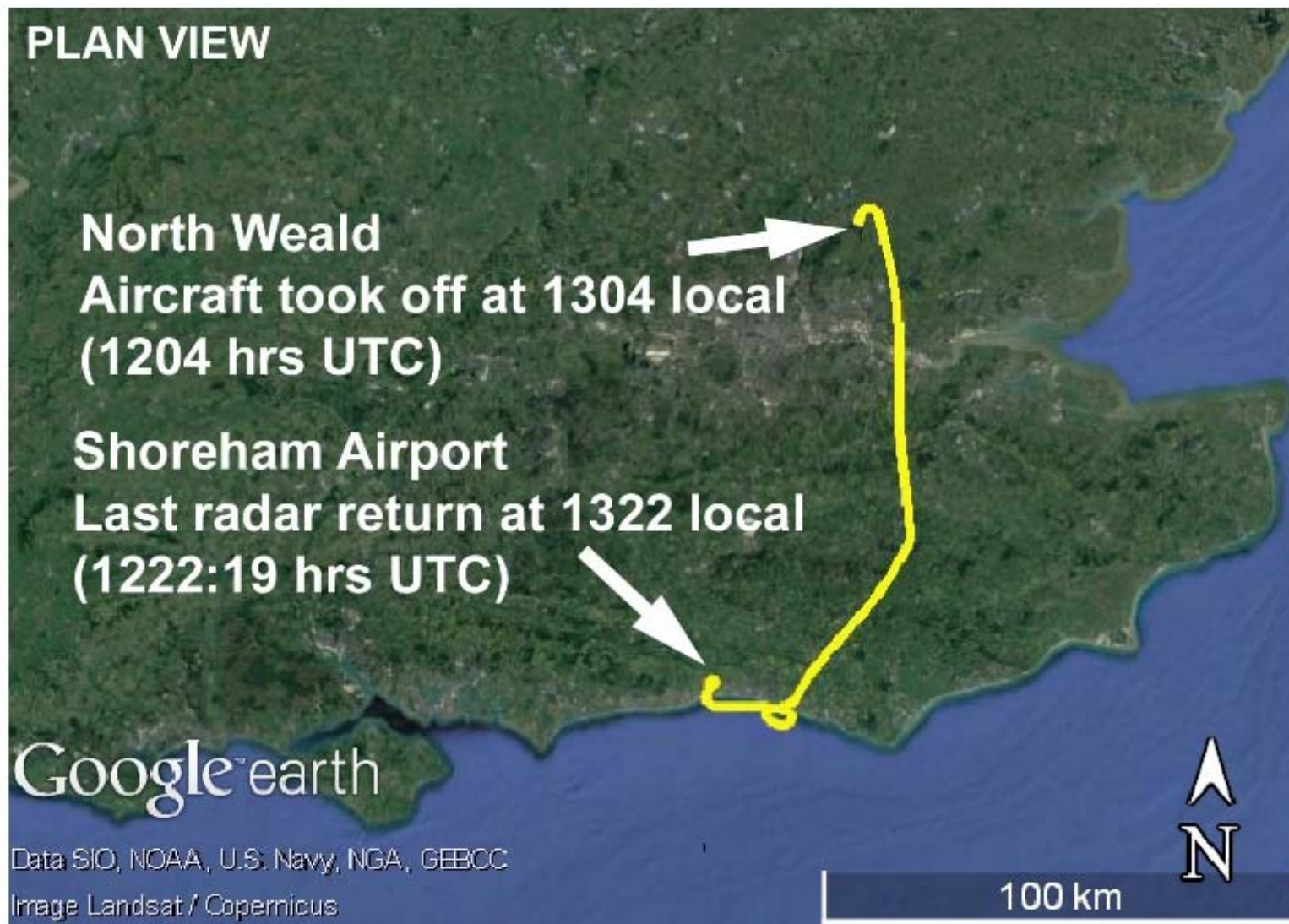
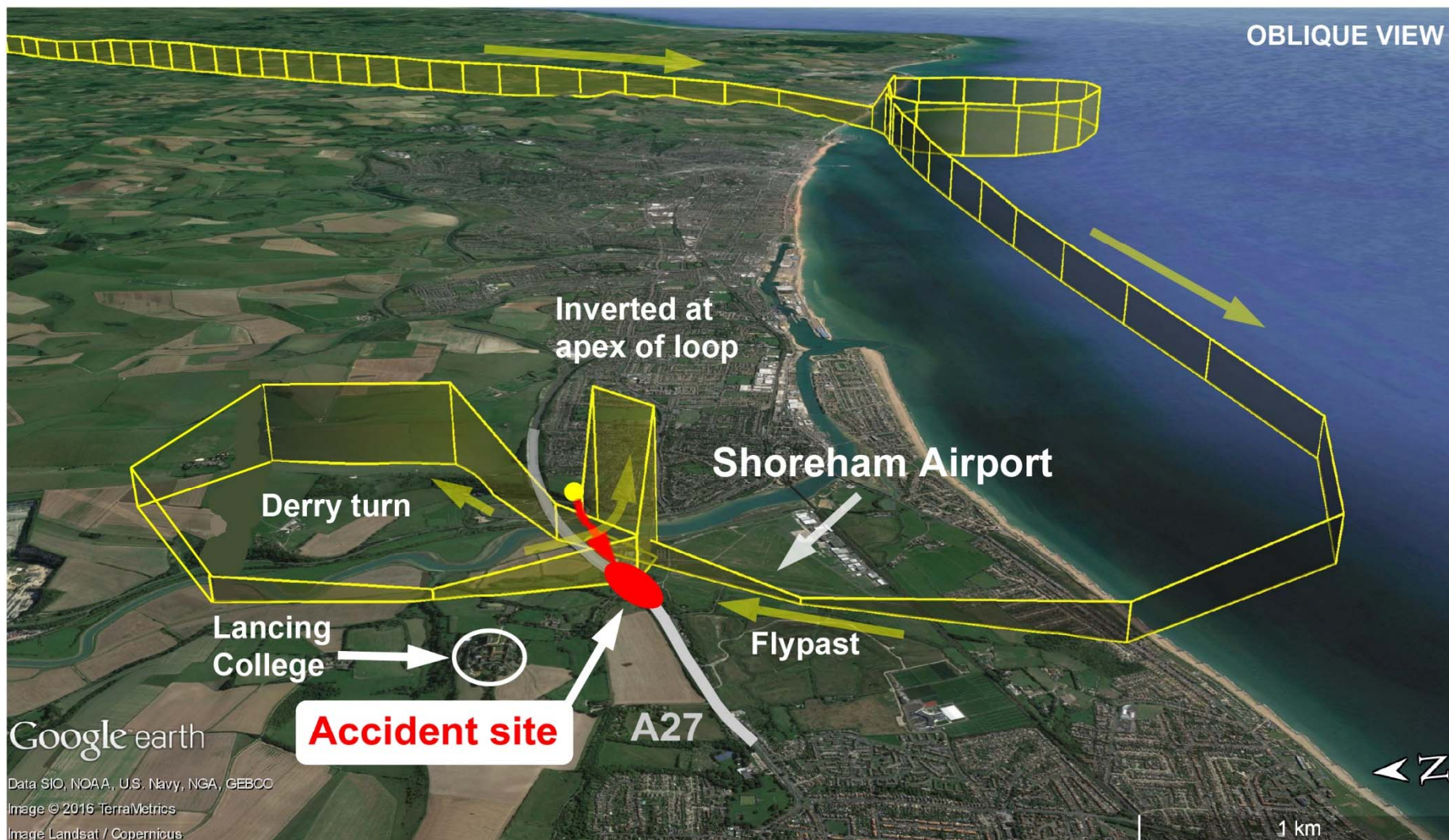




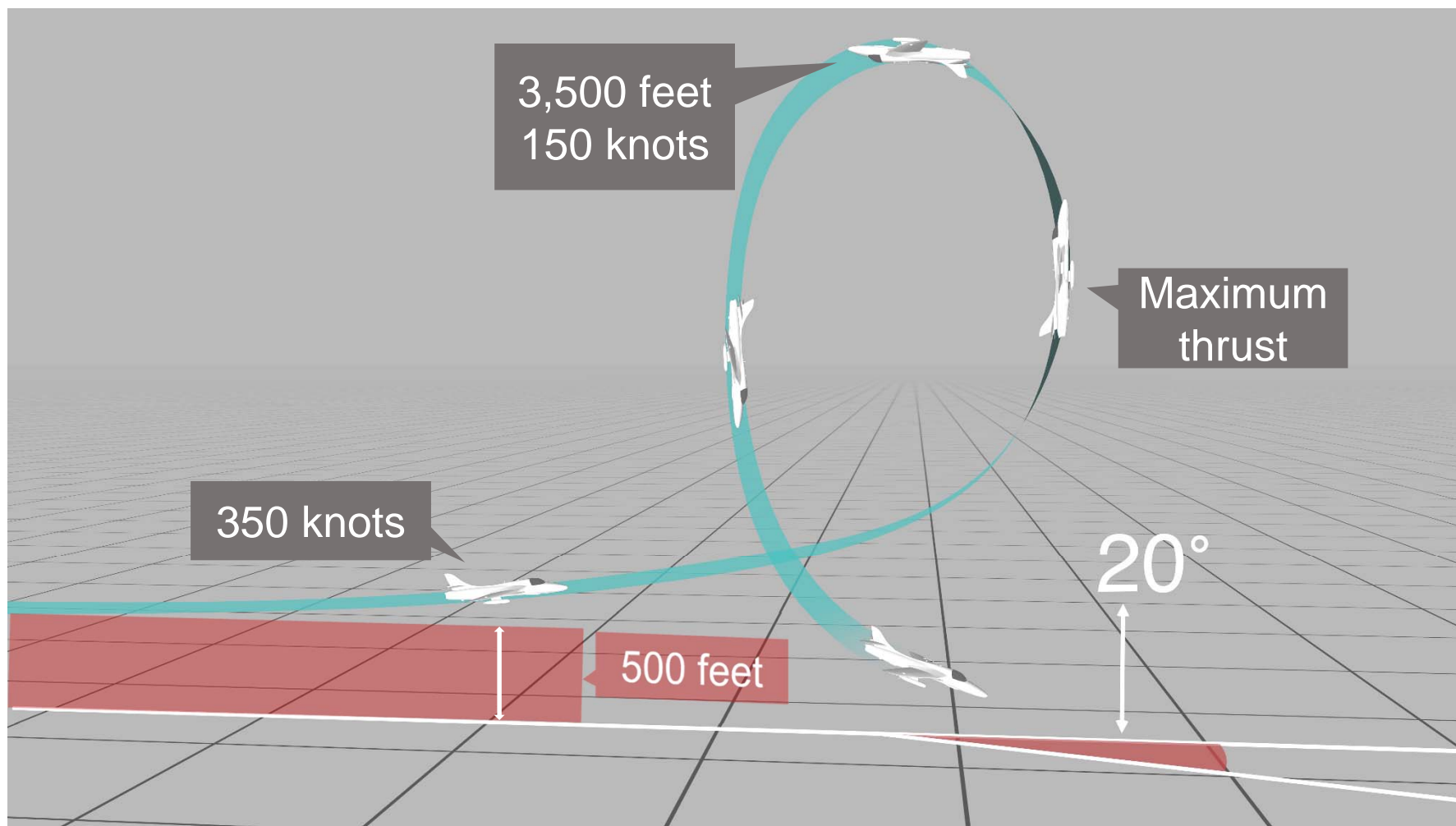
Shoreham Airshow accident 22 August 2015



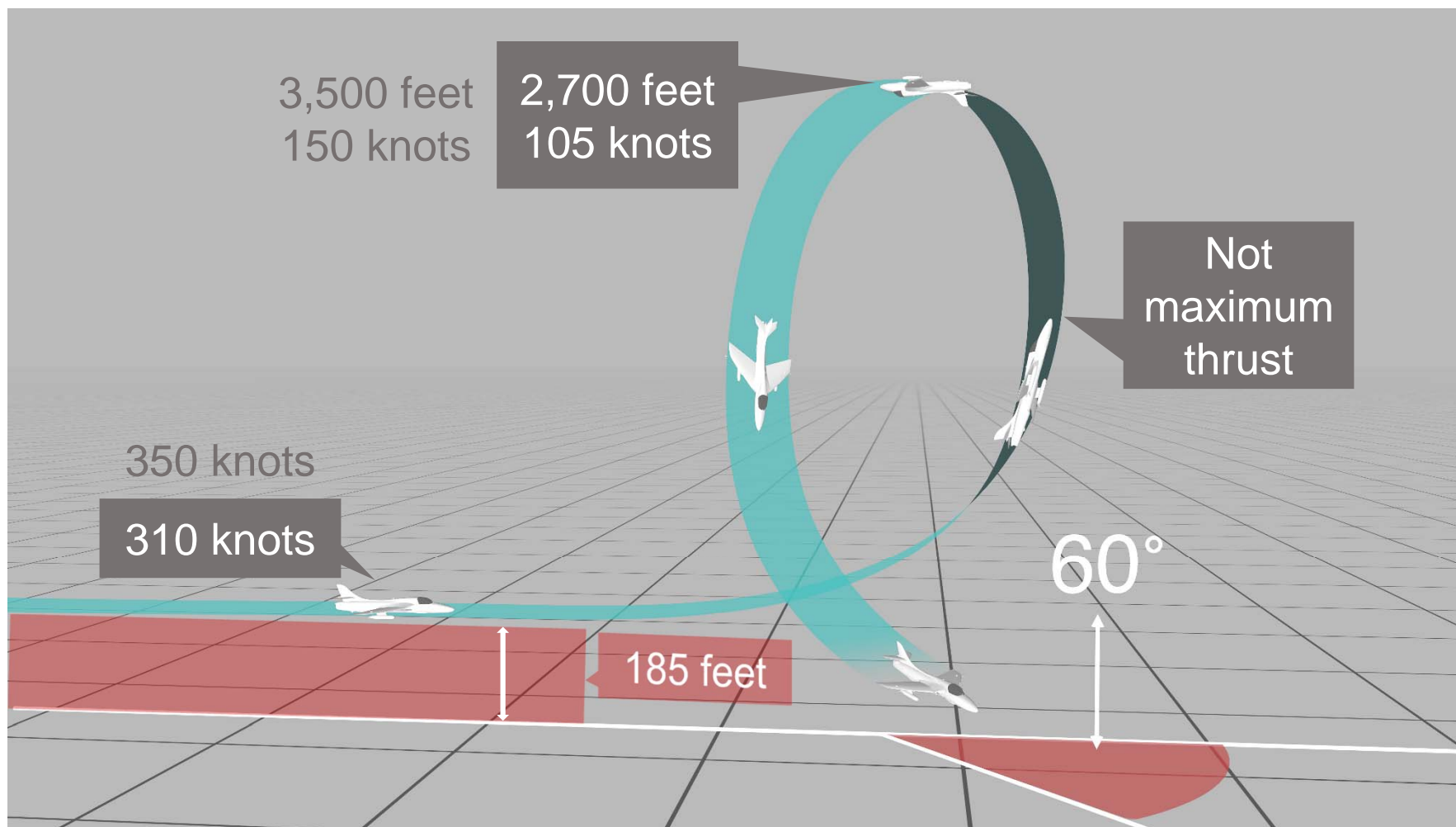


Lines link consecutive radar detection points and do not represent the actual flight path

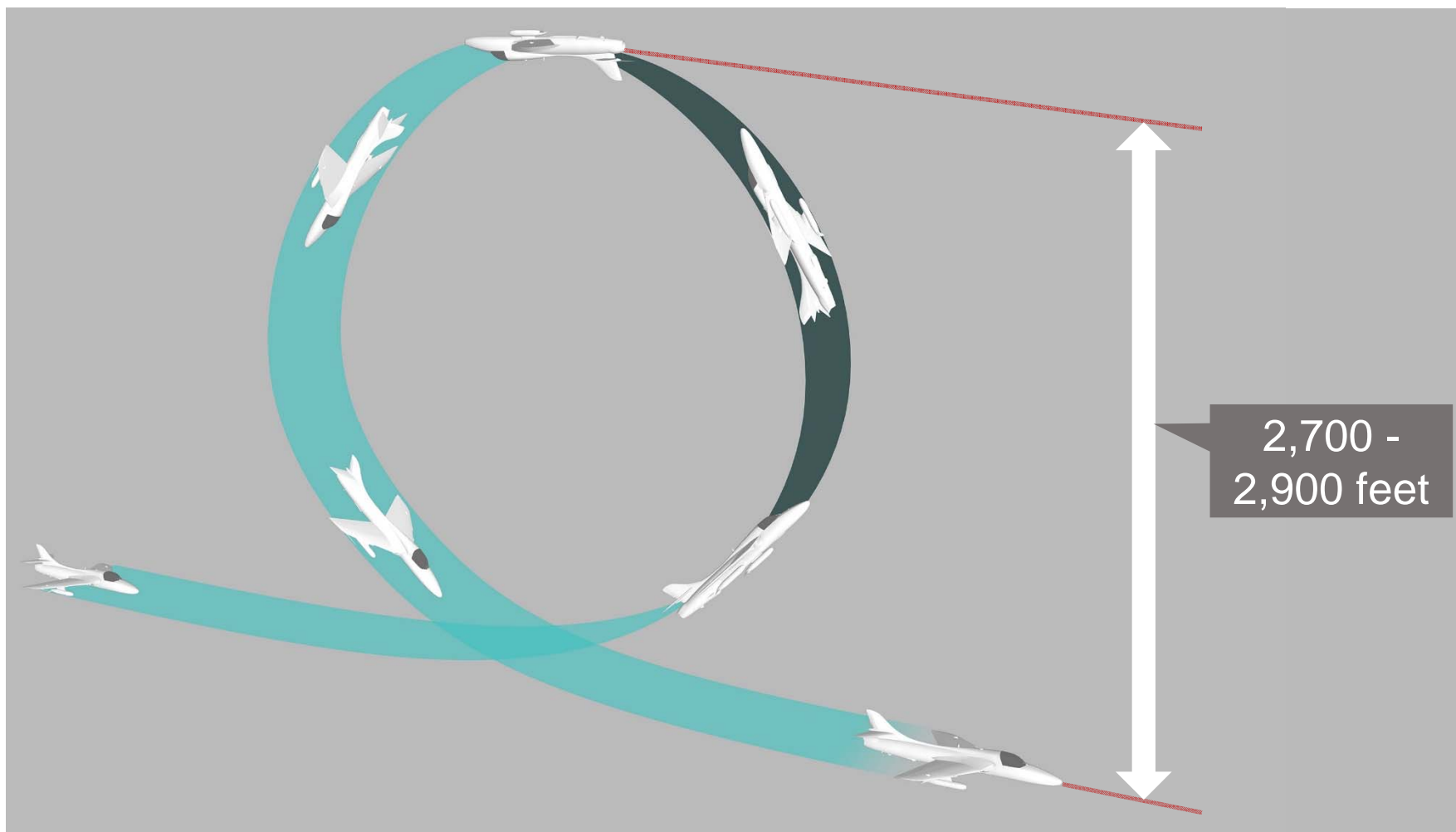
Intended manoeuvre



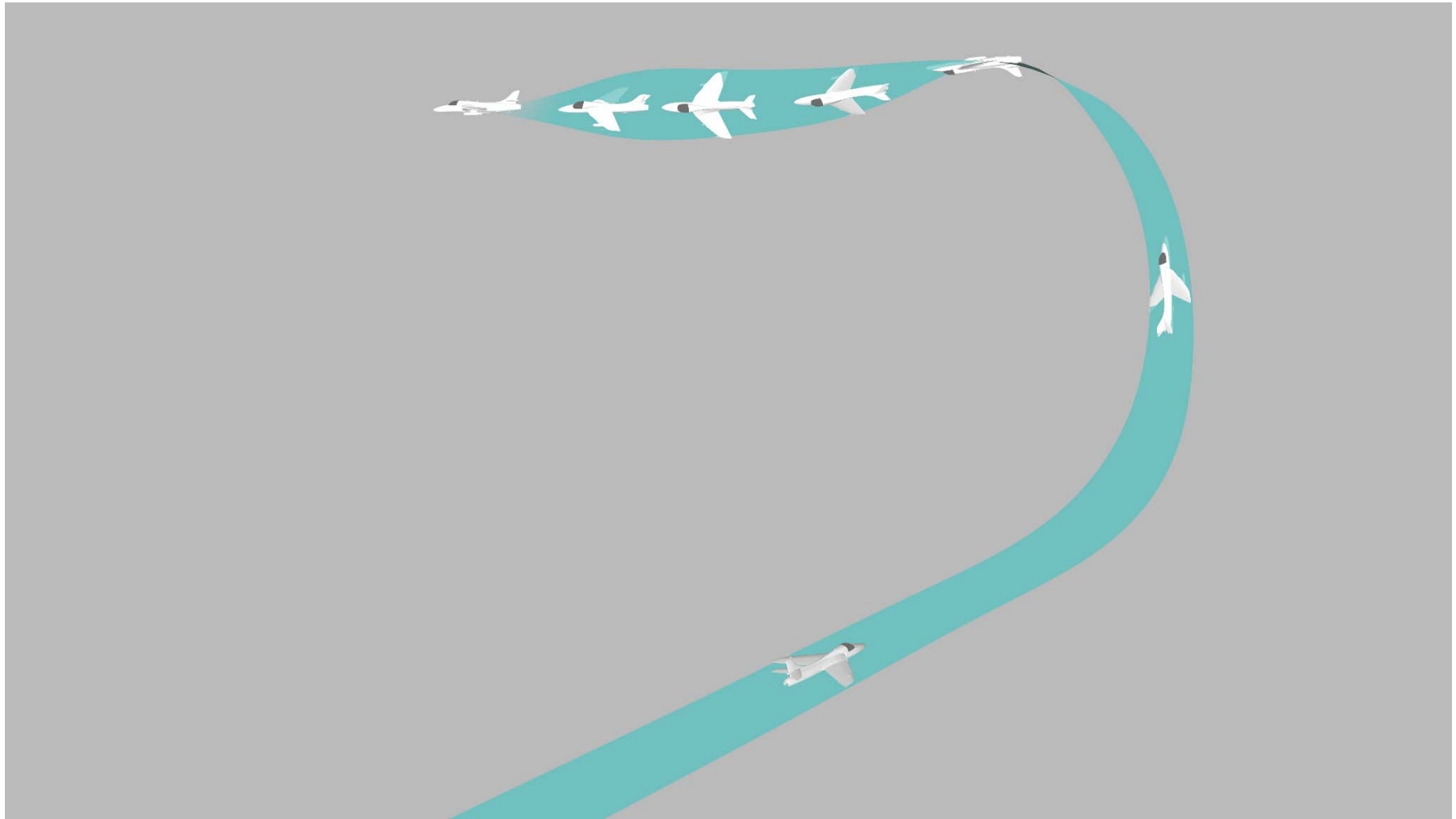
Accident manoeuvre



Height required to complete manoeuvre

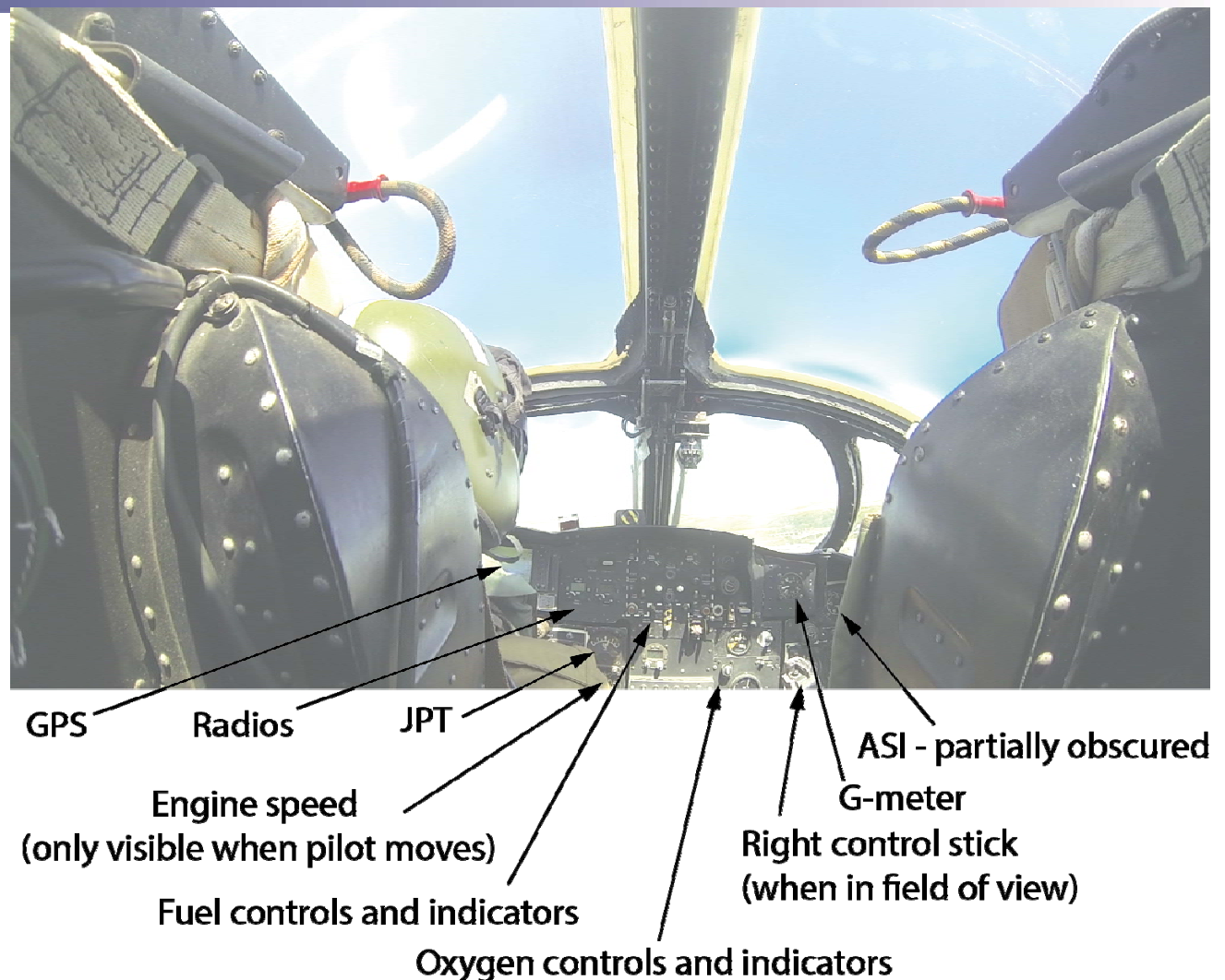


Escape manoeuvre



Action camera

- Limited instruments and controls in view
 - Did not capture pilot's altitude, or airspeed indicators or throttle
 - Limited image resolution
 - Contrast problems during manoeuvres
- Head movement
- Audio
 - Engine speed



- Four possible reasons for entering the manoeuvre:

1. He did not read the ASI.

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 4. He read the airspeed correctly but incorrectly recalled the entry speed as 300 knots.

- Possible reasons for continuing the manoeuvre with insufficient height:

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1. Did not read the altimeter

- Possible reasons for continuing the manoeuvre with insufficient height:
 1. Did not read the altimeter
 2. Misread the altimeter



- Possible reasons for continuing the manoeuvre with insufficient height:
 1. Did not read the altimeter
 2. Misread the altimeter
 3. Used an incorrect gate height

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- Did not read the altimeter
- Misread the altimeter
- Used an incorrect gate height

DATE	REGISTRATION	TYPE	FLIGHT TIME Hr/Min	LOCATION
9 August 2015	G-HILZ	RV-8	0.40	Blackpool
10 August 2015	G-HILZ	RV-8	0.40	Blackpool
14 August 2015	G-HILZ	RV-8	1.25	Eastbourne
15 August 2015	G-BWSG	JP5	0.40	Eastbourne
15 August 2015	G-HILZ	RV-8	1.25	Herne Bay
16 August 2015	G-BWSG	JP5	0.40	Eastbourne
16 August 2015	G-HILZ	RV-8	2.20	Whitstable and Eastbourne
19 August 2015	G-HILZ	RV-8	No time recorded	Broadstairs

- Possible reasons for continuing the manoeuvre with insufficient height:

1. Did not read the altimeter
2. Misread the altimeter
3. Used an incorrect gate height

Loop entry		Loop apex	
Indicated altitude (± 50 ft)	Indicated airspeed (± 5 KIAS)	Indicated altitude (± 100 ft)	Indicated airspeed (± 10 KIAS)
200	270	2,750	125
200	270	3,150	105
200	260	2,800	110
300	260	2,900	130

- Possible reasons for continuing the manoeuvre with insufficient height:
 1. Did not read the altimeter
 2. Misread the altimeter
 3. Used an incorrect gate height

Safety Recommendation: review the grouping of aircraft types in display authorisations to account for handling and performance differences

- Only a few seconds available to realise that the aircraft was too low, change the plan and carry out an escape manoeuvre

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Safety Recommendation: pilots should be trained on escape manoeuvres and be assessed on their ability to perform them

Height and speed indications

- No defects identified with speed indication (ASI)
- Anomalies identified with height indicator (altimeter)

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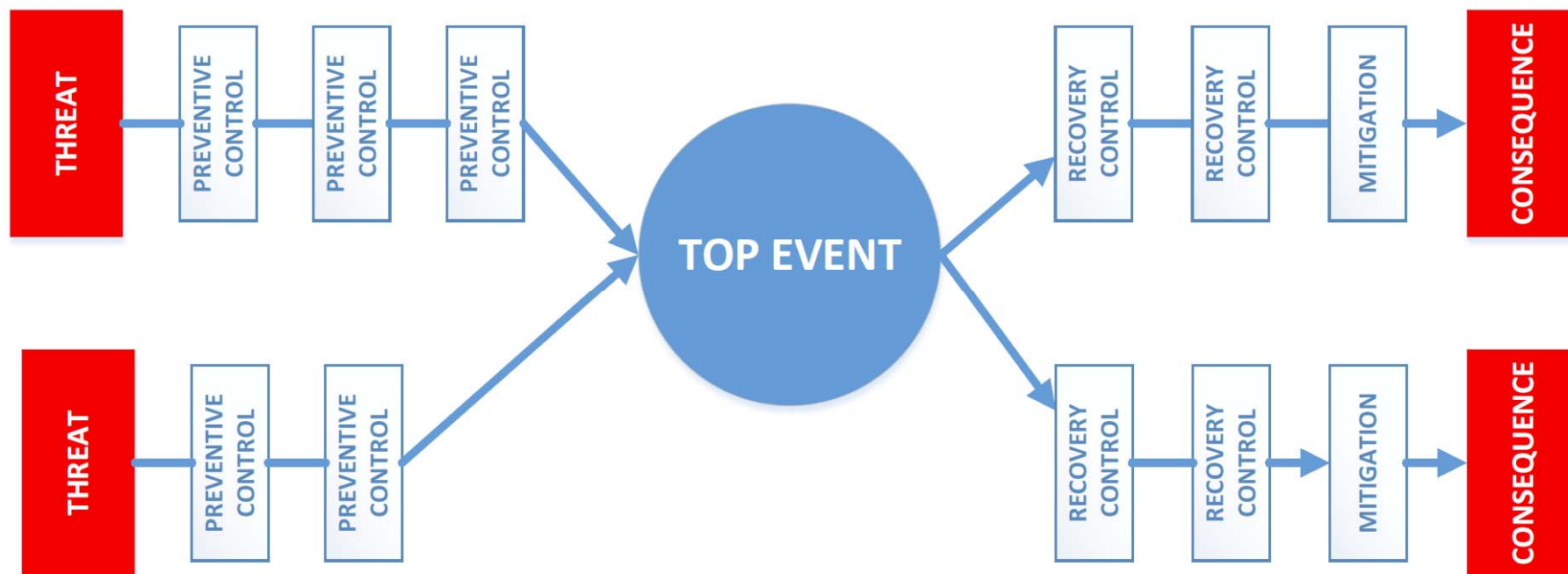
Other

- Aircraft was responding normally to pilot flying control inputs
- Canopy release and ejection seat were not operated by the pilot
- No other technical defects were identified that were relevant to the accident

Anomalies with the aircraft's maintenance and airworthiness were identified during the investigation, but these were not causal to the accident

Ten Safety Recommendations were made to address these issues

Bow tie analysis



The investigation found that the only recovery controls capable of preventing a fatal outcome, once the aircraft had failed to achieve the required height at the apex of the manoeuvre, were:

The successful execution of an escape manoeuvre or

Separation of the accident from the public

The pilot's recent training and experience did not equip him to conduct an escape manoeuvre in a Hawker Hunter aircraft.

The actions proposed to mitigate the hazard of aircraft crashing outside the airfield boundary were not effective.





