

# Learjet 35 A vs. Eurofighter Typhoon

23.06.2014  
near Olsberg-Elpe (Germany)

## **§ 1**

### **Anwendungsbereich des Gesetzes**

**(3) Unfälle und Störungen, an denen zivile und militärische Luftfahrzeuge beteiligt sind, werden federführend von der zivilen Bundesstelle für Flugunfalluntersuchung untersucht (§ 4).**

**Für Fälle, die überwiegend militärische Belange berühren, wird zwischen dem Bundesministerium für Verkehr und dem Bundesministerium der Verteidigung eine geeignete Regelung getroffen.**

# History of Flight

- Learjet 35A DEP 13:03 loc in Hohn IFR
- Climb to FL350 HDG 180°
- Descent and change to VFR
- Orbit near Ramstein til start of training
- Level flight @ 8000 ft AMSL
- HDG NNE
- 14:20 loc take-off Eurofighter QRA @ Nörvenich AFB
- 14:26 loc „Tally“, 14:27 loc „Judy“
- Radio transmtion to describe the target a/c
- 1st obey check
- 14:38 loc 2nd obey check
- 14:38:28 loc MAC

# Learjet 35A



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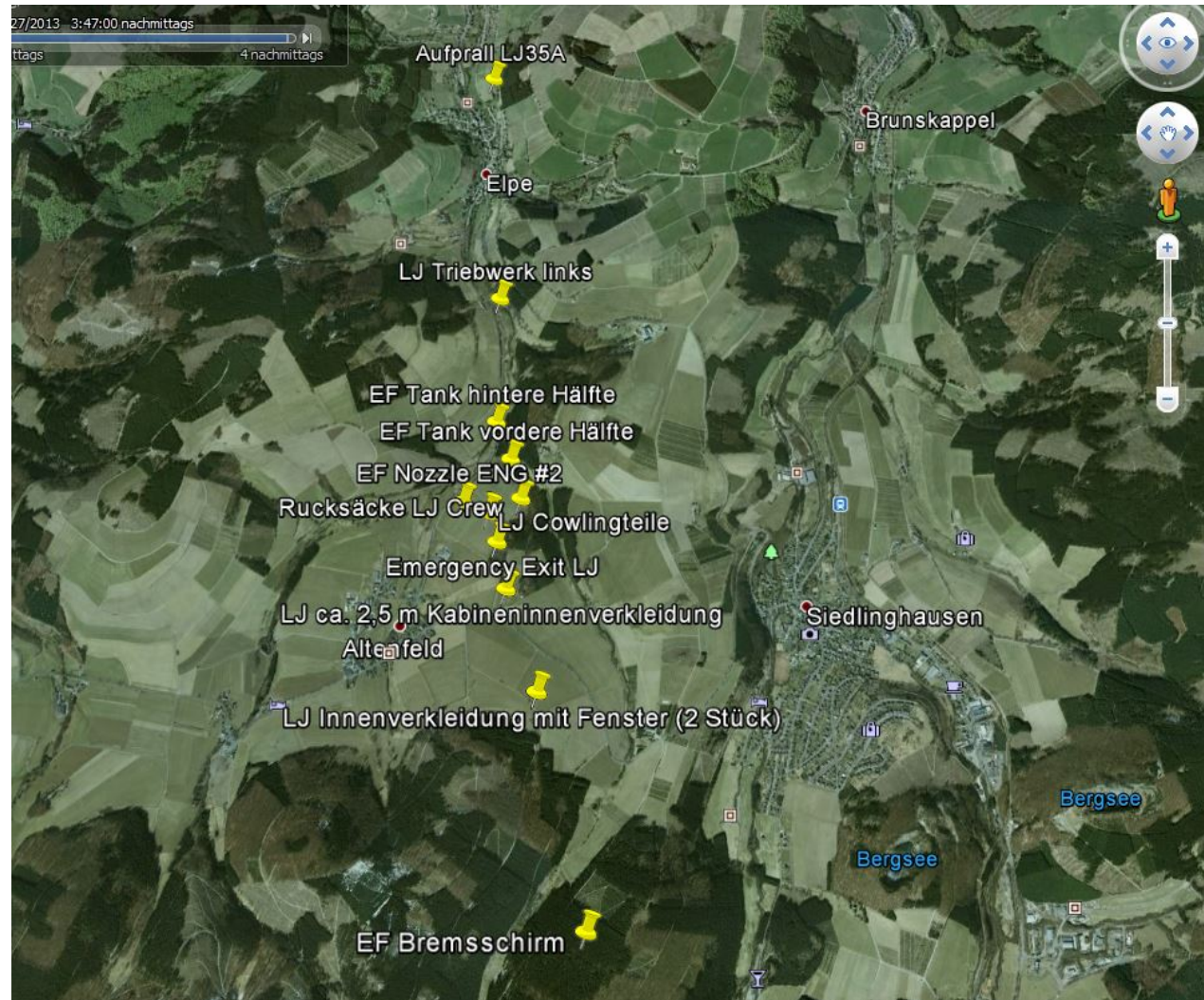
AIRLINERS.NET

# Eurofighter





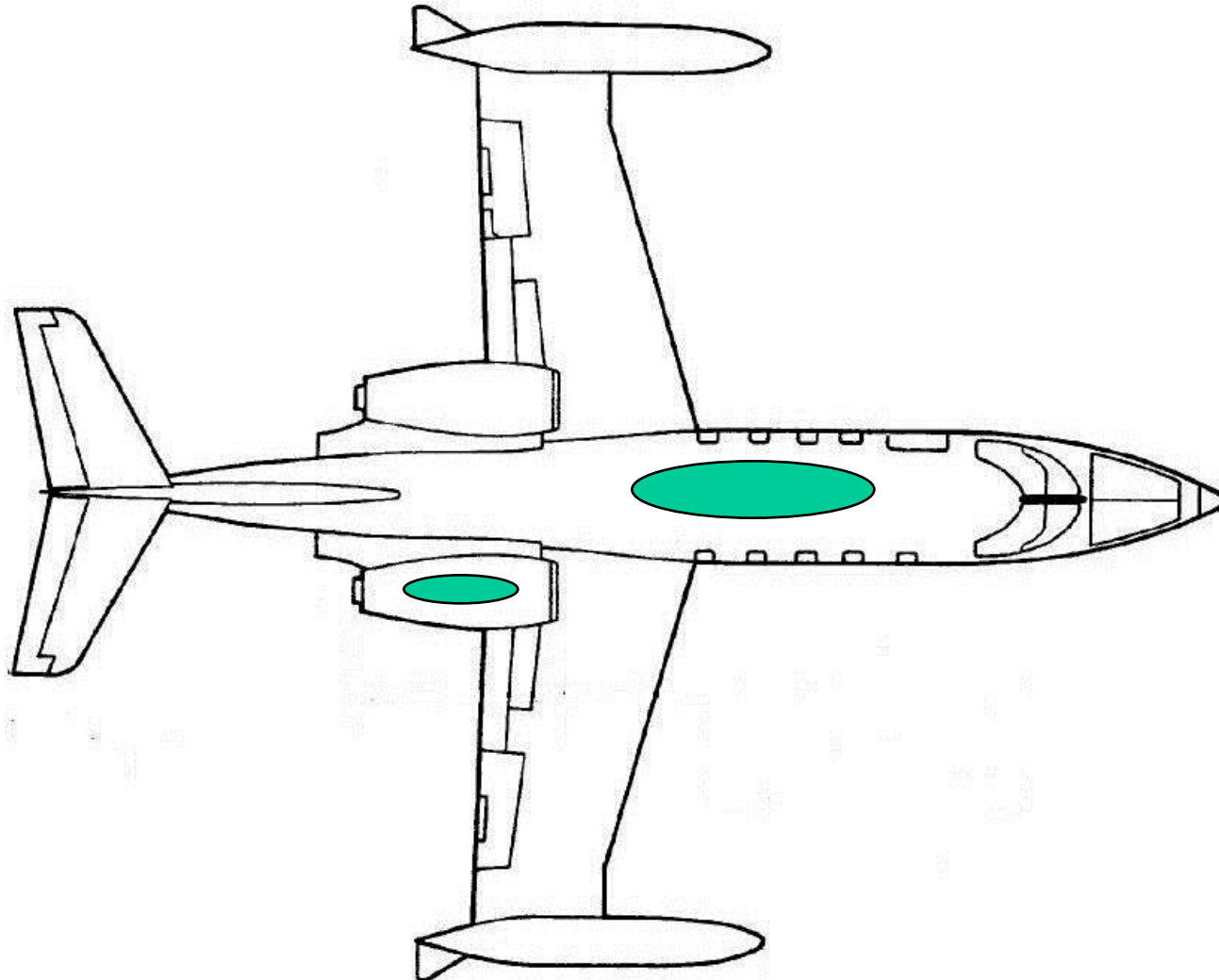
# Wreckage distribution



# Nozzle ENG #2

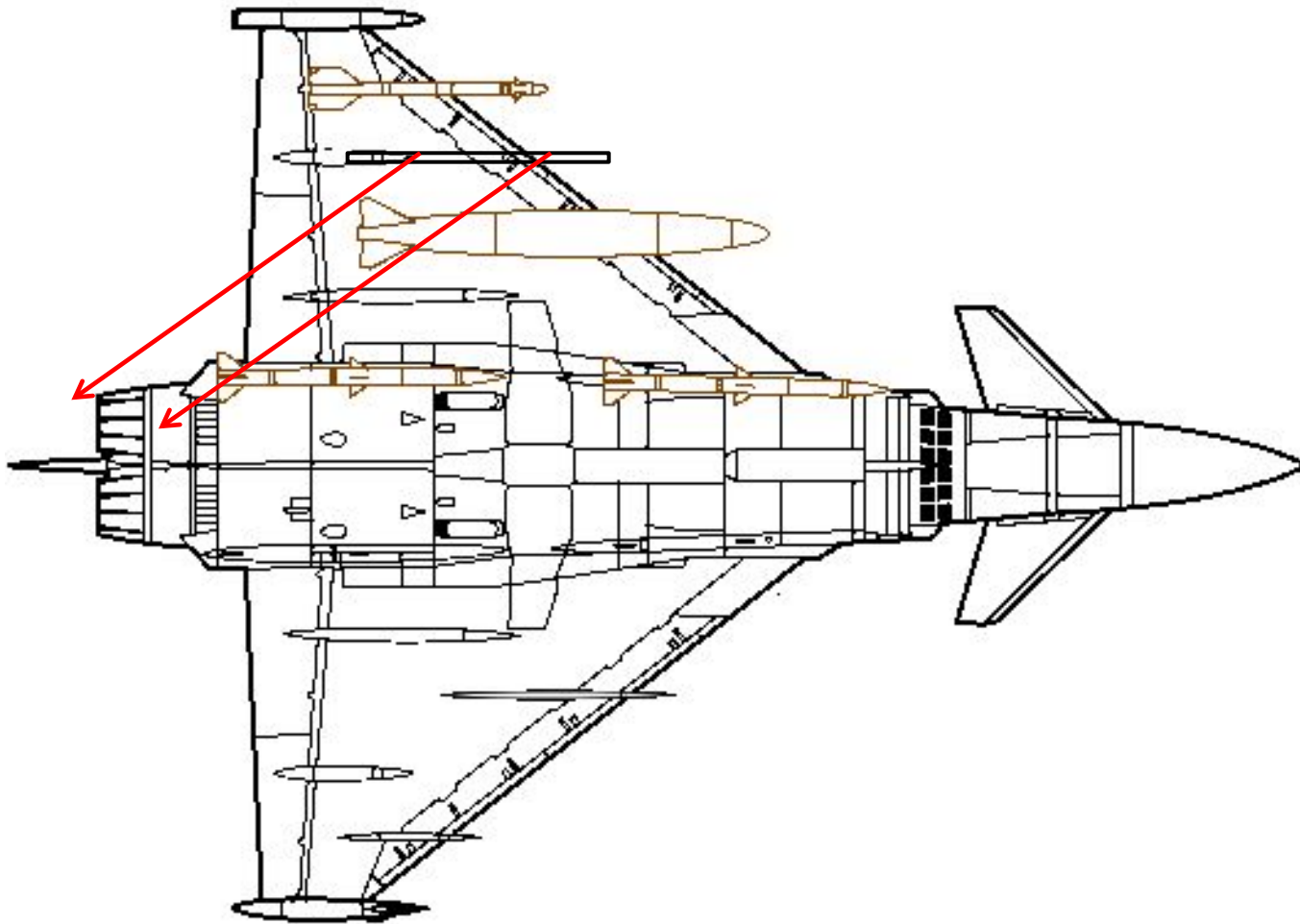


# Collision Marks @ Learjet





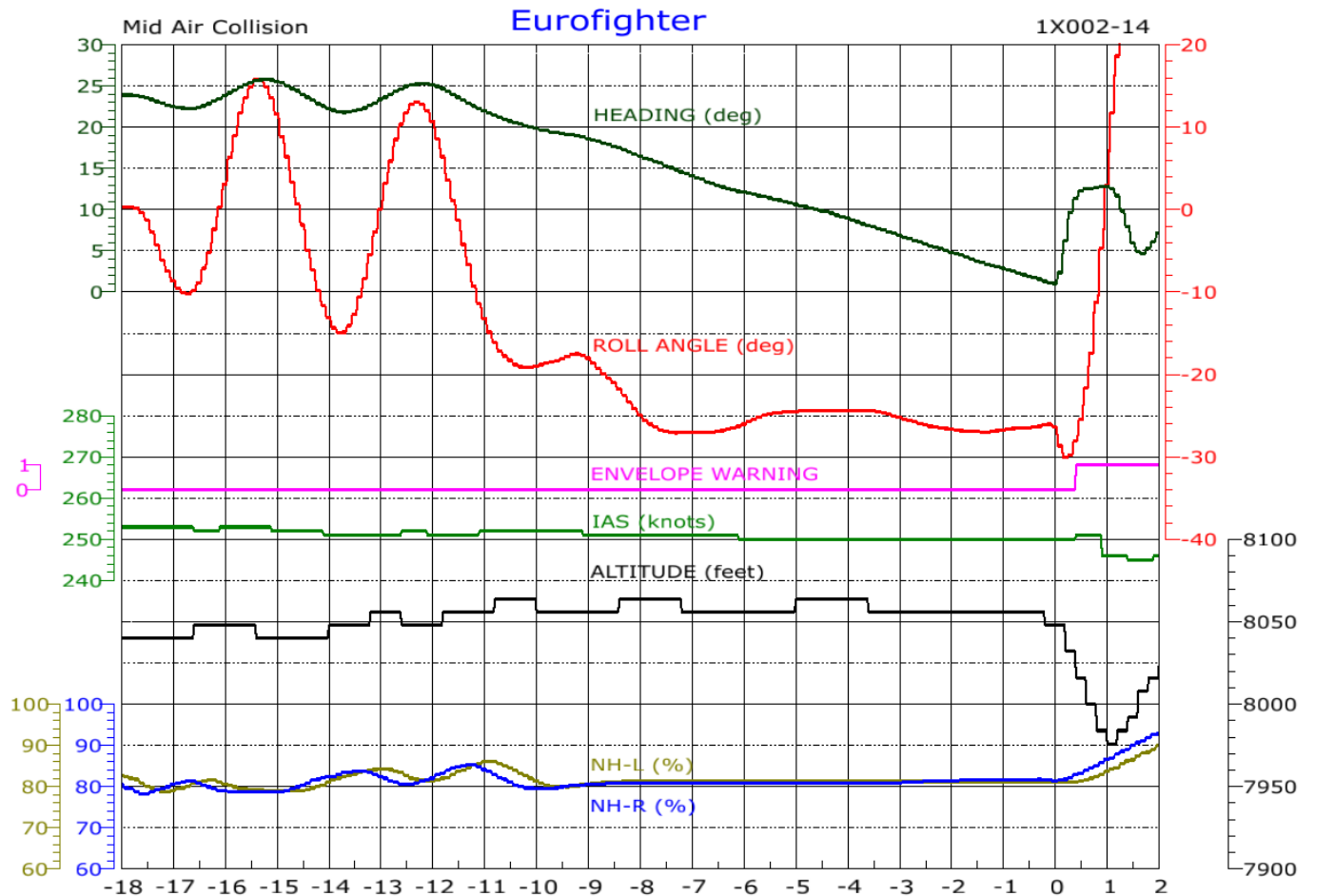
# Collision Marks @ Eurofighter



# Recorders Learjet



# FDR Data Eurofighter



Preliminary Data, file: acc\_Eurofighter

Created: August 21, 2014

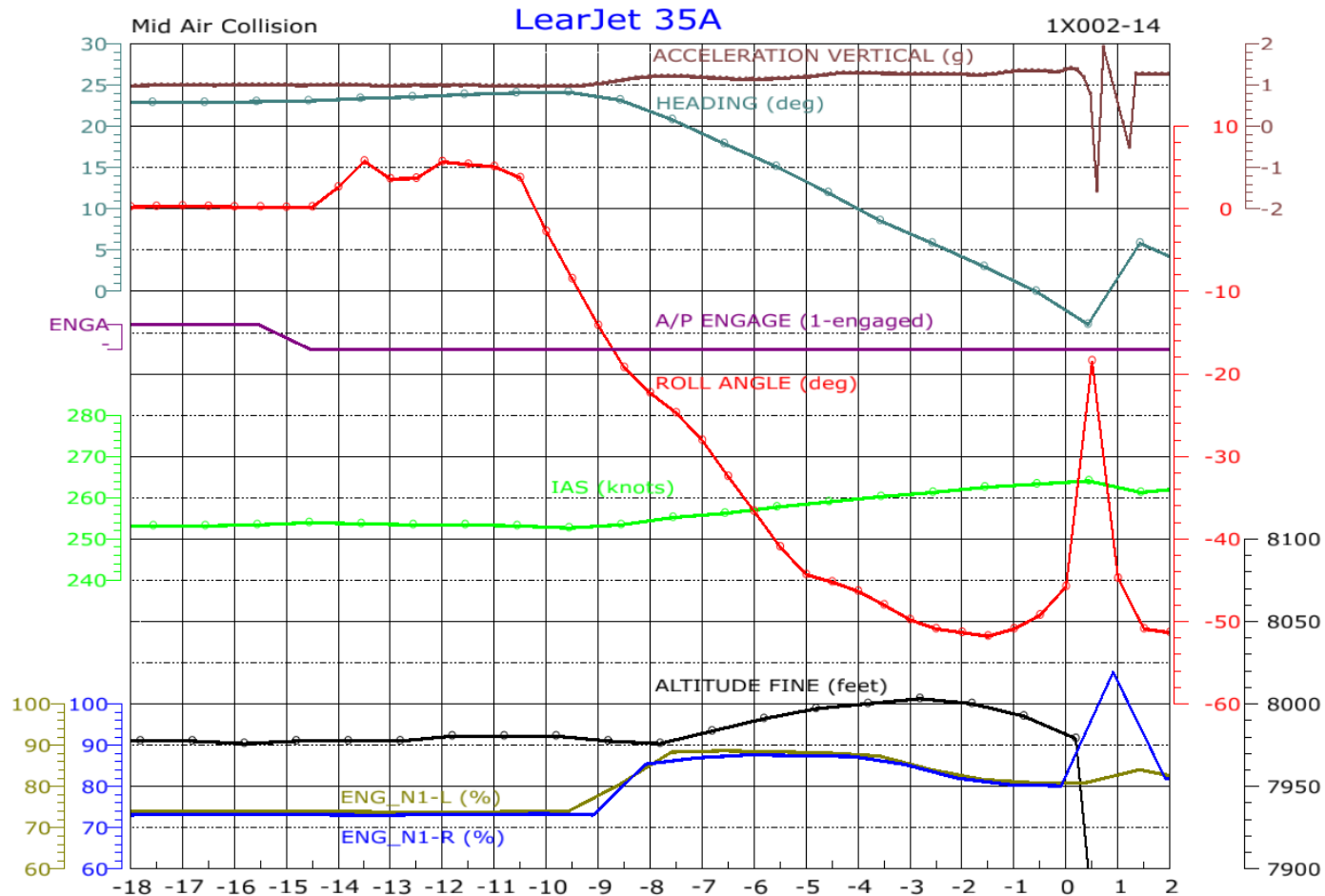
Revised: August 21, 2014

Seconds related to first touch

BFU Germany

AbtFlsichhBw

# FDR Data Learjet



Preliminary Data, file: acc\_LearJet35A  
Created: July 30, 2014  
Revised: July 31, 2014

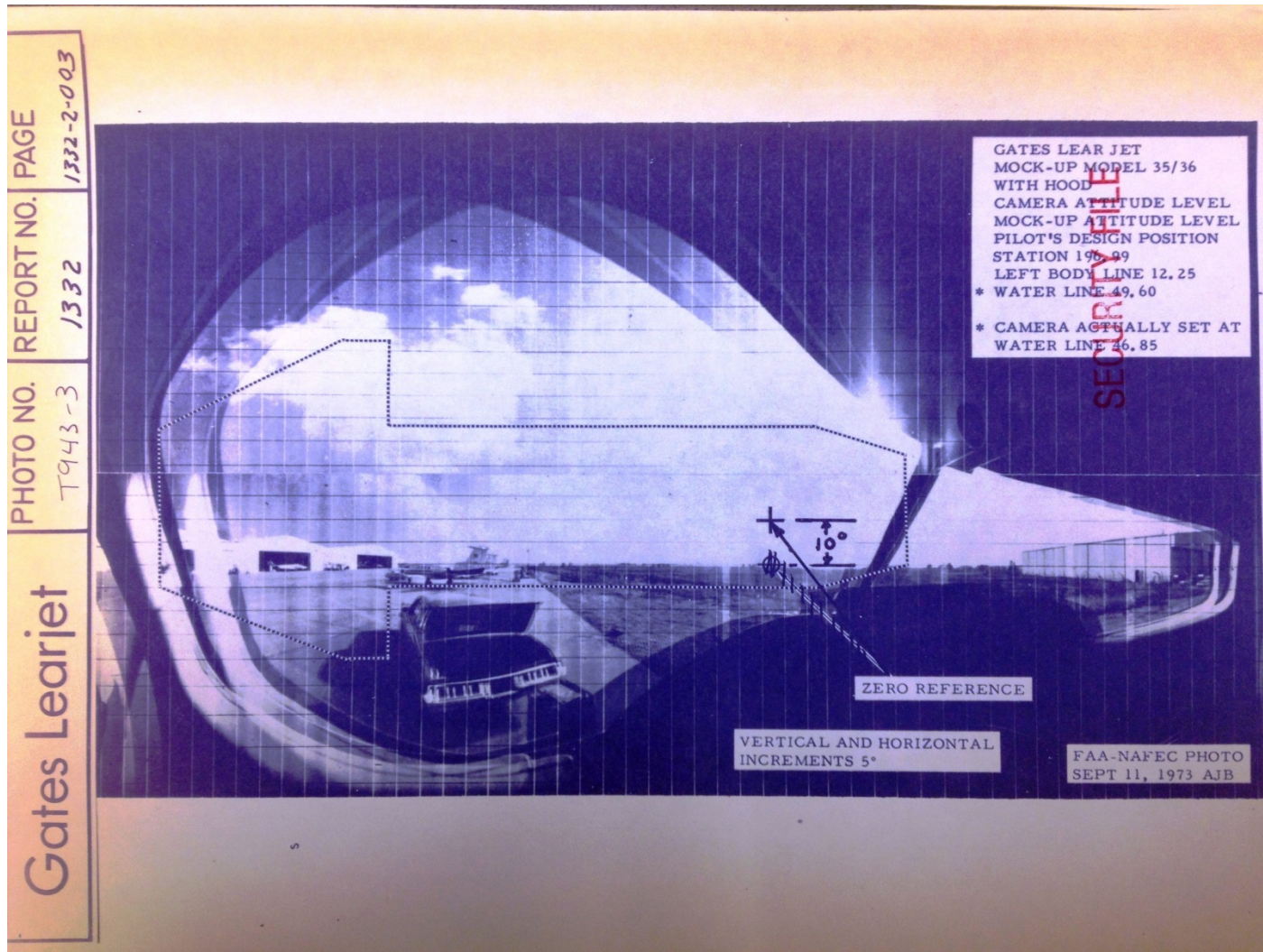
Seconds related to first touch

BFU Germany  
AbtFlsichhBw

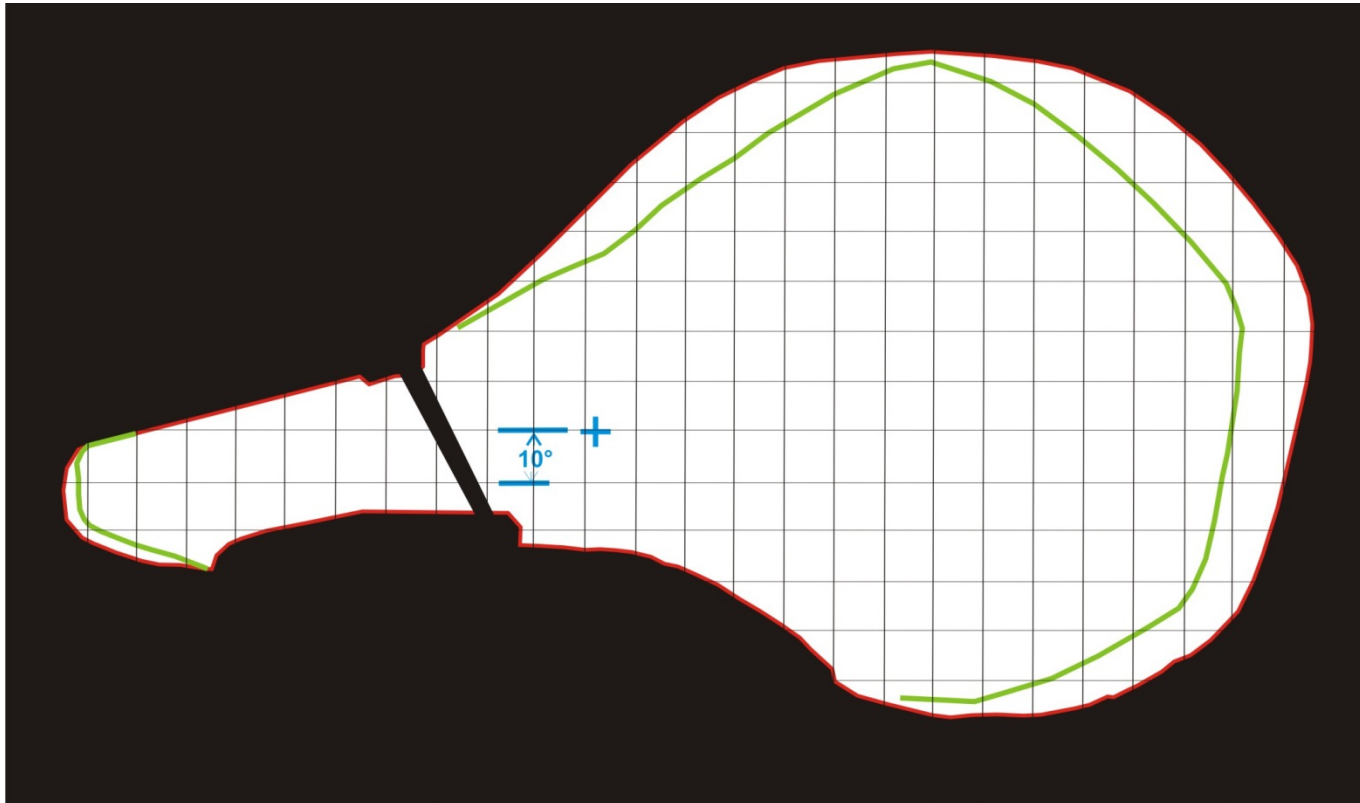




# Assistance by NTSB/FAA

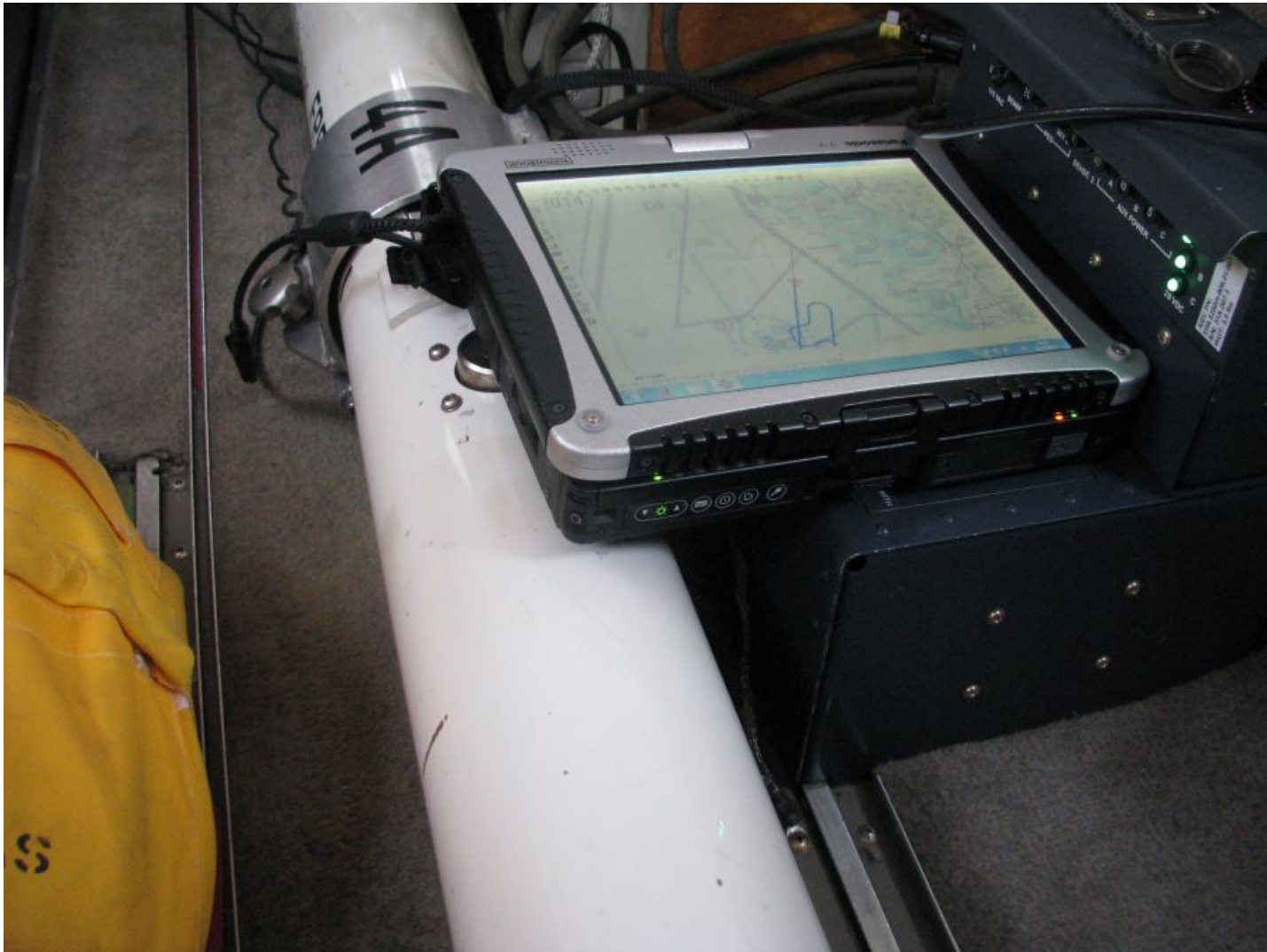


# Copilot's field of Vision





# Portable Computer





# Eurofighter Pilot's field of Vision



# Eurofighter Mirror



# Interception of civil aircraft



LUFTFAHRTH  
AIP GERMANY

Doc 9433-AN/926

## **Manual concerning Interception of Civil Aircraft**

**(Consolidation of Current ICAO Provisions  
and Special Recommendations)**

# Analysis



Why?	Organizational conditions <b>SMS</b> <b>Part SPO</b>	communication <b>CAA / MAA</b>	<b>Military / civil companies</b> <b>CAA oversight</b>	<b>SSP missing</b> <b>Risik analysis</b>
Why?	Rist control / defences <b>CRM</b> <b>Procedues</b>	„Cross Cockpit“ procedure	<b>Safety mesures in training plan</b> <b>EF return to home base</b>	<b>Procedure for loss of vis. contact</b>
Why?	Local conditions  <b>expierece LJ pilots</b>	<b>VMC</b>	<b>Work load</b>  <b>experience EF pilot</b>	
How?	individual actions <b>COP ask to take controls</b> <b>Handover of computer</b>	<b>excessive bank</b>  <b>EF distance to LJ</b>	<b>Task distribution LJ pilots</b>  <b>PIC uses computer</b>	
What?	events  <b>Mid Air Collision</b>	<b>Approach to identify</b>		



# Causes (1)

## Immediate Causes:

- During positioning for the intervention the collision risk due to unexpected manoeuvres of the intercepted airplane was not sufficiently taken into consideration.
- The Learjet crew did not take into account the risks due to possible limitations of the field of vision and the distraction by using the computer when deciding about the task distribution.

Due to insufficient situational awareness during the intervention, the Learjet crew continued the turn with an excessive bank angle despite the loss of visual contact with the Eurofighter flying at the inside of the turn.

# Causes (2)

## Systemic Causes:

- The operator had not specified in detail how the crew should distribute their tasks during Renegade exercises.
- Neither the operator commissioned to conduct aerial target demonstration nor German Air Force had sufficiently described Renegade training nor had a commensurate risk analysis been done.

# Safety Recommendation (1)



The operator to ensure that during aerial target demonstrations a high level of safety is reached. Therefore such flights should be investigated in regard to latent safety risks and actions to mitigate risks.

For Renegade mission trainings, the following points should especially be considered during risk analysis:

- ☐ Applicability of cross cockpit procedures
- ☐ Use of portable computers during critical flight phases
- ☐ Procedures for loss of visual contact
- ☐ Application of flight manoeuvres suitable for the kind of target represented during the training.

# Safety Recommendation (2)



The German MAA to ensure that during interception of civil aircraft a high degree of flight safety is guaranteed.

The Renegade procedure should be sufficiently described and rendered more precisely so that the collision risk of aircraft involved is minimised even in the event of unexpected flight manoeuvres of the intercepted aircraft. Therefore the requirements of single-seat military aircraft should be taken into account more strongly when describing the procedures. The demand on the pilots in regard to the attention and task distribution in individual phases of the procedure should be rendered more precisely and the pilot of the second military aircraft should be more involved in the support to guarantee continued observation of the intercepted aircraft.



# Safety Recommendations (3)



The MAA should ensure that companies acting as civil contracting partners for the Bundeswehr conducting aerial target demonstrations meet the highest Bundeswehr standards in regard to their flight operations and flight safety organizations.

In case the civil contracting partner does not hold an AOC issued by a civil aviation authority, the MAA should ensure that the civil contracting partner is organized such that hazard analyses are conducted in regard to their aerial target demonstrations operations which are suited to ensure a high degree of operational safety.

In case the civil contracting partner is a civil air operator certified by the CAA, regular information exchange should take place between the MAA and the CAA in regard to special operational and flight safety issues in order to support the CAA.

# Safety Recommendations (4)



The CAA should effectively supervise the service providers working for the armed forces in terms of their operation.

Therefore the CAA should cooperate with the MAA in order to better understand the military special features. Therefore, regular information exchange should take place between the CAA and the MAA in regard to special operational and flight safety issues.

# Safety Recommendations (5)



The CAA should ensure that operators have an effective SMS.

It should especially guarantee that the SMS analyses the essential operating modes of an operator in regard to flight safety risks and, if applicable, take actions to minimize the risks.

# Safety Recommendations (6)



The European Aviation Safety Agency (EASA) should add the term aerial target demonstrations to the list of examples mentioned in Commission Regulation (EC) No 965/2012 Part Specialised Operations (SPO) SPO.GEN.005 Scope (a).

## Investigation Report

### Identification

Type of Occurrence:	Accident
Date:	23 June 2014
Location:	Near Olsberg-Elpe
Type of aircraft:	1.) Airplane 2.) Airplane
Manufacturer / Model:	1.) Learjet Corporation / Learjet 35 A 2.) Eurofighter GmbH / Eurofighter
Injuries to Persons:	1.) Pilot and co-pilot fatally injured 2.) None
Damage:	1.) Aircraft destroyed 2.) Aircraft severely damaged
Other Damage:	Crop damage
Information Source:	Investigation by BFU
State File Number:	BFU 1X002-14