Ref. No 253/05/ZZ

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FINAL REPORT

Investigation into incident
Lost of communication
FIR LKAA
on 21st of June 2005

Prague
October 2005

A) Introduction

Operator:	Union Jet – Ireland, call sign EUJ 203
Aircraft type:	Fokker 100
	and
Operator:	German Air Force, call sign QRA GE
Aircraft type:	2x F4F Phantom
Place of Incident:	ODOMO in FIR LKAA
Date:	21st of June 2005
Time:	10:51 – 11:15 UTC (All times in this report are UTC)

B) Synopsis

On 21st June 2005 UZPLN (Air Accident Investigation Institute) received an incident report of a Fokker 100 airplane, registration mark EI-DBR, call sign EUJ 203. The crew flew into FIR EDUU and next to FIR LKAA without establishing contact and without activating the code SSR 7600. The CAOC (Combined Air Operation Centre) called a scramble action by a couple of NATO fighters (German Air Force) to intercept EUJ 203flight without contact in the zone of entry point to FIR LKAA, ODOMO.

In accordance with the standards set in ICAO Annex 13, the Czech Republic was the State of Occurence and AAII carried out the investigation.

The cause of the incident was investigated by an AAII commission comprising:

Investigator in charge:	Ing. Radomír Havíř AAII Czech Republic
Member:	Milan Zikmund ANS Czech Republic
Member:	Lt-Col. Ing. Václav Pelánek Czech Air Force

The Final report was releised by:

ÚSTAV PRO ODBORNĚ TECHNICKÉ ZJIŠŤOVÁNÍ PŘÍČIN LETECKÝCH NEHOD
Beranových 130
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On the 12th of October 2005.

C) The Final report includes the following main parts:

1) Factual information
2) Analysis
3) Conclusions
4) Safety recommendation
5) Annexes (to copy No.1 stored in UZPLN archive)

1 Factual information

1.1 History of the incident

On 21st June 2005 the crew of an F 100 plane of Union Jet airline, call sign EUJ 203, code SSR A0536, was on FPL flight at FL 350 from the Manston Airport (EGMH) to the Praha Ruzyně Airport (LKPR) via entry point to FIR LKAA ODOMO at 11:05 UTC.

On the same day, a joint NATO training was held at FIR LKAA and FIR EDUU with the aim of practising a scramble by a couple of F-4 German Air Force fighters (QRA GEs) against an airplane that lost contact at FIR EDUU to bring it into LK TRA 60 at FIR LKAA.

MACC had been under overall control for western sectors (W) in the area south of line AGNAV – OKL up to FL 260. Temporarily activated areas in FIR LKAA were activated except military traffic LK TRA 60, 68 up to FL240.

At 10:51 the Command Reporting Centre (CRC) received information from CAOC about no contact with EUJ 203 flight and about transferring QRA GE to 'A SCRAMBLE'.

At 10:52:50 MACC received information from the control station PVO (GCI) that QRA GE had a problem – loss of contact, and that it was flying with a heading of 270° from LK TRA 60 area back to the airbase in Germany.

At 10:53:06 the procedure controller MACC Praha (PC MACC) gave the procedure controller of low sector ACC Praha (WL PC) a piece of information about QRA GE flying from LK TRA 60 airspace at FL 200 without contact to exit point from FIR LKAA OKG.

At 10:54:13 the supervisor of ACC Praha was informed by the supervisor of ACC EDUU about EUJ 203 flying without contact in FIR EDUU cca 60 NM west of ODOMO.

At 10:54:23 GCI informed PC MACC that QRA GE flew in emergency on heading 300° at FL 200. GCI did not specify the kind of emergency. At 10:55:50 PC MACC passed on this information to WL PC.

At 10:55:58 SC MACC requested that ACC SC should extend the limit of overall control as far as OKG. ACC SC requested pushing back the change in overall control until the complicated traffic situation in western sectors had been cleared.

At 10:56:34 UAC EDUU passed on information to WL PC that EUJ 203 was still without contact at 50 NM west of ODOMO at FL 350.

At 10:57:51 GCI requested of PC MACC clearance to climb from FL 200 to FL 270 because lack of fuel. PC MACC approved the change.

At 10:58:09 WL PC gave PC MACC information that QRA GE was leaving the area of overall control MACC. PC MACC requested that QRA should go to FL 270 because the fuel ran low but WL PC refused the change in FL due to traffic situation in the area. PC MACC passed on the FL change refusal to GCI.

At 10:58:10 ACC SC gave SC MACC information about EUJ 203 flying without contact, which he received from UAC EDUU.

At 10:58:53 following instructions by GCI, QRA GEs commenced to climb from FL 200 to FL 270.

At 10:59:47 WL PC advised PC MACC of considerable traffic by QRA GE since he still believed QRA GE to be without contact.

At 11:00:00 GCI advised PC MACC that QRA GE scrambled against a flight without contact EJ 203 (incomplete call sign) and announced another change in FL, from FL 270 to FL 350, for QRA GE.

At 11:01:06 ACC SC stopped all westbound flights from LKPR due to complicated air situations in ACC Praha western sectors.

At 11:01:08 ACC SC checked out with SC MACC the information on QRA GE scrambled against EUJ 203.

At 11:01:09 PC MACC passed WL PC the information that QRA GE scrambled against EUJ 203.

At 11:02:38 PC MACC passed WL PC two pieces of information, about FL change for QRA GE from FL 270 to FL 350 and about scrambling against EUJ 203.

At 11:03:12 GCI gave QRA GE the instruction to switch off the mode C SSR.

At 11:03:43 the EUJ 203 crew at the entry point ODOMO did not establish contact on ACC frequency and continued to fly in FIR LKAA.

At 11:04:27 ACC SC specified overall control in ACC western sectors with SC MACC and asked for switching off the mode C SSR at a distance of 20 NM from EUJ 203. SC MACC confirmed this message and passed the request immediately to GCI.

At 11:06:12 the EUJ 203 crew commenced to fly up from FL 350 to FL 361, probably in accordance with TCAS RA.

At 11:08:17 the EUJ 203 crew in LOMKI point area established contact with south-west middle sector ACC Praha (SWM EC ACC Praha) on frequency 121.5 MHz.

At 11:01:38 SWM EC gave the EUJ 203 crew the instruction on frequency 132.065 MHz to continue the actual heading because of QRA GE scramble.

At 11:09:02 SWM EC ACC Praha PC informed PC MACC that EUJ 203 had established contact with SWM EC ACC Praha on frequency 132.065 MHz. PC MACC passed on this information to GCI.

At 11:09:47 the EUJ 203 crew gave SWM EC ACC Praha confirmation that visual contact with QRA GE on frequency 132.065 MHz had been established.

At 11:10:15 QRA GE established contact with the EUIJ 203 crew on frequency 121.5 MHz and relayed it the information about the scramble due to lost contact, stated the actual position as related to LKPR, its position regarding EUJ 203, and asked for confirmation of the flight plan and confirmation of established contact with ACC. The EUJ 203 crew passed QRA GE information on the established contact with ACC Praha on frequency 132.065 MHz.

At 11:11:40 GCI relayed PC MACC information that scramble against EUJ 203 stopped and QRA GE returned to the airport in Germany.

At 11:12:25 QRA GE relayed information about the end of scramble to the EUJ 203 crew on frequency 121.5 MHz.

The situation called for additional communications between other sectors ACC, MACC Praha and ACC EDUU.

1.2 Injuries to persons

NIL

1.3 Aircraft damage

NIL

1.4 Other damage

NIL

1.5 Personnel information

1.5.1 Pilot in command EUJ 203

NIL

1.5.2 Pilot in command QRA GE

NIL

1.5.3 Personnel information ATCO MACC

Job function		SC	PC	GCI
Age		35	34	38
Duty duration (hours)	from beginning of workshift (including breaks)	3:00	3:00	5:50
	From the latest duty rotation	0:25	0:25	0.40
Practice (years)		5 mon	4	15
Qualification good till		17.05.05	14.05.06	16.06.0
Latest qualification training		09.02.05	03.02.05	-

1.5.4 Personnel information ATCO ACC Praha

Job function		SC	WS	SWM EC	WL PC
Age		58	45	34	36
Duty duration (hours)	from beginning of workshift (including breaks)	6:00	6:00	1:00	5:00
	From the latest duty rotation	0:06	0:06	0:01	0:01
Practice (years)		25	12	3	13
Qualification good till		-	12.10.05	18.11.05	06.01.06
Latest qualification training		-	28.05.05	06.04.05	11.03.05

1.6 Information about aircraft

1.6.1. EUJ 203

Aircraft type: Fokker 100
Registration: E-IDBR
Manufactuer: Fokker – VFN Netherlands

1.6.2. QRA GE

NIL

1.7 Meteorological information

According to the Czech air meteorological office ČHMÚ the weather conditions in FIR LKAA at the time of incident on 21/6/2005 were as follows:

Situation: Decaying region of high air pressure invading the CR from north.
Ground wind: 100-200^{o} / 6-12 kts,
Visibility: more than 10 km,
Temperature: 24 ^{o} C,
Cloudiness: FEW CU 3000-5000AGL

1.8 Radio navigation and visual aids

Radio navigation and visual aids had no effect on the incident.

1.9 Communications

1.9.1 Communication between aircraft and air traffic control stations

Radio communication between the two flights was relayed from two different air traffic stations on different frequencies. Radio communication with QRA GE was relayed from GCI in English. Readability on GCI frequency was not distorted and was without statics on both sides. Radio communication with EUJ 203 was, on establishing contact, relayed from SWM EC on frequency 132.065 MHz in English. Readability on frequency 132.065 MHz was not distorted and was without statics on both sides.

1.9.2 Communication between air traffic control stations

Communication between GCI and MACC and between MACC and ACC was relayed on direct telephone lines. The message readability was not disturbed.

The real time passive communication system was provided by ESUP and LETVIS automatic systems.

1.10 Information about FIR LKAA

The serious incident occurred in FIR LKAA that is defined as airspace of class C, which permanent two-way communication is needed and flights must be cleared. IFR flights are provided with separations against other IFR flights and VFR flights. VFR flights are provided with separations from IFR flights and with information about other VFR traffic.

1.11 Flight recorders

Flight recorders were not used. The incident was analysed using records of phone calls between MACC, ACC and GCI, radio communications on ACC frequencies, and radar situation recorded by ANS.

1.12 Description of place of incident

The incident occurred in FIR LKAA, south of airline OKG –OKL, at a height range of FL 200 – FL 361, which is the class C airspace where ATC services are provided to all flights, where duplex communication is necessary, and flights are subject to ATC clearance..

1.13 Medical and pathological information

NIL

1.14 Fire

NIL

1.15 Survival aspects

NIL

1.16 Tests and research

NIL

1.17 Organizational and management information

1.17.1 MACC, CRC, GCI

MACC, CRC and GCI are part of Brigade Command, Control and Reconnaissance, which is part of the organizational structure of the army of the Czech Republic. Their tasks include, among other things, continuous monitoring of airspace situations in FIR LKAA, securing air information services, warning services for SAR, providing ATC for Air Force and its coordination with civil air traffic.

MACC fulfils tasks related to ATC of military aircraft and is in charge of coordination between military and civil air traffic in FIR LKAA. CRC is in charge of tactical command in the airspace of forces and means supervised by NATO. GCI controls flights of military planes in the frame of NATO air defence system in Europe (NATINADS).

1.17.2 ACC Praha

ACC Praha provides ATC services to flights falling in its authority in FIR LKAA area.

1.18 Additional information

AAIU Ireland office in charge did not send any information concerning the EUJ 203 flight**.**

1.19 Incident Investigation Methods

Standard investigation methods were used – radar records and diagrams, audio records, air traffic controllers´ statements, operation documentation (air stripes, flight plans, operation logs, take-on job records).

2 Analysis

Subject to analyses were the EUJ 230 crew activities, radio communication, instructions of air operation services, airspace information and effect on operations in FIR LKAA.

2.1 EUJ 203 Crew

EUJ 203 crew was on a regular flight from EGMH Airport to LKPR Airport. On entering FIR EDUU it did not established contact with UAC EDUU and continued the flight via FIR EDUU to FIR LKAA according to the flight plan without contact and with the code SSR A7600 switched off. During QRA GE scramble the EUJ 203 crew reacted to TCAS RA avoid instruction, which was likely due to the fact that scrambling QRA GE did not switch off C mode on SSR, and climbed from FL 350 to FL 361. On spotting the scrambling QRA GE, the EUJ 230 established contact with SWM EC ACC Praha on frequency 132.065 MHz in the LOMKI reporting point area and acknowledged visual contact with QRA GE. Then the crew continued following ATCO instructions to land at LKPR.

The crew should have identified, using information on flight areas from navigation preparation and FLP, the relevant reporting point of exit or entry into another FIR. In doing so, it should have met requirements of Regulation L2 of Flight Rules Head 3 Art.3.6.3.1 providing that it should advise the air operation unit of the time of passing the obligatory reporting point along with other necessary information. The crew did not apply any procedures to be used in case of lost of contact.

2.2 QRA GEs

The couple of QRA GEs fulfilled tasks within NATO training aimed at scrambling an aircraft that had lost contact flying from FIR EDUU, bringing it to FIR LKAA and then to LK TRA 60 airspace.

After fulfilling the task, QRA GE received instructions from GCI to scramble against EUJ 203 without contact in the area of entry point into FIR LKAA, ODOMO.

During scrambling of QRA GE towards EUJ 203 the crews received the instruction from GCI to switch off the C SSR mode at a distance of 20 NM from EUJ 203. One of the two QRA GEs did not respect this instruction, which probably caused activation of TCAS TA and then RA on board EUJ 203.

QRA GE identified the flight of EUJ 203 and established contact with EUJ 203 crew on frequency 121.5 MHz and advised it of scramble due to the lost of contact, passed information about position and checked FPL data.

2.3 ATC Procedures and Phraseology Used

Air traffic arrangement in FIR LKAA was made in accordance with Procedures for air navigation services PANS – ATM and with an Agreement on using airspace and coordination between civil and military air operations.

ACC Praha

WL EC took all the measures concerning loss of contact according to PANS-ATM Part 15.2.

MACC

SC MACC took over overall control for MACC on W ACC in space south of the airline AGNAV – OKL up to FL 260 and enounced temporarily reserved areas LK TRA 60, 68, up to FL240.

SC MACC adjusted the boundary of overall control in accordance with changes in air situation.

MACC proceeded in subordination to GCI and also to ACC due to the actual status of the overall control.

MACC employed procedures to assist a plane in emergency (QRA GE).

CRC

Immediately on receiving the task from CAOC (scramble) did not pass this information to MACC.

GCI

Provided MACC with incorrect information on QRA GE activities.

2.4 Effect on operating situation in FIR LKAA

In the course of the incident, workload on PC at WL was difficult to handle because the scramble had to be conducted in a very short time. EC had to work in quite a non-standard way with minimum information as received from PC, which led to a situation in which the forced changes in airplanes´ FLs leaving WL were not passed on to neighbouring sectors.

The EUJ 203´s manoeuvre made probably in accordance with TCAS RA led to an uncoordinated climb to SWU ACC Praha responsibility area affecting traffic in the sector. SC ACC Praha made a decision to suspend takeoffs from LKPR towards W for 30 minutes to prevent the situation from getting worse.

The situation caused PC MACC to work under stress (due to high workload) in providing ATS services in FIR LKAA.

3 Conclusions

The commission made the following conclusions:

3.1 The EUJ 203 crew

- did not established two-way radio communications with ACC in ODOMO entry point area and did not make use of any of the loss-of-contact procedures;
- it is likely that the crew reacted to TCAS RA;

- the crew established contact on frequency 132.065 MHz SWM EC Praha in the LOMKI point area on noticing the scrambling fighters;
- the crew established contact with the scrambling QRA GEs.

3.2 QRA GEs

- identified EUJ 203;
- took all the loss-of-contact measures;
- took steps to establish contact with EUJ 203;
- failed to comply with scramble procedures against civil aircraft since at the distance of 20 NM one of the planes did not switch off the C SSR mode, violating an express instruction.

3.3 Procedures for ATC and phraseology used

- CRC did not pass information to MACC immediately after CAOC asked him to scramble against EUJ 203;
- GCI relayed MACC incorrect information about QRA GE activities after leaving LKTRA 60/68 area in FIR LKAA;
- On receiving from GCI information about scramble against EUJ 203, PC MACC had coordination talks with WL PC;
- PC MACC and WL PC issued an uncoordinated clearance to GCI to change the QRA GE flight level from FL 200 to FL 270 because of GCI information about lack of fuel;
- WL EC took all the necessary steps relating to EUJ 203 loss of contact;
- On receiving more information, ACC cleared airspace so that QRA GE could scramble against EUJ 203;
- The phrase used by SWM EC for establishing contact contained information on QRA GE scramble.

3.4 Causes:

- EUJ 203 did not established contact with ATC in FIR EDUU and later on in FIR LKAA either;
- EUJ 203 did not apply any move to be used in the case of loss of contact;
- CRC did not pass the information about QRA GE scramble to MACC and through MACC to ACC;

According to L 13 Regulation the event is classified as **Incident.** From the point of view of the impact it might have on providing ATS, the event is evaluated as a "**Major Incident**".

4 Safety recommendation

- Update scramble fighters´ intervention methodology for ATC centres conforming to L 2 Regulation, L 4444 PANS ATM and Agreement on the use of airspace and responsibilities for coordination between civil and military air operations;
- Amend scramble procedures in the Czech Republic AIP;
- Modify rules for coordination between CRC and MACC;
- Inform ACC about the conclusions of the incident with ATCO.
- Modify ATCO training plans to cover similar situations.

Prague, 12th of October 2005.