



# MINISTRY OF TRANSPORT, CONSTRUCTION AND REGIONAL DEVELOPMENT OF THE SLOVAK REPUBLIC

Aviation and Maritime Investigation Authority  
Námestie slobody 6, P.O.BOX 100, 810 05 Bratislava 15



Reg. No. SKS2012004

## FINAL REPORT

on investigation of serious incident of  
non-observance of separation minima  
between flight TTJ 603 and military flight SK 01

Date: 20.12.2012

Place: LZBB / point ULPUK

The investigation of occurrence has been conducted pursuant to Art. 18 of the Act No. 143/1998 on Civil Aviation (Civil Aviation Act) and on Amendment of Certain Acts and in accordance with the Regulation (EU) No. 996/2010 of the European Parliament and of the Council on investigation and prevention of civil aviation accidents and incidents, governing the investigation of civil aviation accidents and incidents.

The final report is issued in accordance with the Regulation L 13 that is the application of the provisions of ANNEX 13 Aircraft Accident and Incident Investigation to the Convention on International Civil Aviation.

The exclusive aim of investigation is to establish causes of accident, incident and to prevent their occurrence, but not to refer to any fault or liability of persons.

This final report, its individual parts or other documents related to the investigation of occurrence in question have an informative character and can only be used as recommendation for the implementation of measures to prevent occurrence of other accidents and incidents with similar causes.

#### Used abbreviations:

ACC	Area control centre
ACAS	Airborne collision avoidance system
AMC	Airspace management cell
APP	Approach control
bvrps	control and reconnaissance command
CMN	Military aircraft guidance centre (Zvolen)
FA	Chief senior officer of CMN
FL	Flight level
GAT	General air traffic (conducted in accordance with the ICAO rules and procedures)
LPIS	Aeronautical ground information system
LZBB	Flight information region Bratislava
LZSL	ICAO code for airport Sliač
LZTT	ICAO code for airport Poprad -Tatry
N CMN	Chief officer of CMN
OAT	Operational air traffic
RA	avoidance advice from ACAS
RC	Radar controller
RRBP	Tactical radar controller
SAR	Search and rescue
SSR code	Secondary surveillance radar code
STCA	Short term conflict alert
TA	Traffic alert from ACAS
TAS	True airspeed
TRA	Temporary reserved airspace
UTC	Co-ordinated Universal Time
VLI	Serious air incident

## A. INTRODUCTION

Operator:	TATRA JET, s r.o.	Slovak Air Force
Owner:	UNIVERSALINVEST LLC	Slovak Air Force
Type of operation:	general aviation	Slovak Air Force
Type of aircraft:	BEECHCRAFT SUPER KING AIR B200	MiG-29AS
Registration No.:	OM-TAA	SQF 0921
Call sign:	TTJ 603	SK 01
Takeoff site:	LZTT	LZSL
Flight phase:	en route flight	training flight
Place of incident:	point ULPUK	
Date and time of incident:	20.12.2012, 10:14	

Note: All time data in this report are stated in UTC.

## B. INFORMATIVE SUMMARY

On 20.12.2012 the pilot of aircraft MiG – 29AS, call sign SK 01, at 10:10, took off from airport LZSL for a training flight (practising the procedures in emergency alerting system) to areas TRA 07, TRA 07Y, which were activated for this purpose.

At that time the flight TTJ 603 with aircraft Beechcraft King Air B200, registration No. OM-TAA, flew over the area TRA 07 on the basis of flight clearance from ACC Bratislava.

The flight of this aircraft was controlled by ACC Bratislava and coordinated first with RC OAT and then between RC OAT and FA CMN Zvolen. In spite of the coordination the aircraft SK 01 reduced the separation minima ( **5 NM or 1000 ft** ) on two occasions. On one occasion this value was lower than a half of the separation minimum.

The system ACAS of the aircraft OM-TAA activated the conflict traffic alert and issued the avoidance advice (RA). The pilot of the aircraft reported it to ACC Bratislava with information that he had made a manoeuvre in the reaction to RA.

Nobody was injured in this occurrence.

The joint commission was appointed for investigation of the occurrence on the basis of the Agreement on Coordination of Action and Cooperation of Bodies of the Ministries of Transport, Interior and Defence in the investigation of accidents and serious incidents.

Lic. Jaroslava Mičeková

Col. Ing. Ján Salaj

The report is issued by:

Aviation and Maritime Investigation Authority  
of the Ministry of Transport, Construction and Regional Development  
of the Slovak Republic

## C. MAIN PART OF REPORT

1. FACTUAL INFORMATION
2. ANALYSES
3. CONCLUSIONS
4. SAFETY RECOMMENDATIONS

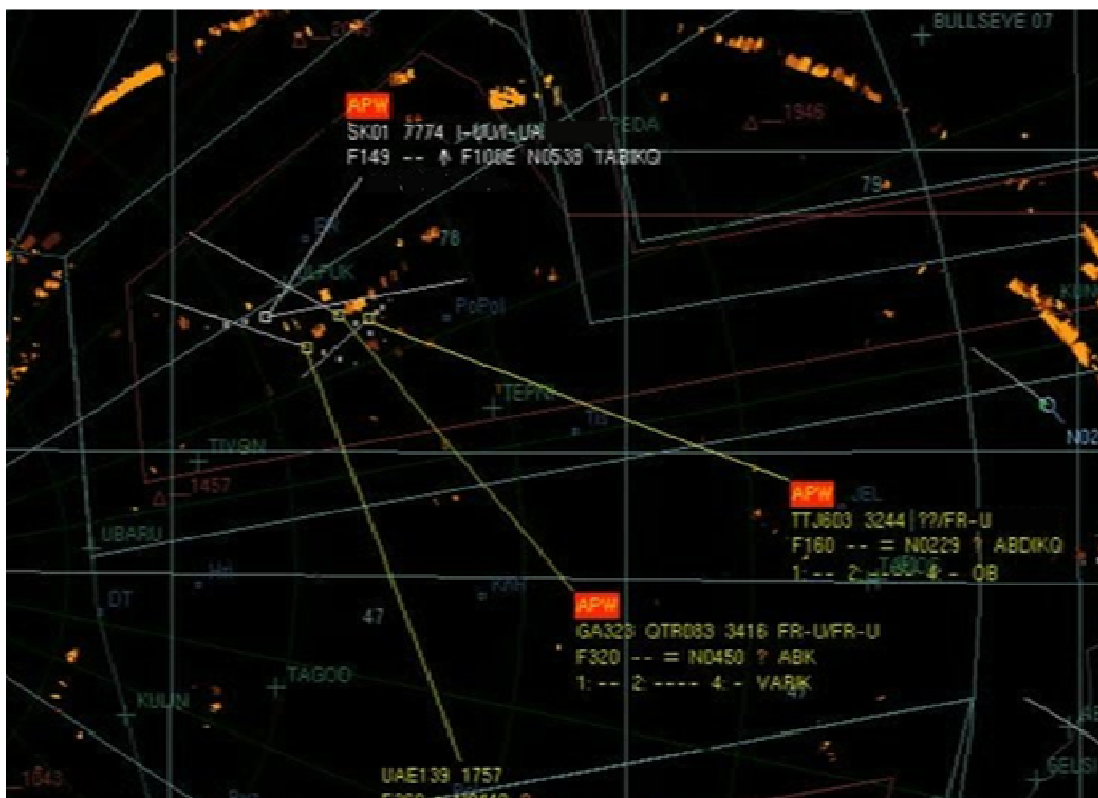
### 1. FACTUAL INFORMATION

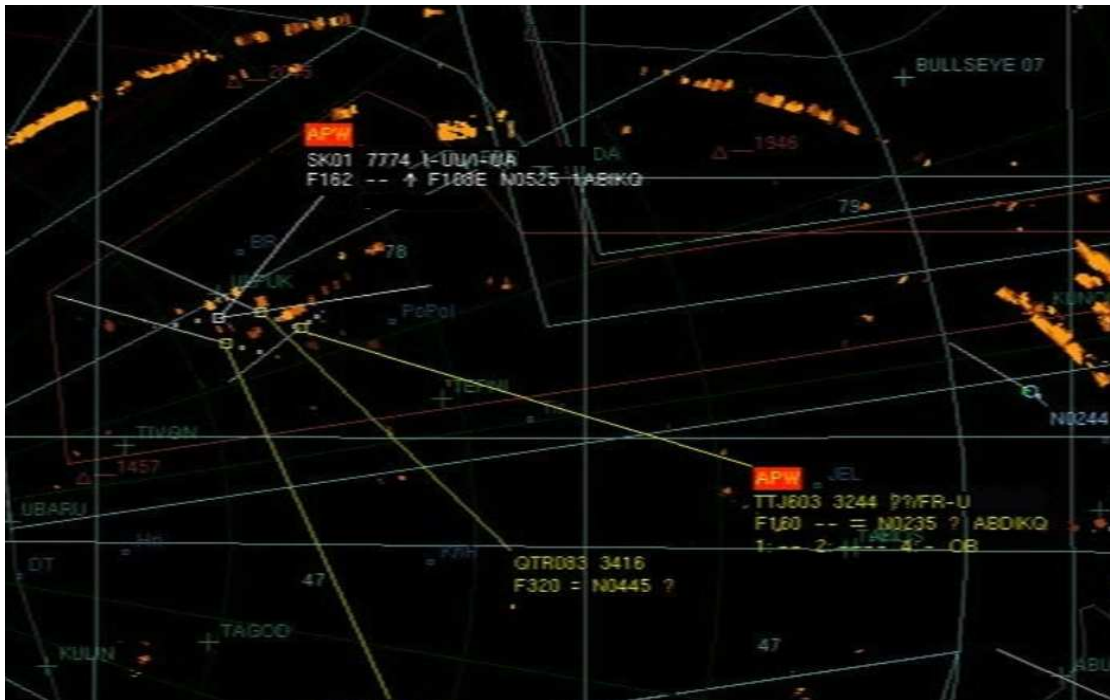
#### 1.1 History of the flight

The aircraft TTJ 603 was controlled by the civil air traffic controller of ACC Bratislava. The military aircraft SK 01 was controlled by RRBP of the Military Aircraft Guidance Centre of the control and reconnaissance command in Zvolen. During control of this flight the practical examination of RRBP in training was implemented under the supervision of the instructor. The purpose of examination was to assess the ability for independent execution of the function.

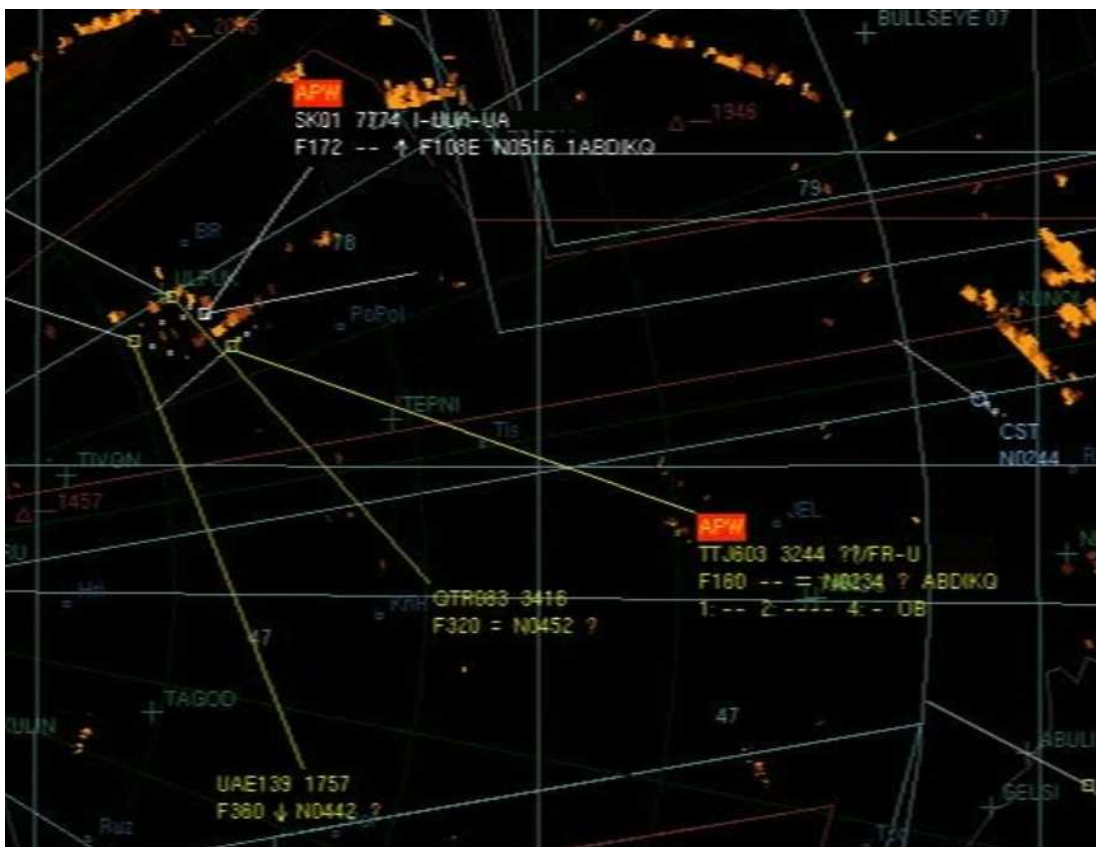
RRBP in training took over the control of flight SK 01 at 10:12. After mutual identification he permitted the pilot to climb up to FL 240.

During this practical examination the distance between military aircraft SK 01 climbing to FL240 and civil aircraft TTJ 603 maintaining FL160 (opposite direction course) was reduced on two occasions for 11 sec from initial value of horizontal separation of 4.2 NM and vertical separation of 0 ft up to 2.6 NM, when the vertical separation of 1000 ft was renewed. At that time the ACAS system of TTJ 603 signalled „TA“. After FA's warning of conflict civil traffic RRBP in training ordered the pilot of aircraft SK 01 to climb up to FL140. However, at that time the pilot of SK 01 exceeded FL160, which he subsequently reported together with information that he was descending to FL140.





The second air miss occurred in the phase of moving away from TAJ 603, when SK 01 descended from FL170 to FL140 during 12 sec from the value of horizontal separation of 1.6 NM to 3.4 NM, where the vertical separation of 1000 ft was renewed. In this air miss the crew of aircraft TAJ 603 received from ACAS the avoidance advice (RA), which they immediately followed and descended to FL146. At that time SK 01 was on departure in a distance of 1.8 NM with vertical separation of 200 ft.





Having missed TTJ 603, the pilot of SK 01 descended to FL159, where he received from RRBP in training the order to climb up to FL240. The crew of the flight TTJ 603 informed ACC Bratislava that they had made the manoeuvre in the reaction to the received avoidance advice and they were climbing back to FL160. RC ACC confirmed this information.

#### **Coordination and air traffic control**

Before the planned activity RRBP in training communicated by phone with pilots of emergency aircraft about the T-scramble mission with expected take off at 10:15 with participation of FA and instructor of training in real operation (instructor). During this call the pilots were informed that the mission would involve examination of RRBP for the 2nd class and that „detailed positive form of control“ would be provided, which meant that RRBP would be obliged to prevent a collision with other aircraft by giving orders for the change of course, speed or altitude of flight to ensure the observance of the prescribed separation minima.

The activation of areas TRA 07, 07Y by OAT was implemented according to a non-standard procedure, where AMC did not inform OAT accordingly and approved the flight of TTJ 603 over the areas without obtaining the opinion from FA.

As there is no direct communication service between ACC Bratislava and CMN Zvolen, the message exchange and hence the coordination of flights is implemented through OAT.

OAT handed over the identification of aircraft TTJ 603 to FA in the form of notice that „**a machine would reach EPEDE at 10:15 and then climb to FL 160 in direction of Sliač**“ without indication of the SSR code. FA received the information.

According to his accounts, FA received from OAT information that a civil airliner would start from the airport LZTT and continue the flight through the area TRA 07, 07Y, where a flight with MiG-29AS was expected. This incomplete information without SSR code was transmitted to RRBP, who received it.

At the incriminated time the instructor supervising the activity of RRBP was distracted from air traffic control by the chief officer of CMN (N CMN), so he was unable to receive the information about civil traffic.

RRBP in training was not alerted by the display system LETVIS of reduction of the separation minima – function STCA – between flights SK 01 and TTJ 603.

Daytime: Day

Flight rules: IFR



**1.1 Injuries to persons**

Without injuries.

**1.2 Damage to aircraft**

No damage.

**1.3 Other damage**

No circumstances with potential claims for compensation of other damage toward a third party were notified to the Aviation and Maritime Investigation Authority.

**1.5 Personnel information**

Not applicable.

**1.6 Aircraft information**

Aircraft involved in the air incident:

MiG-29AS, call sign SK 01





**1.7 Meteorological information**

The flight was made in cloudy weather conditions. Sky cover by clouds: 8/8, lower base: 4000ft/1200m, upper base: 24000ft/7300m.

**1.8 Aids to navigation**

Not applicable.

**1.9 Communications**

Both aircraft were equipped by radio communication equipment enabling two-way communication with all air stations at every moment of the flight.

**1.10 Aerodrome information**

Not applicable.

**1.11 Flight recorders**

Not applicable.

**1.12 Wreckage and impact information**

Not applicable.

**1.13 Medical and pathological information**

Not applicable.

**1.14 Fire**

No fire broke out.



### 1.15 **Survival aspects**

The search and rescue operations using SAR means were not required.

### 1.16 **Tests and research**

Tests or inspection of aircraft parts were not required.

### 1.17 **Organizational and management information**

The flight of aircraft MiG-21AS was implemented as part of the flight preparation programme of the Tactical Air Force.

The flight of aircraft TTJ 603 was implemented on a planned route and in a planned altitude.

### 1.18 **Additional information**

Not applicable.

### 1.19 **Useful or effective investigation techniques**

Standard investigation methods with use of elements of voice and radar records, information indicated in the submitted reports, reports of LPS SR š.p. and reports of the Military Aviation Authority of the Ministry of Defence of SR were used.

## 2. **ANALYSIS**

During the training flight of aircraft SK 01 the separation minima were disregarded by the military aircraft and the alert RA – avoidance advice from ACAS in civil traffic of TTJ 603 was activated.

RRBP in training registered civil traffic in a conflict altitude in the operating area only after warning from FA and his visual evaluation of situation. At that time he lacked the warning from the system LETVIS of reduction of the separation minima / function STCA from the incriminated civil traffic.

The occurrence was caused by several factors, whose origin can be found partially in the over-familiar and inconsistent approach applied in transmission and reception of information about individual flights without their proper identification between OAT and CMN, in the non-standard coordination of flights between individual military air traffic control units as well as in the irresponsible attitude of the instructor toward the fulfilment of his obligations related to supervision of the tactical radar controller in training. The occurrence was also caused by the fact that STCA of the system LETVIS, which is used at CMN for displaying of air raid warning conditions, was non-functional at the critical time.

Serious deficiencies were detected in the application of the RRBP training system according to actual requirements for military air traffic control service and security of LPIS. It was also detected that efficient corrective measures made on the basis of conclusions of investigation of previous air incidents involving members of the incriminated military control unit were taken non-systematically and that deficiencies identified by thematic safety audits were remedied inconsistently.

### 3. CONCLUSIONS / CAUSE OF SERIOUS INCIDENT

#### 3.1 Findings

- OAT did not transmit properly the identification of aircraft, SSR code and coordinated flight route;
- OAT did not submit the request for clearance of flight of TTJ 603 over TRA 07,07Y and ACC approved this request without obtaining the opinion from FA;
- FA transmitted information about the change of control without knowing the call sign (SSR code) of civil traffic overflying the areas TRA 07, 07Y;
- RRBP in training received incomplete information about civil traffic overflying the areas TRA 07, 07Y, where he was supposed to fulfil his mission;
- the areas TRA 07, 07Y were activated by OAT according to a non-standard procedure, where AMC did not inform OAT and approved the flight of TTJ 603 over these areas without obtaining the opinion from FA;
- AMC first reported the activation of the areas TRA 07, 07Y 3 minutes before the take off of SK 01;
- the instructor of RRBP did not pay sufficient attention to RRBP in training and to completeness of information, which affected the activity in the areas TRA 07, 07Y. Moreover, he did not have continuous overview of the air raid warning conditions in the areas TRA 07, 07Y and permitted the reduction of vertical and radar separation minima;
- the attention of the instructor of RRBP, who supervised the activity of RRBP in training, was distracted from the air traffic control at the critical time, so he was unable to receive information about civil traffic;
- the system LETVIS did not indicate any reduction of the separation minima – function STCA from the incriminated civil traffic;  
*Note: The investigation commission found that the function STCA could not have been operable at the time of serious incident due to incorrect configuration.*
- RRBP in training did not issue the flight clearance for SK 01 sufficiently in advance to allow him to adjust the flight to the conditions of the flight clearance;
- FA, the instructor and N CMN did not take any measures for improvement of air traffic safety after the serious incident – interruption of mission with RRBP in training, takeover of control by the instructor and termination of the mission;  
*Note: The pilot of emergency aircraft MiG – 29, call sign SK 01, only learnt about the reduction of the separation minima after the landing.*
- as there is no direct communication service between ACC Bratislava and CMN Zvolen, the message exchange and hence the flight coordination was implemented through OAT.

#### 3.2 Causes of serious incident:

##### Main causes

- non-observance of the separation minima between civil and military air traffic on the part of the military air traffic control unit;
- incorrect division of attention and application of the separation minima by RRBP in training, inconsistent activity of the training instructor in real air traffic.

##### Secondary causes:

- poor coordination of flight operations by FA in the framework of the change of sector suite of CMN;
- incorrect coordination of flight of the civil aircraft over activated areas for military aviation training between FA and RC OAT;

- N CMN did not secure the activity of RRBP to prevent the reduction of the separation minima and during his presence distracted them from their mission;
- the form and content of information transmitted from OAT to CMN Zvolen were not in compliance with the Agreement on Organization and Cooperation between Letové prevádzkové služby SR, š.p. (Operational air traffic Control unit in Bratislava) and the Ministry of Defence of SR (Control and Reconnaissance Centre in Zvolen).

#### 4. SAFETY RECOMMENDATIONS

On the basis of investigation of causes of the serious incident between aircrafts

**Beechcraft King Air B200**, registration No. **OM-TAA**  
and  
**MiG-29AS**, registration No. **SQF 0921**

dated **20.12.2012**

##### **Measures taken after the serious incident:**

The Air Force Commander of the Slovak Republic by its regulation No. VVzS-32-34/2012-SkBL prohibited the implementation of all tactical flights with the exception of „A-scramble“ flights for the Mixed Wing Sliač and the Control and Reconnaissance Command in Zvolen until the termination of investigation of the serious incident.

The Chief of the Control and Reconnaissance Centre of bvrps called back from duty the air traffic controllers who were deemed to have made an error, which contributed to the occurrence of the serious incident.

On 21.01.2013 NOTAM C0115/13 on the change of the lower boundary of temporary reserved airspace TRA 07 from FL090 to FL155 was issued.

##### **We recommend the Armed Forces of SR to take the following measures:**

- to change the lower boundary of airspace LZTRA 07 from FL090 to FL155;
- to establish direct communication service between ACC Bratislava and CMN Zvolen;
- to coordinate the installation of new objective monitoring system recording the actual display of each workstation of LETVIS RDD;
- to update the Agreement on organization and cooperation between the Operational air traffic Control unit in Bratislava and the Control and Reconnaissance Centre in Zvolen;
- to take own measures for remedy of detected deficiencies in OS SR.

Bratislava, 24.04.2013