MINISTRY OF TRANSPORT, CONSTRUCTION AND REGIONAL DEVELOPMENT OF THE SLOVAK REPUBLIC
Aviation and Maritime Investigation Authority
Nám. slobody 6, P.O. BOX 100, 810 05 Bratislava 15

Reg. No. SKO2011005

F I N A L R E P O R T

on investigation of air incident

of aircraft type **Falcon 2000**

registration No. **OM - OPF**

Date: 28.04.2011

Place: Airport Moscow - Vnukovo / UUWW

A. I N T R O D U C T I O N

The investigation of air accident [AA], serious incident [SI], 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.

The final report is issued in accordance with the Regulation L 13 that is the application of the provisions of ANNEX 13 Air Accident and Incident Investigation to the Convention on International Civil Aviation 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 exclusive aim of investigation is to establish causes of accident, serious 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 the air accident in question have an informative character and can only be used as recommendation for the implementation of measures to prevent occurrence of other air accidents and serious incidents with similar causes.

Operator / Owner:	OPERA JET, a.s. / BACA HYDRA Leasing GmbH
Type of operation:	commercial, irregular passenger transport
Type of aircraft:	Falcon 2000

Registration No:	OM-OPF
Take-off site:	Airport Moscow - Vnukovo / UUWW
Planned landing site:	Airport Vienna – Schwechat / LOWW
Flight phase:	take-off

Date and time of detection of incident: 28.04. 2011, at 03:40 hrs

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

B. INFORMATIVE SUMMARY

On 28 April 2011 the crew of aircraft Falcon 2000, registration No. OM-OPF, took-off from the runway ("RWY") 19 at the airport UUWW with two passengers on board, to make a commercial flight to the airport LOWW.

In the take-off phase the crew registered light and sound signals indicating the incorrect configuration of the aircraft for take-off. In accordance with standard operating procedures of the company OPERA JET, a.s. and with the flight manual of the aircraft, the crew interrupted the take-off and fully stopped the aircraft on RWY 19. Afterwards they reported the situation to the active air traffic controllers at the airport UUWW and cleared the active RWY 19.

None of the passengers or crew members was injured in the incident. The aircraft and property and health of third parties were not damaged.

The incident was reported to the UUWW airport security inspector, and by phone and e-mail to the Air Accident and Incident Investigation Authority of the Ministry of Transport, Construction and Regional Development of the Slovak Republic.

In accordance with ICAO Annex 13 and following agreement with the Air Accident Investigation Board of the Russian Federation, the Air Accident and Incident Investigation Authority of the Ministry of Transport, Construction and Regional Development of the Slovak Republic undertook investigation of the incident.

Person appointed for investigation of causes of the incident:

Ing. Igor Benek

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

1.1 History of the flight

On 28 April 2011 the crew members took up their duty rested, without use of psychoactive substances and without stress, in a good health condition.

The pre-flight preparation was conducted in accordance with standard procedures of the company and with the flight manual, without faults.

Once the embarkation of passengers was completed and the engines were started, the crew received from the "Vnukovo Ground" controllers (frequency 120.45 MHz) a permission for taxiing from the stand Vnukovo III and followed the accompanying vehicle to the holding position "C2". During taxiing the monitoring pilot conducted the "TAXI CHECKLIST", that contains among others a check of position of horizontal tail plane that serves for balancing

of aircraft controls in the longitudinal direction. On the holding position "C2", the flight control was taken over by the "Vnukovo Tower" controllers (frequency 118.3 MHz), who gave the aircraft permission to taxi along the runway "14" and back along RWY to the take-off position - RWY 19.

After the reception and confirmation of the take-off permission and once the engine thrust control levers had been put into a take-off position (i. e. maximum thrust), the crew registered light ("TO CONFIG") and sound signals indicating the incorrect aircraft take-off configuration and in accordance with standard operating procedures of the company OPERA JET, a.s. and with the flight manual of the aircraft the crew interrupted the take-off at a speed of 30 – 40 kts and fully stopped the aircraft on RWY 19. Subsequently the crew reported this fact to the "Vnukovo Tower" air traffic controllers and cleared RWY 19 via runway "B2".

After the clearance of RWY 19 and passing through the abnormal checklist it was stated that the cause of signalling had been the incorrect position of horizontal tailplane for take-off, specifically "tail heavy". In accordance with internal regulations of the airport UUWW the crew was ordered to taxi back to the holding position Vnukovo III. The following check of position of horizontal tailplane performed by the crew did not detect any abnormality in control of position of the tailplane.

Daytime: day

Time of incident: 03:40 hrs

1.2 Injuries to persons

Injury	Crew	Passengers	Other persons
Fatal	-	-	-
Serious	-	-	-
Minor	-	-	-
None	3	2	

1.3 Damage to aircraft

The aircraft was not damaged in the incident.

1.4 Other damages

The Aviation and Maritime Investigation Authority was not informed about any circumstances with potential claims for compensation of other damages toward a third party.

1.5 Personnel information

Pilot in command

Citizen of Slovak Republic, aged of 40, holder of the airline transport pilot licence - ATPL (A) No. SK05080158, issued by the Civil Aviation Authority of SR on 16 September 2010.

Qualifications:	Falcon 2000	with marked validity until 31.07.2011
	IR(A)	with marked validity until 31.07.2011
	C525	with marked validity until 31.10.2011
	CRI	with marked validity until 30.06.2012

Medical certificate of 1st class with marked validity until 21.08.2011.

Flying experience:

Total flight hours:	4200 h
Of which with the aircraft type:	320 h

Flight officer

Citizen of Slovak Republic, aged of 33, holder of the commercial pilot licence CPL(A) No. SK03030013, issued by the Civil Aviation Authority of SR on 28.02.2011.

Qualifications:	Falcon 2000	with marked validity until 30.11.2011
	IR(A)	with marked validity until 30.11.2011
	C525 / IR(A)	with marked validity until 31.05.2011

Medical certificate of 1st class with marked validity until 01.04.2012.

Flying experience:

Total flight hours:	1576 h
Of which with the aircraft type:	175 h

1.6 **Aircraft information**

a) **Airframe**

Type:	Falcon 2000
Identification No:	207
Year of manufacture:	2002 (put into operation in 2003)
Manufacturer:	Dassault Aviation

Total flight hours since manufacture: 2296 h 45 min

Certificate of airworthiness No. 1027/01 issued by the Civil Aviation Authority of SR.

b) **Engines**

Engine No. 1:

Type:	CFE738-1-1B
Serial No:	P105561
Manufacturer:	CFE

Date of incorporation into aircraft: 23.09.2004.

Total operating hours since manufacture: 2206h 45 min since manufacture
3h 45 min since G/O

Engine No. 2:

Type:	CFE738-1-1B
Serial No:	P105545
Manufacturer:	CFE

Date of incorporation into aircraft: 28.06.2002.

Total operating hours since manufacture: 2303h 45 min since manufacture
543h 45 min since G/O

c) **Weight of aircraft at the time of incident**:

Empty weight of aircraft	10 717 kg
Useful load	16 kg
Weight of aircraft without fuel	10 933 kg
Weight of fuel	4 535 kg
Weight of standing aircraft:	15 468 kg
Weight of fuel for taxiing:	90 kg
Total weight of aircraft at the time of incident:	15 378 kg

Maximum permitted take-off weight of aircraft according to the flight manual: 16 556 kg.

Weight of aircraft at the time of incident was within the permitted range.

Regular checks (BASIC and A/A+) of aircraft were conducted after 2 293 flight hours and no findings or faults having relation to the incident were detected.

Type of fuel used: JET A1.

1.7 Meteorological situation

The meteorological situation as recorded in the flight documentation from transmission of automatic terminal information service (ATIS):
- wind 190/4, temperature/dew point 11/4, Q_{FE} 995 HPa, without significant cloudiness, RWY 19 in a dry condition.
Meteorological situation at the time of incident had no influence on the occurrence of the incident.

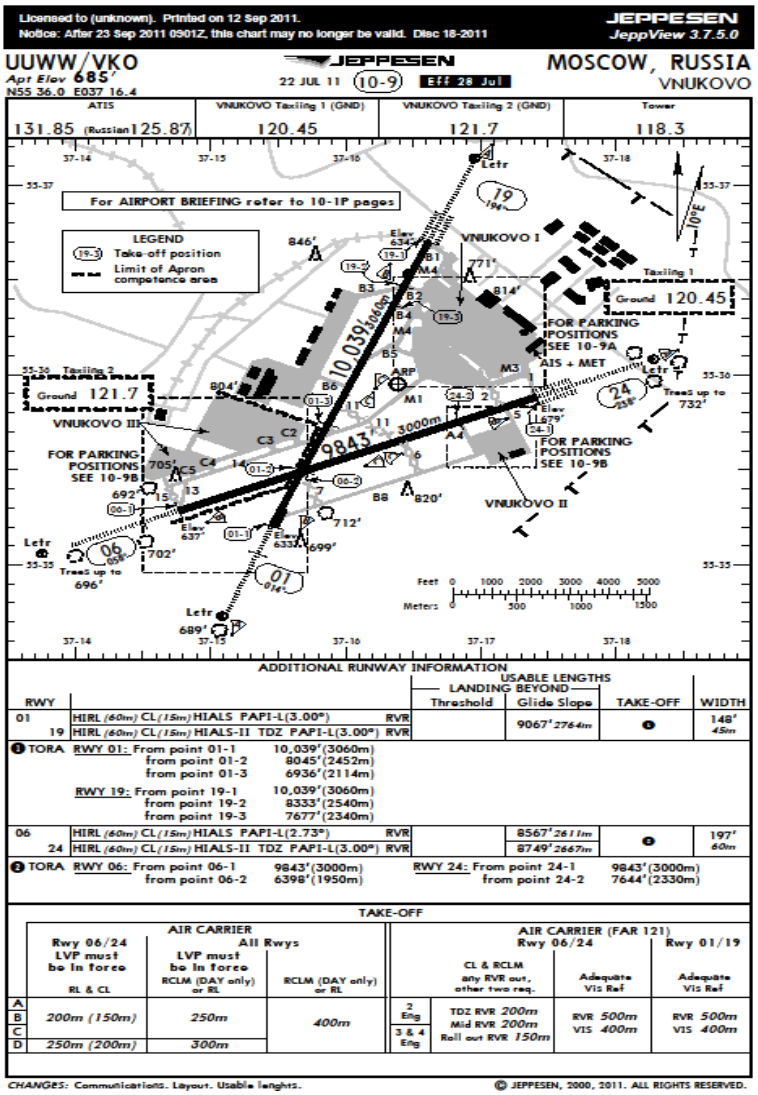
1.8 Aids to navigation

The aircraft was equipped by devices required for flights according to the IFR rules.

1.9 Communications

The aircraft was equipped by radio communication system enabling two-way radio communication at every moment of flight with all air and aircraft stations. At the time of incident the aircraft maintained two-way radio communication with the land aeronautical mobile service (AMS) station of "Vnukovo Tower" on the frequency of 118.3 MHz.

1.10 Aerodrome information



From valid airport notices to airmen “N“ No. A0942/11 and No. A1050/11 obtained from the flight documentation the following information about the condition of runways at the airport UUWW was taken:
- RWY “06-24“ closed for takeoffs and landings of all aircraft types because of ongoing reconstruction works;
- threshold of RWY “01“ shifted 1030 m towards the airport reference point for the reason of ongoing reconstruction works on RWY “06-24“; declared lengths of RWY “01-19“:
TORA, ASDA, LDA: 2030 m (6658 ft)
TODA: 2180 m (7150 ft).

1.11 Flight recorders and other recording systems

Data from the flight and voice recorders in the pilot cockpit were not used for investigation.

1.12 Wreckage and impact information

After the interruption of take-off and having made a full stop on RWY 19, the aircraft cleared RWY 19 using its own driving units and taxied up to the holding position in accordance with internal operating regulations of the airport UUWW.

1.13 Medical and pathological information

Not applicable.

1.14 Fire

No fire broke out.

1.15 Survival aspects

Not applicable.

1.16 Tests and research

No tests or research were implemented.

1.17 Organizational and management information

Not applicable.

1.18 Additional information

Not applicable.

1.19 Useful or effective investigation techniques

Standard investigation methods were used.

2. ANALYSIS

The review of the air operator´s records showed that the crew had rested 2 h 40 min before the flight 10 h 40 min, which is in accordance with valid regulations binding for the operator (Commission Regulation No. 859/2008/EC EU-OPS) and with the operating manual of the company (OM-A).

The flight manual requires for the take-off phase the position of horizontal tailplane within a range between +2.5° and + 5.5° (+ means “tail hea vy“) which is, for illustration purposes, marked green on the tailplane position indicator scale (see Fig. No. 1). By a check of the indicator in the cockpit it was also detected that the shape and colour of the tailplane position indicator were similar to those of the indicator scale lines, which can lead the monitoring pilot (sitting on the right side during the taxiing phase) to a wrong assessment of situation (see Fig. No. 2).

The pre-flight preparation and pre-flight procedures were conducted in accordance with the flight manual of given type and in accordance with valid standard operating procedures of the operator, determined by the operating manual OM-B (Falcon 2000), Chapter 2.

Fig. No. 1: Horizontal tailplane position indicator (right side)

Fig. No. 2: The indicator viewed from the side of the monitoring pilot

3. C O N C L U S I O N S / Cause of air incident

3.1 Findings

- the crew had valid qualifications for the flight.
- the crew was rested, without use of psychoactive substances, without stress, in a good health condition.
- the aircraft fulfilled conditions of airworthiness and did not show any faults
- the aircraft had a valid documentation and was fit for the flight.

3.2 Causes of incident

- the most probable cause of the incident was accidental change of the position of the horizontal tailplane during a radio communication in the taxiing phase

- incorrect evaluation of the position of the horizontal tailplane by the pilot going through the checklist.

Contributory cause:

- lower visibility of the indicator viewed from the side of the monitoring pilot.

4. FLIGHT SAFETY RECOMMENDATIONS

On the basis of investigation of causes of the incident of:

Aircraft **Falcon 2000**

Registration No. **OM - OPF**

Date of incident: **28.04.2011**

The aircraft operator has taken the following preventive measure:

- to include the check of position of horizontal tailplane or aircraft take-off configuration in the checklist used just before the take-off (LINEUP CHECKLIST), which will ensure a duplicate check of substantial parts of the take-off configuration (such as brakes, flaps, balance of controls) and reveal accidental interventions into the aircraft configuration control.

Bratislava, 6 September 2011