AAIS Case Reference: 06/2012

AIR ACCIDENT INVESTIGATION SECTOR

Preliminary

SERIOUS INCIDENT INVESTIGATION REPORT

Runway Incursion

Dubai International Airport
United Arab Emirates
20th March 2012

General Civil Aviation Authority
of
United Arab Emirates

SERIOUS INCIDENT

NAME OF THE OPERATOR	:	Ural Airlines
MANUFACTURER	:	Airbus Industries
AIRCRAFT MODEL	:	A320-214
STATE OF REGISTRY	:	Bermuda
REGISTRATION	:	VQ-BDJ
STATE OF OCCURANCE	:	UAE
LOCATION	:	Taxiway M11, Dubai International Airport
DATE & TIME	:	20th March 2012, 09:41:52 Local Time

Notes:

1. All times in the report are Local Time (Local time "LT" in UAE was UTC+ 4h)
2. The word "Aircraft" in this report implies the aircraft involved in the serious incident
3. The word "Team" in this report implies the Investigation Team

OBJECTIVE

This investigation is performed in accordance with the UAE Federal Act No 20 (1991), promulgating the Civil Aviation Law, Chapter VII, Aircraft Accidents, Article 48, CAR Part III Chapter 3 and in conformity with Annex 13 to the Convention on International Civil Aviation.

The object of this safety investigation is to prevent aircraft accidents and incidents by identifying and reducing safety-related risk. The GCAA AAIS investigations determine and communicate the safety factors related to the transport safety matter being investigated.

Reports are publicly available from :
http://www.gcaa.gov.ae/en/epublication/pages/investigationreport.aspx

It is not a function of the GCAA AAIS to apportion blame or determine liability.

The information contained in this preliminary report is derived from the factual information gathered during the ongoing investigation of the occurrence. Later interim reports or the final report may contain altered information in the case that new evidence appears during the ongoing investigation that requires changes to the information depicted in this report.

Any specific safety issues identified during the course of the investigation will be advised to all parties through the GCAA Safety Recommendations (SR) procedure.

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ABBREVIATIONS

A	Aeroplane
AAIS	UAE GCAA Air Accident Investigation Sector
AFM	Aircraft Flight Manual
AMM	Aircraft Maintenance Manual
AMO	Approved Maintenance Organization
AMS	Approved Maintenance Schedule
amsl	above mean sea level
ATC	Air Traffic Control
ATCO	Air Traffic Controller
ATPL	Air Transport Pilot License
CAAP	Civil Aviation Advisory Publication
CAR	UAE Civil Aviation Regulation
CAR-OPS	UAE Civil Aviation Regulation – Flight Operation
CAT	Category
CAVOK	Cloud and Visibility OK
CG	Centre of Gravity
C of A	Certificate of Airworthiness
COM	Communication
CRM	Crew Resource Management
CVR	Cockpit Voice Recorder
Cm	centimetre
CMR	Certificate of Maintenance Review
CPL	Commercial Pilot License
DAR	Digital Aids Recorder
DFDR	Digital Flight Data Recorder

EICAS	Engine Indicating and Crew Alerting System
ELP	English Language Proficiency
FAA	Federal Aviation Administration
FDIMU	Flight Data Interface Management Unit
FDR	Flight Data Recorder
GCAA	UAE General Civil Aviation Authority
GMR	Ground Movement Radar
hrs	hours
ICAO	International Civil Aviation Organization
IIC	Investigator In Charge
ILS	Instrument Landing System
JAA	Joint Aviation Authorities
kg	kilogram
KIAS	Knots Indicated Air Speed
Km	kilometers
LDA	Landing Distance Available
Ldg	Landing
LH	Left Hand
LT	Local Time
m	metres
mb	millibars
MCC	Multi Crew Co-operation
MHz	Mega Hertz
MSI	Major Structural Inspection
MSN	Manufacturer Serial Number
No.	Number
OK	all correct

PAPI	Precision Approach Path Indicator
PCMCIA	Personal Computer Memory Card International Association
QNH	barometric pressure adjusted to sea level
RH	Right Hand
SN	Serial Number
SOP	Standard Operating Procedures
TO	Take Off
TSO	Time Since Overhaul
TSN	Time Since New
UAE	United Arab Emirates
USA	United States of America
UTC	Co-ordinated Universal Time
VHF	Very High Frequency
VOR	Very High Frequency Omnidirectional Range (Navigation System)
12L ATC	Air Traffic Controller providing air traffic control instructions to traffic on runway 12L
12R ATC	Air Traffic Controller providing air traffic control instructions to traffic on runway 12R

SYNOPSIS

On March 20th, 2012, an A-320, registration VQ-BDJ, after landing at Dubai International airport runway 12L vacated the runway via the high speed turn off M9, and it was instructed to taxi along taxiway Mike. Instead of turning left onto taxiway Mike the aircraft continued straight ahead, entered taxiway M11, crossed the stop bar of runway 12R/30L and stopped, whilst a B-777, registration A6-EBN, was departing from runway 12R. The closest point (nose to wingtip) of the two aircraft was calculated to be approximately 61.615 meters.

The GCAA was informed, on the 20th of March 2012. Thereafter GCAA AAIS formed and dispatched an Investigation Team (Team), which commenced the investigation. The following day the States of the Manufacturers (France & USA), the State of the Operator (Russia), the State of Registry (Bermuda), were notified and assigned Accredited Representatives to the investigation. The UAE GCAA lead the investigation and will issue the final report.

1 FACTUAL INFORMATION

1.1 History of the Flight

On March 20th 2012 an A320 operated as xxx3693 landed on runway 12L at Dubai International airport, arriving from Krasnodar/Pashkovskiy airport, Russia, which is located approximately 1200 nautical miles south of Moscow, in the area between Ukraine and Georgia, approximately 90 kilometers from the coast of the Black Sea. At the same time a B777 operated as xxx59 from Dubai, UAE to Hamburg, Germany, was departing from runway 12R.

The Dubai International Airport has two parallel runways, which are controlled by two different ATCOs.

While, the A-320's was approaching Dubai International Airport its crew was advised, by the ATCO controlling traffic for runway 12L (12L ATC), to expect to vacate runway 12L after landing, via taxiway M9. This was correctly read back by the crew.

After landing the 12L ATC, provided a clearance to the A-320 crew for the aircraft to vacate via M9 and turn left on taxiway Mike. When the A-320 was decelerating, the ATCO, controlling traffic on runway 12R (12R ATC), provided take off clearance to the B777 crew to depart from runway 12R. Shortly after that the A-320 entered M11, crossed the stop bar and continued taxing towards the active runway (12R). Soon after the A-320 stopped taxing. The B777 crew continued their take-off and in accordance to the ground movement radar calculated data the closest point (nose to wingtip) of the two aircraft was approximately 61.615 meters (see images 1, 2 & photos 1,2 and 3).

1.2 Injuries to Persons

Injuries	Flight Crew	Cabin Crew	Passengers	Other	Total
Fatal	-	-	-	-	-
Serious	-	-	-	-	-
Minor	-	-	-	-	-
None	3	5	127	-	-
Total	**Nil**	**Nil**	**Nil**	**Nil**	**Nil**

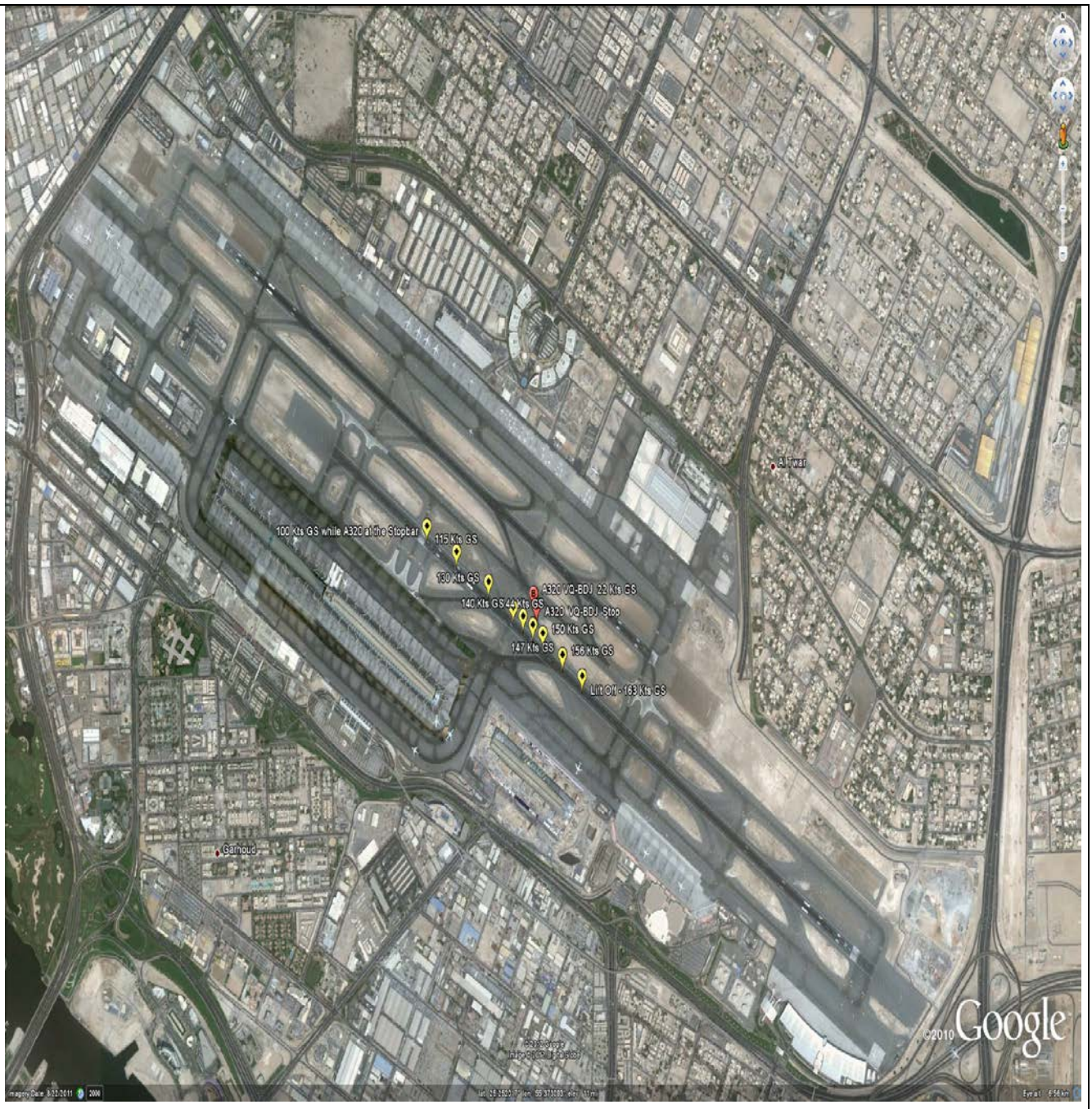

Image 1

Dubai International Airport

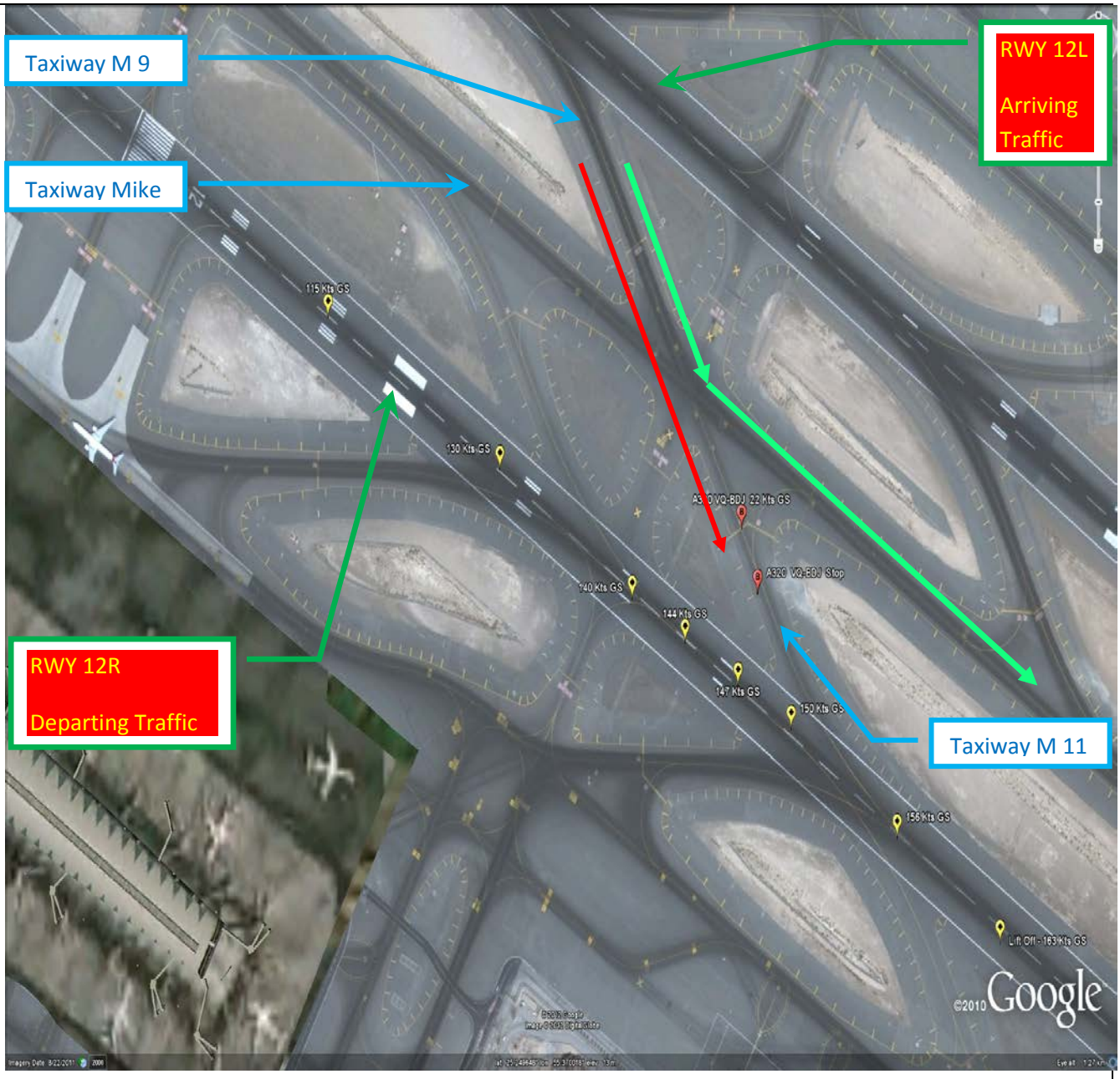

Image 2

Intended path of the A-320 (in green) versus the Performed path of the A-320 (in red)

Photo 1

View of taxiway M9 after vacating runway 12L

Photo 2

View of taxiway Mike

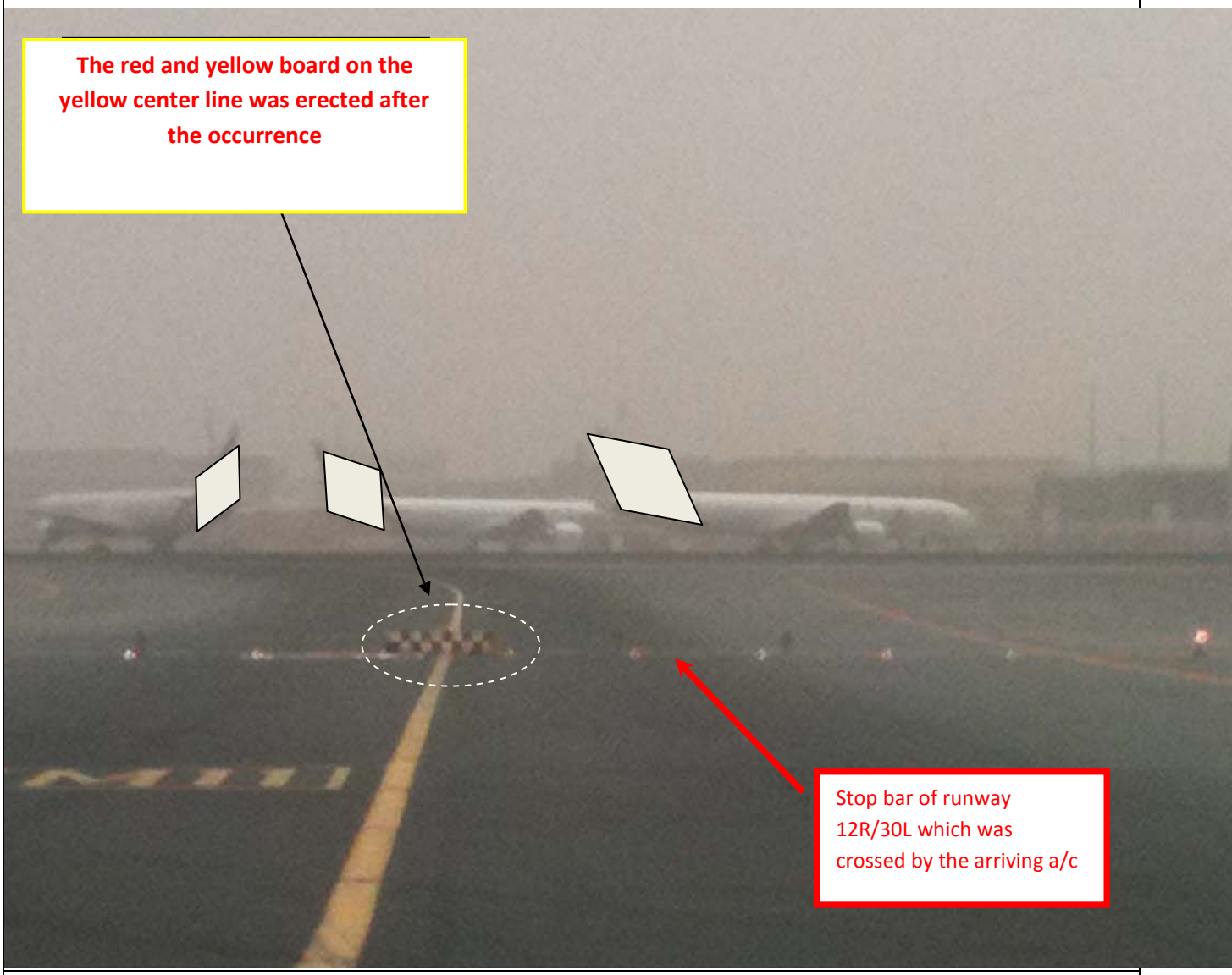

Photo 3

View of taxiway M11

1.3 Damage to Aircraft

Both (arriving and departing) aircraft did not sustain any damage.

1.4 Other Damage

There was no damage sustained by other objects and there was no damage to the environment.

1.5 Personnel Information

1.5.1 The Pilot In Command

Date of birth	09.06.70
Foreign licence number and validity (if any)	№010313 TILL 03.11.12
Class and validity of medical	Class 1 till 03.11.12
Flying experience	
Total all types	8369
Total Command on all types	5120
Total on type	2648
Total last 30 days	50
Total last 24 hours	04 hrs 20 min
Line and proficiency check	LINE CHECK-20.11.11 proficiency check - 30.10.11
English language proficiency	ICAO IV level until 24.05.13

1.5.2 The Safety Pilot

Date of birth	11.08.65
Foreign licence number and validity (if any)	N 010196 TILL 01.07.12
Class and validity of medical	Class 1 till 01.07.12
Flying experience	
Total all types	6761
Total Command on all types	594
Total on type	1972
Total last 30 days	25
Total last 24 hours	04 hrs 20 min
Line and proficiency check	LINE CHEK- 10.04.11 PROFICIENCY-30.08.11
English language proficiency	ICAO IV LEVEL UNTIL 30.03.12

1.5.3 The First Officer

Date of birth	11.03.71
Foreign licence number and validity (if any)	N 010058 TILL18.05.12
Class and validity of medical	Class 1 till 18.05.12
Flying experience	
Total all types	1964
Total Command on all types	0
Total on type	61

Total last 30 days	60
Total last 24 hours	04 hrs 20 min
Line and proficiency check	LINE CHECK-14.12.11
English language proficiency	ICAO IV LEVEL UNTIL 22.02.14

1.6 Aircraft Information

The Airbus A320 is narrow-body aircraft with a retractable tricycle landing gear and are powered by two wing pylon-mounted turbofan engines . This low-wing cantilever monoplane has a conventional tail unit with a single vertical stabilizer and rudder. Wing swept back at 25 degrees, optimized for maximum operating Mach number 0.82. The A320 features a single-aisle cabin of 155.5 inches (3.95 m) outside diameter. In addition, the aircraft has a cargo hold equipped with large doors to assist in expedient loading and unloading of goods.

1.6.1 Aircraft General Information

Aircraft Type:	A320-214
Aircraft Manufacturer:	AIRBUS
Aircraft MSN:	2187
Max TO/Ldg Mass:	77000 / 66000
Date of the last C of A:	22/06/2011
Last C of A expiry date:	21/06/2012
C of A category:	passenger
Aircraft Station License:	EASA0415 BDA/AMO /357
Insurance Validity Period:	14 November 2011 till 13 November 2012
TSN:	34 497
Last CMR date:	**16/12/2011**
Next Due CMR	**15/06/2012**

1.7 Meteorological Information

The weather report at Dubai International Airport at 10.00 UTC which was the approximate time of the serious incident was as follows:

METAR/SPECI from OMDB, Dubai International Airport (United Arab Emirates).		
SA	20/03/2012 07:00->	METAR OMDB 200700Z 08013KT 040V120 1000 R12L/1100N BLDU NSC 25/05 Q1020 TEMPO 0700 DS VV007=
SA	20/03/2012 06:00->	METAR OMDB 200600Z 08014G26KT 050V130 0800 R12L/1000N BLDU NSC 24/06 Q1020 TEMPO 0700 DS VV007=
SP	20/03/2012 05:29->	*SPECI OMDB 200529Z 07015G26KT 050V110 1000 R12L/1000N DU NSC 24/06 Q1020 TEMPO 0700 DS VV007=*
SA	20/03/2012 05:00->	METAR OMDB 200500Z 07010KT 040V120 1000 R12L/0750N DU NSC 23/06 Q1020 NOSIG=
SA	20/03/2012 04:00->	METAR OMDB 200400Z 06009KT 040V110 1200 R12L/1100N DU NSC 22/06 Q1020 NOSIG=

TAF from OMDB, Dubai International Airport (United Arab Emirates).		
FT	20/03/2012 05:15->	TAF OMDB 200515Z 2006/2112 05009KT 1500 DU NSC PROB30 TEMPO 2006/2015 05015G25KT 0800 DS VV005 BECMG 2015/2017 12005KT 5000 BECMG 2107/2109 34012KT=
FT	20/03/2012 05:09->	TAF OMDB 200509Z 2006/2112 05009KT 1500 DU NSC PROB30 TEMPO 2006/2015 05015G25KT 0800 DS VV/// BECMG 2015/2017 12005KT 5000 BECMG 2107/2109 34012KT=
FT	20/03/2012 05:00->	TAF OMDB 200500Z NIL=

1.8 Aids to Navigation

The arriving aircraft utilized the Instrument landing system of Dubai International on RWY 12L

1.9 Communications

The ATC recordings and radar files were made available to the Team.

1.10 Aerodrome Information

1.10.1 General

Dubai International Airport (see image 1) has two parallel runways and taxiways have respective signs. (see photos 1, 2 and 3 which were taken a day after the occurrence. At the time the photographs were taken the visibility was reported as 3000m).

1.10.2 Stop Bar Lighting

Stop Bars are lighted with Red inset lights supplemented with elevated lights on either side of the holding position. Runway holding positions (CAT I and CAT II) and intermediate holding positions for general service road crossings are provided with Stop Bar Lighting.

In addition the UAE AIP has published hot spots with Dubai International Airport.

1.11 Flight Recorders

The Flight Data Recorder (FDR) of the departing aircraft was removed from the aircraft and sent to the General Civil Aviation Authority Air Accident Investigation Laboratory in order to download the data for the investigation purpose.

The detail of the FDR of A6-EBN aircraft was as follows:
Part number: 980-4700-042
Serial Number: SSFDR-11106

The stated Flight Data Recorder was successfully downloaded.

The arriving aircraft was equipped with FDR, CVR, DAR (Digital Aids Recorder) and a FDIMU.

DAR as an additional recorder (which is in fact a kind of PCMCIA) is connected to FDIMU on VQ-BDJ.
The Operator used the DAR for downloading the raw data, which was then sent to the GCAA.

The detail of the FDIMU of VQ-BDJ was as follows:
Manufacturer: SAGEM
Part number: ED48A100
Serial Number: 297
The FDR data from the arriving aircraft was not made available to the Team, as the aircraft flew to destinations where the replacement of the FDR wasn't possible.

1.12 Wreckage and Impact Information

Not applicable to this investigation.

1.13 Medical and Pathological Information

Not Applicable to this investigation.

1.14 Fire

No fire involved in this occurrence.

1.15 Survival Aspects

There was no structure failure of the seats nor to the seat belts attachment.

1.16 Tests and Research

Stop bar accuracy checks were carried out on January 18th 2012 (see images 3 &4), following identification of possible inaccuracies with respect to the map displayed on the Ground Movements Radar. Subsequently an additional check was carried out for M11, with identical results, on the 20th March. These checks confirmed that the position of the stop bar on the map was accurate.

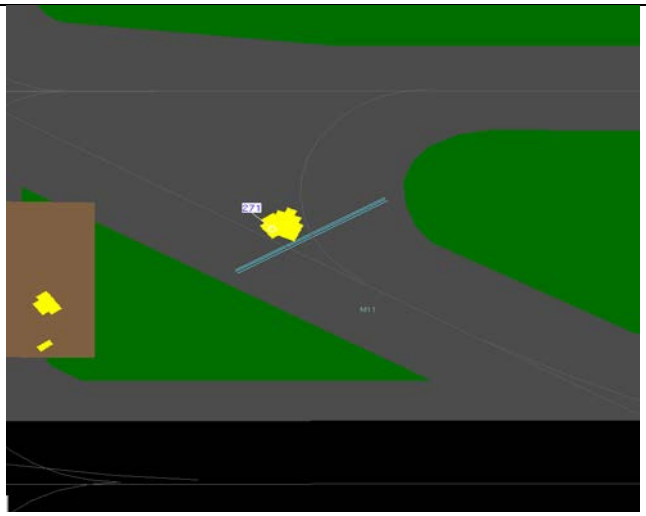

Image 3

Stop Bar accuracy check

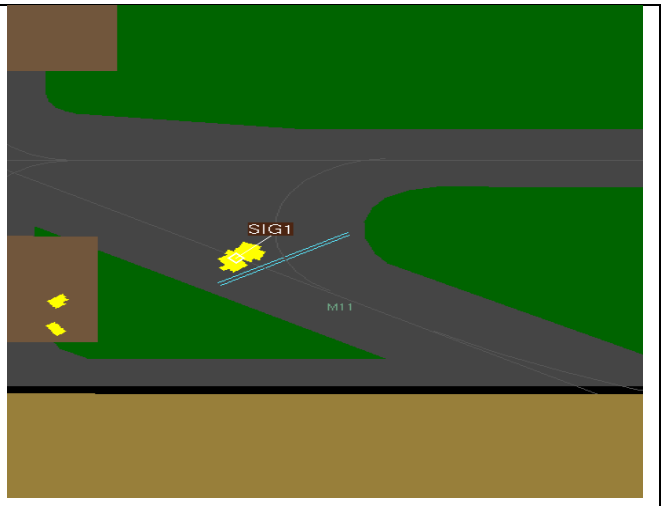

Image 4

Stop Bar accuracy check (detail)

1.17 Organizational and Management Information

The Operator had entered Russian air transportation market in 1943 when the first air enterprise was established in Sverdlovsk/Koltsovo airport.

Since that year the Operator was performing flights on the market as a part of AEROFLOT brand name and had several names of the air enterprise but always operating in conjunction with the Sverdlovsk/Koltsovo.

One of these names was Sverdlovsk Air enterprise.

The year 1993, in December, was the moment when the airline and airport (SVX) decided to register themselves as separate entities and since that moment the Operator entered the Joint-Stock Company and appeared on the market under new name (airport received the name JSC Airport Koltsovo).

The key activities are transportation of passengers and cargo, air ticket booking and sale, repair and maintenance of aircraft. In 2011, the Operator carried more than 2.5 million passengers and serves more than 120 cities (domestic and internationally).

As one of the most developed enterprises of Russia, was included in the Expert 400 rating and became the largest exporter of Ural and Siberia according to Ural Export 100.

In 2010, the airline received the Golden Chariot federal prize as Leader of Russia's Air Transport. Besides, the Operator won The Wings of Russia, the most important award in aviation, for the year 2009 in two categories:

- the Domestic Passenger Air Carrier of the Year in Group II (1 to 3 billion domestic PKM);
- the International Passenger Air Carrier of the Year in Group II (0.2 to 3 billion international PKM).

UAM, the in-flight magazine of the Operator, won in 2010 the annual international competition The Cover of the Year held under the patronage of the Russian Ministry of Culture and Mass Communications and with the assistance of UNESCO.

In 2006, the airline launched an aircraft fleet re-equipment program. Now it operates, under an operating lease agreement, twenty four Airbus planes (15 A320s and 9 A321s) on its domestic and international routes.

The airline plans to begin flying long-range wide-body airplanes of the A330 type in 2014. According to the airline's advanced development plan, by May 2012 it will start operating its own A320 Flight Simulator and by 2015 it will operate over thirty western built planes.

1.18 Additional Information

1.18.1 ICAO Annex 2

ICAO Annex 2 chapter 3 paragraphs 3.2.2.7.2 and 3.2.2.7.3 state:

"3.2.2.7.2 An aircraft taxiing on the maneuvering area shall stop and hold at all runway-holding positions unless otherwise authorized by the aerodrome control tower.

3.2.2.7.3 An aircraft taxiing on the maneuvering area shall stop and hold at all lighted stop bars and may proceed further when the lights are switched off."

1.18.2 ICAO PANS-ATM Doc 4444

Doc 4444 defines a runway incursion as: "*Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft*."

Many aerodromes have hazardous locations on taxiways and/or runways where incidents have occurred. Such positions are commonly referred to as "hot spots".

1.18.3 ICAO Document 9870

Document 9870 , the "Manual on the prevention of runway Incursions" defines *Hot spot "as a location on an aerodrome movement area with a history or potential risk of collision or runway incursion, and where heightened attention by pilots/drivers is necessary".*

Formal definition of hotspots can alert pilots and drivers to movement area design issues which cannot be readily mitigated by signage or lighting or where poor visibility may contribute to reduced Situational Awareness in relation to active runways. It can also alert to potentially critical points where the visual control room (VCR) or other surveillance systems are less effective than on a particular aerodrome generally.

ICAO recommends the local generation of AIP charts to show runway hotspots, which, once issued, must be kept up to date and revised as necessary. *The criteria used to establish and chart a hot spot are contained in the PANS-ATM (Chapter 7) and Annex 4 —* Aeronautical Charts *(Chapters 13, 14 and 15)*.

All identified hot spots should be examined for short or long term opportunities for mitigation of or removal of the hazard identified. These actions include:

awareness campaigns;

enhanced visual aids (signs, markings and lights);

use of alternative routings;

changes to the movement area infrastructure, such as construction of new taxiways, and

decommissioning of taxiways;

closed-circuit television (CCTV) for critical VCR sight line deficiencies.

1.19 Useful or Effective Investigation Techniques

Not applicable to this investigation.

2 ANALYSIS

To be determined

3 CONCLUSIONS

3.1 Findings

To be determined

3.2 Probable Cause

To be determined

4 SAFETY RECOMMENDATIONS

No Safety Recommendations issued