

الهيئة العامة للطيران المدني
GENERAL CIVIL AVIATION AUTHORITY



Air Accident Investigation Sector

Accident

- Final Report -

AAIS Case N°: AIFN/0003/2014

Ground Vehicle Collision with a Parked Aircraft

Operator:	Ural Airlines
Make and Model:	Airbus A321-231
Nationality and Registration:	Bermuda, VQ-BOC
Place of Occurrence:	Dubai International Airport
State of Occurrence:	United Arab Emirates
Date of Occurrence:	17 February 2014



Aircraft Accident Brief

AAIS Case No.:	AIFN/0003/2014
Operator/owner:	URAL AIRLINES
Aircraft Make and Model:	A321-231
Registration Mark:	VQ-BOC
MSN:	1199
No. and Type of Engines:	Two turbofan IAE V2533-A5
Date and Time (UTC):	17 February 2014, 00:48
Location:	Dubai International Airport.
Category:	Transport (Passenger)
Persons On-Board:	8
Injuries:	1

Investigation Objective

This Investigation is performed pursuant to the UAE Federal Act No. 20 of 1991, promulgating the Civil Aviation Law, Chapter VII, Aircraft Accidents, Article 48; It is in compliance with the UAE Civil Aviation Regulations, Part VI, Chapter 3; in conformity with Annex 13 to the Convention on International Civil Aviation; and in adherence to the Air Accidents and Incidents Investigation Manual.

The sole objective of this Investigation is to prevent aircraft accidents and incidents. It is not the purpose of this activity to apportion blame or liability.

Investigation Process

The Accident was notified to the General Civil Aviation Authority (GCAA) on 17 February 2014 at about 0150 UTC. The Investigator dispatched to Dubai International Airport on 17 February 2014. The Investigator coordinated with all authorities on site by initiating the accident investigation process according to prepared and previously exercised plans. The Air Accident Investigation Sector (AAIS) of the GCAA is leading the investigation, as the United Arab Emirates (UAE) is the State of Occurrence.



Notes:

- ¹ Whenever the following words are mentioned in this Report with the first letter Capitalized, it shall mean:
 - (Aircraft)- the aircraft involved in this Incident.
 - (Airport)- Dubai International Airport.
 - (Investigation)- the investigation into this Accident.
 - (Accident)- this investigated Accident.
 - (Report)- this Accident Investigation Report.
- ² Unless otherwise mentioned, all times in this Report are 24-hour clock in Coordinated Universal Time (UTC), (UAE Local Time minus 4).
- ³ Photos used in the text of this Report are taken from different sources and are adjusted from the original for the sole purpose to improve clarity of the Report. Modifications to images used in this Report are limited to cropping, magnification, file compression, or enhancement of color, brightness, contrast or insertion of text boxes, arrows or lines.



Synopsis

The Aircraft was parked at the assigned gate with the passenger loading bridge (PLB) docked at the left forward door (L1), while eight cabin crewmembers were onboard.

A catering vehicle was due to dock with the aft right door (R4). The vehicle stopped several meters away from the Aircraft awaiting instructions from the marshaller to move forward.

After the marshaller signalled the driver to move forward, the driver pressed his right foot on the brake pedal and moved the gear lever to the drive position (D). As the driver removed his foot from the brake pedal, the vehicle jumped forward and impacted the Aircraft.

The force of the impact caused the Aircraft to move to the right through approximately 30 degrees from its original heading.

A gap opened suddenly between the PLB and the L1 door. A cabin crewmember, who was standing in the vicinity of the L1 door, fell through the gap to the ramp. She sustained serious injuries.

The causes of the impact incident were that the vehicle driver was not aware that the vehicle was approaching the Aircraft at excessive speed because his situational awareness was, most likely, degraded by tiredness and/or distraction.

One safety recommendation is addressed to Emirates Flight Catering to examine the rest policy of airside operators and introduce a balanced distribution of break periods within the daily rostered hours. One safety recommendation is addressed to Dubai Airports to improve the ramp safety emergency response plan especially the rapid response to an accident and quickly transporting injured persons to a medical facility.



Abbreviations

AAIS	The Air Accident Investigation Sector
AFIS	Aerodrome Flight Information Service
AMC	Airport Medical Center
CofA	Certificate of Airworthiness
Cof R	Certificate of Registration
CVR	Cockpit Voice Recorder
CSN	Cycles Since New
DCAA	Dubai Civil Aviation Authority
ERP	Equipment Restrain Area
FDR	Flight Data Recorder
GCAA	General Civil Aviation Authority of the United Arab Emirates
ICAO	International Civil Aviation Authority
IFR	Instrument Flight Rules
L1	Left hand
No.	Number
TSLO	Time Since Last Overhaul
TSN	Time Since New-flight hours
UAE	The United Arab Emirates
UTC	Coordinated Universal Time
SOP	Standard Operating Procedure
VFR	Visual Flight Rules



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1. Factual Information

1.1 History of Flight

On 16 February 2014, an Airbus A321-321 Aircraft, registration VQ-BOC, operating flight number U6-803 arrived at Dubai International Airport from Novgorod International Airport, Russia, on a scheduled passenger flight.

The Aircraft was scheduled to spend approximately four hours on the ground at Dubai before departing on the next flight. The Aircraft was parked at the assigned gate with the passenger loading bridge (PLB) docked at the left forward door (L1), while eight cabin crewmembers were onboard.

A catering vehicle was due to dock with the aft right door (R4). The vehicle stopped several meters away from the Aircraft awaiting instructions from the marshaller to move forward.

After the marshaller signalled the driver to move forward the driver pressed his right foot on the brake pedal and moved the gear lever to the drive position (D). As the driver removed his foot from the pedal, the vehicle jumped forward and struck the Aircraft.

The driver stated that when he realised what was happening, he tried to stop the vehicle by pressing on the brake pedal three times, but the brakes did not respond.

The force of the impact caused the Aircraft to move to the right through approximately 30 degrees from its original heading. This equated to a distance of four meters to the right of the parking bay centreline.

A gap opened suddenly between the PLB and the L1 door. A cabin crewmember, who was standing in the vicinity of the L1 door, fell through the gap to the ramp surface. She sustained serious injuries to her head and limbs having fallen approximately three meters.

Figure 1 illustrates the position of the Aircraft.



Figure 1. Position of the Aircraft at the Airport



1.2 Injuries to Persons

Table 1 shows the injuries. The seriously injured cabin crewmember was a national of the Russian Federation.

Injuries	Flight Crew	Cabin Crew	Other Crew Onboard	Passengers	Total On-board	Others
Fatal	0	0	0	0	0	0
Serious	0	1	0	0	1	0
Minor	0	0	0	0	0	0
None	0	7	0	0	7	0
TOTAL	0	8	0	0	8	0

1.3 Damage to Aircraft

The Aircraft sustained damage to the lower fuselage, right hand side.

1.4 Other Damage

The vehicle sustained damage to its left upper forward corner area.

1.5 Personnel Information

1.5.1 The cabin crewmember

The Accident occurred while the cabin crew were preparing for the flight. The injured cabin crewmember was assigned for the Zone 1 area of the cabin. At the time of the Accident, the cabin crewmember was inside the Aircraft, one meter away from the L1 door, carrying out a normal check on the cabin crew panel.

1.5.2 The vehicle driver

The driver of the vehicle was a male 43 years of age, who had joined the Emirates Flight Catering on 31 July 2010, the driver's most recent training was in February 2012.

According to the employee attendance sheet provided by the ground handling company, for the period from 31 December 2013 to 17 February 2014 immediately preceding the Accident, the driver had worked for five consecutive days, 12 hour shifts per day. Each shift included a one hour break. The day of the Accident was the sixth and last day of his roster before a rest day.

On the morning of the Accident day, the driver left his work place to go home at 0200 and he had rested at home before coming back to work an evening-morning duty starting at 1400 and planned to finish at 0200 the next day. Of his time off prior to the Accident shift, the driver rested at home for about six and a half hours.

When he reported for duty at 1400, the driver checked his flight slip displayed on the board and found that his first mission was due to start very soon; therefore, he departed to the catering area immediately.

Once he arrived at the catering area, the driver carried out a visual check of the vehicle, and found that everything was normal. At about 1800, and after completing two missions on the same catering vehicle, the driver, took a 39 minute break. At 1839, he resumed his duty. The driver operated four missions: the first was driving a freezer van, and



two were driving a catering vehicle. These three missions were carried out uneventfully. The Accident occurred on the fourth mission.

Less than two hours before his duty ended, the driver was required to operate his sixth mission, which was to drive the catering vehicle to stand F1 to cater the Accident Aircraft. The driver arrived at the stand at 0100.

The Investigation reviewed the driver's file and found no similar incidents on file.

1.6 Aircraft Information

Table 2 illustrates general data on the Aircraft based on the records provided to the Investigation.

Table 2. Aircraft data	
Manufacturer:	Airbus
Model:	320-321
MSN:	1199
Date of manufacture:	1 March 2000
Nationality and registration mark:	Bermuda, VQ-BOC
Name of the owner:	Sierra Leasing Limited
Name of the operator:	Ural Airlines
Certificate of Airworthiness (CoA)	
Number:	1646
Issue date:	14 October 2013
Valid to:	23 October 2014
Certificate of Registration (CoR)	
Number:	1845
Issue date:	21 October 2011
Valid to:	Open
Date of delivery	20 October 2011
Total hours since new (TSN)	43609
Total cycles since new (CSN)	16789
Last inspection and date:	DY-Check 16 February 2014 03:15 UTC SVX 8DY-Check 13 February 2014 (WP # PP00005714) LED A-Check 10 January 2014 (WP # PP005532) C-Check 7 December 2012 (WP # PP003651) OVB
Engines	Two turbofan, International Aero Engines AG, IAE V2533-A5

1.7 Meteorological Information

The prevailing meteorological conditions were not a factor in this Accident.

1.8 Aids to Navigation

None of the ground-based navigation aids, on-board navigation aids, and aerodrome visual ground aids and their serviceability was a factor in this Accident.



1.9 Communications

None of the on-board communications aids was a factor in this Accident.

1.10 Aerodrome Information

Table 2 illustrates the Aerodrome information

Table 2. Aerodrome information	
Aerodrome ICAO Code	: OMDB
Airport Name	: Dubai International Airport
Airport Address	: Dubai, the United Arab Emirates
Airport Class	: III
Airport Service	: AFIS
Type of Traffic Permitted	: IFR/VFR
Coordinates	: 00° 53' 37" S, 134° 03' 01" E
Category for Rescue Fire Fighting Service	: Category 3

Dubai International Airport is certified under the UAE Civil Aviation Regulations (CAR) Part IX- *Aerodromes*.

The Airport has three terminals and the Accident Aircraft was parked at Terminal 1. The stands were marked on the tarmac with bold letters and were equipped with lights. The lights were lit at the time of the Accident.

1.11 Flight Recorders

The flight recorders were not removed because the Accident occurred whilst the Aircraft was parked.

1.12 Wreckage and Impact Information

The Aircraft was intact. The vehicle left black marks on the tarmac consistent with skid marks produced by the front tires.

1.13 Medical and Pathological Information

The cabin crewmember sustained serious injury which led to her being hospitalized for more than one week.

1.14 Fire

There was no sign of fire.

1.15 Survival Aspects

After the impact, the crewmember fell from the L1 door to the ramp causing fractures to her hands, and broken bones in her face, jaw and skull. She was transported in the ramp agent's car to the Airport Medical Centre (AMC) at about 0120. Thereafter, the crewmember was transported to a hospital in the city after initial medical treatment in the AMC.



1.16 Tests and Research

The catering vehicle was transported by a recovery vehicle to a maintenance facility in the UAE for testing. The following were inspected, examined, or checked¹:

- Brake system.
- Engine power control system (from the acceleration pedal up to the Injection unit).
- Tire condition.
- Front wind shield visibility.
- Front and side mirrors condition.
- Driver seat condition: controllability, setting, general condition, etc.
- Air conditioning functionality.
- Lighting system (headlights).

The inspection, examination, and check revealed that:

- The brake system was normal.
- Acceleration linkages and cables were normal.
- Tires were in good condition.
- Visibility from front wind shield was normal.
- Condition of the side mirrors was normal, left mirror bracket found bent.
- Driver's seat was found to be in good operational condition.
- All lights were found to be functioning normally.

1.17 Organizational and Management Information

Emirates Catering is the responsible body for catering aircraft at Dubai International Airport.

1.18 Additional Information

1.18.1 Standard Operating Procedure (SOP)

According to paragraph 5.6 of *SOP OPS-005*, the vehicle driver shall approach the aircraft slowly and shall test the brakes 10 meters and then 5 meters from the aircraft. This test will ensure that there is enough distance to stop the vehicle by an alternative means should the normal brakes fail.

According to paragraphs 5.1 and 5.2:

"Before entering ERA [Equipment Restraint Area] at the airside, Hi loader driver stops the vehicle.

The driver proceeds onto the ERA, only with the guidance of a marshaller.

Note:

¹ Reference: report N° SDP-5383, dated 6 April 2014



- a. *No Vehicle should be driven in ERA without marshaller*
- b. *If there is any malfunction reported in the Hi loader refer to SOP 8.”*

1.19 Useful or Effective Investigation Techniques

No new investigation techniques were used during this Investigation.



2. Analysis

2.1 General

The Aircraft was parked on a stand equipped with full ramp service. The ramp equipment did not contribute to the collision between the vehicle and the Aircraft.

In addition, the weather and visibility conditions were normal based on the meteorology report.

The following paragraphs contain analysis of ramp operations, ramp safety, human factors, and rescuing the injured crewmember.

2.2 Ramp Operations and Ramp Safety

Ramp operations and ramp safety are governed by the *Emirates Catering and Ramp Operations Manual (SOP)*.

The procedures in the *SOP* contain cautions and warnings that are necessary to conduct safe actions on the ramp.

The driver stated that the vehicle did not respond to the application of the brakes when they were applied at the appropriate position and speed. Examination of the vehicle did not reveal any defect in the brake system that could have affected its performance.

2.3 Human Factors

There was no sign of any psycho-active substance that could have affected the performance of the driver.

The driver was instructed to go to stand F1 to cater the Aircraft. The driver stopped a few meters away from the Aircraft awaiting instructions from the marshaller to move forward.

After the instructions were given to move, the driver pressed his foot on the brake pedal and moved the gear shift to (D). Once he removed his foot from the pedal, the vehicle jumped forward and struck the Aircraft.

According to his statement, the most recent training attended by the driver took place in February 2012, and he had undergone no further training on ramp operations and ramp safety up to the accident date.

The Investigation believes that training is not only required for normal operations on the ramp, but is also a good opportunity to cover any new requirements, lessons from reported occurrences, operation of new equipment, changes to the airside area, etc. Special attention to night and low visibility operations should be included in initial and continuation training.

The response of any person to a situation is dependent on their perception of the situation; therefore, it is very important that the person must perceive the situation correctly before reacting or moving to the next step in the procedure.

The driver's perception includes the appropriate evaluation of distance between objects and vehicle speed and direction. When the driver approached the Aircraft, his perception of the situation regarding the actual speed of the vehicle was not in line with the desired speed to approach the Aircraft, according to the handling agent *standard operating procedure (SOP)*.

The Investigation believes that the driver was not aware of the improper approach of the vehicle to the Aircraft because his awareness was, most probably, degraded by tiredness, having worked five consecutive twelve hour shifts, and / or distraction.



2.4 Rescuing the injured cabin crewmember

After the cabin crewmember fell to the ramp surface she was transported by a ramp vehicle to the Airport Medical Centre (AMC).

The volunteer rescuer was neither trained in first aid, nor was he required to transport injured people.

The cabin crewmember was transported to Airport Medical Centre (AMC) by car because the requested ambulance did not respond to the accident site.



3. Conclusions

3.1 General

From the evidence available, the following findings, causes and contributing factors were made with respect to this Accident. These shall not be read as apportioning blame or liability to any particular organisation or individual.

To serve the objective of this Investigation, the following sections are included in the conclusions heading:

- **Findings-** are statements of all significant conditions, events or circumstances in this Accident. The findings are significant steps in this Incident sequence but they are not always causal or indicate deficiencies.
- **Causes-** are actions, omissions, events, conditions, or a combination thereof, which led to this Accident.
- **Contributing factors-** are actions, omissions, events, conditions, or a combination thereof, which, if eliminated, avoided or absent, would have reduced the probability of the accident or incident occurring, or mitigated the severity of the consequences of the accident or incident. The identification of contributing factors does not imply the assignment of fault or the determination of administrative, civil or criminal liability.

3.2 Findings

- 3.2.1 The cabin crewmember was licensed and qualified for the flight in accordance with the current requirements of the Civil Aviation Regulations of Russia.
- 3.2.2 The Aircraft was certificated, equipped and maintained in accordance with the current requirements of the Civil Aviation Regulations of Bermuda.
- 3.2.3 The Aircraft was airworthy.
- 3.2.4 The Aircraft was parked correctly in the parking bay.
- 3.2.5 The catering vehicle's brake system was serviceable before and after the collision.
- 3.2.6 The driver had worked for five consecutive days, evening-morning shift, daily 12 hours (from 1400 to 0200 next day). The Accident day was his sixth and last working day before his next day off.
- 3.2.7 Because of the driver's busy work schedule, he took a thirty minute break, instead of the allowed one hour break.
- 3.2.8 The Accident occurred at the last two hours of 72 weekly rostered hours.
- 3.2.9 Special attention to night and low visibility operations should be included in initial and continuation training.
- 3.2.10 There were no signs of any psychoactive substance that could have affected the performance of the driver.
- 3.2.11 The driver was not fully aware of the vehicle performance because his mindset was not aligned with the responses or performance of the vehicle due to tiredness.
- 3.2.12 The overall performance of the driver was, most probably, degraded by tiredness or distraction.
- 3.2.13 The impact force caused the nose of the Aircraft to shift suddenly and create a gap with the jet way.



- 3.2.14 The cabin crewmember was standing at her designated station next to the L1 door and the force of the collision was sufficient to cause her to be thrown from the Aircraft onto the ramp.
- 3.2.15 The weather and visibility conditions were normal.
- 3.2.16 The airport emergency response to the Accident was not satisfactory as the ambulance did not respond to the Accident scene.
- 3.2.17 Transporting the injured crewmember to the medical center was done in a voluntary and non- standard manner.

3.3 Causes

The Air Accident Investigation Sector determines that the causes of the Accident were:

- 3.3.1 The catering vehicle driver was not aware that the vehicle was approaching the Aircraft at excessive speed; and
- 3.3.2 The performance of the driver was degraded, most probably, due to tiredness or distraction.



4. Safety Recommendations

4.1 General

The safety recommendations listed in this Report are proposed according to paragraph 6.8 of *Annex 13 to the Convention on International Civil Aviation*², and are based on the conclusions listed in heading 3 of this Report; the GCAA expects that all safety issues identified by the Investigation are addressed by the receiving States and organizations.

4.2 Final Report Safety Recommendations

The Air Accident Investigation Sector recommends that:

4.2.2 Emirates Flight Catering:

SR67/2015

Improves the rest policy of airside operators by introducing a balanced distribution of break periods within the daily rostered hours.

This exercise is recommended to be jointly conducted with Dubai Airports.

4.2.2 Dubai Airports: This SR is related to a safety issue, not to a contributing factor

SR68/2015

Improves the ramp safety emergency response plan especially the rapid response to an accident and the rapidly transportation of injured persons to a medical facility.

This report is issued by:

The Air Accident Investigation Sector
General Civil Aviation Authority
United Arab Emirates.

² Paragraph 6.8 of *Annex 13 to the Convention on International Civil Aviation* states: 'At any stage of the investigation of an accident or incident, the accident or incident investigation authority of the State conducting the investigation shall recommend in a dated transmittal correspondence to the appropriate authorities, including those in other States, any preventive action that it considers necessary to be taken promptly to enhance aviation safety'.