

الهيئة العامة للطيران المدني  
GENERAL CIVIL AVIATION AUTHORITY



# Air Accident Investigation Sector

## Serious Incident - Summary Report -

AAIS Case N° AIFN/0005/2020

# Balloon Impacting a Sand Dune

Operator:	Balloon Adventures Emirates LLC
Make and Model:	UltraMagic N-500
Nationality and Registration:	UAE, A6-BOR
Place of Occurrence:	Margham, Dubai
State of Occurrence:	The United Arab Emirates
Date of Occurrence:	20 February 2020



This Investigation was conducted by the Air Accident Investigation Sector of the United Arab Emirates pursuant to Civil Aviation Law No. 20 of 1991, in compliance with Air Accident and Incident Investigation Regulation, and in conformance with the provisions of Annex 13 to the Convention on International Civil Aviation.

This Investigation was conducted independently and without prejudice. The sole objective of the investigation is to prevent future aircraft accidents and incidents. It is not the purpose of this activity to apportion blame or liability.

The Air Accident Investigation Sector issued this Summary Report in accordance with national and international standards and best practices. Consultation with applicable stakeholders, and consideration of their comments, took place prior to the publication of this Report.

The Summary Report is publicly available at:

<http://www.gcaa.gov.ae/en/epublication/pages/investigationReport.aspx>

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## Investigation Process

The serious incident involved an Ultra Magic Balloon, registration A6-BOR, and was notified to the Air Accident Investigation Sector (AAIS) Duty Investigator (DI) by phone to the Hotline Number (+971 50 641 4667) on 20 February 2020 at 1300 LT.

After the Initial/On-Site Investigation phase, the occurrence was classified as a serious incident.

The scope of this Investigation is limited to the events leading up to the occurrence; no in-depth analysis of non-contributing factors was undertaken.

### Notes:

1. Wherever the following words are mentioned in this Report with first capital letter, they shall mean the following:
  - (Balloon) - The balloon involved in this serious incident.
  - (Commander) - The pilot of the serious incident flight
  - (Incident) - The serious incident that is the subject of this Summary Report
  - (Investigation) - The investigation into the circumstances of this serious incident
  - (Operator) - Balloon Adventures
  - (Report) - This Summary Report.
2. Photos and figures used in this Report are taken from different sources and are adjusted from the original for the sole purpose of improving the 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 addition of text boxes, arrows, or lines.

3. This structure of this Summary Report is adapted from the Final Report format depicted in Annex 13.

## Factual Information

### History of the Flight

On 20 February 2020, an N500 balloon (figure 1) operated by Balloon Adventures, departed at 0645 LT of the United Arab Emirates on a flight over the desert of the Emirate of Dubai with 24 persons on-board.

The Lead Pilot<sup>1</sup> for the flight of five balloons was responsible for checking the weather forecast at the take-off site prior to departure. This was normally done 24 hours before the flight. For safe operation of the N500 balloon, flights are usually cancelled if the wind is above the take-off limit. The Lead Pilot stated that the wind speed and weather were acceptable at the day of the flight for takeoff.

Prior to commencing the flight, the passengers were briefed on different emergency situations by the Commander. The briefing included a hard landing scenario in which case passengers were instructed to adopt the brace position before the impact and that their harnesses must be fastened. This was in accordance with the Operator's *standard operating procedure (SOP)*.

On the day of the Incident, the five balloons were permitted to fly from the Murqab take-off site and return for landing to an area called Second Flat, Murqab, Dubai.

At 0645 LT, the five balloons departed the take-off area and gradually ascended to 4,000 feet above ground level (AGL). All balloons experienced normal flight conditions as they cruised over the desert. In preparation for landing, the Commander stated that the Lead Pilot had selected the Second Flat Area as the most suitable landing area due to the wind direction the balloons were being directed towards. For a balloon, the

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<sup>1</sup> The Lead Pilot: is the overall commanding pilot for the balloons flying in formation. He carries certain duties as outlined in the SOP manual



flight path and the selection of the landing area are determined by the wind direction.



Figure 1. N-500 Balloon

After selection of the Second Flat Area as the landing area, the Lead Pilot commenced the descent. The Commander of the Incident balloon, which was number three in the landing sequence, stated that upon flying over the landing area at Murqab, he started to descend to 1,600 feet AGL and instructed the passengers to adopt the landing position.

The Commander and the Lead Pilot stated that they encountered a variable wind during approach with gusts of up to 20 knots at the lower altitude, when overflying sand dunes. The Investigation did not observe any gusting wind prediction or report on the meteorological terminal air report (METAR) or the terminal aerodrome forecasts (TAF) for the nearest three airports: Dubai International Airport (OMDB); Al Maktoum International Airport (OMDW); or Al Ain International Airport (OMAL).<sup>2</sup> Both the Lead Pilot and Commander reported that they encountered turbulence while overflying the sand dunes.

The Commander stated that during the approach for landing he noticed an increase in tailwind speed of 20 knots at 1,000 feet AGL accompanied by turbulence. The Commander stated that the turbulence was unavoidable.

According to the Commander, at 500 feet AGL, he found that the Balloon was being “pushed

downwards.” To counter the downdraft, the Commander added heat to inflate the balloon to gain more control and reduce vertical speed at the low altitude, and continued the approach.

When the Balloon was close to the ground at approximately 50 feet AGL, the Commander pulled the rope to allow the air to exit the balloon and touch down immediately (Fast Deflation System “FSD”). The FSD is used to bring a balloon quickly to the ground. As per the *Flight Manual*, use of the FSD is not allowed above 30 feet AGL.

During the second landing attempt, the course of the Balloon took it in the direction of a sand dune. The Balloon impacted the sand dune which caused it to land in a sideways orientation. The Commander stated that there were constant changes in the wind, which became a cross wind during the second touchdown. The balloon came to a full stop at 0755 LT.

One passenger suffered a minor leg injury during the landing and following medical attention, he was released from hospital having been declared medically fit.

The two remaining balloons subsequently landed uneventfully.

## Damage to Balloon and Property

No damage was sustained by the Balloon or by any property during the incident.

## Personnel Information

### Crew licenses and experience

Both the Commander of the Balloon and the Lead Pilot possessed Balloon Pilot Licenses (BPL) issued by the General Civil Aviation Authority of the United Arab Emirates (GCAA) which entitled them to fly hot air balloons, in accordance with *CAR (Civil Aviation Regulations) Part 2*.

The Commander had a total of 1151.30 flying hours on balloons, and the Lead Pilot had a total of 1576.48 flying hours.

<sup>2</sup> As per the statements of the Safety Manager and the Director of Flight Operations, the Lead Pilot, the weather reports for these airports are used by the Operator’s pilots to provide an approximate indication

of weather conditions at the landing areas as the landing areas are not equipped with weather reporting installations.



The Commander had conducted a total of 1807 landings as a whole. In which 196 landings was conducted in Dubai. A total of 15 landings were conducted in Second Flat Area.

The total number of landings for the Lead Pilot was 1500. In which 86 landings were conducted in Dubai and six of them were conducted in the Second flat area. Both pilots were medically fit and they held valid class 2 GCAA medical certificates.

## Balloon Information

The N500 Ultra-Magic (figure 2) is a hot air balloon in which the lifting force consists of hot air that is produced by means of a MK32 propane burner (figure 3).

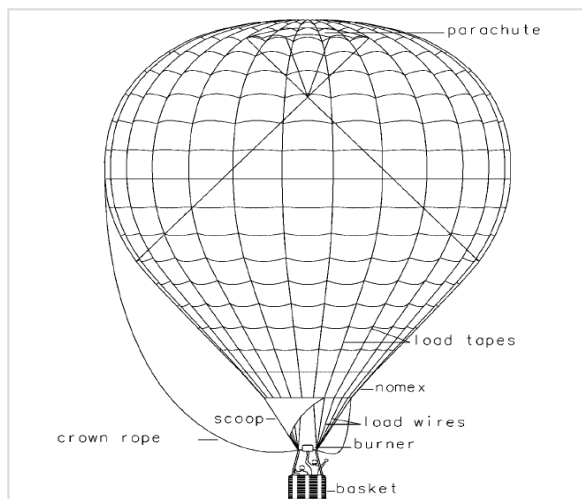


Figure 2. N-500 Ultra Magic overall view

The three main parts of the N500 balloon are the envelope, the fuel system, and a basket. Envelopes are made of high resistance polyamide fabric reinforced by polyester load tapes. These tapes carry the forces due to



Figure 3. N-500 Ultra Magic overall view

loading and transmit the load to the balloon frame. The burner is a high output device that converts the fuel (liquid propane) stored in the fuel cylinders into heat energy.

The Operator uses a dedicated GPS device that measures the altitude, speed, and wind direction (figure 4).

The Balloon was certified and airworthy in accordance with the GCAA requirements. A post-Incident inspection carried out by the Operator did not reveal damage to the Balloon.

Balloon operations were carried out in compliance with the *Manned Ballooning Airworthiness Regulation* (Part V, Chapter 5 of the *Civil Aviation Regulations* of the United Arab Emirates). The regulations require the balloon Operator to equip the Balloon with the following:

“

1. Projecting objects on the trapeze, basket or other equipment, that could cause injury to the occupants, must be padded.
2. A handheld fire extinguisher of an approved type.
3. Restraint harnesses.
4. Local attachment points in the load path between the safety belt or harness and the main structure of the basket.
5. An Altimeter If installed as in the AFM or a portable GPS (Global Positioning System).
6. A rate of climb indicator or a portable GPS)
7. A First Aid Kit.
8. A fuel quantity gauge, an envelope temperature indicator and a burner re-lighter and matches.
9. Portable VHF Air Communication Equipment.
10. Portable GPS, an industry standard which measures and records flight data (altitude, speed, time and latitude and longitude), and data stored within the last 24 month period.”

## Balloon operating limitations

The N500 balloon *Flight Manual* states that the surface wind for balloon operations must not exceed 15 knots for takeoff. The *Flight Manual* also states that to operate the N500 balloon,



there should be no weak thermal activity, and no sign of a storm or a formation of a storm.

The *Flight Manual* states that in case thermal activity is encountered, the temperature inside the Balloon should be stabilized with the Balloon at a safe height of over 3,000 feet AGL.

### Balloon's fast deflation system (FDS) usage and limitations

The Balloon was equipped with FDS incorporating a parachute venting system with extra opening capabilities. As shown in figure 5 the rip line, which is red in color, pulls the center of the parachute together creating a large opening, which allows a large outflow of hot air for final deflation of the envelope. The line must not be used for venting.

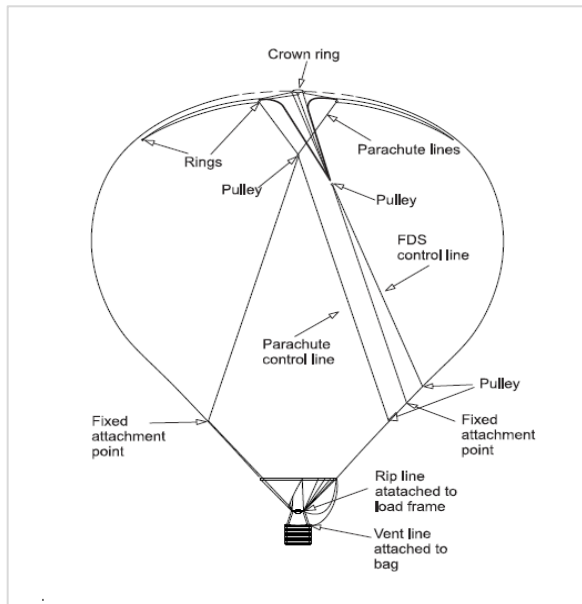


Figure 5. FDS Mechanism

The opening action of the red rip line (the FDS) can be reversed by pulling on the red parachute (vent) cord/line. According to the *Flight Manual* it is forbidden to use the FDS above an altitude of more than 10 meters (30 feet). This is noted as a WARNING in the *Flight Manual*. The FDS is used if a need arises for a rapid loss of altitude. The Commander could not recall at what height he had activated the FDS. He believed that he activated the FDS at approximately 50 feet AGL. (Figures 5 and 6)

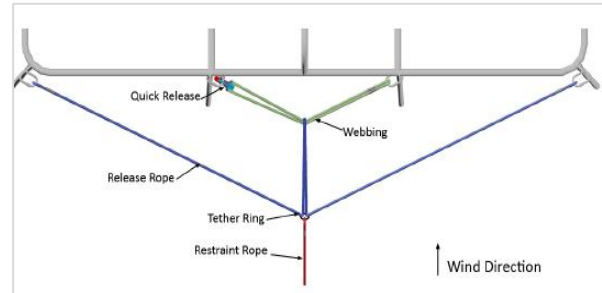


Figure 6. N500 balloon rope colors

### Weather information

The Operator stated that the balloon take-off sites is equipped with surface wind measurement equipment to measure wind speed and direction.

On the day of the Incident, the Lead Pilot had obtained weather information from multiple sources which included:

1. National Centre of Meteorology;
2. NOAA (National Oceanic and Atmospheric Administration) HYSPLIT trajectories;
3. Metrological Aerodrome Report (METAR) and Terminal Aerodrome Forecast (TAF) for Al-Maktoum and Al Ain Airports;
4. Balloon pilot reports; and
5. Operator's weather stations at takeoff sites.

The Investigation reviewed the weather data used by the Lead Pilot for releasing the Balloon flight, and there was no reported or forecasted wind gust on the METAR or TAF during the scheduled landing time of the five balloons' flights. The wind was within limits for departure.

As per the statements of the Safety Manager and the Director of Flight Operations, the Lead Pilot, the Operators uses the METAR and TAF of OMDB, OMAL, and OMDW to have a holistic understanding of the weather conditions in the Emirate of Dubai. This was necessary because the designated landing areas in the desert for the balloons were not equipped with weather stations.



According to the 0400 UTC (0800 LT), issued METAR for OMDB, the wind speed was 2 knots from variable directions. The clouds and visibility were normal. The METAR message was:

OMDB 200400Z VRB02KT CAVOK 20/06  
Q1012 NOSIG=

The weather at OMDW for the same time was south-east at 12 knots. The METAR message was:

METAR OMDW 200400Z 15012KT  
CAVOK 20/05 Q1013 NOSIG=

The METAR of OMAL that was issued for 0500 UTC indicated the south-east at a speed of 11 knots was:

METAR OMAL 200500Z 16011KT  
CAVOK 23/06 Q1015 NOSIG=

The wind was from 0400 am Zulu time.

The OMDB, OMDW, and OMAL weather data does not provide the exact weather conditions at the Second Flat Area. The Operator's use a combination of weather reports of different airports to have a holistic view of the weather around to plan for the flight.

The Commander stated in his post-Incident Air Safety Report submitted to the Operator, that he descended to a low level close to the sand dunes, where he encountered unexpected turbulent conditions.

## Aerodrome Information

The Operator's *Operations Manual* stated that all operations were to be conducted within areas that are approved by the Dubai Civil Aviation Authority (DCAA).

Balloon operations are carried out from three sites. The Second Flat Area is shown in figure 7.

The Operator's SOP requires the landing area to be flat, and located within a designated area. In addition to that, the SOP requires that each balloon pilot choose the landing spot based on:

1. Passenger safety (as flat as possible).
2. Ease of recovery.
3. Care of equipment.
4. To be within the marked area of Dubai Desert Conservation Reserve (DDCR).
5. Avoid prohibited and restricted areas.



**Figure 7.** Second Flat Area landing site

The Incident Balloon approached the landing site in Second Flat Area from over sand dunes located at the edge of the landing site. The Balloon contacted one of these sand dunes during the approach.

*According to CAR Part IV subsection 3, the aerodrome shall be suitable to conduct takeoff and landing as follows:*

*"An aircraft shall not land at, or take-off from any place unless the place is suitable for use as an aerodrome for the purpose of landing and taking off of aircraft in safety, having regard to all circumstances, including the prevailing weather conditions."*

## Organizational and Management Information

The Operator was established in 2005 and was certified by in accordance with *CAR Part IV* to operate Hot Air Balloons. The operations center of operation is located at Motor City, Dubai.

All balloon take-off sites were equipped with weather stations as they are under the ownership of the Operator.

The Operator's policy and procedures are stated in the *Operations Manual* and in SOP.

For radio communication during flight, the Operator utilizes the 122.250 MHz frequency. This frequency was also used to report any event that affects safety of the flight.

The Operator had previously suffered an Incident with an N500 balloon under similar circumstances. The previous incident is under investigation by the Air Accident Investigation Sector.



### Safety management system (SMS)

The Operator has a dedicated *safety management system (SMS) Manual* which stated that the organization has a comprehensive approach to ensuring safe operations. According to the *SMS Manual*, the Operator applied a hazard identification and risk assessment system.

The *SMS Manual* stated:

*“In case of a reportable occurrence, the Reportable Occurrences required to be reported to the GCAA shall be notified by means of ROSI (Reporting of Safety Incident). When a ROSI is filed, the Director of Flight Operations and Safety Officer shall be advised. ROSIs are automatically copied to the Manager Quality Systems.”*

### Pilot recruitment and training

The Operator's *Operations Manual* stated that the recruitment of pilots is based on the following criteria:

- Minimum of 500 flying hours on large passenger balloons;
- Meet the requirements of the selection process;
- Assessment by the Operator's crew training manager; and
- Completion of the Operator's assessment process by examiners approved by the GCAA.

As per the *Operations Manual*, the PIC is responsible for maintaining the highest level of flying standards.

To maintain currency on the balloon type, pilots are required to undergo an annual currency check with a GCAA-approved examiner. This check includes managing emergencies.

In accordance with the *Operations Manual*, pilot performance is assessed and graded as follows :

S: Satisfactory

SB: Satisfactory after briefing

SR: Satisfactory after repeat

US: Unsatisfactory.

The Incident flight Commander had successfully completed his Pilot Proficiency

Check (PPC) in October 2019. His training for emergencies included:

- Obstacle Avoidance;
- Thermals, updrafts, downdrafts; and
- Passenger Emergencies.

The assessment of the Commander for emergency items was SB (Satisfactory after Briefing).

This indicates that the Commander needed input or briefing from the trainer on the above items during the PPC but he was able to complete it to a sufficient standard following a briefing by the GCAA-approved examiner.

### Pilot in command (PIC) responsibility

The *Operations Manual* stated that the PIC is ultimately responsible for taking the necessary action to ensure the safety of the passengers and the balloon.

As stated in the *Operations Manual*, the PIC is permitted to follow any course of action necessary for the interest of safety that requires immediate decision and/or action.

For the safe operation of the balloon, the PIC is allowed to deviate from the prescribed routes, methods, procedures, and minima. When such authority is exercised, the PIC is required to keep air traffic control informed regarding the progress of the flight, his actions, and his intentions.

The PIC is required to complete a written report of any such deviations after landing when the course of action taken involves a departure from any company procedures, or from the rules or regulations issued by any competent authority.

### Lead Pilot responsibility

The *Operations Manual* stated that the Lead Pilot is:

“Responsible for determining if the forecast and prevailing weather conditions are acceptable for a balloon flight to take off;

In charge of all flying activities on a particular day;

Responsible for Communications with Air Traffic Control and relaying the messages to the rest of the balloons in case of formation flight.”

When more than one balloon is flying, then the Lead Pilot is responsible for:



“

- a) The overall organization of flying activities;
- b) Ground Crew control;
- c) Submission of a flight plan;
- d) Take off site selection area;
- e) Flight profiling;
- f) When required, communication with air traffic control;
- h) Completion and return of all documentation to the Operator.”

### **Passenger pre-flight briefing, boarding passes and pre-loading**

The Operator's flight boarding pass restricted certain types of people who have or had health or body circumstances such as pregnant ladies, children less than six years, persons having undergone major surgery or broken limbs the past six months, and people who suffer from chronic back or neck pain. The boarding passes (written in English and Chinese) describe such kind of people as 'Restricted Passengers':

The same boarding pass that listed the restricted passengers contained also a declaration that shall be signed by the passenger who is allowed to board the flight. The declaration stated:

“I agree to follow the Pilot's instructions during take-off. Flight and landing. I understand that failing to do so could result in serious injury. I also agree not to take photos of any sensitive areas, such as military bases.”

The Operator's pre-boarding procedures stated:

“If you have passengers who have mobility problems such that they are unable to climb into the basket, then they may be pre-loaded. It is important that you demonstrate the pre-loading position to them, and assist them to assume the correct position in the basket. This may be especially useful in windier inflations when the passengers need to get into the basket fast.”

### **Landing procedures and passengers briefing**

The Operator's *Flight Manual* stated that in case of a hard landing, or when a high wind landing is anticipated, the Commander is required to:

“

1. Brief the passengers to brace with knees slightly bent, hold on firmly to the handles inside the basket, and to watch the progress of the landing.
2. Inform the passengers not to leave the basket until instructed.
3. Remove spectacles including passengers.
4. Throw overboard any unnecessary ballast, taking all possible care not to cause any damage below when doing so.
5. Extinguish the pilot lights.
6. Shut down all cylinder valves and vent the fuel lines before impact.”

As per the Manufacturer's *Flight Manual*, the landing technique in windy conditions should be with minimized vertical velocity. In addition, a steeper descent angle should be chosen, rounded out by a long burn to achieve straight and level flight at about 20 feet AGL. The parachute is then opened and kept open until the envelope is fully deflated.

### **Onboard video camera**

The Operator used cameras to record flight events. As stated by the Safety Manager and the Lead Pilot, the cameras are used only as a reference for safety-related issues. The cameras' battery life was approximately 70 minutes. Therefore, flights that last longer will not be recorded all.

The Investigation was not able to check the approach and the landing phases of the Incident flight, as they had not been recorded.

## **Analysis**

### **Weather Information**

The Lead Pilot referred to weather data provided by the installations at the take-off site to determine if it was safe to conduct the flight. For landing, there was no weather installation at the landing area. The Lead Pilot used the weather data for OMDB, OMAL, and OMDW to obtain an approximate estimation of the weather conditions at the time of landing.

However, weather data needed to be accurate in order to anticipate conditions at the intended landing area. The statement of both the Lead Pilot and Commander showed that the windy conditions with updrafts and downdrafts that were encountered were challenging and



needed to be planned for before commencing the descent. The lack of actual weather information for each landing area was a cause of uncertainty which led to unforeseen risks.

After reviewing the *Operations Manual*, the criteria used to select the landing area did not include weather conditions at the landing area as a factor to be considered by the Lead Pilot before selecting a landing area.

Adding this factor to the Lead Pilot decision-making process, is useful as it reflects good airmanship practice and enhances safety. However, to have this data available for balloon pilots, there should be a weather station at each landing site to transmit weather data to the Lead Pilot before he selects the landing area.

Providing an automated weather reporting station at each landing area would reduce the risk of severe unpredicted weather conditions such as rain or sand storms. Ensuring safety of the aerodrome for takeoff and landing is mandatory as per CAR IV.

## Pilot performance during Approach and Landing

After the Lead Pilot selected the Second Flat Area as the landing location, all five balloons started descending for the approach. The balloon piloted by the Lead Pilot was the first to land. It landed safely and did encounter gusty conditions during the approach.

The Commander of the Incident Balloon commenced his approach as number three in the landing sequence. In order to control the descent of the Balloon in the gusty wind, he added hot air down to 50 feet AGL. The combination of an updraft and an excessive amount of hot air in the Balloon's envelope due to extended use of the burner down to a low level made it harder for the Commander to land the Balloon. To counter these effects, the Commander used the FDS to allow hot air to exit the envelope and so lose altitude in order to touch down. However, after using the FDS at 50 feet and touching down, the Balloon bounced and ascended again. This indicates that the Balloon envelope was not fully opened and hot air was still present in the envelope, which was sufficient to cause it to ascend again.

The Balloon contacted a sand dune as it floated over the edge of sand dune area following its ascent. The Balloon came to a stop 20 meters beyond the sand dunes.

## Commander's Training History

The Commander received a grading of SB in the following items in his latest PPC before the Incident flight:

- Obstacle avoidance
- Thermals, updrafts, and downdrafts
- Passenger emergencies.

The skills above in which the Commander received the SB grade were the same as those applicable in the weather conditions on the day of the Incident. The SB grading shows that the Commander needed an input from the Trainer to reach the standard required in these skills. However, there is no evidence that the Commander's performance during the Incident flight was relevant to his last PPC. The Investigation determined that the grading system used by the Operator was not in accordance with the latest grading system in the *Civil Aviation Regulations*.

## Restricted Passengers

The Operator identified Restricted Passengers on their boarding pass and the passengers signed the boarding pass. The SOP of the Operator stated that if a passenger had mobility problems they should be assisted. This could have been an opportunity for the Commander to see which passengers had mobility problems.

The Operator can put additional barriers to prevent boarding of unfit passenger on the balloon. In addition to signing the boarding pass and self-declaration, the Operator shall advise the balloon crew to notice if a passenger is unable to board the balloon he/she shall be aware that it might be hazardous for him to be on board the Balloon.

Also, paper boarding passes can be substituted with an electronic one. As the paper format of the boarding pass is limited in terms of the language that it can include. The electronic declarations will enable passengers who do not speak English or Chinese – the languages in which the current boarding passes is written on – to clearly read and understand the types of restricted passengers that can board the balloon in their own language.



## Conclusions

### Findings

- (a) The Balloon was certified, equipped and maintained in accordance with the existing requirements of the *Civil Aviation Regulations* of the United Arab Emirates.
- (b) The Balloon was airworthy for the flight.
- (c) The Balloon Commander was appropriately licensed.
- (d) The Commander, in his currency PPC, needed input from the trainer to reach the standard in Emergency items. Some of these skills were needed during the approach and landing of the Incident flight.
- (e) The boarding and takeoff of the Incident flight were uneventful.
- (f) Of the five separate balloon flights that departed on the morning of day of the Incident, four landed uneventfully.
- (g) The Commander inflated the Balloon during the approach to control the descent.
- (h) The Commander used the FDS at 50 feet to lose height in order to touch down.
- (i) The Balloon bounced and floated due to the hot air in the envelope, which was sufficient to allow the Balloon to float.
- (j) During the second touchdown, the Balloon basket hit a sand dune.
- (k) One passenger sustained a minor injury during the landing.
- (l) The injured passenger who signed the declaration, falls under "Restricted Passengers" as outlined in the boarding pass.
- (m) The injured passenger had signed the Restricted Passenger declaration before commencing the flight indicating that he had read, understood, and took the responsibility of the declaration.
- (n) The onboard video camera did not record the full length of the Balloon flight due to its limited battery life.

### Causes

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

- (a) The basket impacting a sand dune causing an injury to one of the passengers.
- (b) Before impacting the sand dune, the balloon had landed hardly on the edge of Second Flat Area and bounced due to extended use of burners for landing keeping the Balloon envelope inflated until late stage.
- (c) The Balloon floated toward the sand dune, and was directed by wind and hot air remaining in the envelope.

### Contributing Factors

The Air Accident Investigation Sector identifies a contributing factors to the Incident was the lack of weather measuring aid in the Second Flat Area.

## Safety Recommendations

The Air Accident Investigation Sector recommends that Balloon Adventures Emirates LLC:

#### SR27/2021

Provide Second Flat Area with means of measuring weather to aid the pilots in their descent preparation.

#### SR28/2021

Install a video recording device capable of recording the entire flight.

### This Report is issued by:

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

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