



الهيئة العامة للطيران المدني
GENERAL CIVIL AVIATION AUTHORITY

Air Accident Investigation Sector

Accident

- Preliminary Report -

AIFN/0020/2014

Loss of Control Inflight Resulting in a Heavy Landing

Operator: Falcon Aviation Services
Type: AgustaWestland AW109SP
Registration: A6-FLP
Location: Emirates Palace Hotel Heliport
Date of Occurrence: 15th December 2014



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GENERAL CIVIL AVIATION AUTHORITY

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

Incident Brief

GCAA AAI Report No:	AIFN/0020/2014
Operator:	Falcon Aviation Services
Aircraft Type	AW109SP
Registration	A6-FLP
Engine [s]	2 x Pratt and Whitney Canada PW207C
Location	Emirates Palace Hotel, Abu Dhabi
Category	Air Transport
Persons on Board	Two Crew/Pax TBD
Injuries	Two minor (unconfirmed)

Investigation Objective

This Investigation is performed pursuant to the United Arab Emirates (UAE) Federal Act 20 of 1991, promulgating the Civil Aviation Law, Chapter VII, Aircraft Accidents, and Article 48. It is in compliance with Part VI, Chapter 3 of the UAE Civil Aviation Regulations, 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) Air Accident Duty Investigator on 15 December 2014

An investigation team was immediately dispatched to the accident site.

In accordance with ICAO Annex 13, the States of Manufacture were notified and appointed an Accredited Representative [ACCREP] to the investigation and nominated Technical Advisors [TA] from the manufacturer of the airframe and the engine respectively.

The Air Accident Investigation Sector (AAIS) of the GCAA is leading the investigation, as the United Arab Emirates (UAE) is the State of Occurrence

ADREP Classification¹

Primary	Loss of Control Inflight [LOC-I]
Secondary	Abnormal Runway Contact [ARC]

¹ The Accident/Incident Data Reporting (ADREP) system is operated and maintained by ICAO. The ADREP Occurrence category taxonomy is a set of terms used by ICAO to categorize aircraft accidents and incidents and allow safety trend analysis on these categories. The ADREP Occurrence category taxonomy is part of the ICAO accident reporting system (ADREP).



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Abbreviations and Definitions

AAIS	Air Accident Investigation Sector
ACCREP	Accredited Representative
ADREP	Accident Occurrence Category Taxonomy
ARC	Abnormal Runway Contact
AUH	Abu Dhabi International
CAR Ops 3	Civil Aviation Regulations/Helicopters
EKP	Emirates Palace Heliport
FAS	Falcon Aviation Services
FATO	Final Approach and Take-Off area
FM	Flight Manual
HIGE	Hover In Ground Effect
HLO	Heliport Landing Officer
HOGE	Hover Out of Ground Effect
ICAO	International Civil Aviation Organization
kt	Knots
LOC-I	Loss of Control Inflight
MAUW	Maximum All Up Weight
METAR	Meteorological Aerodrome Report
MTOW	Maximum Take Off Weight
OAT	Outside Air Temperature
OMAD	Abu Dhabi International
RFM	Rotorcraft Flight Manual
RMS	Radio Management System
SATCOM	Satellite Communications
SOP	Standard Operation Procedures
TA	Technical Advisors
TAF	Terminal Aerodrome Forecast
TAUW	Total All Up Weight
UAE	United Arab Emirates
VHF	Very High Frequency
VIP	Very Important Person
WDI	Wind Direction Indicator



Accident Synopsis

The accident flight was scheduled to depart from the Emirates Palace Heliport² [EKP] at 18:30 local time with VIP passengers to destinations in Dubai.

Prior to the EKP departure the aircraft, an AW109SP helicopter, was flown the short distance from an adjacent secured heliport to the heliport at EKP to wait for VIP passengers.

The crew for this flight was comprised of two pilots. Maximum passenger seating in the VIP configuration for this aircraft is six passengers.

The aircraft was airborne at 18:32:38 from EKP, hover taxied forward at approximately eight to ten feet above ground level with a forward airspeed of approximately ten knots [kt].

The aircraft hover taxied³ over descending, sloping ground adjacent to the helipad with a slow forward speed.

The aircraft then descended vertically, pitched nose up briefly, prior to contacting the flat ground adjacent to the heliport.

The accident sequence after contact with the ground is that the aircraft pitched forward, yawed/rotated approximately 20 degrees to the right before coming to a full stop with the engines running and the aircraft lower fuselage contacting the ground.

The landing gear forward and aft was damaged as was the tail rotor, tail rotor boom with internal damage to the tail rotor torque tube and associated surrounding structure.

The aircraft was unserviceable following the heavy landing.

Reader Advisory Notes

This is a Preliminary Report which is a short factual report of the event. Within twelve months a full accident report will be published or an Interim Report if the twelve month limit is exceeded.

In *Section 1 Factual Information* of Annex 13 reports there are nineteen sub-sections, 1.1 to 1.19.

Where a section has no factual information relevant or available to the factual Preliminary Report the phrase 'To Be Determined' is used.

In the Final Report, there are three additional sections: Analysis, Conclusions and Safety Recommendations.

Information relevant to the investigation will be updated and included in the accident investigation final report.

² Heliport. An aerodrome or a defined area of land, water or a structure used or intended to be used wholly or in part for the arrival, departure and surface movement of helicopters.

³ Low level maneuvering around a heliport, usually for positioning.



1. Factual Information

1.1. History of the Flight/Narrative of Events

The AW109SP for this flight was a two pilot operation, with a maximum passenger seating in the VIP configuration for six passengers.

The crew were contacted via email by Falcon Aviation Services [FAS] Flight Operations department at 15:18⁴ and were provided with flight schedules for the flights to and from Dubai.

At 16:13 the crew were provided with revised schedules and a departure time from Abu Dhabi of 17:30.

The flight schedule sent from the FAS flight operations department for the flight from Abu Dhabi to destinations in Dubai indicated that the passenger numbers to board at EKP were six in total.

The aircraft was at a secure heliport near the EKP heliport. Prior to the short transit flight from the secured heliport to the EKP heliport, the mandatory load sheet was completed by the pilot in command with the empty weight, fuel and crew weights signed off for the short transit flight between the secure heliport and the EKP heliport.

The Total All Up Weight⁵ [TAUW] for the short distance transit flight was 2910kg with a Maximum Take Off Weight [MTOW] of 3175kg.

The aircraft was then flown the short distance to the EKP heliport to wait for the VIP passengers to embark.

At EKP the loading was conducted by VIP security personnel and was unsupervised by the crew due to the operating procedures used for VIP transit which can exclude the crew from viewing the passenger cabin.

Based on the crew statements, no load sheet was available for the passenger weights and total number of passengers to board the aircraft prior to departure from the EKP heliport.

The EKP heliport has no Heliport Landing Officer [HLO] who would normally provide passenger information and a method for the crew to estimate the passenger weights.

The accident flight departed from Abu Dhabi at 18:32:38 local time with the VIP passengers on board for destinations in Dubai.

The aircraft hover taxied forward at approximately eight to ten feet above ground level, with a forward airspeed of approximately 10 knots [kt].

The aircraft hover taxied over descending, sloping ground adjacent to the helipad with a slow forward speed.

The aircraft then descended vertically, pitched nose up, remaining in the nose high attitude prior to contacting the flat ground adjacent to the heliport.

⁴ All times are local UAE time which is UTC + 4 hours

⁵ The total weight of the helicopter is the sum of all of the aircraft weights: airframe, cargo, fuel and passengers at any given time during operations.

The accident sequence after contact with the ground is that the aircraft pitched forward, yawed/rotated approximately 20 degrees to the right before coming to a full stop with the engines running and the aircraft lower fuselage contacting the ground.

The landing gear forward and aft was damaged as was the tail rotor, tail rotor boom with internal damage to the tail rotor torque tube and associated surrounding structure.

The aircraft was unserviceable following the heavy landing.

1.2. Injuries To Persons

INJURIES TO PERSONS						
Injuries	Flight Crew	Cabin Crew	Other Persons On-board	Passengers	Total On-board	Others
Fatal	0	0	0	0		0
Serious	0	0	0	0	0	0
Minor	0	0	0	2	0	0
None	2	0	0	TBD ⁶	0	0
TOTAL	2	0	0	TBD	TBD	0

Figure 1: Table of Injuries

1.3. Damage To Aircraft

The aircraft was substantially damaged as a consequence of the uncontrolled descent and abnormal runway contact⁷.



Figure 2: A109SP Accident Aircraft Damage

1.4. Other Damage

No other damage was caused other than some scuff marking and indentations to the surface of the rejected take off area.

⁶ Total passengers numbers on board has to be determined.

⁷ Abnormal Runway Contact is the ADREP classification in a FATO for this type of event.



1.5. Personnel Information

Both Pilots held valid GCAA licenses at the time of the accident.

Both pilots had been issued type ratings for the A109SP by the operators training organization.

1.6. Aircraft Information

The AW109SP is a high speed, high performance, multipurpose helicopter powered by two Pratt and Whitney Canada PW207C engines.

The AW109SP is used for passenger transit and logistics duties within the UAE.

The AW109SP in typical VIP configuration has two crew locations and seating for six passengers, three facing aft and three facing forward.

There is no additional seating for observers or supernumerary passengers or crew.

1.7. Meteorological Information

There was no meteorological information specific to the EPK heliport available to the crew.

The EPK heliport is not equipped with a Wind Direction Indicator [WDI]

The closest observing site for a weather briefing is Abu Dhabi International Airport [OMAD].

The OMAD Terminal Aerodrome Forecast (TAF)⁸ is below:

- TAF OMAD 151700Z 1518/1624 04005KT CAVOK BECMG 1600/1602 14005KT
- BECMG 1608/1610 35011KT BECMG 1620/1622 05005KT 4000 HZ NSC=

The Meteorological Aerodrome Report (METAR)⁹ is below:

METAR (1400-2000Z)

- OMAD 151400Z 35007KT 320V030 CAVOK 24/15 Q1018 A3008 NOSIG=
- OMAD 151500Z 35006KT 320V020 CAVOK 23/16 Q1019 A3011 NOSIG=
- OMAD 151600Z 36006KT CAVOK 23/16 Q1020 A3012 NOSIG=
- OMAD 151700Z 02004KT CAVOK 23/16 Q1020 A3013 NOSIG=
- OMAD 151800Z 03004KT 360V060 CAVOK 22/17 Q1020 A3014 NOSIG=
- OMAD 151900Z 06004KT CAVOK 22/16 Q1020 A3013 NOSIG=
- OMAD 152000Z 08005KT 050V110 CAVOK 22/16 Q1020 A3012 NOSIG=

1.8. Aids To Navigation

To Be Determined

⁸ A concise statement of the expected meteorological conditions at an airport during a specified period (usually 24 hours)

⁹ METAR is a format for reporting weather information. A METAR weather report is predominantly used by pilots in fulfilment of a part of a pre-flight weather briefing,



1.9. Communications

The AW109SP is equipped with a radio communication system comprising the following:

- Radio Management System [RMS]
- VHF/AM1 System
- VHF/AM2 System
- The Audio Integrating System
- SATCOM Aircell telephone system

1.10. Aerodrome Information

The Emirates Palace Hotel Heliport is adjacent to the hotel. It is used primarily for the arrival and departure of hotel guests and VIP passengers.

The heliport is uncontrolled and there is no Heliport Landing Officer [HLO] stationed at the heliport.

Helicopters operating into the EPK heliport are required by GCAA CAR Ops 3 to be capable of Performance Class 1¹⁰

The EPK Heliport Final Approach and Take-Off area [FATO¹¹] is unspecified by the heliport owner or in the operators' Standard Operation Procedures [SOP].

Helicopters using the EKP heliport must be capable of Category 'A' performance in the event of an engine or systems failure.¹²

The helicopter operator had no Standard Operating Procedures [SOP] for this heliport, or specific approach and departure procedures available to the operating crew.

The heliport requires a Category 'A' departure.

A Category 'A' departure requires a multi-engine helicopter with engine and system isolation as per GCAA CAR Ops 3 and Flight Manual [FM] performance based on a critical engine failure concept which provides adequate surface area [with no obstacles] and performance capability for continued safe flight if an engine fails.

A Category 'A' departure ensures that there is sufficient power available should an engine fail by restricting the Maximum All Up Weight [MAUW] of the helicopter.

It also provides space for rejected take-offs and landings and obstacle clearance.

¹⁰ Performance Class 1. Performance Class 1 operations are those with performance such that, in the event of failure of the critical power unit, the helicopter is able to land within the rejected take-off distance available or safely continue the flight to an appropriate landing area, depending on when the failure occur.

¹¹ Final Approach and Take-Off area (FATO). A defined area over which the final phase of the approach maneuver to hover or landing is completed and from which the take-off maneuver is commenced and, where the FATO is to be used by helicopters operated in Performance Class 1, includes the rejected take-off area available.

¹² Category A with respect to helicopters means multi-engine helicopters designed with engine and system isolation features specified in CS-27/29 or equivalent acceptable to the Authority and Helicopter Flight Manual performance information based on a critical engine failure concept which assures adequate designated surface area and adequate performance capability for continued safe flight in the event of an engine failure.

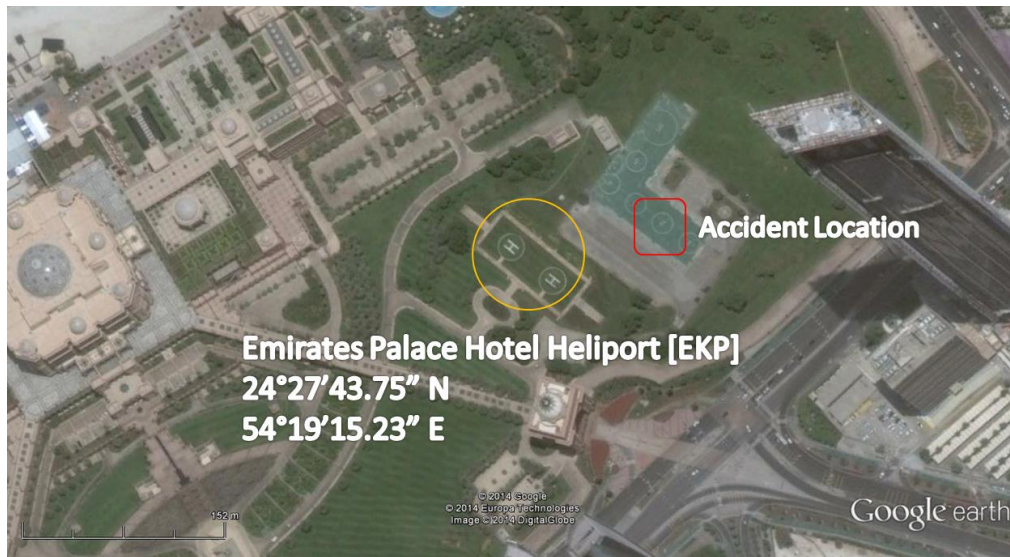


Figure 3: Heliport Location

1.11. Flight Recorders

This category of air transport helicopter is not required under current regulations to install flight data recorders.

The EKP heliport has several Closed Circuit Video Recorders [CCVR] used for security and surveillance.

The accident was captured on the CCVR and will be analyzed for relevant information.

1.12. Wreckage And Impact Information

The wreckage was localized as the AW109SP was intact with the main assemblies in place, although the damage was substantial.

The location of the accident was on the area adjacent to the heliport, on a 045° radial from the helipad.

The simplified graphic below of the accident timeline moves from right to left.

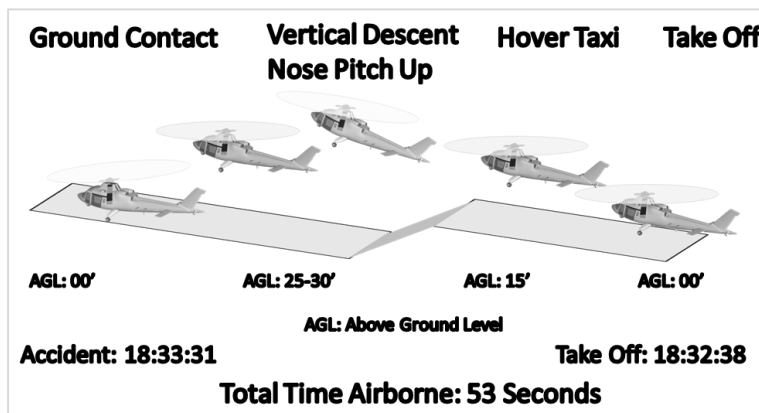


Figure 4: Simplified Accident Diagram



1.13. Medical and Pathological Information

The crew were not injured. There are incidental reports of passenger minor injuries, not confirmed.

Following a serious incident or accident, the operating crew are required by a mandatory GCAA requirement to undergo a medical screening process for alcohol and drugs testing.

1.14. Fire

There was no fire

1.15. Survival Aspects

The Emergency Locator Transmitter [ELT] was triggered and detected by the Abu Dhabi SAR Mission Coordination Centre – MCC indicating that a signal was received by the COSPAS SARSAT System during this period.

The passengers were evacuated by the security service to a secure area adjacent to the hotel complex.

1.16. Tests and Research

To Be Determined

1.17. Organisational and Management Information

To Be Determined

1.18. Additional Information

Helicopter Take-off performance based on the Rotorcraft Flight Manual [RFM] is as follows:

- The maximum take-off weight for this helicopter at a pressure altitude of 50 ft and at 20°C is unrestricted at 3175 kg.
- Hover In Ground Effect [HIGE] and Hover Out of Ground Effect [HOGE] performance at TOP AEO¹³ with Engine Air Particle Separator [EAPS] and Environmental Control System [ECS]/Heater ON have been verified for a pressure altitude of zero [0] feet and 23°C.
- There is no weight limitation with respect to the MTOW of 3175 kg either in HIGE and HOGE condition within the relevant margins.

1.19. Useful or Effective Investigation Techniques

To Be Determined

¹³ Rotor Power Turbine Speed (AEO)



Final Report Availability

In accordance with GCAA CAR Part VI, Chapter 3, Air Accidents and Incidents Investigation and ICAO Annex 13/§6.5, the GCAA will release the final report in the interest of accident prevention.

The UAE, as the State conducting the investigation, shall make the final report publicly available as soon as possible and, if possible, within twelve months of the date of the accident.

In accordance with ICAO Annex 13/§6.6, if the report cannot be made publicly available within twelve months, the State conducting the investigation shall make an interim statement publicly available on each anniversary of the occurrence, detailing the progress of the investigation and any safety issues raised.

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

To Report an Incident or Accident

24 hour Duty Investigator Contact Details are below

For the immediate reporting of an Accident/Serious Incident call the hotline number below which is the 24 hour Duty Investigator

+971 50 6414667

E-mail: aai@gcaa.gov.ae