



Aviation Short Investigation Final Report

System Component Failure – Non-Powerplant
(SCF-NP)

Beech B99, C6-OFM

Black Point Airport (MYEB), Black Point, Exuma, Bahamas
17th October 2022

AAIA Aviation Occurrence Investigation
Report # OCC-2022/0031

Final Report
17th July 2023



Fig.1 Photo of C6-OFM at Black Point Airport (MYEB), Exuma, Bahamas

Released in accordance with Section 25 of the Aircraft Accident Investigation Authority Act (AAIA) 2019 and Section 1.445 of the AAIA Regulations 2021.

Publishing information

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About the AAIA

The Aircraft Accident Investigation Authority (AAIA) is the independent accident investigation agency under the Bahamas Ministry of Transport & Housing (MOT&H) charged with the responsibility of investigating all aviation accidents and serious incidents in the Bahamas.

The AAIA's function is to promote and improve safety and public confidence in the aviation industry through excellence in:

- Independent investigation of aviation accidents and other safety occurrences
- Safety data recording, analysis and research
- Fostering safety awareness, knowledge and action.

The AAIA does not investigate for the purpose of apportioning blame or to provide a means for determining liability. At the same time, an investigation report must include factual material of sufficient weight to support the analysis and findings. At all times the AAIA endeavors to balance the use of material that could imply adverse comment with the need to properly explain what happened, and why, in a fair and unbiased manner.

The AAIA performs its functions in accordance with the provisions of the Aircraft Accident Investigation Authority Act 2019 and Regulations 2021, International Civil Aviation Organization (ICAO) Annex 13 and, where applicable, relevant international agreements.

The Aircraft Accident Investigation Authority is mandated by the Ministry of Transport & Housing to investigate aviation accidents and incidents, determine probable causes of accidents and incidents, issue safety recommendations, study transportation safety issues and evaluate the safety effectiveness of agencies and stakeholders involved in air transportation. The object of a safety investigation is to identify and reduce safety-related risk. AAIA investigations determine and communicate the safety factors related to the transport safety matter being investigated.

The AAIA makes public its findings and recommendations through accident reports, safety studies, special investigation reports, safety recommendations and safety alerts. When the AAIA issues a safety recommendation, the person, organization or agency is required to provide a written response without delay. The response shall indicate whether the person, organization or agency accepts the recommendation, any reasons for not accepting part or all of the recommendation(s), and details of any proposed safety action(s) resulting from the recommendation(s) issued.

About this report

Decisions regarding whether to conduct an investigation, and the scope of an investigation, are based on many factors, including the level of safety benefit likely to be obtained from an investigation. For this occurrence, a limited-scope, fact-gathering investigation was conducted in order to produce a short summary report, and allow for greater industry awareness of potential safety issues and possible safety actions.



AIRCRAFT ACCIDENT INVESTIGATION AUTHORITY

Registered Owner: Ocean Airways Company Limited

Operator: Flamingo Air Limited

Manufacturer: Beechcraft

Aircraft Type: B99

Nationality: Bahamas

Registration: C6-OFM

Place of Accident: Black Point Airport (MYEB), Black Point, Exuma, Bahamas

Date and Time: 17th October 2022, 4:30 pm EDT (2030 UTC)

Notification: Civil Aviation Authority Bahamas (CAA-B)
National Transportation Safety Board (NTSB) United States
International Civil Aviation Organization (ICAO)

Investigating Authority: Aircraft Accident Investigation Authority,
Ministry of Transport & Housing

Investigator in Charge: Kendall Dorsett Jr.

Releasing Authority: Aircraft Accident Investigation Authority

**Date of Final
Report Publication:** 17th July 2023

Occurrence Summary

On the 17th October, 2022, the Aircraft Accident Investigation Authority (AAIA) was notified of an occurrence that took place at the Black Point Airport (MYEB), Black Point, Exuma, Bahamas at approximately 4:30 pm EDT (2030 UTC) involving Air Operator Certificate (AOC) holder Flamingo Air Ltd aircraft, a Beech 99 with Bahamas registration C6-OFM.

The commercial flight departed the Lynden Pindling International Airport (MYNN), Nassau, Bahamas with nine (9) passengers and two (2) crew members on board. According to the pilots, the flight was uneventful up and until the point of landing.

Investigations indicated that upon landing runway 11 at MYEB, there was a collapse of the left main landing gear which led to the aircraft veering off to the left side of the runway's centerline. It then travelled a distance of approximately 1,516 feet down the runway, at which point it exited the useable paved portion of the runway (left side), ultimately coming to rest in bushes after travelling an additional 265 feet.



The aircraft came to rest at coordinates 24° 05'21.20"N 76°23'48.10"W And was oriented in a northerly direction (approximately 355°) at a distance of approximately 50 feet from the runway's edge. There were damages observed to the left wing, left propeller, and

Fig. 2 Google Earth Imagery of Crash site at MYEB

aircraft undercarriage including the pod. There were no reported injuries in relation to the occurrence.

On the 18th October 2022, AAIA investigators were dispatched to the accident site to conduct the on scene portion of the investigation. Assessments produced evidence (tire signature markings) that suggested touchdown prior to the beginning of the usable paved portion of the runway. Taking into consideration this evidence along with evidence obtained from previous similar occurrences at MYEB, the AAIA issued the following safety recommendation (SR2022-002) to the Airport Authority on 20th October 2022:

The Aircraft Accident Investigation Authority (AAIA) recommends that, without delay, the Airport Authority implements the placement of appropriate runway markings at Black Point Airport (MYEB), including threshold markings that will aid pilots in landing operations.

Aircraft Information

The Beechcraft 99 is a twin engine, unpressurised turboprop aircraft that seats up to 17 persons. It was designed in the 1960s as a replacement for the Beech 18 and derives from the earlier King Air and Queen Air; using the wings of the Queen Air, the engines and nacelles of the King Air, and sub-systems from both.

The 99 can seat a crew of two and up to 15 passengers. It is powered by two 550 hp Pratt & Whitney Canada PT6A-20 engines and first flew in July 1966. Type certification was granted on 2 May, 1968 and deliveries commenced later that year.

Aircraft Manufacturer	Registration
Beechcraft	C6-OFM
Serial Number	Registered Owner
U-58	Ocean Airways Company Limited
Model / Series	Aircraft Category
B99	Normal
Engine Manufacturer	Engine Type
Continental Motors	Reciprocating

Post-accident, upon inspection of the left main landing gear, it was discovered that there was a fracture in the left main landing gear drag brace support fitting.



Fig. 3 Left main landing gear drag brace support fitting

Investigation Findings

Pilot

The pilot in command of the aircraft was 55 years old at the time of the occurrence and possessed a Commercial Pilot certificate with airplane multi-engine land and instrument airplane ratings, issued by the Civil Aviation Authority of The Bahamas (CAA-B) 25th January 2021, with an expiration date of 31st January 2026.

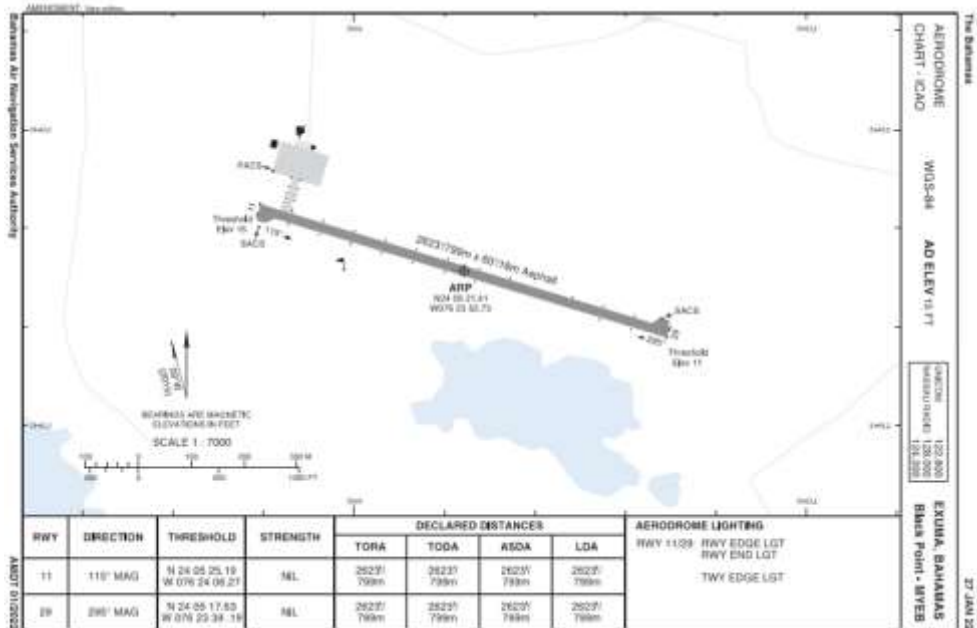
Prior to the accident, he had accumulated a total flight time of approximately 8,000 hours with approximately 1,800 hrs. on type (Beech 99). He possessed a first class medical certificate issued 18th July 2022 by the CAA-B with the limitation, “Have available glasses for near vision”.

The second in command of the aircraft was 26 years old at the time of the occurrence and possessed a Commercial Pilot certificate with airplane multi-engine land and instrument airplane ratings, issued by the Civil Aviation Authority of The Bahamas (CAA-B) on 1st August 2019, with an expiration date of 31st August 2024.

He accumulated a total flight time of approximately 800 hours with approximately 150 hours on type (Beech 99). He possessed a first class medical certificate issued on 28th April 2022 by the CAA-B with the limitation, “Must wear corrective lenses”.

The Aerodrome

Black Point Airport (MYEB)¹, Black Point, Exuma, Bahamas



¹ Information for MYEB taken from Bahamas Aeronautical Information Publication Fifth Edition Amendment 01/2022
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The Black Point Airport (MYEB), situated in the settlement of Black Point, Exuma, Bahamas is served by one runway with designation 11/29 that is surfaced with asphalt and has dimensions of length 2,623 feet and width of 60 feet.

The airspace classification for the aerodrome is designated Class E airspace and the type of traffic permitted is Visual Flight Rules (VFR).



Fig. 4 Runway 11 at MYEB

Runway edge lights, runway end lights, and taxiway edge lights are installed at the aerodrome. The aerodrome is void of runway markings (runway threshold markings, runway designation markings, runway holding position markings, and runway centerline marking).



Weather

Meteorological Information:

Conditions at Accident site	Condition of Light
Visual Meteorological Conditions	Day
Observation Facility Location	Observation Time
Lynden Pindling Int'l Airport (MYNN) Nassau, Bahamas	2000 UTC; 4:00 PM
Distance from Accident Site	Temp /Dewpoint
82 nautical miles	30° C /22° C
Lowest Cloud Condition	Wind
SCT	
Altimeter Setting	Visibility
29.98 in. HG	>6 statute miles

Analysis

In review of several occurrences that would have taken place at the Black Point Airport (MYEB), Black Point, Exuma, Bahamas during the three (3) years prior to this accident, there were similarities seen in a few of the events with regard to pilots touching down prior to the paved usable portion of the runway, as evidenced by the presence of tire signature markings prior to the paved runway surface.



Fig.5 Threshold of Runway 11 at MYEB

The fact that these occurrences involved more than one operator, and aircraft of varying types, highlights the possibility that the common factor, which is the aerodrome, may have presented some deficiencies that are contributory.

The Aeronautical Information Manual (effective date 11/3/22) Chapter 2, 2-3-1 (a) states, *“Airport pavement markings and signs provide information that is useful to a pilot during takeoff, landing, and taxiing”*.

According to Bahamas CAR AGA² 1-Aerodromes, Section 1, 5.2.2.1, *“A runway designation marking shall be provided at the thresholds of a paved runway”*. Additionally, Bahamas CAR AGA 1-Aerodromes, Section 1, 5.2.4.1 states, *“A threshold marking shall be provided at the threshold of a paved instrument runway, and of a paved non- instrument runway where the code number is 3 or 4 and the runway is intended for use by international commercial air transport”*.

² Bahamas Civil Aviation Regulations Aerodromes and Ground Aids

As the MYEB aerodrome was void of any runway markings up to the time of this occurrence, and in consideration of the prior similar occurrences and the above mentioned regulations, the AAIA issued safety recommendation SR2022-002 to the Airport Authority of The Bahamas on 20th October 2022: ***The Aircraft Accident Investigation Authority (AAIA) recommends that, without delay, the Airport Authority implements the placement of appropriate runway markings at Black Point Airport (MYEB), including threshold markings that will aid pilots in landing operations.***

In a correspondence dated 14th November 2022, the Airport Authority presented to the AAIA, a corrective action plan (CAP) to address the deficiencies noted in safety recommendation SR2022-002. The CAP included the addition of runway threshold markings, runway designation markings, and runway holding position markings at MYEB.

The Airport Authority identified a commencement date of 1st December 2022, and a tentative completion date of 31st March 2023. In lieu of the Airport Authority's corrective action plan, the AAIA categorized the status of the issued safety recommendation SR2022-002 as, ***“Open – Acceptable Response”***.

During the course of the investigation, upon assessment of previous reported landing gear incidents involving this specific make and model aircraft within the operator's fleet, associated with the landing gear drag brace support fitting and accompanying parts, it became evident that the required maintenance inspection interval of 200 hours within the approved maintenance inspection program may not be adequate.

The Civil Aviation Authority of The Bahamas (CAA-B), in a correspondence dated 22nd November 2022, was provided documentation of maintenance issues identified relative to the main landing gear drag brace support fitting and associated parts for several of the Beech 99 aircraft within the Operator's fleet.

Subsequently, in a letter dated 30th November 2022, the CAA-B issued the following to the Operator: ***In accordance with CAR OPS1.890 (a) (5) and in the interest of safety, the Authority require the amendment of Flamingo Air Limited Approved Maintenance Program FL/B99/AAIP for incorporation and implementation of the element of Beech 99 Maintenance Manual 05-50-00 (2) Inspection After Hard Landing; (2) Landing Gear; Inspections (a-h) every 25 hours of flight time to detect any fault and mitigate any failure of the main landing gear drag brace support, the drag brace assembly and attaching parts.***

The AAIA was in agreement with the measure utilized by the CAA-B, as it would seek to take a proactive posture by requiring the shortening of the inspection interval from 200 hours to 25 hours which would potentially provide an opportunity to identify the development of faults or signs of fatigue within the component.



Findings

These findings should not be read as apportioning blame or liability to any particular organization or individual.

- 1) The aircraft was certified and registered in accordance with existing Bahamas Civil Aviation Regulations and approved procedures.
- 2) The pilot in command of the aircraft was appropriately licensed for the flight in accordance with existing Bahamas Civil Aviation Regulations.
- 3) The second in command of the aircraft was appropriately licensed for the flight in accordance with existing Bahamas Civil Aviation Regulations.
- 4) Weather was not a factor in this occurrence.
- 5) The aircraft was not equipped with a flight data recorder (FDR) or a cockpit voice recorder (CVR); neither was required by regulation.
- 6) Tire signature markings were observed prior to the beginning of the paved usable portion of runway 11/29 at MYEB.
- 7) There was a collapse of the left main landing gear upon landing runway 11 at the Black Point Airport (MYEB), Exuma, Bahamas.
- 8) The aircraft came to rest at coordinates 24° 05'21.20"N and 76°23'48.10"W.
- 9) Post-accident inspection revealed a failure of left main landing gear drag brace support fitting.
- 10) The Black Point Airport (MYEB) was void of runway markings as required by applicable Bahamas CAR AGA Regulations.



Probable Cause

The AAIA has determined the probable cause of this accident to be system component failure – non powerplant (SCF-NP) – left main landing gear drag leg support fitting.

Contributing factor to this occurrence include;

- Lack of visual references (runway markings) to aid in providing situational awareness to pilots during landing at MYEB

Safety Recommendation(s)

The AAIA issued the following safety recommendation SR2022-002 to the Airport Authority on 20th October 2022:

The Aircraft Accident Investigation Authority (AAIA) recommends that, without delay, the Airport Authority implements the placement of appropriate runway markings at Black Point Airport (MYEB), including threshold markings that will aid pilots in landing operations.

The Airport Authority provided a Corrective Action Plan (CAP) on 14th November 2022 to address the deficiencies identified by installing the appropriate runway markings, and upon review, the AAIA found the CAP acceptable.