



Aviation Short Investigation Final Report

Missing Aircraft

Cessna 150G, N3214X

Location Unknown, September 26th 2017

AAID Aviation Occurrence Investigation

AO-17-002172

Final Report – October 5th 2018

The Air Accident Investigation Department (AAID)

The Air Accident Investigation Department (AAID) is the independent accident investigation department under the Bahamas Ministry of Tourism and Aviation (MOTA) charged with the responsibility of investigating all aviation accidents and incidents in the Bahamas.

The AAID'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 AAID 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 AAID 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 AAID performs its functions in accordance with the provisions of the Bahamas Civil Aviation Act 2016, Civil Aviation (Investigations of Air Accidents and Incidents) Regulations and Amendment Regulations 2017, International Civil Aviation Organization (ICAO) Annex 13 (Eleventh edition, July 2016 – latest revision) and, where applicable, relevant international agreements.

The Air Accident Investigation Department is mandated by the Ministry of Tourism and Aviation to investigate air transportation 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 objective of a safety investigation is to identify and reduce safety-related risk. AAID investigations determine and communicate the safety factors related to the transport safety matter being investigated.

The AAID makes public its findings and recommendations through accident reports, safety studies, special investigation reports, safety recommendations and safety alerts. Unless otherwise indicated, recommendations in this report are addressed to the regulatory authorities of the State having responsibility for the matters with which the recommendation is concerned. It is for those authorities to decide what action is taken. When the AAID 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.

Official Copies of accident reports can be obtained by contacting:

Air Accident Investigation Department
2nd Floor, Manx Corporate Center
#45 West Bay Street
P. O. Box CB-11702
Nassau N. P., Bahamas
Tel: 1 (242) 397-5513 / 5509 / 5520
Fax: (242) 327-2192

Additional copies of the reports can be viewed on the **AAID's** website at: <http://www.baaid.org> or requested by email: aaid.mota@gmail.com or baaid@bahamas.gov.bs.

Missing Aircraft – Cessna 150G N3214X

What Happened?

On October 12, 2017 the Air Accident Investigation Department was notified of an aircraft that departed Grand Bahama Int'l Airport (MYGF), Freeport, Grand Bahama for Rum Cay, Bahamas (MYRP) but never arrived. Further investigations revealed that on 26th September 2017, Cessna N3214X arrived at the Grand Bahama International Airport with a flight plan indicating a route of Grand Bahama to North Eleuthera and final destination of Rum Cay.

The two souls on board departed Grand Bahama and landed at North Eleuthera (MYEH) where they refueled before departing at 2:30 pm LCL (1830 UTC). The aircraft never arrived at Rum Cay or any of the surrounding islands. Searches began for the missing aircraft on 12 October, when the alert was raised that the couple never arrived despite departing North Eleuthera since 26th September. Searches were conducted by the US Coast Guard, Royal Bahamas Police Force and Royal Bahamas Defense Force. Search and rescue mission was conducted between North Eleuthera, Freeport, Grand Bahama and Rum Cay, Bahamas. Search efforts were eventually suspended.

On 29th November, 2017, a tire wheel assembly (**Photo 1**) that was later determined to belong to the aircraft was handed over to authorities after having being found by a local fisherman on the island of Grand Bahama. This tire was the only piece of the aircraft that has been identified to date.



Photo 1 – N3214X Tire

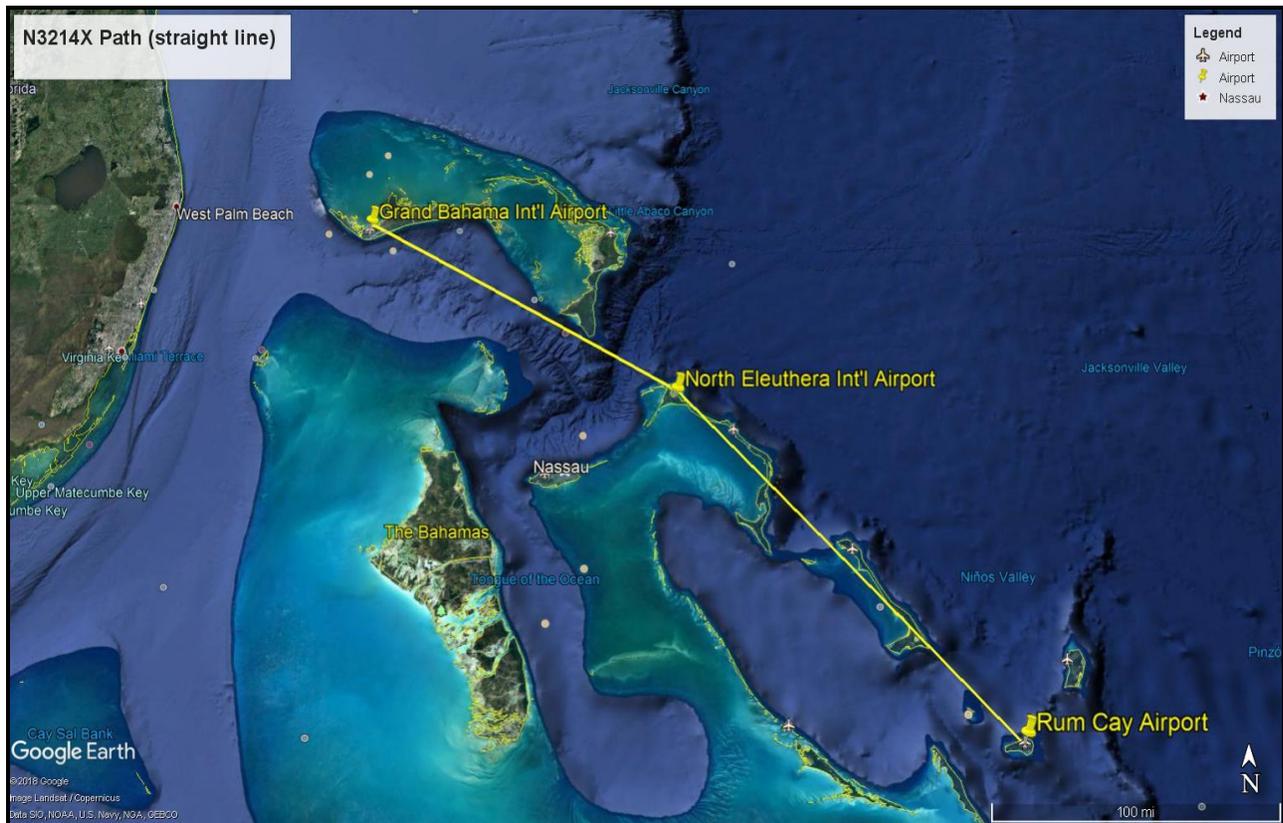


Figure 1 – N3214X Route

On the 15th August 2018, the AAID received a tip from the NTSB regarding the sighting of wreckage potentially belonging to N3214X. Armed with this information, a team of AAID investigators were dispatched on the 21st August 2018 to the areas in question to follow up. This mission included searches of the coastal areas of Paradise Island, Rose Island, and Blue Lagoon Island. However, the search did not yield any identification of airplane wreckage.

Investigation Findings

- Analysis of weather forecasts and observations (textual, graphs & charts) for the accident period suggests that weather may have been a contributing factor in this accident.
- A search of official weather briefing sources, such as Leidos, and Direct User Access Terminal Service (DUATS), revealed that the accident pilot did contact Leidos. The accident pilot contacted Leidos around 2110 UTC on September 25th 2017 for a flight from Fort Pierce, Florida, to Freeport, Bahamas.
- The accident pilot did not contact Leidos or DUATS before the accident flight (26th September 2017). An archive search of ForeFlight data revealed that the accident pilot did not gather weather information from ForeFlight before or during the accident flight. It is unknown if the accident pilot checked or received additional weather information before or during the accident flight.

- The AAID was not officially notified of the missing aircraft until 12th October 2017, some seventeen days after the aircraft would have departed North Eleuthera for its destination of Rum Cay.

Crew Experience

Pilot

The pilot of the aircraft was a 56 year old male at the time of the accident. He had been issued a United States Private Pilot License August 22nd 2017, with single-engine land privileges. He possessed a Third Class Medical Certificate issued on the same date with the restriction ‘Must wear corrective lenses’.

The Aircraft

N3214X (**Photo 2**) was a two seat, all metal, fixed high-wing, aircraft. It had a single engine powered by four pistons driving a two-blade fixed pitch propeller. The landing gear was tricycle type and affixed to the undercarriage. This model of aircraft was designed primarily for flight training and was known for superb handling qualities and ease of flying. Official records obtained from the Federal Aviation Administration (FAA) showed N3214X was registered in the United States of America to Joe Rush, of Edgewood, Texas. The registration certificate was issued by the FAA on 20th November, 2012 with expiration date of 30th November, 2018.



Photo 2

Weather

A detailed weather study was conducted by the National Transportation Safety Board (NTSB) to assess the role weather may have played in this accident. The weather data gathered for the study came from the NTSB’s Washington DC office and from official National Oceanic and Atmospheric Administration (NOAA) National Weather Services (NWS) sources.

Lynden Pindling International Airport (MYNN) was the closest airport with official weather observations and is located 7 miles west of Nassau, Bahamas. MYNN is located 50 miles southwest of the departure location, at an elevation of 16 ft.

Below are the official Meteorological Aerodrome Report (METAR) observations taken and disseminated during the times surrounding the accident: The decoded observations from MYNN in

plain language surrounding the time of the accident (1830 UTC) were as follows:

MYNN weather observation at 1800 UTC, wind from 140° at 4 knots, 6 kilometers or about 4 miles visibility in thunderstorms and light rain, broken ceiling at 1,400 ft. AGL in cumulonimbus clouds, broken clouds at 1,600 ft. AGL in towering cumulus clouds, overcast skies at 7,000 ft. AGL temperature of 25° C, dew point temperature of 24° C, and an altimeter setting of 29.94 inches of mercury. Remarks: cumulonimbus and towering cumulus clouds scattered all quadrants, lightning in-cloud, cloud-to-cloud, and cloud-to-ground southwest through west, east through south, and overhead.

MYNN weather observation at 1900 UTC, wind calm, 9 kilometers or about 6 miles visibility in thunderstorms and light rain, broken ceiling at 1,500 ft. AGL with cumulonimbus clouds, broken clouds at 1,600 ft. AGL in towering cumulus clouds, overcast skies at 7,000 ft. AGL, temperature of 26° C, dew point temperature of 25° C, and an altimeter setting of 29.93 inches of mercury. Remarks: cumulonimbus and towering cumulus clouds all quadrants.

The observations from MYNN surrounding the accident time indicated MVFR to VFR conditions with thunderstorm activity.

Radars Imagery Information

The closest NWS Weather Surveillance Radar-1988, Doppler (WSR-88D) to the departure location was the Miami, Florida, radar (KAMX), located 202 miles west-northwest of the accident area at 13 ft.

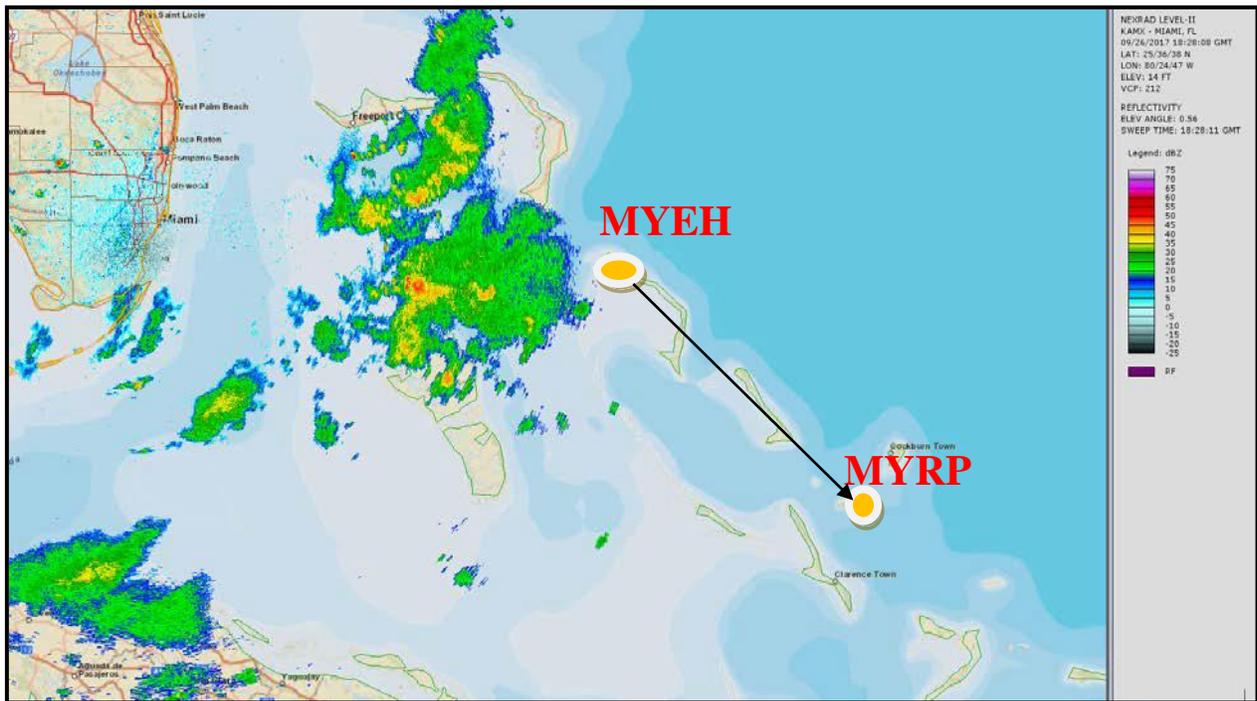


Figure 2 - KAMXWSR-88D reflectivity scan initiated at 1828 UTC

Satellite Data

Visible and infrared imagery from the Geostationary Operational Environmental Satellite number 16 (GOES-16) data was obtained from the NWS.

Figure 3 below presents the GOES-16 visible imagery from 1830 at 2X magnification with MYEH (departure location) and MYRP (intended destination) highlighted with red squares. Inspection of the visible imagery indicated abundant cloud cover along the intended route of flight with several areas of cumulonimbus clouds in between MYEH and MYRP. The cumulonimbus clouds and thunderstorm activity were moving from southwest to northeast.

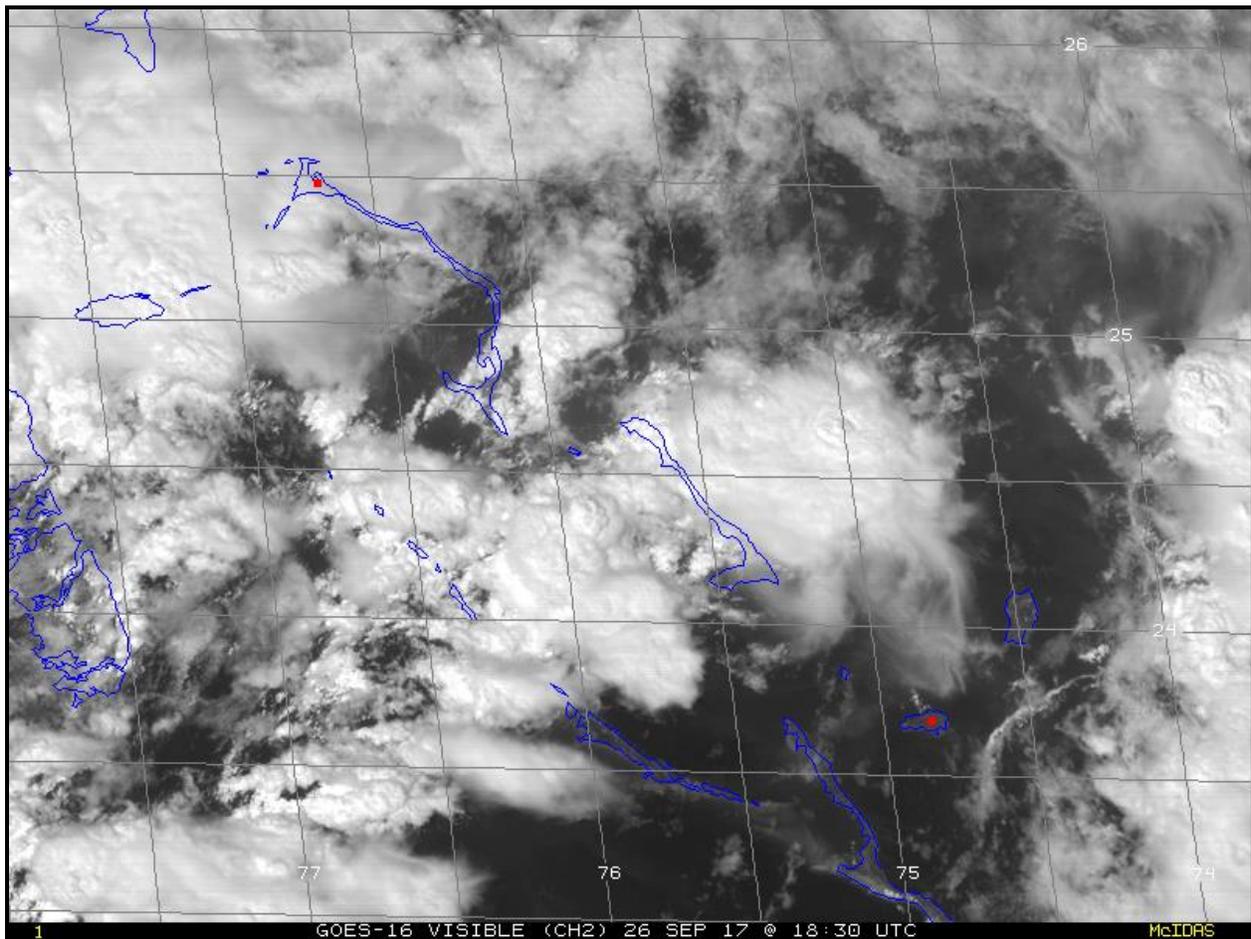


Figure 3 - GOES-16 visible image at 1830 UTC

Safety Action

Whether or not the AAID identifies safety issues in the course of an investigation, relevant organizations may proactively initiate safety action in order to reduce their safety risk.

Safety Message

In lieu of the fact that the accident in question involves a missing aircraft, it should be noted that the issuance of an associated safety message by the AAID can only serve to reiterate the importance of adhering to those regulations, policies and procedures that are of significance in such situations.

The importance of pre-flight action cannot be overstated, especially when taking into account aspects related to weather. Bahamas Civil Aviation General Regulations (CAGR) Schedule 10 – Operations of Aircraft (10.365) states the following:

10.365 PRE-FLIGHT ACTION, INCLUDING WEATHER REPORTS & FORECASTS

(a) Before commencing a flight, the PIC shall be familiar with all available meteorological information appropriate to the intended flight.

(b) The PIC shall include, during preparation for a flight away from the vicinity of the place of departure, and for every flight under the instrument flight rules—

(1) A study of available current weather reports and forecasts; and

(2) The planning of an alternative course of action to provide for the eventuality that the flight cannot be completed as planned, because of weather conditions.

As thunderstorms do pose a threat to the safe operation of aircraft, it is always wise to exercise caution when operating in and around the vicinity of thunderstorms. The Aeronautical Information Manual is one source that provides information useful for the operation of aircraft in such conditions. Aeronautical Information Manual chapter 7 Safety of Flight, section 7-1-29:

DOS AND DON'TS OF THUNDERSTORM AVOIDANCE.

a. Thunderstorm Avoidance. Never regard any thunderstorm lightly, even when radar observers report the echoes are of light intensity. Avoiding thunderstorms is the best policy. Following are some dos and don'ts of thunderstorm avoidance:

(1) Don't land or take off in the face of an approaching thunderstorm. A sudden gust front of low-level turbulence could cause loss of control.

(2) Don't attempt to fly under a thunderstorm even if you can see through to the other side. Turbulence and wind shear under the storm could be hazardous.

(3) Don't attempt to fly under the anvil of a thunderstorm. There is a potential for severe and extreme clear air turbulence.

(4) Don't fly without airborne radar into a cloud mass containing scattered embedded thunderstorms. Scattered thunderstorms not embedded usually can be visually circumnavigated.

- (5) Don't trust the visual appearance to be a reliable indicator of the turbulence inside a thunderstorm.
- (6) Don't assume that ATC will offer radar navigation guidance or deviations around thunderstorms.
- (7) Don't use data-linked weather next generation weather radar (NEXRAD) mosaic imagery as the sole means for negotiating a path through a thunderstorm area (tactical maneuvering).
- (8) Do remember that the data-linked NEXRAD mosaic imagery shows where the weather *was*, not where the weather *is*. The weather conditions may be 15 to 20 minutes older than the age indicated on the display.
- (9) Do listen to chatter on the ATC frequency for Pilot Weather Reports (PIREP) and other aircraft requesting to deviate or divert.
- (10) Do ask ATC for radar navigation guidance or to approve deviations around thunderstorms, if needed.
- (11) Do use data-linked weather NEXRAD mosaic imagery (e.g., Flight Information Service-Broadcast (FIS-B)) for route selection to avoid thunderstorms entirely (strategic maneuvering).
- (12) Do advise ATC, when switched to another controller, that you are deviating for thunderstorms before accepting to rejoin the original route.
- (13) Do ensure that after an authorized weather deviation, before accepting to rejoin the original route, that the route of flight is clear of thunderstorms.
- (14) Do avoid by at least 20 miles any thunderstorm identified as severe or giving an intense radar echo. This is especially true under the anvil of a large cumulonimbus.
- (15) Do circumnavigate the entire area if the area has 6/10 thunderstorm coverage.
- (16) Do remember that vivid and frequent lightning indicates the probability of a severe thunderstorm.
- (17) Do regard as extremely hazardous any thunderstorm with tops 35,000 feet or higher whether the top is visually sighted or determined by radar.
- (18) Do give a PIREP for the flight conditions.
- (19) Do divert and wait out the thunderstorms on the ground if unable to navigate around an area of thunderstorms.

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 summary report, and allow for greater industry awareness of potential safety issues and possible safety actions.

This case is officially closed. It may be re-opened if new and significant evidence becomes available.

By the Air Accident Investigation Department



Delvin R. Major
Chief Investigator of Air Accidents