

Aviation Short Investigation Final Report

Occurrence involving
Israeli Aircraft Industries
Westwind – 1124A, Registration N790JR



**Treasure Cay, Abaco, Bahamas
5th July, 2021**

**AAIA Aviation Occurrence Investigation
Controlled Flight into Terrain
AO21-022**

**Date of Final Report
2nd August, 2021**



Publishing information

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Aircraft Accident Investigation Authority

About the AAIA

The Aircraft Accident Investigation Authority (AAIA)

The Aircraft Accident Investigation Authority (AAIA) is the independent accident investigation agency under the Bahamas Ministry of Transport & Local Government (MOT&LG) charged with the responsibility of investigating all aviation accidents and 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 and the International Civil Aviation Organization (ICAO) Annex 13 and, where applicable, relevant international agreements.

The AAIA is mandated to investigate air transportation accidents and incidents, determine probable cause(s) of such 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. 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.

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 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.

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Title

Registered Owner:	Transenergie Inc.
Manufacturer:	Israeli Aircraft Industries
Aircraft Type:	IAI 1124A Westwind
Nationality:	United States of America
Registration:	N790JR
Place of Accident:	Treasure Cay, Abaco, Bahamas
Date and Time:	5 th July 2021, Approximately 3:45pm EDT (1945UTC)

Synopsis

Notification:	Civil Aviation Authority Bahamas (CAA-B), National Transportation Safety Board USA (NTSB), Federal Aviation Administration (FAA), Civil Aviation Authority Israel (CAAI)
Investigating Authority:	Aircraft Accident Investigation Authority (AAIA), Ministry of Transport & Local Government
Investigator in Charge:	Capt. Delvin R. Major
Accredited Representatives:	Mr. Robert Gretz (NTSB) USA
Technical Advisors:	Capt. Theodore Ferguson, CAA-B Capt. Chavaz Thomas, CAA-B
Releasing Authority:	Aircraft Accident Investigation Authority
Date of Final Report Publication:	2 nd August, 2021

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What Happened?

On the 5th July, 2021 at approximately 3:45PM, EDT (1945UTC), an Israeli Aircraft Industries, (IAI) Westwind 1124A aircraft, United States registration N790JR, crashed a short distance from the end of runway 32 at the Treasure Cay International Airport (MYAT), Treasure Cay, Abaco, Bahamas.

The aircraft plowed through airport lighting equipment at the end of the runway, hitting and breaking several trees along its path. A trail of aviation fuel and pieces of the aircraft and avionics equipment from the flight deck, were left behind before the aircraft finally hit a small mound (hill), spinning, hitting several additional trees, breaking apart and bursting into flames. The aircraft came to rest at coordinates 26°45'21.50"N, 77°24'7.26"W, approximately 2,000 feet (.33 miles) from the end of runway 32.

As this airport did not have a fire truck or crash and rescue personnel stationed on site, assistance with fire services were requested from the town. Two firetrucks from the township responded, however, due to the location of the crash, and no access road available, the trucks were unable to reach the crash site and assist in extinguishing the blaze. The fire continued unimpeded, dampened only by the intermittent downpour of rain, which did not aid in extinguishing the blaze, but rather, only limited the spread of the fire to surrounding bushes. The raging fire totally destroyed the aircraft and much of the control surfaces and components in the direct area of the blaze.

On July 6, a team of investigators from the AAIA and CAA-B were dispatched to the scene. Upon arrival of the investigation team, surrounding brush and trees, as well as some parts and components of the aircraft were still burning. Initial assessments pointed to a possible failure of the aircraft to climb and perform as required.

Runway 14/32 is 7,001 x 150 feet with an asphalt surface and based on the distance the aircraft traveled from the end of the runway to its final resting place, the signature marking on trees and airport lighting fixtures struck by the aircraft, in addition to the ground scars, along with pieces of the aircraft beyond the runway, up to the final resting place of the aircraft, it appears the aircraft was approximately 2 to 5 feet about the surface and not developing any lift or climb performance, while developing full power over the ground, striking trees and brush along its path.

Investigations uncovered the private flight with a crew of two (2), proposed a flight time departure of 2:10PM EDT from the Treasure Cay International Airport (MYAT), with a planned destination of Nassau, Bahamas (MYNN) and an arrival time of 2:33PM EDT, according to flight plan retrieved from Flightaware.com¹. The flight plan did not specify whether the flight would be operated under Visual Flight Rules (VFR)² or Instrument Flight Rules (IFR)³.

According to witness statements taken at Treasure Cay, witnesses recalled two pilots entering the ramp after 3 pm. Witnesses also stated that one of the persons onboard advised customs that they will be departing for Marsh Harbor for fuel in the aircraft (N790JR).

¹ Flightaware.com is a global aviation software and data services company, based in Houston, Texas, United States. The company operates a website and mobile applications which offer free flight tracking of both private and commercial aircraft across the globe.

² In aviation, visual flight rules (VFR) are a set of regulations under which a pilot operates an aircraft in weather conditions generally clear enough to allow the pilot to see where the aircraft is going.

³ Instrument flight rules (IFR) are a set of regulations that dictate how aircraft are to be operated when the pilot is unable to navigate using visual references under visual flight rules.

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A Bahamas Customs Department, Form No. C38 – Transire, which is required to be approved and stamped by Bahamas Customs and carried onboard all aircraft operating within the Bahamas’ boundaries, was completed, signed and presented to Customs Officers stationed at the Treasure Cay International Airport by the second-in-command on the aircraft. The approval was time stamped at 1505 local (3:05pm or 1905UTC).

The approved Transire listed Marsh Harbor, Abaco (MYAM) as the final destination. It is uncertain which destination the aircraft would be travelling to, as the destination in the flight plan, differed from the destination approved on the Transire Form C38.

A witness recalled that both pilots were sitting in the aircraft for about 40 mins before starting both engines and proceeding to runway 32 for departure. According to several witnesses, during the departure, there were cloud build-ups but no rain.

Eyewitnesses also stated that at the time of departure, N790JR entered the threshold of runway 32, accelerated down the entire runway, but never become airborne. Damages to the runway edge light and approach lights of runway 14 were noted, confirming eyewitness statements of the aircraft never becoming airborne.

A witness mentioned, “when present at the airport we look to see planes get in the air, noticing this did not happen. I called the baggage handler and we proceed down the runway, we saw white smoke as we continue off in the bush was what appears to be an explosion.”

The aircraft landing gear left behind indentation on the surface of the ground about 60-80 feet from the threshold of runway 14. As the wing struck the approach lights, it created a hole in the left-wing, as evidence of fuel burn to the underbrush and fuel trail marks were evident and led to the crash site. Along its flight path, and closer to the mound that was struck, pine trees were dislodged, ground scarring was evident and pieces of aircraft and avionics from the flight deck and other debris were strewn about on the ground, leading up to the final resting place of the aircraft.

The tail of the aircraft which included the elevator, horizontal stabilizer, vertical fin and rudder (which control movements of the aircraft), was detached and lodged in between two pine trees, thereby separating the fuselage of the aircraft from the tail section.

During onsite inspection of the wreckage, there were still smoldering aircraft parts and components which hindered efforts to closely examine all components of the aircraft. A search was made for the Cockpit Voice Recorder and/or Flight Data Recorder (which would have revealed a more accurate account of what transpired) to no avail. All avionics and other components located in the aft section of the aircraft where recorders are housed, were all destroyed by impact and the post-crash fire. Most of the aircraft, with the exception of a few components and control surfaces that were strewn about, out of the direct path of the fire, was destroyed by the post-crash fire.

During documentation of the scene and wreckage, 2 undamaged locking pins, which were later identified as thrust reverser locking pins were discovered amongst the wreckage, out of the direct path of the fire. The locking pins are used as safety features to protect the aircraft against unseen mishaps when parked or not in use, but must be removed before a flight as it can disrupt aircraft systems from functioning at its full capacity. (It could not be determined whether the pins were installed at the time of the crash or whether they were removed prior and thrown from the aircraft when the aircraft broke apart).

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The pilot in command that flew the aircraft in to Treasure Cay on July 2, confirmed the pins as the secure pins for the thrust reverser, which he claims he personally inserted, prior to retiring for the day after their flight.

Investigation has uncovered that with this type aircraft, there are several configuration settings that the pilot must physically select and set, in order that the aircraft would climb after takeoff. Based on the fact that the aircraft was not able to climb, those configurations and settings were probably not met.

As a result of the accident crash sequence and post-crash fire, both occupants of the aircraft received fatal injuries.

During the post-crash interview of both pilots that flew the aircraft initially into Treasure Cay, it was revealed that the aircraft was stolen. As a result of the revelation of the aircraft being stolen, the local police was advised. The Safety and Security aspect of the investigation continued under the AAIA, addressing concerns raised prior to involvement of the Royal Bahamas Police Force (RBPF) for their investigation, based on the report of the aircraft being reported stolen.

The AAIA uncovered several serious safety and security concerns as it relates to the Treasure Cay International Airport which have been addressed for required action to both the Civil Aviation Authority Bahamas as well as the Airport Authority Family Island Airport Division.

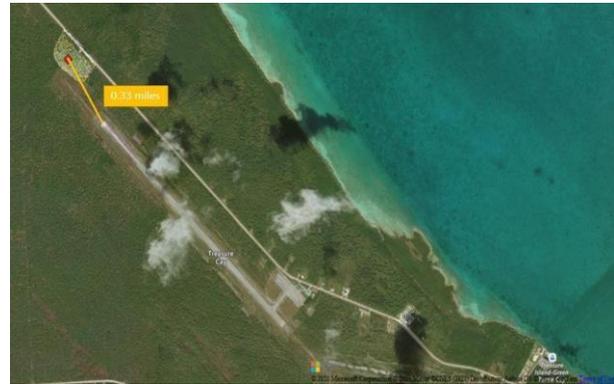


Photo 1: N790JR ground scars and post-crash fire at accident site

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Weather Information

At the time of the accident, the weather in the vicinity of the Treasure Cay International Airport was reported by the Bahamas Department of Meteorology as;

Rain bands of Tropical Storm Elsa will periodically affect portions of The Bahamas while a high-pressure ridge will maintain moderate to strong winds through the forecast period. Applicable to area under investigation throughout the period from 1800 UTC Monday, 05/JUL/2021 to 0600 UTC Tuesday, 06/JUL/2021.

Special Features: FEW/SCT 015/018 CB/TCU SCT/BKN 018/050 TOP LYRD FL160 BKN 200/240 ISOL TO WDLY SCT SHRA/TSRA LOC IFR CONDS AND MOD TURB PSSBL IN SHRA/TSRA = WND SE AT 15-20KT

Satellite/Radar Imagery: Radar and Satellite Imageries initialized at 18:30 UTC showed high clouds namely cirrus and low-level cumuliform clouds with showers and possible thunderstorms offshore, north-northeast of Treasure Cay.

Surface Winds: Winds were from the south-southeast at a speed of 10 to 15 knots with higher gusts in showers and thunderstorms.

Surface Observations

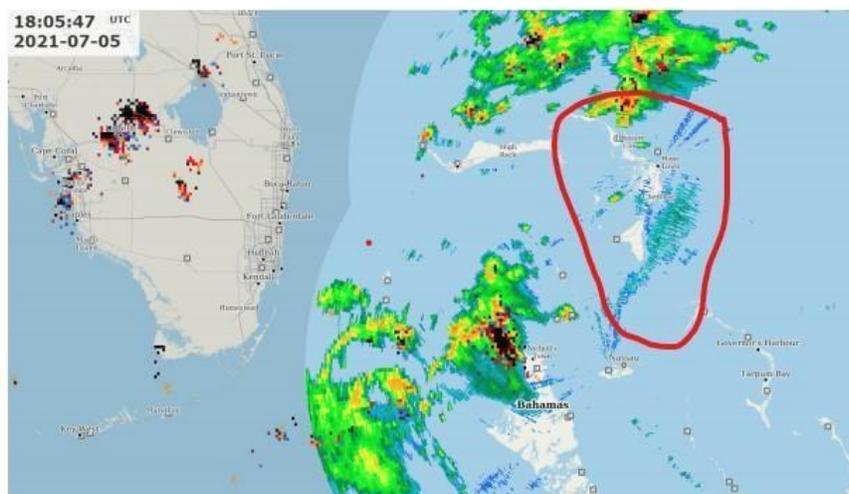
(METAR) at MYGF (Freeport) and MYNN (Nassau—LPIA):

MYGF 051800Z 15011KT 999 FEW018TCU SCT100 BKN250 30/25 A3006 MYGF 051900Z 16013KT 9999 FEW018CB SCT100 BKN250 30/25 A3005

MYNN 081800Z 16012KT 9999 SCT025 31/24 A3014 MYNN 081900Z 15012KT 9999 BKN025 30/25 A3013.

At the time of departure, eyewitnesses reported the conditions at the airport as light drizzle, however, shortly thereafter, the conditions deteriorated with a heavy rain downpour which also hampered rescue operations.

2:05PM 5th July, 2021



Aircraft Information

General information

The Israel Aircraft Industries (IAI) Westwind 1124A is a medium size twin-engine business jet, certified in the transport category as a two-pilot aircraft. Depending on the installed seating configuration, the aircraft can carry up to 10 passengers. N790JR was configured with eight (8) passenger seats. The cabin could also be configured for executive seating and other specialized roles, such as air ambulance and freight flights. The aircraft was fitted with two Garrett AiResearch TFE-731 turbofan engines.

The cabin was pressurized and the aircraft's maximum operating altitude was 45,000 ft. The Westwind 1124A aircraft was approved (type-certified) by the Israeli Civil Aviation Authority in December 1979 and the US Federal Aviation Administration in April 1980.

The 1124A evolved from a previous series of aircraft, including the 1121 (certified in the US in 1964), the 1123 (certified in Israel and the US in 1971) and the 1124 (certified in Israel and the US in 1976). The certification basis for the 1124A included US Civil Aviation Regulation 4b effective 31 December 1953, as well as some amendments and additions.

The 1124 and 1124A are very similar. Although the engines remained the same, a number of aerodynamic modifications enhanced the 1124A's performance, such as a new leading-edge profile for the wing and the installation of winglets on the wing tip tanks.

When compared to the 1124, the 1124A had an improved specific fuel consumption, higher initial cruise altitude capability and increased range.

The modification to the leading edge of the wing also marginally increased the capacity of the aircraft's main fuel tanks.

N790JR was a Westwind 1124A, manufactured in 1984 (serial number 424) and placed on the US civil aircraft register. At the time of the accident, the accumulated airframe hours and landings was unknown. The aircraft was registered to Transenergie Inc. a Domestic for Profit Corporation in Houston, Texas, USA.

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Regulatory Requirement

As the aircraft was registered in the United States of America, all certifications (aircraft and airmen) are required to conform to the United States Code of Federal Regulations (CFR).

The IAI, 1124A aircraft is type certificated for more than one required pilot flight crewmember to operate. At a minimum, the pilot in command (PIC) must possess a type rating for that aircraft.

In accordance with US 14 CFR 61.31(a) (2) Type Rating requirements, additional training, and authorization requirements;

- (a) Type ratings required. A person who acts as a pilot in command of any of the following aircraft must hold a type rating for that aircraft;
 - (2) Turbojet-powered airplanes

In accordance with US 14 CFR 61.55 (a) (1) (2) (3) and (b) (1) - Second in command qualifications states;

- a) A person may serve as a second-in-command of an aircraft type certificated for more than one required pilot flight crewmember or in operations requiring a second-in-command pilot flight crewmember only if that person holds;
 - 1. At least a private pilot certificate with the appropriate category and class rating; and
 - 2. An instrument rating or privilege that applies to the aircraft being flown if the flight is under IFR.
 - 3. At least a pilot type rating for the aircraft being flown unless the flight will be conducted as domestic flight operations within the United States Airspace.
- b) Except as provided in paragraph (e) of this section, no person may serve as a second-in-command of an aircraft type certificated for more than one required pilot flight crewmember or in operations requiring a second-in-command unless that person has within the previous 12 calendar months:
 - (1) Become familiar with the following information for the specific type aircraft for which second-in-command privileges are requested -
 - i. Operational procedures applicable to the power plant, equipment, and systems.
 - ii. Performance specifications and limitations.
 - iii. Normal, abnormal, and emergency operating procedures.
 - iv. Flight manual.
 - v. Placards and markings.
 - vi. Except as provided in paragraph (g) of this section, performed and logged pilot time in the type of aircraft or in a flight simulator that represents the type of aircraft for which second-in-command privileges are requested, which includes
 - vii. Three takeoffs and three landings to a full stop as the sole manipulator of the flight controls;
 - viii. Engine-out procedures and maneuvering with an engine out while executing the duties of pilot in command; and
 - ix. Crew resource management training.

In accordance with US 14 CFR 61.19(b) (1) Duration of pilot and instructor certificates and privileges

- (b) Paper student pilot certificate. A student pilot certificate issued under this part prior to April 1, 2016 expires;
 - 1) For student pilots who have not reached their 40th birthday, 60 calendar months after the month of the date of examination shown on the medical certificate.

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Investigation Findings

The aircraft N790JR departed the Las Americas Airport (SDQ) in the Dominican Republic on Friday 2nd July, 2021 at 2:03PM EDT and arrived at the Treasure Cay International Airport on 2nd July, 2021 at 3:45PM EDT. The flight originated from the Dominican Republic with two (2) flight crewmembers and three (3) passengers. After offloading passengers and securing and locking the aircraft, the crew stated they then checked in to their hotel. The crew stated that they were apprehended by immigration authorities for unknown reason(s) on July 4, 2021 and detained.

The crew further stated that about an hour prior to their release on July 6, (a day after the accident), they were informed that the aircraft they arrived on at Treasure Cay, was involved in an accident and persons on board were killed. The crew further stated they never met the pilots and never gave any one authority to move the aircraft. The crew maintained that they had the only set of keys for the aircraft (which they produced and showed to investigators) in their possession during their period of detention.

During the interview the pilot in command stated the aircraft was stolen. At that point in the interview, the crew were advised they would have to report this matter to the local authorities as the AAIA investigate for the purpose of safety and stolen aircraft is a matter for the police to investigate.

Pilot

The pilot-in-command of the aircraft at the time of the accident was a 30 year old male who was issued an Airline Transport Pilot certificate by the United States Federal Aviation Administration on 28th August, 2019. He also held a type rating for the Boeing B737 and the Saab SF340 aircraft.

The Pilot in command did not meet the requirements of US CFR 61.31 to act as pilot in command of the IAI 1124A aircraft as he was not in possession of a type rating required for this aircraft type.

Second in Command

The second in command was a 27 year old male and was issued a student pilot certificate on 5th March, 2014 which expired 31st March, 2019. He did not meet the requirements of US 14 CFR 61.19(b) (1)

The second in command also did not meet the requirements of US CFR 61.55 to act as second in command of the IAI 1124A aircraft, as he was not in possession of at least a private pilot certificate or type rating required for this aircraft type.

AAIA Actions

Upon notification to the AAIA that the aircraft was officially reported as stolen, the AAIA notified the Commissioner of Police that the investigation to determine the validity of the stolen claims would be turned over to the Royal Bahamas Police Force for further investigation. The AAIA took a supporting role to the RBPF investigation providing whatever technical support they would need to continue their investigation. The AAIA continued its investigation into safety and security concerns uncovered as it relates to the airmen and the aerodrome (MYAT).

In accordance with the Aircraft Accident Investigation Authority Regulations 2021, Subpart B, – Personal Responsibility: Accident Reporting, Section 1.050.

- (a) If, in the course of an investigation it becomes known, or it is suspected, that an act of unlawful interference was involved, the investigator-in-charge shall immediately initiate action to ensure that the aviation security authorities of The Bahamas are so informed.

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- (b) For the purpose of these Regulations, an act of unlawful interference means any act or attempted act such as to jeopardize the safety of civil aviation and air transport including —
- (1) unlawful seizure of an aircraft;
 - (2) destruction of an aircraft in service;
 - (3) hostage taking on board aircraft or on aerodromes;
 - (4) forcible intrusion on board an aircraft, at an airport or on the premises of an aeronautical facility;
 - (5) introduction on board an aircraft or at an airport of a weapon or hazardous device or material intended for criminal purposes;
 - (6) use of an aircraft in service for the purpose of causing death, serious bodily injury, or serious damage to property or the environment; or
 - (7) communication of false information such as to jeopardize the safety of an aircraft in flight or on the ground, of passengers, crew, ground personnel or the general public, at an airport or on the premises of a civil aviation facility.

Probable Cause

The AAIA has classified the accident as a controlled flight into terrain (CFIT) and determined the probable cause of the CFIT accident is due to the failure of the aircraft to climb (perform) as required.

Contributing factors which resulted in the failure of the aircraft to perform as required includes;

- Failure of the crew to configure the aircraft for the proper takeoff segment
- Crew unfamiliarity with the aircraft systems

Recommendations

1. The AAIA has recommended to the Commissioner of Police of the Royal Bahamas Police Force that under his direction an investigation should be carried out to determine the claims made of stolen aircraft.
2. The AAIA is currently in discussions with the Civil Aviation Authority Bahamas and Airport Authority – Family Island Airport Division to address serious safety and security issues identified during the investigation and safety recommendations, if warranted, will be addressed, documented and tracked at a later date.