



# Aviation Investigation Final Report

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<b>Location:</b>	Lanai, Hawaii	<b>Accident Number:</b>	DCA15LA011
<b>Date &amp; Time:</b>	October 16, 2014, 14:47 Local	<b>Registration:</b>	N301KH
<b>Aircraft:</b>	Boeing 737 330	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Aircraft loading event	<b>Injuries:</b>	3 None
<b>Flight Conducted Under:</b>	Part 121: Air carrier - Non-scheduled		

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## Analysis

Aloha Air Cargo flew to an out-station with none of their personnel located there. The decision was made to limit the number of Additional Crew Members (ACMs) due to concerns about the return flight's weight and balance. With the choice of taking the load planner or the mechanic, Aloha Air Cargo made the decision to take the mechanic, which was against the company loading procedures since the mechanic was not trained on cargo securing nor were there any approved personnel at the destination to assist with loading and securing the empty pallets.

Since the load planner would not be making the flight, he discussed with the mechanic on how to load the empty pallets for the return flight, which was to load and lock each empty pallet in their original loaded location. However, while in LNY, Aloha Air Cargo dispatch recommended that all the pallets be placed in position 9 due to concerns about weight and balance. It is unknown if the mechanic tried to contact the load planner to discuss the new configuration.

The cargo floor locks will only secure the bottom pallet when engaged properly and not the stacked pallets. The decision was made to secure the stacked pallets with a cargo strap which was insufficient to keep the pallets from moving. Even though it was stated that during the loading process that the locks were "up" and locked, when the Marshaller entered the airplane he observed the locks between station 8 and 9 were down/unlocked. In addition, there was damage found to the right hand forward and aft locking mechanisms, implying these locks were used but failed due to overload.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the improper loading and securing of the cargo pallets, which shifted on departure, resulting in substantial damage to the aft pressure bulkhead.&nbsp;nbsp;

## Findings

**Aircraft**

(general) - Incorrect use/operation

## Factual Information

### History of Flight

<b>Prior to flight</b>	Aircraft loading event (Defining event)
<b>Enroute-climb to cruise</b>	Pressure/environ sys malf/fail

On October 16, 2014, at about 1447 local time, an Aloha Air Cargo flight 601 B737-330, N301KH, experienced a cargo shift shortly after takeoff from Lanai Airport (LNY), Lanai City, Hawaii, causing substantial damage to the aft pressure bulkhead and the airplane was not able to pressurize. The flight continued to its destination and was towed to a hanger. Upon further examination it was found that a stack of cargo "cookie sheets" came free of their cargo locks in position 9 and shifted rearward. There were no injuries to the two flight crew and one onboard mechanic. The flight was operating under 14 *Code of Federal Regulations* Part 121 as a non-scheduled cargo flight from LNY to Daniel K Inouye International Airport (HNL), Honolulu, Hawaii.

Aloha Air Cargo was chartered, by Hawaii Island Air, to fly round trip from HNL to LNY to deliver lumber for an impending hurricane. LNY was not a station Aloha Air Cargo normally flew to, nor did they have employees there. In addition to the flight crew, a flight mechanic and a load planner were scheduled to fly with the aircraft to provide support. Just prior to the flight's departure, dispatch noted that due to weight and balance concerns on the return trip only one of the additional employees could ride with the aircraft. The choice was made to leave the load planner behind and take the aircraft mechanic as the Additional Crew Member (ACM). This was contrary to company guidance.

Flight 600, departed HNL at 1240 HST and arrived in LNY at 1253 HST. After arriving in LNY, the aircraft was off loaded and then the, now empty, cargo pallet cookie sheets were loaded for the return flight. Aloha Air Cargo used various unit load devices (ULDs) in its freighter operation. The LD7 cargo pallet "cookie sheets" consisted of a single skinned pallet with four edge rails, four corner castings and a center sheet section. The pallet sheet and edge rails are attached to each other by rivets. The edge rails are attached to each other at the four corners by means of corner castings.

The mechanic, first officer (FO), and Island Air employees helped to load the aircraft and verified that the locks were up and locked in all positions. There were a total of 8 empty pallet cookie sheets. Of these sheets 7 were strapped down and secured to the 8th sheet. The 8th sheet was then locked down in position 9 (the aircraft was equipped with 9 cargo positions on the main deck with the ninth position being the most aft and turned lengthwise). This was done per dispatch's request for center of gravity (CG) consideration, even though before departure from HNL the load planner had discussed with the mechanic that each pallet should go back in their original position and locked down.

Flight 601, departed LNY at 1449 HST and arrived in HNL at 1514 HST. Nothing out of the ordinary was noticed by the crew in the feel of the aircraft nor did they hear anything unusual. The auto fail light came on during climb and the quick reference handbook (QRH) was then followed. No door lights illuminated and the outflow valve indicated "Closed." However, upon reaching 10,000 ft. the altitude

alert horn came on so the crew leveled at 10,000 ft. No emergency was declared. The aircraft landed uneventfully. Upon arrival the flight crew notified dispatch of the pressurization issue, made a log book entry, and was assigned a new aircraft for continued flight. Dispatch notified maintenance of the aircraft pressurization problem.

Per company procedures, Marshaller A performs a post arrival check of the aircraft and verifies the content of the cargo before unloading can begin. Marshaller A noticed that all of the pallets were loaded into position 9, that none of the locks between position 8 and 9 were up, and the straps holding the sheets had allowed the sheets to shift aft making contact with the aft pressure bulkhead. Post event examination revealed that the aft pressure bulkhead had substantial damage, left aft (L2) door panel was damaged, and the right hand forward and aft pop up locking mechanism "claws" were detached/torn from their seat tracks. (See Figure 1)



Figure 1: Pallet cookie sheets and damage to aft pressure bulkhead

## Pilot Information

<b>Certificate:</b>	Airline transport; Commercial	<b>Age:</b>	59, Male
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine sea	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	5-point
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 1 With waivers/limitations	<b>Last FAA Medical Exam:</b>	August 22, 2014
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	April 25, 2015
<b>Flight Time:</b>	(Estimated) 17840 hours (Total, all aircraft), 14330 hours (Total, this make and model), 14995 hours (Pilot In Command, all aircraft), 17 hours (Last 90 days, all aircraft), 8 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

## Co-pilot Information

<b>Certificate:</b>	Airline transport; Commercial	<b>Age:</b>	42, Male
<b>Airplane Rating(s):</b>	Multi-engine land	<b>Seat Occupied:</b>	Right
<b>Other Aircraft Rating(s):</b>		<b>Restraint Used:</b>	5-point
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>		<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 1 Without waivers/limitations	<b>Last FAA Medical Exam:</b>	February 18, 2014
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	June 19, 2014
<b>Flight Time:</b>	(Estimated) 6000 hours (Total, all aircraft), 880 hours (Total, this make and model), 4448 hours (Pilot In Command, all aircraft), 160 hours (Last 90 days, all aircraft), 66 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Boeing	<b>Registration:</b>	N301KH
<b>Model/Series:</b>	737 330 330	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	1995	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Transport	<b>Serial Number:</b>	27904
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	
<b>Date/Type of Last Inspection:</b>	October 16, 2014 Continuous airworthiness	<b>Certified Max Gross Wt.:</b>	138499 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	2 Turbo fan
<b>Airframe Total Time:</b>	41163 Hrs at time of accident	<b>Engine Manufacturer:</b>	CFM INTL
<b>ELT:</b>	Not installed	<b>Engine Model/Series:</b>	CFM56-3C1
<b>Registered Owner:</b>		<b>Rated Power:</b>	10460 Lbs thrust
<b>Operator:</b>		<b>Operating Certificate(s) Held:</b>	Flag carrier (121)
<b>Operator Does Business As:</b>		<b>Operator Designator Code:</b>	TSAA

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>		<b>Distance from Accident Site:</b>	
<b>Observation Time:</b>		<b>Direction from Accident Site:</b>	
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	/	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>		<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>		<b>Temperature/Dew Point:</b>	
<b>Precipitation and Obscuration:</b>			
<b>Departure Point:</b>	Lanai, HI (LNY )	<b>Type of Flight Plan Filed:</b>	IFR
<b>Destination:</b>	Honolulu, HI (HNL )	<b>Type of Clearance:</b>	IFR
<b>Departure Time:</b>		<b>Type of Airspace:</b>	Class C

## Airport Information

<b>Airport:</b>	Lanai Airport LNY	<b>Runway Surface Type:</b>	Asphalt
<b>Airport Elevation:</b>	1308 ft msl	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>	21	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	5001 ft / 150 ft	<b>VFR Approach/Landing:</b>	

## Wreckage and Impact Information

<b>Crew Injuries:</b>	3 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	3 None	<b>Latitude, Longitude:</b>	20.78,-156.949996(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Ward, Effie Lorenda
<b>Additional Participating Persons:</b>	
<b>Original Publish Date:</b>	April 6, 2020
<b>Note:</b>	The NTSB did not travel to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=90269">https://data.nts.gov/Docket?ProjectID=90269</a>

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).