



FINAL INCIDENT REPORT

Landing with Weight & Balance CG Out of Limits
EZ Air, Air Operator Certificate No. 17
SAAB 340B
N417XJ, MSN 417
Flight 7Z-0571 from Curaçao (TNCC) to Bonaire (TNCB)

18 December 2024

Final Incident Report
CURCW/24/1134



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ABBREVIATIONS

AFM	Aircraft Flight Manual
AOM	Aircraft Operations Manual
ATC	Air Traffic Control
ATPL	Air Transport Pilot License
CB	Circuit Breaker
CCAA	Curaçao Civil Aviation Authority
CCAR	Curaçao Civil Aviation Regulations
CG	Centre of Gravity
COA	Certificate of Airworthiness
CPL	Commercial Pilot License
CVR	Cockpit Voice Recorder
DME	Distance Measuring Equipment
FC	Flight Crew
FDR	Flight Data Recorder
F/O	First Officer
GE	General Electric
GHM	Ground Handling Manual
GOSM	Ground Operations Service Manager
ILS	Instrument Landing System
Kg	Kilogram
Lbs	Pounds
METAR	Meteorological Actual Report
MTOW	Maximum Take Off Weight
NOTAM	Notice to Air Mission (Notice to Airmen)
OCC	Operations Control Centre Curaçao
OM-A	Operations Manual - A
OM-B	Operations Manual – B
PF	Pilot Flying
PJG	Curaçao VOR/DME Navigation Aid
PNF	Pilot Non-Flying
POB	Persons on Board



QA	Quality Assurance
TAF	Terminal Area Forecast
TAT	Total Aircraft Time
TAL	Total Aircraft Landings
TC	Total Cycle
TNCA	Beatrix Airport, Aruba
TNCB	Bonaire International Airport
TNCC	Hato International Airport, Curaçao
TT	Total Time
UTC	Universal Time Coordinated
VARs	Videcom Airline Reservations System
VHF	Very High Frequency
VOR	Very High Frequency Omnidirectional Range
W&B	Weight & Balance
WOW	Weight on Wheels



FINAL DRAFT INCIDENT REPORT
No. CURCW/24/1134

EZ Air, Air Operator Certificate No. 17,
SAAB 340B,
N417XJ, MSN 417,
Flight EZR 571 from Curaçao (TNCC) to Bonaire (TNCB),
Landing in TNCB, 11 October 2022.

Following is a CCAA, Curaçao Civil Aviation Authority, final report of the circumstances of the incident investigation so far, as the State of the Operator.

The sole objective of the investigation of the incident shall be the prevention of incidents or accidents. It is not the purpose of this activity to apportion blame or liability.

ABSTRACT

This report explains the incident involving a SAAB 340B, MSN 417, operated by EZ Air where the flight crew was unable to lower the nose completely with elevator pitch down after landing.

The safety issues discussed in this report focus on the need for:

1. improved ground handling procedures;
2. the review and amendments of ground personnel and flight crew procedures;
3. improved baggage and cargo handling.
4. Amend the Weight & Balance process.

Safety recommendations concerning these issues are addressed in this report.



SYNOPSIS

EZ Air (EZR) flight 7Z-571 departed Curaçao on 11 October 2022 on an IFR Flight plan enroute to Bonaire (TNCB) during daytime on a scheduled commercial flight.

During touchdown in TNCB, the flight crew experienced a continuous nose-up pitch during flare. The crew was unable to completely lower the nose by applying only the elevator down movement and subsequently applied power and brakes to maintain the nose-down position. After coming to a stop on the runway, the flight crew taxied the aircraft to the ramp with above-ground idle power and brakes. Approaching the parking position, all four main tires deflated due to the activation of the main wheel's thermal plugs by the excessive heat generated by the brakes. No further damage to the aircraft occurred. The Captain was the Pilot Flying. As reported by the flight crew, no anomalies were observed during loading, boarding, take off, cruise, descent, and approach.

Aircraft damage was limited to the deflation of all four main tires on the apron due to the activation of the four main wheel thermal fuses caused by continuous brake application during taxiing. No tail strike occurred, and no further aircraft damage was sustained.

The CCAA was notified of the incident by the operator on 11 October 2022 who in turn notified the Dutch Safety Board as the State of Occurrence.

SAAB AB, Support and Services, formerly known as SAAB AB, SE-581 88 Linkoping, Sweden, was also contacted and provided comprehensive support for the investigation. They conducted technical analysis and produced an animation video presentation of the FDR Raw Data.

The incident flight was replicated by the CCAA in the SAAB 340 simulator in Miami using actual data. This simulation revealed that, in the event Beta is selected with the power levers before the nose wheel touches down (which is an unexpected occurrence), the aircraft's nose pitches up aggressively. This nose-up pitch necessitates excessive yoke down force counteraction, but it has minimal impact. Prompt forward power application is required to swiftly lower the pitch and bring the nose wheel back to the ground.

An animated video was produced by SAAB AB utilizing the actual FDR Raw data information to demonstrate the nose-up pitch attitude during landing.

An initial investigation report was submitted to the FAA, the Dutch Safety Board and ICAO on 16 December 2022.

Contributors

EZ Air management who produced a comprehensive internal report of the incident;
The Dutch Safety Board;
SAAB AB.



1. FACTUAL INFORMATION

1.1 History of the flight.

EZ Air flight 7Z-0571.

Type of aircraft: SAAB 340D. Year of Manufacture 1997
The SAAB 340 was developed and manufactured by Saab Aircraft AB, Linköping, Sweden. The aircraft is a Regional Airliner designed and built for service over short/medium sectors and multistep routes. It is certified for two pilots and one cabin crew member. Source: EZ Air Operations Manual Part B, Rev. Original, 15 January 2021.

The type of flight: Commercial Scheduled Air Transport.

Non-Dangerous Goods carrier.

Dangerous Goods on board: None.

Last point of Departure: TNCC, Curaçao. Departure Time: 21:13 UTC / 17:13 LT

Point of Landing: TNCB, Bonaire. Landing Time: 21:27 UTC / 17:27 LT

Date & Time of event: 11 October 2022, 21:28 UTC / 17:28 LT.

Position of the aircraft: After Landing, TNCB and taxiing to the Apron.

Number of crew and passengers: 34 Passengers (33 Adults, 1 Child),
2 Cockpit Crew, 2 Flight Attendants (1 in training).

On 11 October 2022 N417XJ, flight No 7Z-571, was scheduled to depart from TNCC to TNCB. The Boarding process was completed as usual without any abnormalities.

During the boarding process of the aircraft, thirteen (13) pieces of un-checked hand baggage (carry-on baggage) were handed over from the passengers to the Ramp Handling Agent and loaded in the cargo compartment C2. The FC (Flight Crew) initiated normal pre-departure checks and gave "OK BOARDING". After "OK BOARDING", the FC requested Start-up, and Start-up approval was given by Hato Tower. The FC initiated start check and started the right engine first.

Approximately 9 minutes after the right engine was started, the chocks were removed, and the left engine started. The aircraft blocked off at 21:03 UTC. Approximately 9 minutes after blocks-off, the FC instructed Cabin Crew to take their seats. Aircraft was airborne at 21:13 UTC. At approximately 21:23 UTC, the FC received clearance to land from Flamingo Tower. At approximately 21:24 UTC FC instructed Cabin Crew to take their seats.

The aircraft was at 0 feet at approximately 21:27 UTC. Approximately 5 seconds after, the PNF called out "Flight Idle Stop", followed by "Left Beta" and "Right Beta". Approximately 1 to 2 seconds after the "Right Beta" was called out, the Stall Warning activated. After 3 seconds of the "Stall Warning" sound the "Configuration Warning" activated.



After approximately 12 seconds of the “Configuration Warning”, Flamingo Tower gave clearance to backtrack and taxi via Delta to the apron. During Taxi to the Apron, Captain commented that the aircraft has the tendency to nose up and initially suspected a tail strike. After approximately 3 minutes of the clearance to backtrack during taxi to the parking position, the FC suspected a flat tire. Approximately 16 seconds hereafter the captain stopped taxiing prior to reaching the parking position. The FC requested OCC to install the Tail Support Strut before shutting down the left engine. The Tail Support Strut was installed, and the left engine was shut down. Passengers deboarded and cargo off-loaded.

The FC took pictures of the Loaded Cargo Compartment prior to offloading the baggage (see Captain’s Report below). The FC inspected the aircraft and noticed no damage to the tail but found all 4 main wheels deflated.

Maintenance arrived in Bonaire, carried out an inspection of the aircraft. No damage was noted except for the deflated main Wheel Assemblies. **Inspection of the Wheel Assemblies concluded that deflation occurred due to blown thermal fuses caused by brake heat during taxi with power above ground idle and application of brakes.** All 4 main wheels were replaced, the brake assemblies inspected for damage & wear. The CVR & FDR CBs were pulled to conserve required data for further investigation.



Captain's Report

Date Occurrence: 11 Oct 2022
Flight Number: 7Z591
Route: CUR BON
Wx: VFR CAVOK

17:28 LT: Touchdown. (Landing Time when Incident Occurred)

During final approach noticed more than 1 1/2 nose trim down.
At touchdown as speed decreased the nose pitched violently up as going on its tail. Stall warning comes on momentarily and I immediately gave forward power and pushed the nose forward to avoid going on tail on the runway. Had to taxi with power on (out of Ground Idle) to avoid the airplane to pitch up. Normal taxi to apron until more or less 10 meter from Parking Position (Parking Line) when I felt the airplane started to wobble decided to stop as I suspected a deflated tire.

I ordered that the airplane not to be offloaded until pictures taken. (See Attachments with explanations).
Decided to leave the right engine running with right Condition Lever in MAX in order to help maintain Forward pressure on the nose wheel. Disembarkation started from the back of the aircraft towards front of the aircraft. See picture of pogo pin before disembarkation and after disembarkation including picture of the nose strut without passengers onboard but with all bags and cargo still loaded on the airplane.

After offloading the airplane with 2 separate carts and having each compartment offloaded on one cart each, all baggages and cargo was weighted one by one for actual weights. (See PDF attachment of Actual Weights and another PDF with PAX LIST including weights of PAX and BAGS together with a Copy of the Load Sheet)

Original Report signed by the Captain.



PIC Taken by Ground Crew **WITH PAX ONBOARD**



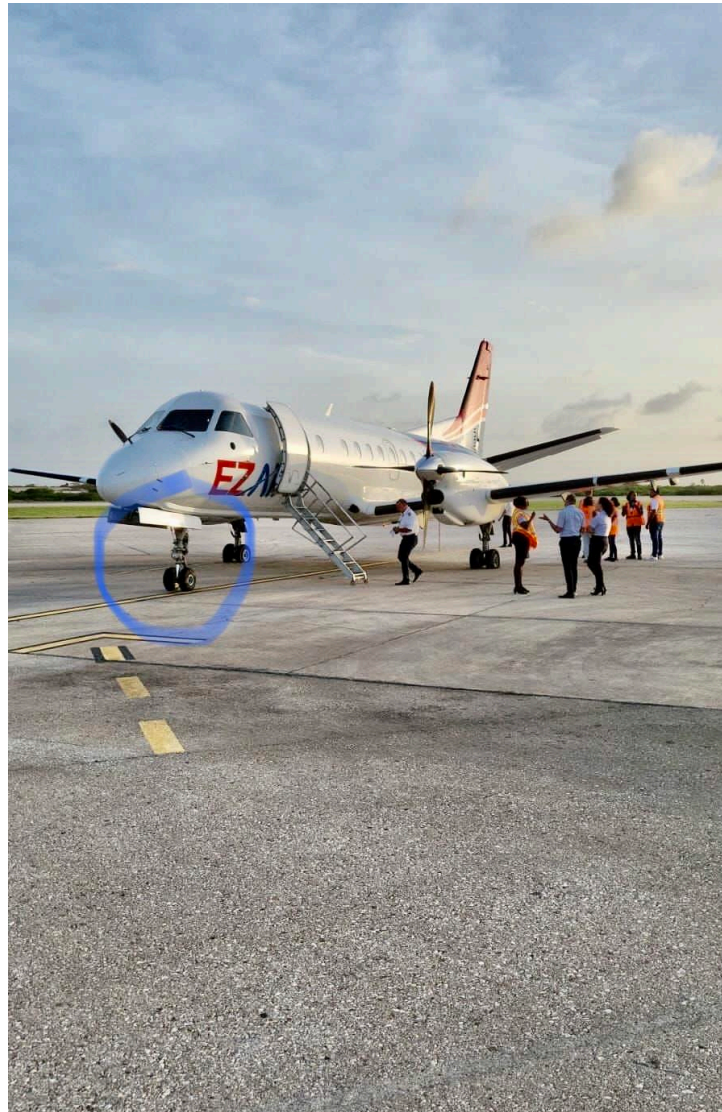
Aircraft **without passengers** with Baggage as loaded in CUR. Notice the tail strut is still at an angle.

According to SAAB AB, in this picture, the center of gravity is at about 32% MAC (MID/AFT, about 3/4 of the envelope).

Ref. text on page 12, the support should still have to stand with some inclination.



Close up PIC of the Cargo Compartment before Offloading



Notice the extended nosewheel strut with aircraft without passengers but still loaded with baggage and cargo.

As per SAAB 340 design, the nose gear will reach max extended position with approximately 520 lbs. cargo (ref ACAP 05-00 sect. 9).

Approximately 1770 lbs. of baggage/cargo is loaded in the aircraft in this picture.



PIC shows FULL pitch DOWN after parking. During Approach it was over 1 ½ Down and during TAXI requested the FO to TRIM further DOWN in the hope that all bits will help keep the nose wheel firm on Ground

1.2 Injuries to Persons

Injuries	Crew	Passengers	Others
Fatal	None	None	None
Serious	None	None	None
Minor	None	None	None

1.3 **Damage to Aircraft:** 4 Main Wheels deflated.

1.4 **Other Damage:** None.

1.5 Personnel Information

Captain: CCAA ATPL License, SAAB 340. FAA SPPA.
 Total flight hours: +/- 16230. Total hours on type: +/- 113.
 Ratings: Multi Engine Land, Instrument.
 Medical: Valid Class 1.

First Officer: CCAA CPL License, SAAB 340. FAA SPPA.
 Total flight hours: +/- 2912. Total hours on type: +/- 289.
 Ratings: Multi Engine Land, Instrument.
 Medical: Valid Class 1.



1.6 Aircraft Information

a) Airworthiness

The aircraft N417XJ, MSN 417, was airworthy with a valid Certificate of Airworthiness (CoA).

Engines: Two GE CT7-9B

Propellers: DOWTY (c)R.354/4-123-F/26 - (c)R.354/4-123-F/27.

Total Time TAT: 40672.9 Hours

Total Landings TAL: 46403 Landings

TC, Type Certificate Holder: SAAB AB, Support and Services, (Formerly known as SAAB AB, Saab Aeronautics), SE-581 88 Linkoping, Sweden.

b) Weight & Balance, see paragraph 2.5

c) Type of Fuel: Jet A-1. Not relevant.

1.7 Meteorological Information

a) Weather TNCB

SIG WX: Few Isolated SHRA PSBL

CLDS: FEW TO SCT CU/SC, 1500-2000FT TOP BETWEEN FL150 AAND FL180

SFC VIS: 10+ KM. TEMPO 5-8 KM IN PSBL SHRA

METAR TNCB 112055Z 08014KT 050V110 9999 SCT019 BKN022 29/25 Q1011=

METAR TNCB 112155Z 07012KT 9999 FEW017 SCT020 29/25 Q1011=

b) Natural light conditions. Runway dry.

1.8 Aids to Navigation

Operating VOR DME, ILS, ADSB.

No relevant NOTAMS.

1.9 Communications

The aircraft was on TNCB Flamingo Tower, VHF frequency 118.7 MHz.

1.10 Aerodrome Information

Operation normal. No relevant NOTAMS.

1.11 Flight Recorders

The aircraft is equipped with an FDR, Flight Data Recorder, and a solid state CVR, Cockpit Voice Recorder.

Cockpit Voice Recorder

The CVR shows that the initial departure from TNCC, Take-off, Climb, Cruise and Descent were uneventful.

During Landing (Touchdown) the following events were recorded:

- 01h48m52s (CVR recording point), FO calls out - 0 Feet



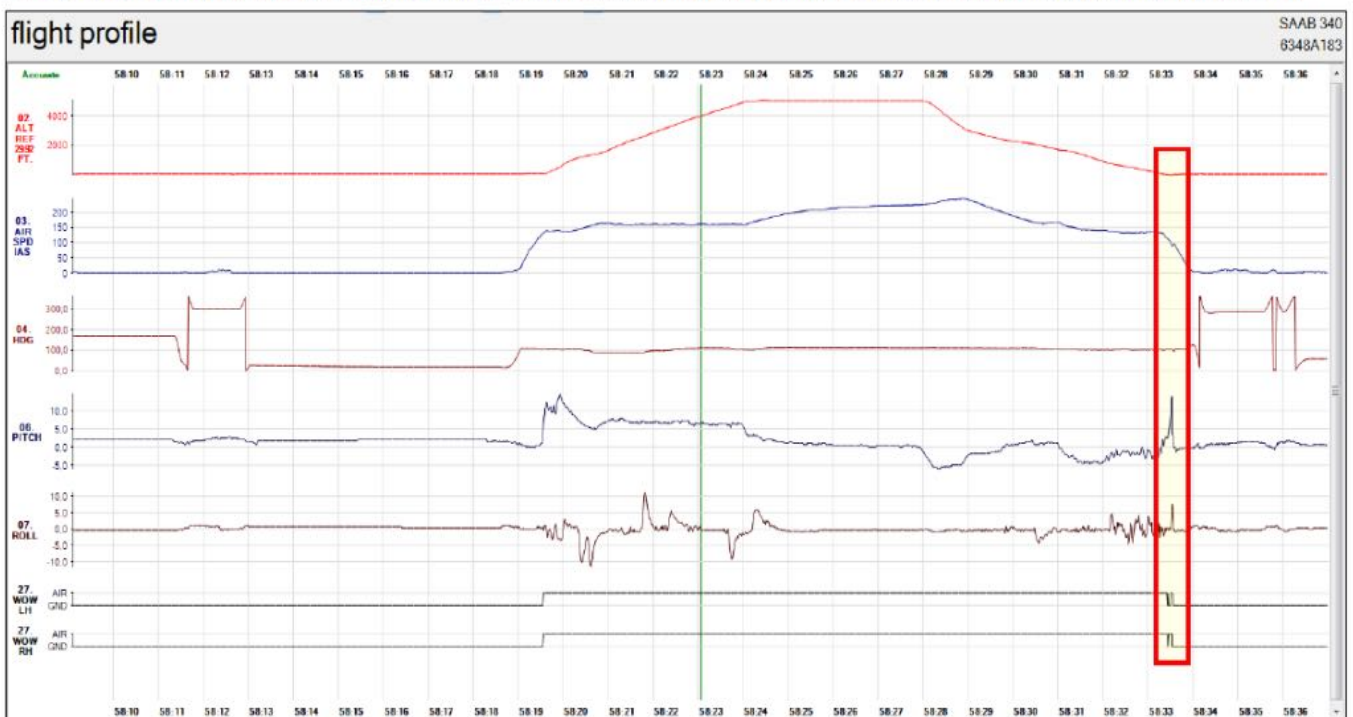
- 01h48m57s, FO calls out - Flight Idle Stop
- 01h48m58s, FO calls out - Left Beta
- 01h48m59s, FO calls out - Right Beta
- 01h49m01s, Stall Warning sounds
- 01h49m04s, Configuration Warning
- 01h49m18s, Tower provides clearance to backtrack and taxi to apron via Delta.

Flight Data Recorder

The FDR recordings showed a normal Take-Off, Climb, Cruise, Descent and Approach to Landing.

N417XJ EZAIR DFDR EVENT REPORT GRAPHS

Overall Flight profile for the last flight, complete data download from aircraft power up to power down. Notice highlighted area during touch down for abnormal High pitch and High Roll, also WOW bouncing.



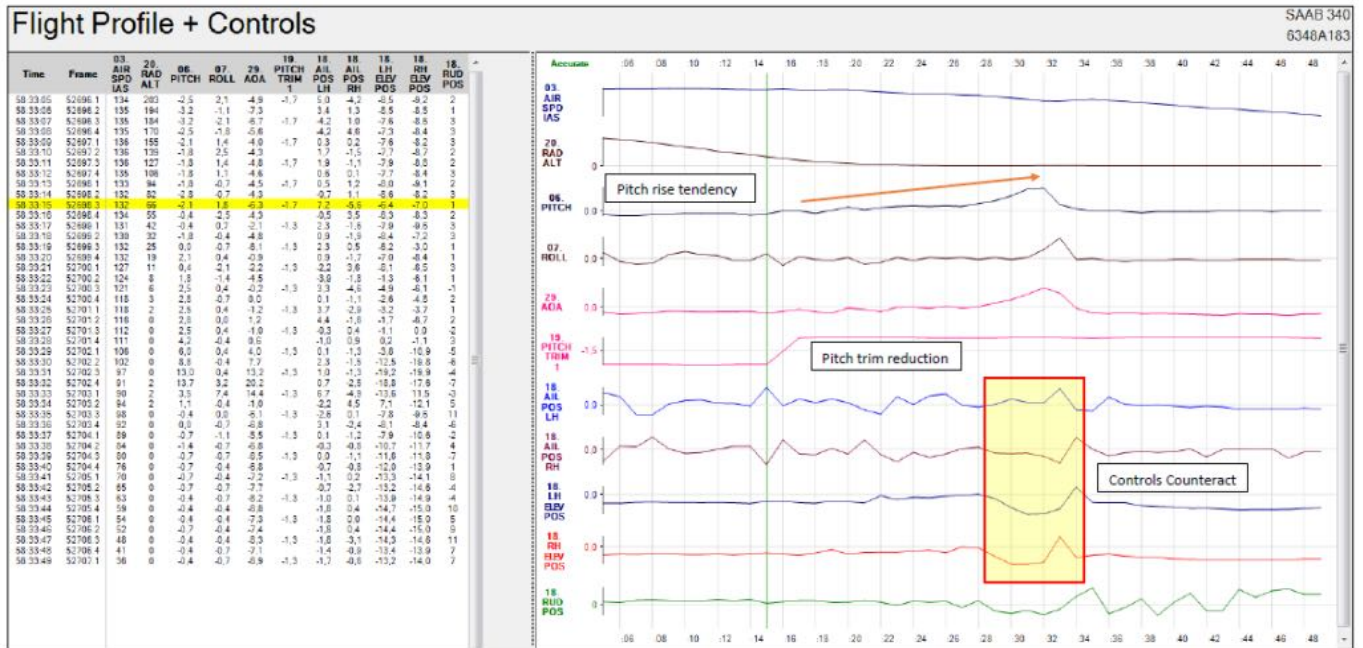
Courtesy SAAB AB

The FDR recording shows a pitch rise tendency when pitch trim was changed from -1.7 to -1.3 (nose up) at RA Altitude of 42', and a power reduction at RA Altitude of 25' followed by a pitch increase.



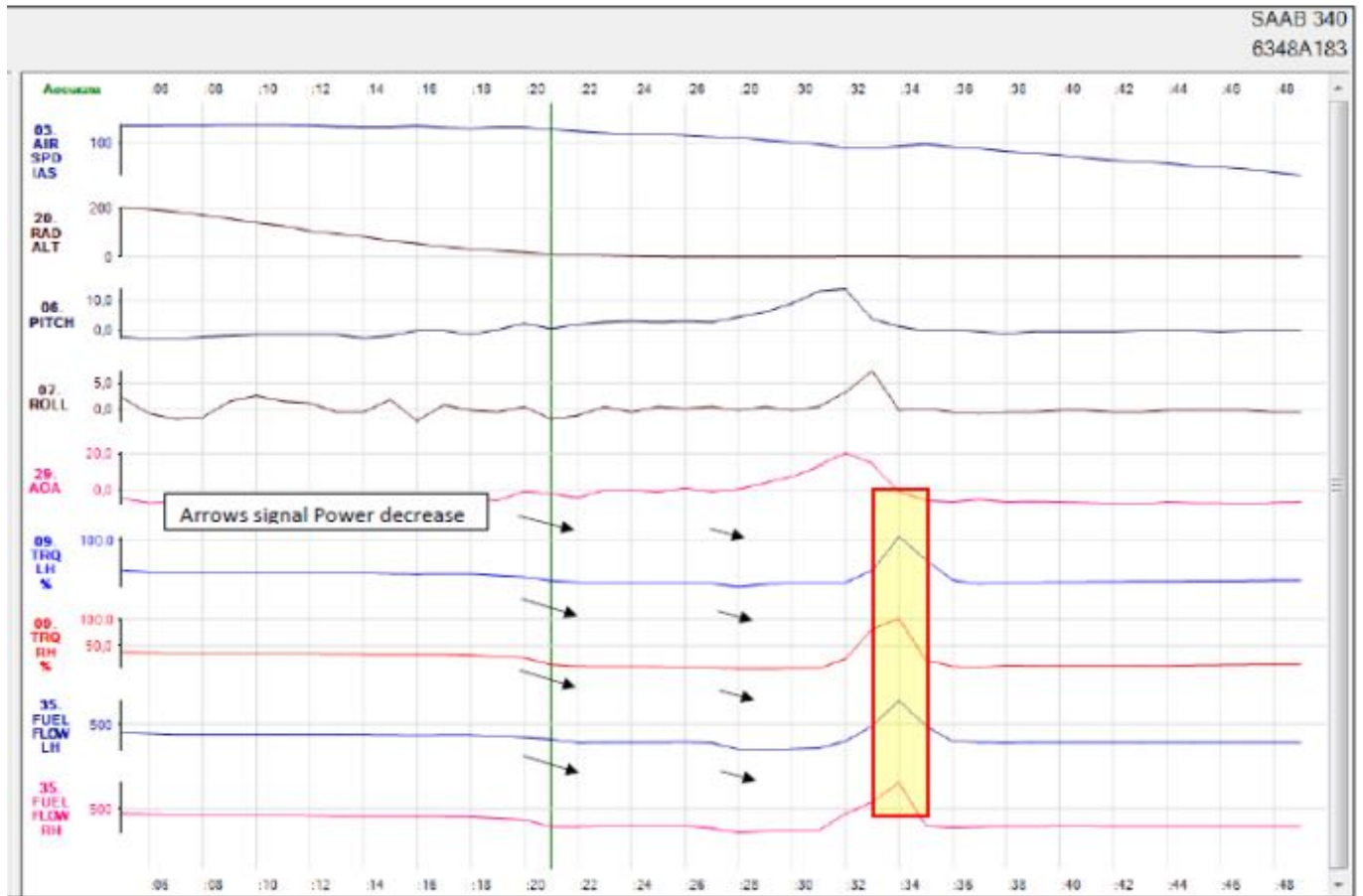
N417XJ EZAIR DFDR EVENT REPORT GRAPHS

Zoomed detail for touch down, including flight controls, at recording time 58:33:17 there is a Pitch trim reduction from -1.7 to -1.3, can be correlated to Pitch Rise tendency. Elevator and ailerons operated to counteract high pitch and high roll as highlighted.



Courtesy SAAB AB

Second pitch reduction at RA Altitude of 8' indicates a further increase in Pitch, thereafter at RA Altitude of 0' the FDR recorded an increase of pitch up to a value of 13.7°, in combination with a high roll. During touch-down a high pitch and high roll with bouncing (WOW) was recorded.

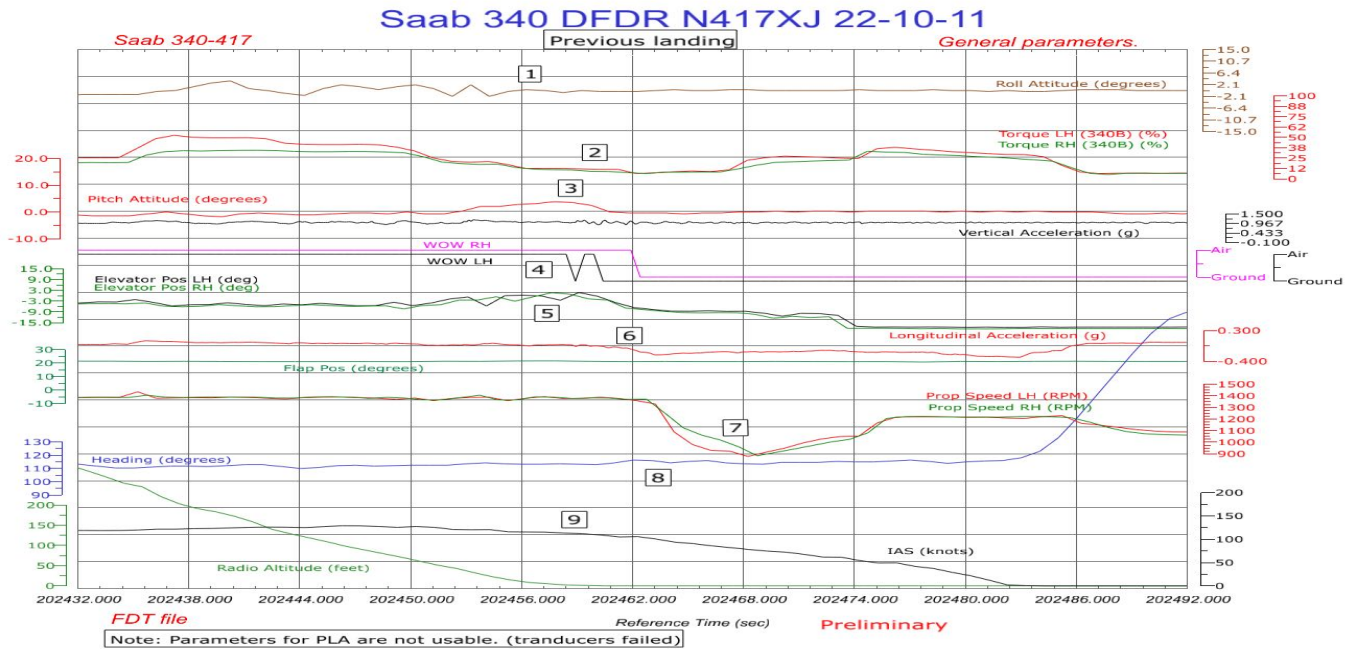


After high pitch rise and high roll rise, maximum power was applied, and pitch was lowered.



PREVIOUS LANDING PARAMETERS

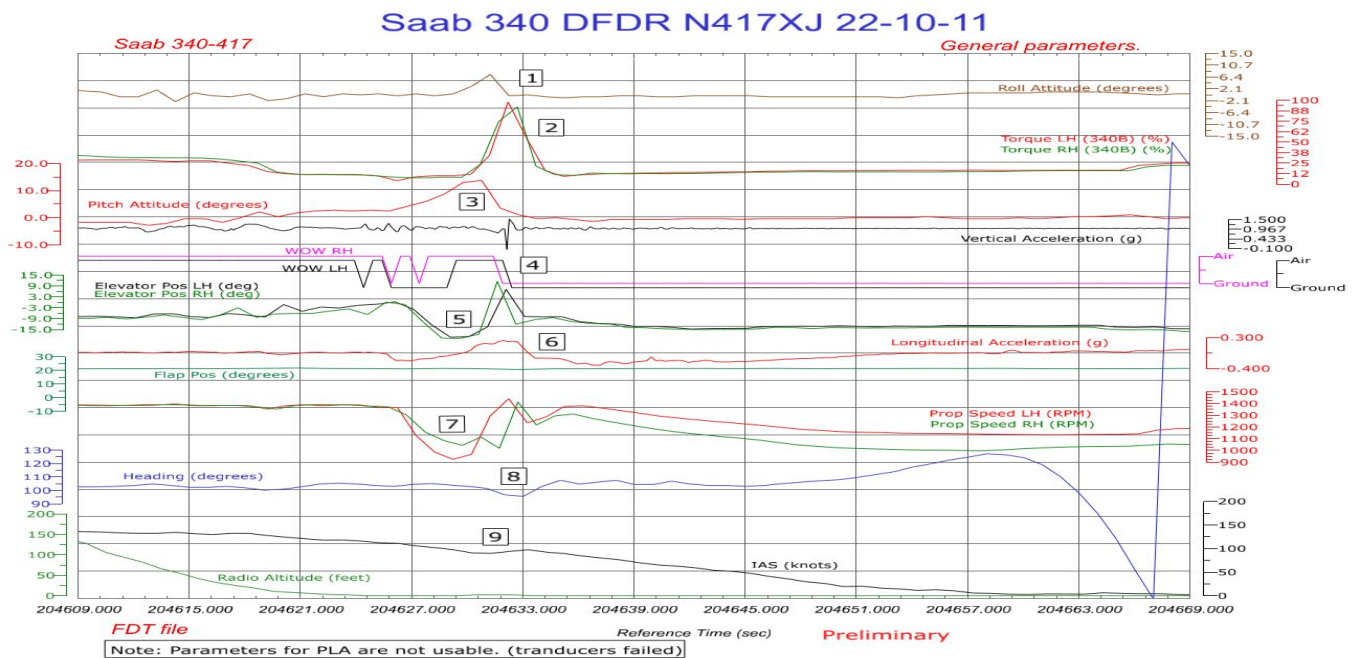
November 25, 2022



Courtesy SAAB AB

INCIDENT LANDING PARAMETERS

November 25, 2022



Courtesy SAAB AB



Following is a summary of observations from FDR-data by comparing the FDR data from the **Previous Landing** with the **Incident Landing** from the above charts. The following observations can be made.

Ref. Plot Marker #1

Previous Landing: The Roll Attitude indicates wings level during the touch-down.

Incident Landing: The Roll Attitude indicates a RH Roll up to 7 degrees during the bounced touch-down.

Ref. Plot Marker #2

Previous Landing: The L+R Engine Torque is reduced during the flare and touch down as expected during a normal landing.

Incident Landing: The L+R Engine Torque is abruptly increased and then reduced just before both Weight on Wheel switches indicates "on ground".

Ref. Plot Markers #3

Previous Landing: After touch down, the nose is dropped to a Pitch Attitude around zero degrees and then the LH+RH Prop RPM starts to decrease to about 900RPM.

Incident Landing: After touch down, the Pitch Attitude is about 4 degrees when the Prop RPM starts to decrease to around 940rpm on the LH Engine and 1050RPM on the RH engine.

Ref. Plot Marker #4

Previous Landing: The Weight on Wheel switches indicates a landing with a short transition on the LH Landing Gear from Air to Ground and then back to Air followed by Ground for a duration of about four seconds.

Incident Landing: The Weight on Wheel switches indicates a bounced landing with transitions from Air to Ground, back to Air and then back to Ground for a duration of about eight seconds.

Ref. Plot Marker #5

The Elevator Positions during the initial flare are about the same for both landings.

Incident Landing: The recorded Elevator Positions indicates a sharp Elevator down followed by a sharp Elevator up command ending with Elevator down.

Ref. Plot Marker #6

Previous Landing: Longitudinal Acceleration indicates a retardation after the nose has been lowered to a Pitch Attitude around zero degrees.

Incident Landing: Longitudinal Acceleration indicates a retardation when the LH+RH Prop RPM starts to decrease and the Aircraft Attitude is about 3 degrees nose up.

Ref. Plot Marker #7

Previous Landing: The LH and RH Prop RPM follows each other during the taxi to the apron,

Incident Landing: The split between the LH and RH Prop RPM (about 140RPM) is still present during the taxi to the apron.

Ref. Plot Marker #8

Previous Landing: The recorded Magnetic Heading is constant at Runway Heading during the landing and roll-out.



Incident Landing: The recorded Magnetic Heading indicates a slight Left Turn of about 5 degrees during the touch-down before returning back to Runway Heading.

Ref. Plot marker #9

Previous Landing: The recorded IAS bleeds off as expected during a normal landing.

Incident Landing: The recorded IAS increases with about 7kt during the touch-down when the Engine Torque is increased.

Ref. Timeframe outside of attached plots

Previous Landing: Taxi to the apron is done with an Engine Torque setting around 7%

Incident Landing: Taxi to the apron is done with an Engine Torque setting of around 15-23%.

The parameters for LH and RH Power Lever Angles are unserviceable for this Aircraft.

2. ANALYSIS

2.1 No anomalies were detected by the Flight Crew or Ground Handling personnel during the loading process at TNCC. There was no indication that the aircraft may be exceeding acceptable CG limits, specifically the Tail Support Strut position.

2.2 **One of the contributing factors** to this incident were the loading of **unaccounted Baggage/Cargo** and the loading of Hand Baggage from Cabin to the C1/C2 compartments not calculated in the computer load sheet resulting in a CG aft movement. The situation was not recognized during take-off, cruise, descent or approach, but only on Touch-down (landing). Additionally, the Nose up trim & power reductions during the landing and touchdown phases have contributed to the rapid increase in Pitch. The flight crew avoided a tail strike by adding power to get the nose down.

This part of the analysis describes a contributing factor to the incident as inaccuracies on the weight and balance load sheet and the pitch-up incident during landing. Further down in this section the center of gravity position is shown to be forward of the aft limit as per SAAB AB.

As per EZ Air Operations Manual Part B, Rev. Original, 15 January 2021.

With main gear compressed, **tail strike occurs at a 13° deck angle.**

To prevent risk of tail tipping, **CG must always remain forward of 47% MAC.** At AFT CG positions, use the tail support strut during loading/unloading.

With the actual load weighed and recorded in TNCB after the incident, shows that **the Take-Off weight exceeded the MTOW, and the Landing weight exceeded the MLW.** The center of gravity showed forward of the aft limit for Takeoff and Landing (i.e. within the CG envelope extrapolated to the landing weight). The computer load sheet will not be produced if any limit is exceeded.

2.3 As per SAAB AB and referring to the tail strut photos on pages 12-13, the findings on these photos can be expected in most operational loading scenarios. On the Saab 340, the support strut will touch the ground after the main tires deflate. With normal tire pressure the strut will have a nominal clearance of approx. 50mm at aft CG and max weight. After the main tires deflate the support strut will have to



be placed at an angle of 25-30 degrees (page 12). With no passengers onboard the strut will still touch the ground at an angle (page 13). With normal tire pressure the nosewheel strut will be fully extended with approx. 520 lbs. or more cargo loaded (ref picture on page 15) in an otherwise empty aircraft.

The support kicks in because of the deflated tires, not because the aircraft is loaded near the rear center of gravity limit. With the current load drop and normal pressure in the tires, the support has approx. 50mm clearance (ref. 2.1 in the report). With deflated tires, the clearance drops to -170mm and the support must be at an angle, between 25-30 degrees.

- 2.4 Taxiing to the parking position was with power above ground idle to avoid pitch up during taxi. This resulted in the extensive use of brakes causing the brakes to develop heat and causing the thermal fuses of the main wheels to activate. This in turn releases the tire pressure slowly, preventing explosion of the tires and damage to the aircraft.

2.5 **Main Wheels**

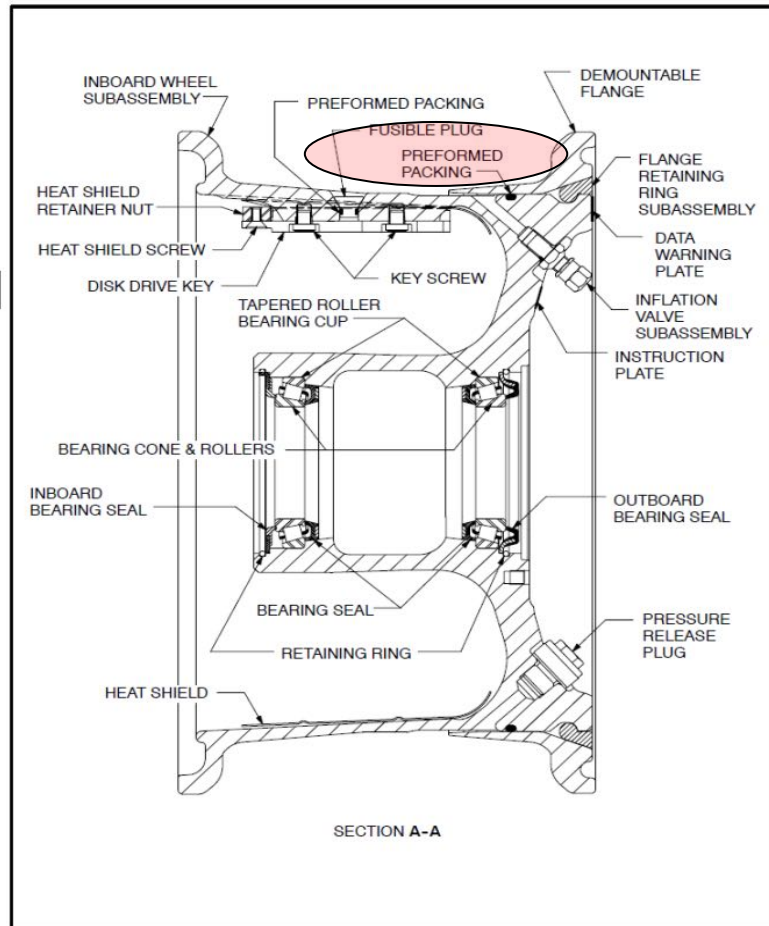
The wheel and brake system are designed to absorb the energy induced by a rejected take-off from V1 speed at MTOW. Actual rejected-take off tests have shown that thermal fuses may blow, resulting in one or more flat tires when aborting at high energy levels, but no other damage to the wheels and brakes has occurred. Many braking events at lower speeds and/or weights (e.g. during pilot training) or long taxiing at high weight and/or speed might heat up the brakes enough to make the thermal fuses melt (Reference AOM 25/1, paragraph 10, page 10).

The wheels were disassembled and inspected, and it was confirmed that that the thermal fuses have melted due to heat exposure which can also be noticed on the heat shields.



AIRCRAFT BRAKING SYSTEMS
Corporation

COMPONENT MAINTENANCE MANUAL
MAIN WHEEL ASSEMBLY 5010488



Main Wheel Assembly 5010488-2
Figure 1 (Sheet 1 of 2)

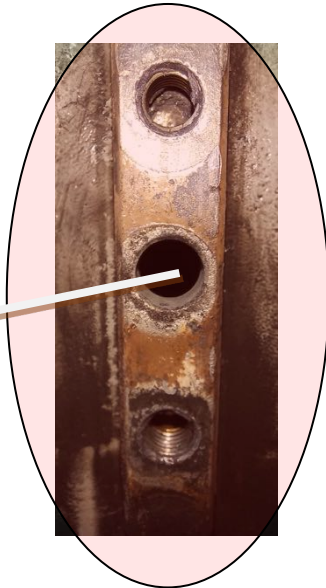
32-41-16 Page 2
Oct 05/04



Heat

Melted Thermal fuse shown here with "KEY"

CVR recording indicates the moment the FC noticed a Flat Tire, after which the captain stopped taxiing approaching the parking position.



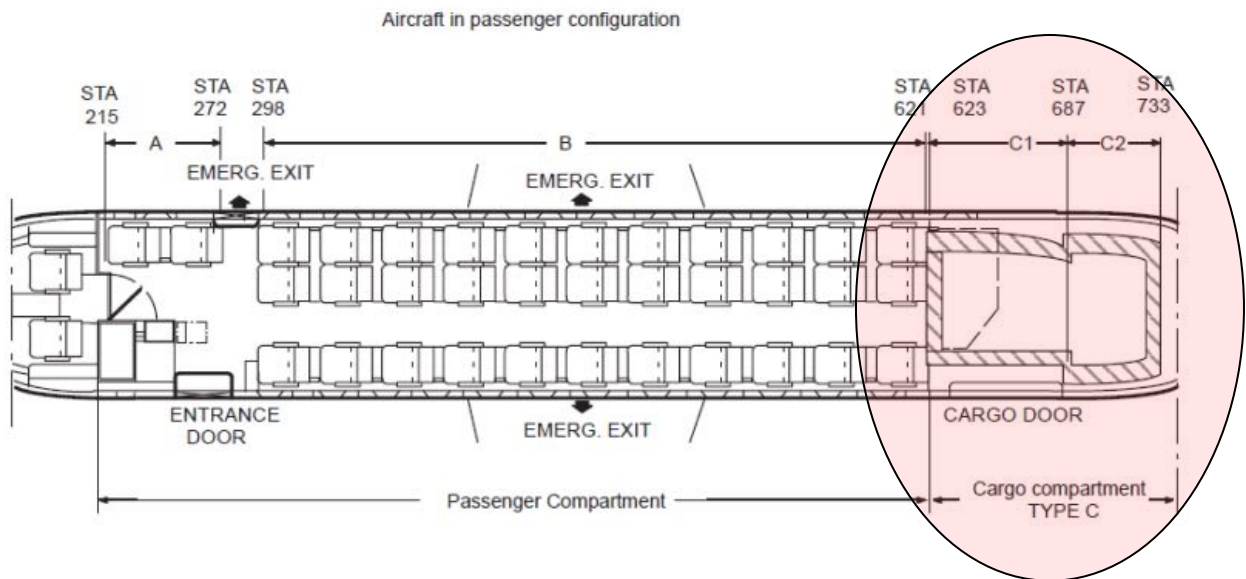
Melted Thermal fuse shown here with "KEY" removed.





2.6 Weight & Balance – Cargo Area

The main cargo compartment is located in sections C1 and C2 in the rear fuselage.



2.6.1 Weight & Balance – Cargo Load Limits

The Cargo loading limits as per SAAB 340B W&B Manual are as follows:

16. Limitations with Main Net 7225572–561 and Side Net 72257572–543 installed (FWD Lavatory Config.)

This section gives the compartment and cumulative load limitations for compartment C1 and C2.

A. Compartment Load Limitation

C1		C2
Not tied down (see note)	Tied down	
1300 lb (590 kg)	1500 lb (680 kg)	850 lb (385 kg)

B. Cumulative Load Limitation

Cumulative Load Limit, C1 + C2: 2100 lb (950 kg)



Weight & Balance Flight Envelope

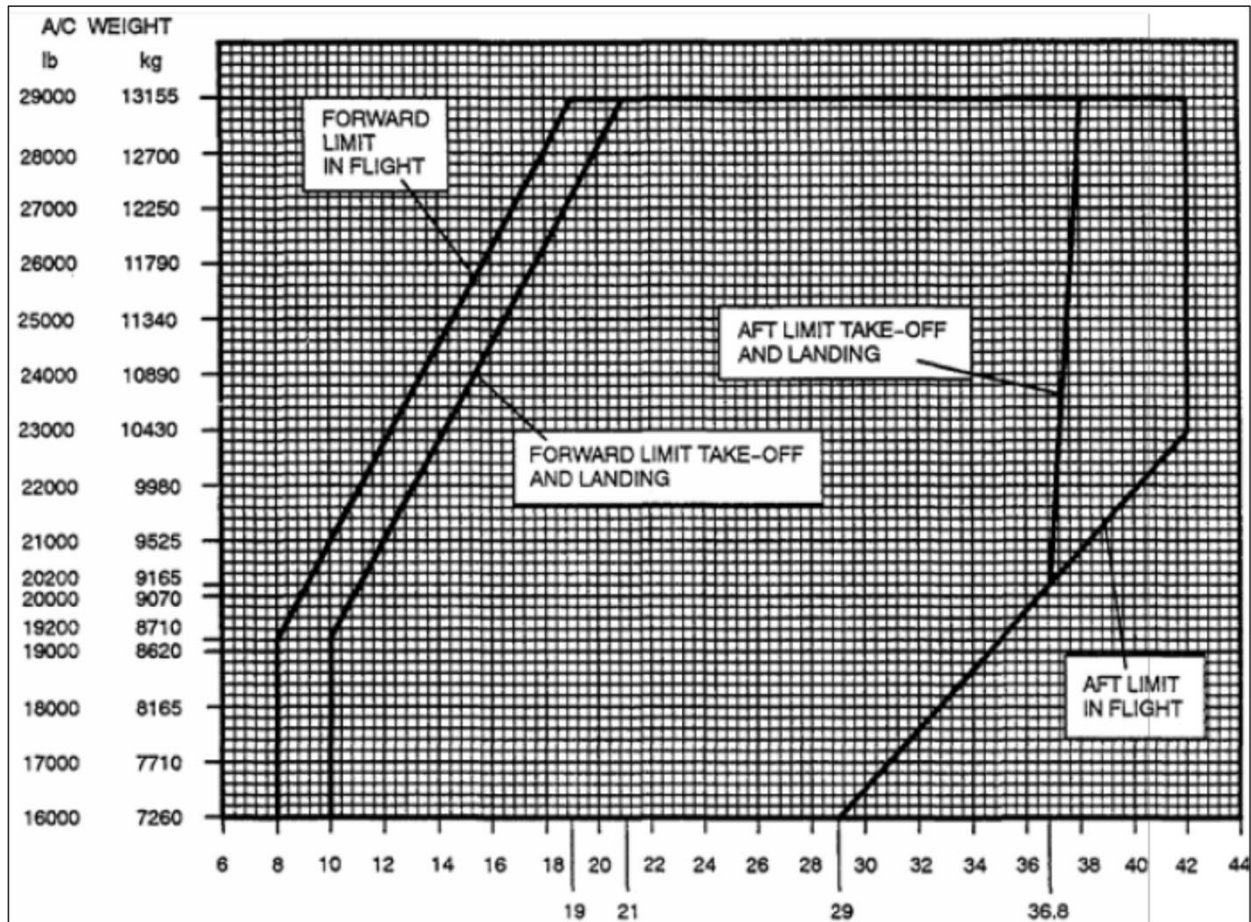


Figure 8.1 – Flight envelope

Source: EZ Air Operations Manual Part B, Rev. Original, 15 January 2021.

2.6.2 Weight & Balance – Loading

The investigation revealed that additional baggage and cargo were loaded onto the incident flight 7Z-571 in Curaçao. This extra baggage and cargo, which was accepted from another carrier, was estimated to weigh 80¹ kilograms (176 pounds) and was designated for loading onto another EZ Air non-scheduled flight 7Z-701 to TNCB.

An interview with the ramp handling agent by EZ Air revealed that he was unaware that the additional cargo should have been loaded onto the non-scheduled flight 7Z-701 to TNCB. Instead, this extra baggage was loaded onto the incident flight 7Z-571 to TNCB. Notably, this additional load was not recorded on the Baggage Control Form (BCF) by the ramp handling agent. The current procedure for the BCF sheet stipulates that only checked-in baggage is to be documented on the form. An interview with the Operations Control Center (OCC) indicated that clear instructions were provided to load the extra baggage/cargo onto the non-scheduled flight 7Z-701 to TNCB.



In accordance with the issued Load Sheet, a total of 1000 pounds of baggage was to be loaded into compartment C1, and a total of 346 pounds of baggage was to be loaded into compartment C2. However, a recount of the baggage and cargo after the incident revealed a total of 36 pieces in compartment C1 and a total of 20 pieces in compartment C2.

The loads in cargo compartment C1 and C2 included checked-in baggage, thirteen (13) pieces of unchecked hand baggage² removed from passengers at the aircraft during the boarding process, and the additional baggage and cargo.

2.6.2.1 Weight & Balance – Passenger Weights

<u>EZ Air CCAA Approved OM-A reference 8.15.2.</u>		
ADULT	-	185 lbs (84 kg) – Includes 8 kg Carry-on baggage
MALE	-	194 lbs (88 kg) – Includes 8 kg Carry-on baggage
FEMALE	-	154 lbs (70 kg) – Includes 8 kg Carry-on baggage
Note: On flights where no hand baggage is carried in the cabin or where hand baggage is accounted for separately, 6kg (13 lbs) may be deducted from the male and female standard masses.		

2.6.3 Weight & Balance – Actual Computer Load Sheet

As per the computer actual load sheet the following weights were used:

- 5485 lbs Passengers
- 1346 lbs Cargo

The Passenger weights are based on the issued load manifest from VARS, Videocom Airline Reservations System.

¹ This is not an actual weight confirmed by EZ Air

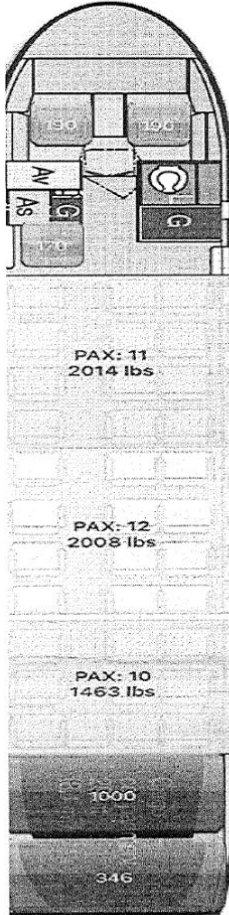
² Hand Baggage is normally accounted for in the Passenger Weight as per CCAA Approved OM-A



MINISTRY OF
TRAFFIC, TRANSPORT AND URBAN PLANNING
CURAÇAO CIVIL AVIATION AUTHORITY

N417XJ SF340B CT79B

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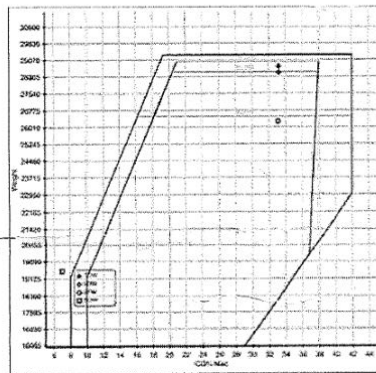


	Weight (lbs)	FWD CG %MAC	CG %MAC	AFT CG %MAC
Empty Weight	18587		16.45	
Pilots	550			
Aircraft Items	314			
BOW	19451		7.03	
Passengers	5485			
Cargo	1346			
ZFW	26282	15.95	33.09	42.00
Fuel	2600			
Taxi Weight	28882	18.87	33.19	42.00
Taxi Burn	100			
TOW	28782	20.76	33.18	37.97
Takeoff Limit	29000	Structural		
Enroute Burn	300			
LDW	28482	20.42	33.15	37.93
Landing Limit	28500	Structural		

	Departure	Arrival
ICAO	TNCC	TNCB
Runway	11	10
Shortened		
TORA/LDA	11198	9449
Wind	10010 T	08014 T
Crosswind	0	3
Headwind	10	14
Temp C	31	28
Altimeter	1011.00	1011.00
Flap	FLAPS 0	20/35 FLAPS
Limit Weight	29000 lbs	28500 lbs
Reason	Structural	Structural

11	Departure	Reduced Thrust
Weight	28782 lbs	28782 lbs
V1	127	128
V _R	128	128
V2	128	128
VFTO	133	133
Power	97.9	79.2
Trim	0.30	
To Dist	5507 ft	6049 ft
Assumed Temp C		36
L/O Altitude	1036 ft	

Departure Options
ANTHICE OFF
ECS ON
APR ARMED
RATED POWER
C PWR METHOD



10	Arrival	Emerg Ret (TNCC-11)
Weight	28482 lbs	28782 lbs
VFS	133	133
VAPP	124	125
VREF	124	125
LD Dist	1954 ft	2009 ft
1.00 Dist	1954 ft	2009 ft(1.00 LD)
MA Grad	2.7	2.6
Flap	20/35 FLAPS	20/35 FLAPS
Limit Weight	28500 lbs	29000 lbs
Reason	Structural	Structural

Arrival Options
ANTI ICE OFF
ECS ON
RATED POWER
UNFACTORED LANDING DISTANCE

Flight ID	7Z571
Flight Date	10/11/2022 21:00
PIC	ARZ
SIC	MAI
Jumpseat	/
Dept Alternate	
Arrv Alternate	
POB/CREW/PAX/Infants	36/3/33/0
Prepared By	AC
Notes	TTB 35 AP 18

Loading Certificate
I hereby certify that this aircraft is loaded in accordance with current loading instructions.

10/11/2022 20:12 _____
(Date) (Name)

Captains Certificate
I hereby certify that this aircraft is loaded in accordance with current loading instructions.

10/11/2022 20:12 _____
(Date) (Name)

Emergency Return Options
ANTI ICE OFF
ECS OFF
RATED POWER
UNFACTORED LANDING DISTANCE



2.6.4 Weight & Balance – Actual Load

The following values were recorded in TNCB:

C1 – Total pieces loaded 36, @ 639 kgs (1408.75 lbs)

C2 – Total pieces loaded 20, @ 164 kgs (361.5 lbs)

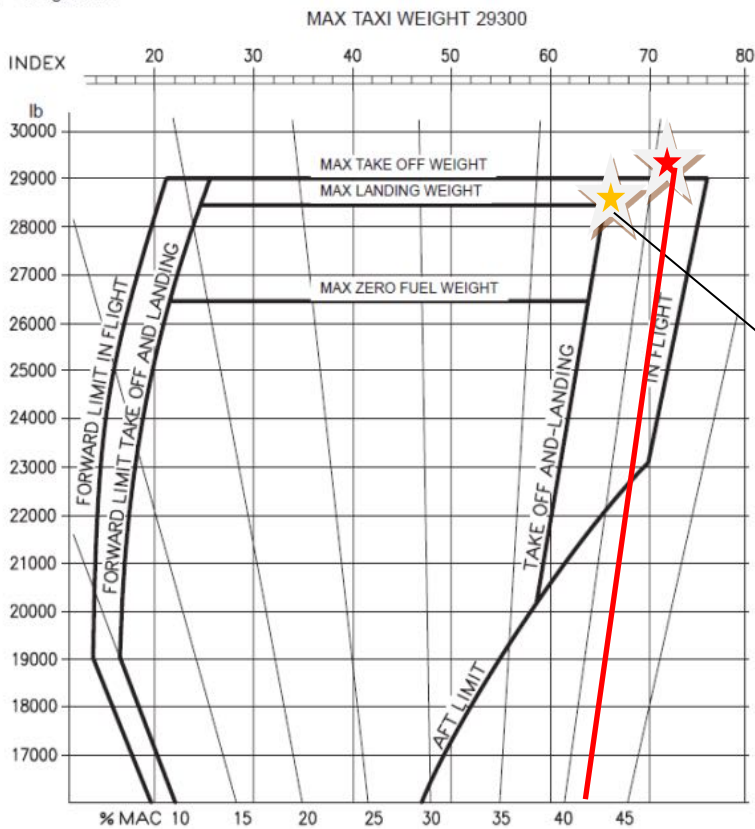
The C1 Cargo maximum capacity is 1300/1500 lbs (590/680 kg) and the maximum capacity of the C2 Cargo compartment is 850 lbs (385 kg). The cumulative load limit for C1 & C2 compartments is 2100 lbs (950 kg).

These figures resulted in the following:

- Estimated Landing Weight - 28906 lbs.
- Overweight of - 28906 – 28500 = 406 lbs.
- Estimated CG inches - 442 in
- Estimated Landing Weight CG %MAC - 37%

7. Center of Gravity Limits. 340B Post-MOD 2438 (SB 340-51-010)

A. Weight in lb



Estimate CG without extra Baggage/Cargo & Pax Hand luggage moved to C1/C2

A17158

FIG. 8 WEIGHT AND CG ENVELOPE



2.6.5 **Weight & Balance – Manual Load Sheet**
 Created after the incident.

SAAB 340
 Weight and Balance Manual

F. Calculation Table

	Weight				Index	
					-	+
DOW	1	9	4	5		7
Observer						
Passengers	5	4	8	5		
Fwd					18	
Aft						30
Cargo C1	1	0	0	0		23
Cargo C2		3	4	6		9
Sub total	2	6	2	8	18	69
ZFW	2	6	2	8		51
Fuel	2	6	0	0		1
TOW	2	8	0	8		52

MANUAL Calculation as per ORIGINAL Loadsheet (APG)

A/c Empty Weight 18587.2 lbs
 A/c EW Cg 425.75"
 A/c EW Moment 79143.034

18587.2 425.75 79143.034
 550 193 1064 (Pilots)
 314 231 725 (A/c items)

19451.2 416 8082

D.O.I. = $\frac{19451.2 \times (416 - 438)}{10,000} + 50$

D.O.I. = +7.2

T.O.W. Index 52

A17153

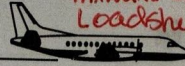
FIG. 1 CALCULATION TABLE

Page 1 of 6



SAAB 340 B

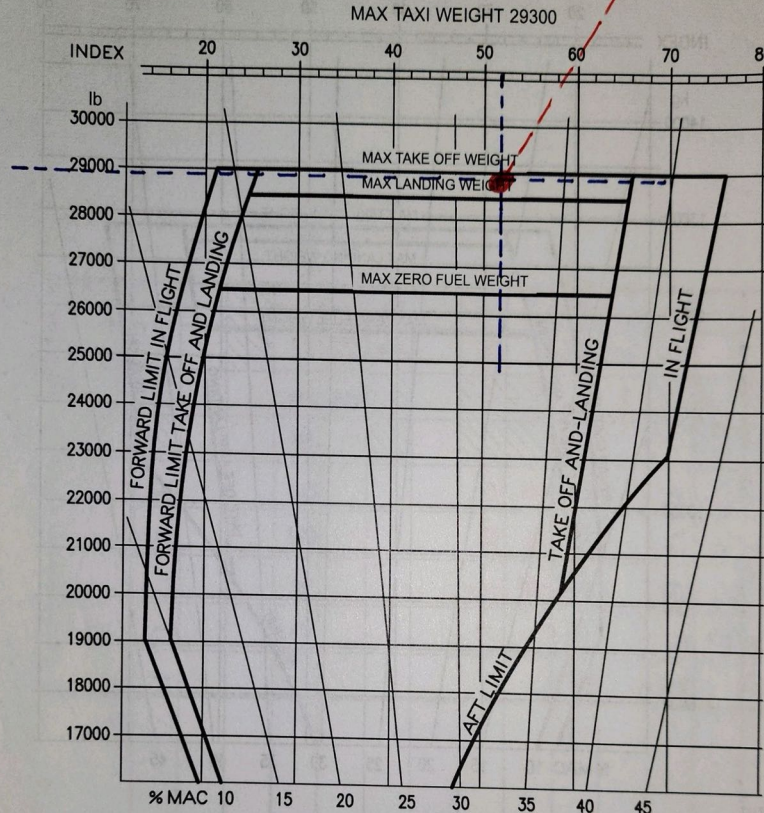
Weight and Balance Manual



MANUAL CALCULATION AS PER ORIGINAL Loadsheet (ATG).

7. Center of Gravity Limits. 340B Post-MOD 2438 (SB 340-51-010)

A. Weight in lb



Page 2 of 6

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FIG. 8 WEIGHT AND CG ENVELOPE

EFFECTIVITY:

01-70-10

REV: 50 RELEASE DATE: Jun-27-2022 PRINTED: Jul-22-2022 10:04 PM

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SAAB 340

Weight and Balance Manual



MANUAL CALCULATION WITH ACTUAL weight
 as weighed in station Benavise after
 the incident.

F. Calculation Table

	Weight				Index	
					-	+
DOW	1	9	4	5	1	7
Observer						
Passengers	5	4	8	5	3	
Fwd					18	
Aft						30
Cargo C1			14	0		33
Cargo C2			5	0	2	14
Sub total	2	6	8	4	4	18
						84
						→ -66
ZFW	2	6	8	4		66
Fuel		2	6	0		1
TOW	2	9	4	4		67

A17153

FIG. 1 CALCULATION TABLE

Page 3 of 6

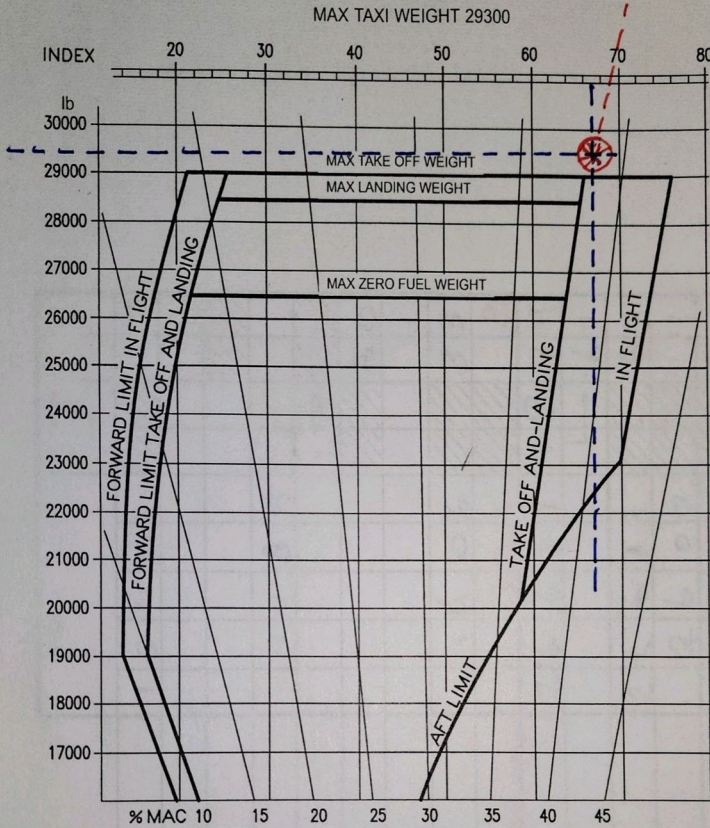


SAAB 340 B



Weight and Balance Manual

7. Center of Gravity Limits, 340B Post-MOD 2438 (SB 340-51-010)
 A. Weight in lb



Page 4 of 6

A17158

FIG. 8 WEIGHT AND CG ENVELOPE

EFFECTIVITY:

01-70-10

Page 14
 Jan 01/93

REV: 50 RELEASE DATE: Jun-27-2022 PRINTED: Jul-22-2022 10:04 PM



SAAB 340

Weight and Balance Manual



MANUAL CALCULATION Removing the extra "unaccounted for" weight accepted from another carrier of ± 80 kg and loaded in C2.

F. Calculation Table

	Weight				Index	
					-	+
DOW	1	9	4	5	1	7
Observer						
Passengers	5	4	8	5		
Fwd					1	8
Aft						3
						0
Cargo C1 actual weight	1	4	0	6		3
Cargo C2 actual weight less unacc. cargo			3	2	6	9
Sub total	2	6	6	7	1	7
						9
						6
ZFW	2	6	6	7	1	6
Fuel		2	6	0	0	1
TOW *	2	9	2	7	1	6

176 lbs Removed
 502 lbs - 176 lbs = 326 lbs

A17153

FIG. 1 CALCULATION TABLE

* in this weight hand luggage that normally is accounted for in the pax weight has been weighed additionally.

Page 5 of 6



SAAB 340 B

Weight and Balance Manual



MANUAL CALCULATION with actual weights in C1 + C2 less the unaccounted cargo from another carrier of 80kg.

CG @ 29271 lbs

INDEX 62

Page 6 of 6

- 7. Center of Gravity Limits. 340B Post-MOD 2438 (SB 340-51-010)
- A. Weight in lb

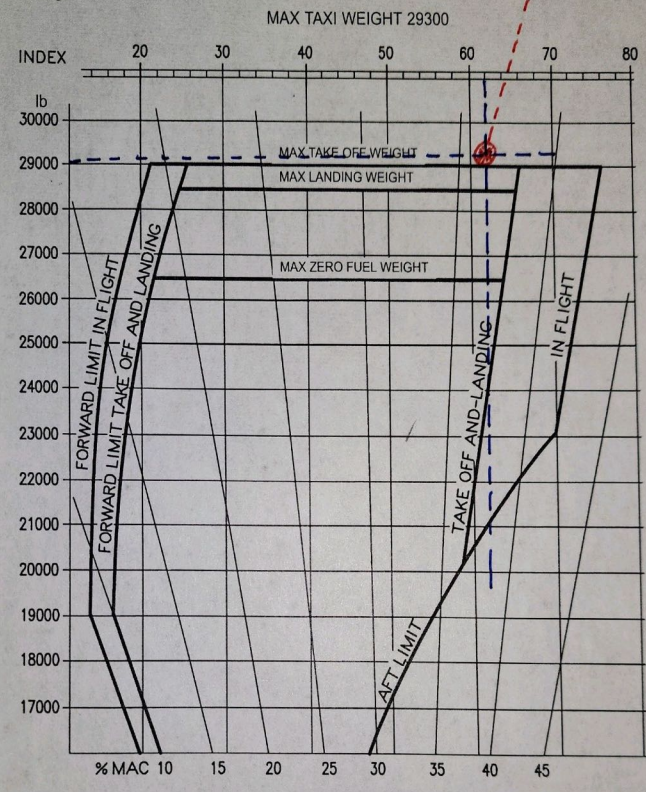


FIG. 8 WEIGHT AND CG ENVELOPE

A17158

EFFECTIVITY:

01-70-10

Page 14
 Jan 01/93



3. CONCLUSIONS

3.1 Findings

- a. The captain and the first officer were properly certificated and qualified under the CCAR, Curaçao Civil Aviation Regulations. There was no evidence of any medical or behavioral conditions of the flight crew that might have adversely affected their performance during the incident flight.
- b. The incident airplane was properly certified, equipped, and maintained in accordance with the CCAR.
- c. Weather was not a factor in this incident.
- d. The Weight & Balance of the flight was a factor. According to SAAB AB, the Weight and Balance of the flight was not at an aft limit that would cause the aircraft to tail tip or pitch up during landing. Rather the crew perceived a Weight & Balance factor. Furthermore, there are some unclear inconsistencies with the Weight & Balance loading weights due to the then mishandling of hand baggage and the wrongly loaded checked baggage destined for another flight (the procedure has been corrected in the meantime). This also puts focus on the Beta selection process as detailed in paragraph 3.2(a).
- e. The flight crew Work & Rest roster indicated no abnormalities and within limits.
- f. With the actual load weighed and recorded in TNCB after the incident, shows that the Take-Off weight exceeded the MTOW. The Landing Weight exceeded the MLW. The CG without the extra baggage/cargo and Passenger hand luggage loaded shows within limits on the computer load sheet. The computer load sheet will not be produced if any limit is exceeded.
- g. The actual CG, taking into account the loaded extra baggage/cargo and hand luggage, does not show out of limits (at the outer edge of the envelope). SAAB AB analysis shows, based on the weighed contents of C1 and C2 (page 32), the CG was within the extrapolated aft limit.
- h. The computer load sheet did not take into account the extra Baggage and Hand Luggage loaded in the aircraft.
- i. The incident flight was reproduced by the CCAA in the SAAB 340 simulator with the actual data. This showed that in the event Beta is selected with the power levers before the nose wheel is on the ground (WOW), the nose of the aircraft will pitch up aggressively. This nose-up pitch required above normal yoke down force counter action, however with little effect. Quick forward power application is required to swiftly lower the pitch and the nosewheel back on the ground.
- j. An animation video was created by SAAB AB from the actual FDR Raw data information which clearly shows the nose up pitch attitude on landing. **See Appendix A.**

3.2 Probable Causes

- a. As confirmed by SAAB AB, with normal landing procedures, landing at or near the aft CG limit does not introduce a pitch up. As the incident flight was reproduced by the CCAA in the SAAB 340 simulator with the actual data. This showed that in the event Beta is selected with the power levers before the nose wheel is on the ground (WOW), the nose of the aircraft will pitch up aggressively. This nose-up pitch required above normal yoke down force counter action, however with little effect. Quick forward power application is required to swiftly lower the pitch and the nosewheel back on the ground. See animated video in Appendix A.



- b. The ground handling crews mishandling and incorrect loading of baggage destined for the extra flight 7Z-701 and not for the incident flight 7Z-571.
The acceptance of baggage from another carrier without the proper weighing and handling. This poses the uncertainty that no dangerous goods were loaded.
- c. Insufficient awareness and training of ground personnel of correct procedural handling of carry-on and checked baggage. See paragraph 4.1.2 “Additional Safety Actions Taken.”

3.3 Contributing Factors

- a. Extra baggage/cargo (reported to be 80 kg/176 lbs.) accepted from another carrier was loaded on the incident flight, 7Z-571, in error. This should have been loaded on another flight 7Z-701. This extra luggage was therefore not accounted for in the W&B of the incident flight.
- b. One of the contributing factors of this incident is determined to be the AFT CG position at landing of the aircraft augmenting a pitch-up attitude at above MLAW.
- c. The average weight of each passenger includes a maximum of 8kg of hand luggage. At check-in, the hand luggage is weighed accordingly. At boarding, the hand luggage of each passenger is collected at the aircraft and stowed in the baggage compartment C1 or C2. This was not accounted for on the computer load sheet.
- d. The exact location of the hand luggage is not reflected on the computer load sheet and may have had an adverse effect on the CG as the hand luggage should be located in the cabin together with the passenger, W&B wise. This feature of the computer load sheet should be implemented without delay.
- e. Insufficient awareness and training of ground personnel of correct procedural handling of carry-on and checked baggage. See paragraph 4.1.2 “Additional Safety Actions Taken”.
- f. Taking into account points 3.3a and 3.3d, this caused some inconsistencies in the Weight & Balance loading weights.

4. SAFETY RECOMMENDATIONS AND ACTIONS

4.1 SAFETY ACTIONS

The following safety actions were initiated:

4.1.1 Recommendations and Immediate Safety Actions Taken

1. Implement Flight Crew simulator recurrent training with the topic of the aggressive pitch-up effects of selecting Beta with the power levers before the nosewheel is firmly on the ground (WOW).
2. EZ Air management has immediately prohibited acceptance of Baggage/Cargo from other carriers until clear procedures are in place for the documenting, acceptance & weighing loading of Baggage/Cargo other than from EZ Air.
3. The Videcom Airline Reservations System function to record Hand Baggage (Unchecked Baggage) weight has been enabled as per 20 October 2022, and instructions have been sent to all passenger handlers & OCC.
4. Implement yearly refresher training to ground and dispatch personnel.
5. Improve communications between ground personnel and OCC dispatch personnel.



MINISTRY OF
TRAFFIC, TRANSPORT AND URBAN PLANNING
 CURAÇAO CIVIL AVIATION AUTHORITY

THROUGH PASSENGER MANIFEST													
FLIGHT DATE: 20OCT						CAPTAIN:						BT	
FLIGHT: 7Z0570						FIRST OFFICER:						BT	
ORIGIN: CUR			STD: 1100	ETD: 1100		FLT ATTENDANT:						BT	
DESTINATION: AUA			STA: 1130	ETA: 1130		FLT OPS:						BT	
AIRCRAFT: SAAB 340B						FLT MECH:						BT	
AIRCRAFT TYPE: SF3						FLT ROUTE: CUR-AUA							
PASSENGER NAME	ORIGIN	DOBT	SEX	CLASS	SEAT	HEIGHT	FAK WT	BAGGAGE			LOGATOR	REMARKS	
1. CANNIGIETER/MIRANDAMS	CUR	AUA	F		026	62	1	11	0	AACR3	DOB,DOCS		
2. CARDENAS/ROSALBAMRS	CUR	AUA	F		008	62	1	19	0	AACR3	DOB,DOCS		
3. CRANSTON/CHRISTENMRS	CUR	AUA	F		019	62	1	10	0	AACVJE	DOB,DOCA,DOCS		
4. FIGUEROAGIRON/SEGUNDAMRS	CUR	AUA	F		023	62	1	15	0	AACWJK	DOCA,DOCS		
5. ILIENKO/IRYNAMISS	CUR	AUA	F		015	62	0	0	0	AACXGQ	DOB,DOCS		
6. IVANOVA/YOANAPLAMENOVAMS	CUR	AUA	F		004	62	0	0	0	AACXGN	DOB,DOCS		
7. JIMENEZ/LUZSTELLAMRS	CUR	AUA	F		008	62	1	16	0	AACRBA	DOB,DOCS		
8. KORZHISVITLANAMRS	CUR	AUA	F		017	62	1	15	0	AACXGQ	DOB,DOCS		
9. LAMPREA/LUZMRS	CUR	AUA	F		005	62	1	13	0	AACR3	DOB,DOCS		
10. LOPEZ/CLAUDIAMRS	CUR	AUA	F		025	62	1	20	6	AACR90	DOCA,DOCS		
11. LOPEZRAMIREZ/LOUISMR	CUR	AUA	M		027	87	1	17	0	AACCSU	DOB,DOCS		
12. LOVERT/SHATLYNMRS	CUR	AUA	F		013	62	1	18	0	AACX9D	DOCA,DOCS		
13. LUNA/MARIAMRS	CUR	AUA	F		010	62	1	12	0	AACR3	DOB,DOCS		
14. LUNA/MIRIAMMRS	CUR	AUA	F		009	62	1	10	0	AACR3	DOB,DOCS		
15. MARTIN/ALIRAMISS.IN02	CUR	AUA	I		020	0	1	10	0	AACVJE	DOB,DOCA,DOCS		
16. MYKAL/DARIAMISS	CUR	AUA	F		018	62	0	0	0	AACXGQ	DOB,DOCS		
17. OSORIOORTIZ/RIXIEMRS	CUR	AUA	F		021	62	0	0	7	AACWXP	DOCA,DOCS		
18. ROA/MARIAMRS	CUR	AUA	F		011	62	1	20	0	AACR3	DOB,DOCS		
19. ROSEBOOM/CORNELISM	CUR	AUA	M		003	82	1	7	0	AACRC5	DOB,DOCA,DOCS		
20. ROSEBOOM/LANAMISS.IN13	CUR	AUA	I		002	0	1	19	0	AACRC5	DOB,DOCA,DOCS		
21. SANCHEZ/BETTYMRS	CUR	AUA	F		007	62	1	14	0	AACR3	DOB,DOCS		
22. SOMERSONMERCADO/KARINAMRS	CUR	AUA	F		022	62	1	8	0	AACWJK	DOCA,DOCS		
23. STEEN/ANNEMRS	CUR	AUA	F		001	62	2	29	0	AACR05	DOB,DOCA,DOCS,FQTV		
24. THIELMAN/MEDARDOMR	CUR	AUA	M		015	82	1	14	0	AACWJG	DOCA,DOCS,DOCS		
25. VANVENROOL/DAVYMR	CUR	AUA	M		024	82	0	0	12	AACVVL	DOB,DOCS		
26. VLITLOVERT/KINGRICHMR.CHE5	CUR	AUA	C		012	35	1	10	0	AACX9D	DOCA,DOCS		
27. WESTERTHIELMAN/ELVIRAMRS.CD	CUR	AUA	F		014	62	1	20	0	AACWFS	DOCA,DOCS,DOCS		
28. WU/MEILINGMRS	CUR	AUA	F		028	62	0	0	0	AACX3S	DOCA,DOCS		
29. WU/WENYIMR	CUR	AUA	M		029	82	0	0	0	AACX3S	DOCA,DOCS		
TOTAL (including Flight Crew) 27 + 2 INF						1747			23	325	42	TOTAL PASSENGERS 27+1 INF	
CARGO						No. of PCS.			TOTAL WT.			Carg/Fax/Weig (kg) 2114	
MALE 5		FEMALE 21		CHILD 1		INFANT 2							
TAKEOFF WEIGHT:						NOTES							
TAKEOFF C.G.:													
FUEL LOAD:													
FUEL BURN:													
CARGO TOTAL:						SEARCH FOR DELAY							
BALLAST:													
LANDING WEIGHT:													
CERTIFIED CORRECT:						ACCEPTED BY:							
DEPARTURE LEAD:						FLYGT-34 COMMAND:							

Enabled Un-checked Hand Baggage Weight Column

- Ramp handlers have been retrained on 17 October 2022 on correct practices & procedures for the SAAB 340B loading, which also included proper communication with OCC. An attendance list was provided.
- A Company Operations Bulletin was issued on 28 October 2022 (MB281024-01) to Flight Crew on the operation with critical CG conditions, i.e., Passenger Distribution, Tail Strut Support touching ramp.
 As per the EZ AIR Operations Manual Part B, Rev. Original, 15 January 2021, a company bulletin is issued by Flight Operations Management to distribute, as soon as possible, important or urgent technical information for Flight crew related to the EZ Air fleet and its operations. It is mandatory for all crew members to read and adhere to these instructions.



OPERATIONAL BULLETIN

No. MB281024-01

ALERT LEVEL :

Information

CRITICAL

Issue Date: 28-Oct-2022
 Due Date: N/A
 Revision Number: 0

Page: 1

To Flight Crew/Training Department/Maintenance Department,

Subject:

SAAB 340B LOAD SHEET AWARENESS WHEN CG'S ARE AT LIMITS (FLIGHT ENVELOPE)

Reference:

- Operations Manual-Part B Saab 340B- Chapter 5 Normal Procedure Section 5.4.5.1 (STUCK TAIL STAND)
- Operations Manual-Part B Saab 340B- Chapter 9 Mass and Balance Section 9.4.10 (FUEL BURN OFF)
- AFM 340B FLIGHT CONTROLS Description 8.1 Page 7 (TRIM INDICATOR)

Refresher / Ready knowledge:

- Operations Manual - Part A Chapter 8 Operating Procedures
 - 8.14 MASS AND CENTRE OF GRAVITY
 - 8.15 MASS AND BALANCE METHODS, PROCEDURES AND RESPONSIBILITIES
 - 8.17 SEATING POLICY
 - 8.17.1 LAST MINUTE CHANGES (LMC)
- Operations Manual - Part A Chapter 11 Handling of Accidents and Occurrences

Description:

This bulletin is issued as part of an Immediate Safety Action plan due to the recent incident in Bonaire.

FC's shall be extra Alert and Aware of aircraft Weight and Balance whenever they receive a Load Sheet with CG's at or near the Limits of the "CENTER OF GRAVITY LIMITS GRAPH".

Refer to figure 1 & 2 for an exploded view of the LS CG LIMITS TABLE & GRAPH.

Be aware of the GREEN BAND (refer to Figure 4) on the pitch trim indicator, although this Green band indicates take-off range, it may give a good indication during final approach to landing on what to expect.

Figure 5 refers to the extra Alertness as to the FUEL BURN OFF when using the inherent inaccuracies of dealing with average passenger and bag weights and average compartment centroids even if it indicates within limits.

This Operational Alert Bulletin is effective as per immediate

Original report signed.



OPERATIONAL BULLETIN

No. MB281024-01

ALERT LEVEL :

Information

CRITICAL

Issue Date: 28-Oct-2022

Due Date: N/A

Revision Number: 0

Page: 2

SAAB 340 B



Weight and Balance Manual

5. **340B post-MOD NO 2438 (SB SAAB 340-51-010)**

A/C WEIGHT		FORWARD LIMIT				AFT LIMIT			
lb	kg	IN FLIGHT		T-O./LANDING		T-O./LANDING		IN FLIGHT	
		%MAC	STA	%MAC	STA	%MAC	STA	%MAC	STA
29000	13155	19.0	427.9	21.0*	429.5*	38*	443.5*	42	446.8
23000	10430							42	446.8
20200	9160					36.8	442.5	36.8	442.5
19200	8710	8	418.9	10	420.5				
16000	7260	8	418.9	10	420.5	29	436.1	29	436.1

* = T-O only.

NOTE: For values of CG limits not shown in the table above, the CG graph 01-10-20 page 10 should be used.

NOTE: MAXIMUM TAXI WEIGHT (MTW) = 29300 lb (13290 kg).

EFFECTIVITY:

01-10-20

Figure 1



OPERATIONAL BULLETIN

No. MB281024-01

ALERT LEVEL :

Information

CRITICAL

Issue Date: 28-Oct-2022

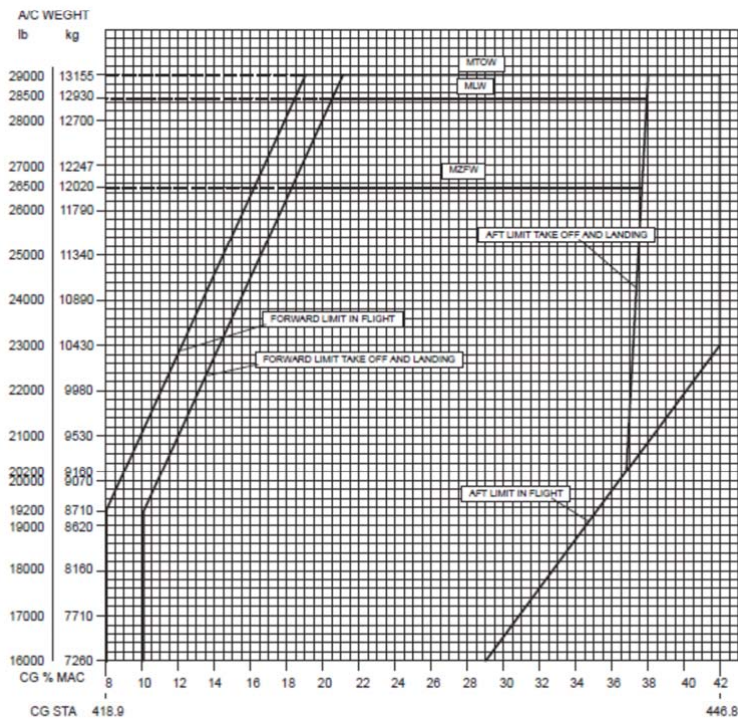
Due Date: N/A

Revision Number: 0

Page: 3

SAAB 340 B

Weight and Balance Manual



A11226 CENTER OF GRAVITY LIMITS GRAPH, 340B, post-MOD NO 2438 (SB SAAB 340-51-010) FIG. 7

EFFECTIVITY:

01-10-20

Figure 2



OPERATIONAL BULLETIN

No. MB281024-01

ALERT LEVEL :

Information

CRITICAL

Issue Date: 28-Oct-2022

Due Date: N/A

Revision Number: 0

Page: 4



Operations manual - Part B
 Saab 340B - Chapter 5
 Normal Procedures

Revision: Original
 Date: 15 Jan 2021

	<ul style="list-style-type: none"> • Confirms ENGINE overhead panel lights out • Verifies AUTOCOARS LOW light on • Checks HYD Panel quantity and pressures • Signals or calls "Remove Chocks" • Checks DFDR panel lights out • Checks EFIS display/No flags • Check standby ADI erect • Autocoarsen P3 test (first flight of the day) • 830 bottom governing • CTOT test (first flight of the day) • ICE protection test (first flight of the day) 	<ul style="list-style-type: none"> • Notes "BLOCKS OFF" time on Operational Flight Plan (OFFP)
--	---	---

5.4.5.1 STUCK TAIL STAND

If ground personnel report difficulty in removing the tail stand:

- The Captain recalculates the Load sheet
- The Captain visually checks cargo loading in C1 and C2 compartments.
 - The Captain ensures this information matches the Load Sheet
 - If the Load sheet and the load information agree, the Captain starts both engines and advances the condition levers to the MIN position
- If this action frees the tail stand, the flight may depart

CAUTION: Attempting to release the tail stand by advancing the power levers forward of the ground idle detent is prohibited.

If the tail stand remains stuck, or if the load information and the Load sheet did not agree, the flight shall not depart until:

- The cargo load is re-counted by the ground crew
- The cargo load is visually verified by the Captain

5.4.5.2 CONDITIONS REQUIRING AN START ABORT

If any of the following conditions occur during engine start, the start must be aborted immediately:

- NG does not increase when starter is engaged.
- NG does not reach approximately 20% after starter activation.
- During a motoring start, ITT does not decrease below 175°C within 30 seconds of beginning ventilation (motoring) run.
- No ENG OIL pressure indication within 30 seconds of starter activation.
- During a motoring start, no rise in ITT within 10 seconds after selecting CL to START.
- A hung start occurs.

Figure 3



OPERATIONAL BULLETIN

No. MB281024-01

ALERT LEVEL :

Information

CRITICAL

Issue Date: 28-Oct-2022

Due Date: N/A

Revision Number: 0

Page: 5

Trim indicator.
Displays trim tab deflection for pitch, roll and yaw.
The indicator shows trim tab deflection for both main and standby systems.
Green band indicates take-off range.

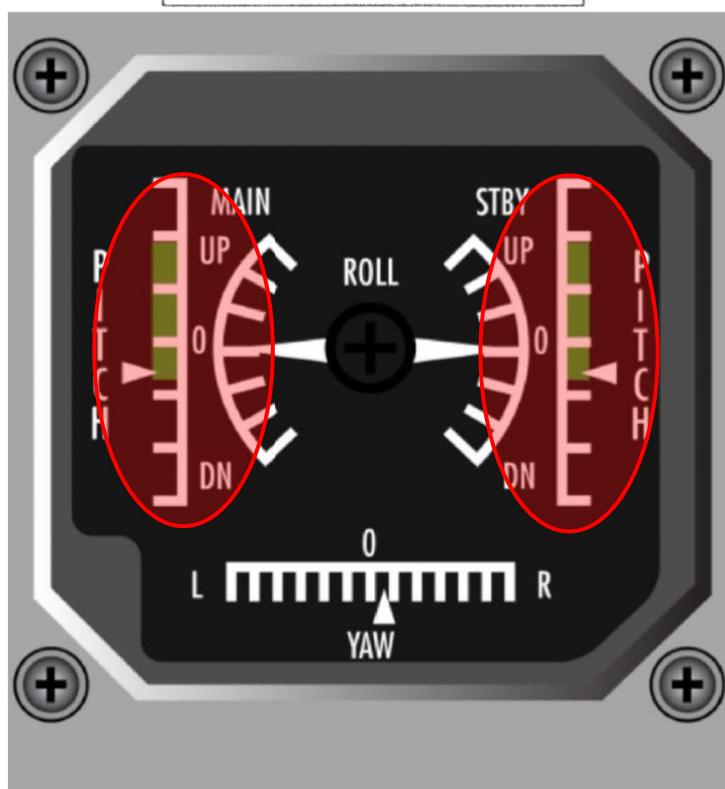


Figure 4



OPERATIONAL BULLETIN

No. MB281024-01

ALERT LEVEL :

Information

CRITICAL

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Operations Manual - Part B
 Saab 340B - Chapter 9
 Mass and Balance

Revision: Original
 Date: 15 Jan 2021

9.4.8 SETTING TAKEOFF PITCH TRIM

The take-off pitch trim setting can be read from the See Gee™ by noting the position of the take-off weight and index in relation to the green dotted lines representing the trim tab settings. The dotted trim setting lines are labeled in units of nose up trim and are valid for take-off with flaps at 0 degrees. For take-off with flaps set at 15 degrees an additional 1/2 unit of nose down trim from that marked on the calculator must be set.

9.4.9 FORWARD LIMIT NO PASSENGERS

There are two limit lines depicted at the forward end of the envelope. When operating the aircraft without passengers, both the Passenger Weight Variation constraint and the Passenger Seating Variation constraint, (Caution Zones) may be ignored, along with the forward inflight movement allowance for an aft passenger to the lav.

When operating without passengers, observe the green limit line labeled FWD LIMIT NO PAX. With passengers on board, use the line labeled FWD LIMIT and also observe the requirements detailed above for the Caution Zones.

9.4.10 FUEL BURN OFF

After arriving at a satisfactory final index for take-off, the burn off of fuel must be taken into account to ensure that the center of gravity will be within limits for landing. Remember that fuel will not affect the index but it will affect the weight of the aircraft and in some cases, a decrease in weight at a constant index can cause the center of gravity to go through a limit.

After subtracting the weight of fuel to be burned, the intersection of the engraved line with this landing weight will show the CG for landing. If this will cause the landing index to fall within a caution zone then the instructions for that caution zone operation must be complied with prior to takeoff. Be aware that when operating near either limit that fuel burn off can cause the CG to exceed that limit after takeoff.

WARNING
 IT IS RECOMMENDED THAT WHEN THE FINAL INDEX IS AT OR NEAR A LIMIT AND IT IS FEASIBLE TO MOVE PAYLOAD TO BRING THE CENTER OF GRAVITY MORE TOWARD THE CENTER OF THE ENVELOPE, THAT IT BE DONE. THE INHERENT INACCURACIES OF DEALING WITH AVERAGE PASSENGER AND BAG WEIGHTS AND AVERAGE COMPARTMENT CENTROIDS COULD CAUSE THE ACTUAL CENTER OF GRAVITY TO BE OUT OF LIMITS WHEN COMPUTATIONS USING THESE AVERAGE WEIGHTS AND CENTROIDS INDICATE IT IS WITHIN LIMITS.

9.4.11 LOAD PLANNING

The See Gee™ calculator makes a convenient tool for planning the loading of an aircraft. By using the See Gee™ to do a sample loading of an aircraft with the planned payload, it can often be determined in advance which methods will result in an acceptable center of gravity, thereby precluding time-consuming last-minute movements of passengers or baggage.

CAUTION
 Do not leave the See Gee™ exposed to direct sunlight or high heat conditions as it may be damaged. Leaving a See Gee™ in the sun on a glare shield for example, will cause warping and cracking of the vinyl lamination and may damage it beyond usable repair.

Figure 5



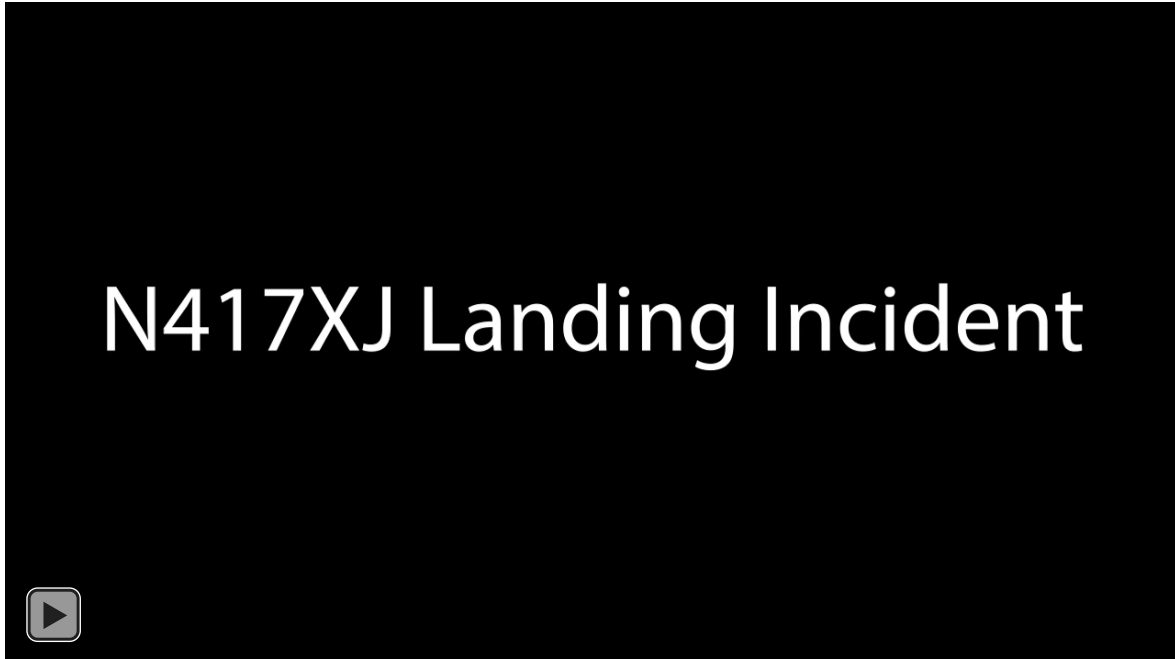
4.1.2 Additional Recommendations and Safety Actions Taken

- a. Signs have been designed/made (to post at the check-in counter), to familiarize and make passengers aware that during check-in it is a mandatory requirement to have ALL Baggage (including hand luggage – unchecked baggage) weighed.
 - *Signs have been made for location at check in counters & ticket office.*
- b. Carry On Baggage size Frames have been designed/made to sort all hand baggage that will be loaded in the Cargo compartment when reaching the aircraft.
 - *All EZ Air Line stations have been provided with Carry-on Baggage Size Frames.*
- c. Train OCC personnel on the process to add all baggage & hand baggage weights as stated on the Passenger Manifest to be calculated in the Load Sheet & ASAP STAR system electronic W&B software.
 - *Training has been conducted on the 26th of October 2022.*
- d. Retrain Passenger Service Agents, with emphasis on Hand Baggage (unchecked) procedures.
 - *All stations have been properly retrained on the EZ Air procedures by the GOSM.*
- e. Revise procedures for the Cabin Seating Report completion, which will aid the captain to properly distribute the passengers when necessary.
 - *The Cabin Seating report has been reviewed and it was concluded that the current form fulfils its purpose and is acceptable as is, no change required.*
- f. Add Baggage Control Form (BCF) procedures, by adding the requirements to document ALL baggage/Cargo that is loaded in Cargo Compartments C1 & C2.
 - *The BCF Form has been revised to document hand luggage moved to the Cargo Compartment.*
- g. Aft CG aircraft handling has been added to the Simulator Training curriculum as per the 26th of October 2022, and the first SIM recurrent session including this training has been completed.
- h. Flight dispatch, Passenger & Ramp Handling Internal Audit on Loading procedures.
 - *Implement yearly Inspections/Audits.*
- i. Implement Flight Crew simulator recurrent training with the topic of Loading procedures and characteristics of Aft or CG out of Limits.
- j. Implement Flight Crew Simulator Recurrent Training with the topic of selecting Beta with the power levers before the nosewheel is firmly on the ground resulting in an aggressive pitch up attitude.



APPENDICES

Appendix A – Animation Video EZ Air, 7Z-571,N417XJ Landing Incident BON.



Courtesy SAAB AB