

ALERT BULLETIN

AB 2006:19/11-4

4/12/06

685304, 686667, 587219, 597768, 657484, 583742

TO: Boeing Commercial Airplane Company

INFO: FAA (AFS-230, AFS-200, AFS-300, AFS-900, ANM-100, SEA-AEG), AASC, AIA, ALPA, AMFA, APA, ASAP, ATA, CAPA, IFALPA, IAM, ICASS, IPA, NATA, NTSB, PAMA, TWU

FROM: Linda J. Connell, Director
NASA Aviation Safety Reporting System

SUBJ: AIRCRAFT DELAMINATION INCIDENTS

We recently received an ASRS report describing a safety concern which may involve your area of operational responsibility. We do not have sufficient details to assess either the factual accuracy or possible gravity of the report. It is our policy to relay the reported information to the appropriate authority for evaluation and any necessary follow-up. We feel you should be aware of the following:

ASRS has received a number of reports describing delamination incidents on various aircraft.

(ACN 685304) A captain alleges that during a climb through 15000 feet the aircraft developed a vibration that abruptly stopped a short time later. The first officer was sent to the cabin and discovered composite delamination between the spoilers and the trailing edge flaps. The flight diverted and executed a precautionary landing. Post flight maintenance inspections discovered a three foot long inboard panel section was missing.

(ACN 686667) A first officer reported that during push back and initial flap deployment, a flight attendant relayed a passenger's claim that "part of the wing was missing." The captain directed the reporter to investigate the problem who found that a portion of the training edge inboard flap was missing and the top half of the flap had delaminated.

(ACN's 587219,597768, 657484, 583742) Describe similar delamination issues and are also enclosed.

(Keywords: Delamination)

To properly assess the usefulness of our FYI service, we would appreciate it if you would take the time to give us your feedback on the value of the information that we have provided. Please contact Harvey Hartmann or Don Purdy at (408) 541-2800 or email at hhartmann@mail.arc.nasa.gov, dpurdy@mail.arc.nasa.gov.



Aviation Safety Reporting System
385 Moffet Park Dr · Suite 200 · Sunnyvale · CA · 94089



ACN: 685304

Time

Date : 200601

Day : Thu

Local Time Of Day : 1201 To 1800

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Altitude.MSL.Single Value : 15000

Aircraft / 1

Controlling Facilities.ARTCC : ZZZ.ARTCC

Make Model : B757-200

Person / 1

Function.Oversight : PIC

Function.Flight Crew : Captain

ASRS Report : 685304

Person / 2

Function.Flight Crew : First Officer

Person / 3

Function.Flight Attendant : On Duty

Person / 4

Function.Controller : Radar

Events

Anomaly.Aircraft Equipment Problem : Critical

Anomaly.Non Adherence : Published Procedure

Independent Detector.Other.Other : 3

Resolatory Action.None Taken : Detected After The Fact

Resolatory Action.Other : Acft Diverted

Consequence.Other : Aircraft Damaged

Consequence.Other : Company Review

Consequence.Other : Maintenance Action

Narrative

UPON CLBING THROUGH 15000 FT, THE ACFT DEVELOPED A VIBRATION. AFTER A SHORT TIME IT ABRUPTLY STOPPED. AROUND THAT TIME WE WERE ADVISED BY OUR FOURTH FLT ATTENDANT THE SHE HEARD AND FELT THE VIBRATION ALSO. WE HAD ONE FLT ATTENDANT CHK TO SEE IF ANYTHING WAS AMISS OUT BY THE ENG NACELLES OR WING AREA. HE RPTED BACK THAT THE WING WAS COMING APART OR SOMETHING TO THAT EFFECT. THIS REALLY GOT OUR ATTENTION SUCH THAT I SENT THE FO BACK TO GET SOME SPECIFICS. HE FOUND THAT THE OUTER LAYER COVERING THE COMPOSITE STRUCTURE OF THE SURFACE BETWEEN THE SPOILERS AND THE TRAILING EDGE FLAPS HAD PEELED BACK AND OFF. FROM HIS VANTAGE POINT, HE COULD NOT TELL THE COMPLETE EXTENT OF THE DAMAGE. HE DID RPT SOME LOOSE BITS FLAPPING IN THE BREEZE. WE SLOWED THE ACFT SO AS TO KEEP FROM LOSING MORE PIECES, AS WELL AS TO KEEP FROM FLYING TOO FAR FROM ZZZ SHOULD WE NEED TO DIVERT (WHICH WAS BECOMING A REALLY GOOD IDEA ABOUT THEN). AFTER TALKING TO MAINT CTL, WE DECIDED TO DIVERT TO ZZZ. WE HELD FOR ABOUT 45 TO 50 MINUTES WITHIN SIGHT OF ZZZ IN ORDER TO BURN DOWN FUEL TO REACH MAX LNDG WT. AN OVERWT LNDG WAS CONSIDERED, BUT AS THE ACFT WAS NOT SHOWING CONTROLLABILITY DIFFICULTIES, WE FELT THAT THE LIGHTER WTS, WITH ASSOCIATED LOWER LNDG SPDS WOULD BE BENEFICIAL. SHOULD THE ACFT PERFORMANCE DEGRADE DURING THE FUEL BURN DOWN, WE WOULD HAVE BEEN ABLE TO MAKE ZZZ IN SHORT ORDER. WE DID HAVE THE FLT ATTENDANT WHO INITIALLY OBSERVED THE DAMAGE TAKE ANOTHER LOOK AND RPT ANY CHANGES. NONE WERE OBSERVED. WE BRIEFED THE FLT ATTENDANTS FOR A PRECAUTIONARY LNDG. WE LANDED AND TAXIED TO THE GATE. UPON REACHING THE GATE, THE MECHANIC HAD ME LOWER THE FLAPS. WE FOUND THAT THE INBOARD 3 FT SECTION OF THE PANEL WAS MISSING. THE FULL EXTENT OF THE DAMAGE COULD NOT BE OBSERVED FROM THE CABIN DURING CRUISE.

CALLBACK CONVERSATION WITH RPTR REVEALED THE FOLLOWING INFO: THE RPTR STATED THE AIRPLANE REQUIRED FULL FLAPS AND R AILERON INPUT TO KEEP THE AIRPLANE LEVEL.

Synopsis

A B757-200 ON CLBOUT EXPERIENCED A WING PANEL DELAMINATION FELT THROUGH AN AIRFRAME VIBRATION AND VERIFIED VISUALLY. CREW DIVERTED TO NEAREST SUITABLE ARPT.

ACN: 686667

Time

Date : 200602

Day : Tue

Local Time Of Day : 0601 To 1200

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Altitude.AGL.Single Value : 0

Environment

Flight Conditions : VMC

Aircraft / 1

Controlling Facilities.Tower : ZZZ.Tower

Make Model : B757-200

Person / 1

Function.Flight Crew : First Officer

ASRS Report : 686667

Person / 2

Function.Oversight : PIC

Function.Flight Crew : Captain

Person / 3

Function.Flight Attendant : On Duty

Person / 4

Function.Observation : Passenger

Person / 5

Function.Maintenance : Technician

Events

Anomaly.Aircraft Equipment Problem : Critical

Anomaly.Other Anomaly.Other : Partial Trailing Edge Flap Separation

Independent Detector.Other.Other : 4

Resolatory Action.Other : Returned To Gate

Consequence.Other : Aircraft Damaged

Consequence.Other : Flight Cancelled

Consequence.Other : Maintenance Action

Narrative

WE HAD A NORMAL PUSHBACK AND TAXI OUT -- SELECTED FLAPS 5 DEGS FOR DEP. FLT ATTENDANT THEN CALLED COCKPIT TO RPT A PAX CLAIM THAT PART OF THE 'WING' WAS MISSING. WE STOPPED ACFT -- CAPT DIRECTED ME TO PERFORM A VISUAL INSPECTION AFTER FOLLOWING SECURITY PROC. I CONFIRMED THAT A PORTION OF THE TRAILING EDGE INBOARD FLAP WAS MISSING AND THAT THE TOP HALF OF THE FLAP HAD DELAMINATED AND SEPARATED FROM THE ACFT. WE RETURNED TO THE GATE. BOTH THE GND CREW AND MYSELF HAD PERFORMED AN EXTERIOR CHK OF THE ACFT. WE DID NOT NOTICE THE DAMAGE WITH THE FLAPS RETRACTED AT THE GATE. PAX NOTED SEEING DAMAGE ON PUSHBACK. THE ACFT WAS REMOVED FROM SVC FOR REPAIR. THE MAJORITY OF THE DAMAGE WAS ON THE TOP SURFACE OF THE FLAP ASSEMBLY. IT WAS A CLEAR SUNNY DAY AND THE MISSING PIECE OF THE FLAP WAS RIGHT BY THE FAIRING. IT IS POSSIBLE THAT WITH A COMBINATION OF THE SUN IN OUR EYES AND A SHADOWING EFFECT FROM THE FAIRING COMBINED WITH THE FLAPS BEING IN THE RETRACTED POSITION, THE DAMAGE WAS MISSED ON THE EXTERIOR WALKAROUND.

Synopsis

A B757-200 RETURNED TO THE GATE FOLLOWING A PAX DISCOVERY DURING TAXI FOR TKOF THAT A PORTION OF THE TRAILING EDGE FLAP WAS MISSING AND THAT THE TOP HALF OF THE FLAP HAD DELAMINATED.

ACN: 587219

Time

Date : 200307

Day : Mon

Local Time Of Day : 1801 To 2400

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Altitude.MSL.Single Value : 29000

Aircraft / 1

Controlling Facilities.ARTCC : ZZZ.ARTCC

Make Model : B757-200

Person / 1

Function.Oversight : PIC

Function.Flight Crew : Captain

ASRS Report : 587219

Person / 2

Function.Flight Crew : First Officer

Person / 3

Function.Oversight : Flight Attendant In Charge

Person / 4

Function.Other Personnel.Other : Mx Ctlr

Person / 5

Function.Other Personnel : Dispatcher

Events

Anomaly.Aircraft Equipment Problem : Critical

Anomaly.Other Anomaly.Other : #6 L.E. Slat Failure

Independent Detector.Other.Other : Person 3

Resolatory Action.Flight Crew : Declared Emergency

Resolatory Action.Flight Crew : Diverted To Another Airport

Consequence.Other : Aircraft Damaged

Consequence.Other : Company Review

Consequence.Other : Maintenance Action

Narrative

DURING CLB-OUT, PURSER ADVISED PIECES ON R WING WERE VIBRATING AND SHREDDING OFF. I DIRECTED THE FO AS THE PF TO ENGAGE THE AUTOPLT AND GO BACK TO THE CABIN TO PERSONALLY OBSERVE THE RPTD DAMAGE. HE OBSERVED DAMAGE TO THE LEADING EDGE SLAT ON THE R WING, INBOARD OF THE ENG. THE AFT PORTION WAS VIBRATING STRONGLY. DECLARED EMER, RETURNED TO ZZZ, AND CONFERRED WITH DISPATCH AND MX, WHO ADVISED A NORMAL FLAP LNDG. DUE TO OUR OVERWT CONDITION, IE, 210K LBS, WE LANDED WITH FLAPS 25 DUE TO GUSTING WINDS. LNDG UNEVENTFUL WITH AUTOBRAKES 2. CALLBACK CONVERSATION WITH RPTR REVEALED THE FOLLOWING INFO: THE RPTR STATED THE #6 SLAT IS LOCATED ON THE R WING INBOARD OF THE ENG AND THE LEADING EDGE AND UPPER SURFACE IS CONSTRUCTED OF KEVLAR OR CARBON FIBER COMPOSITES. THE RPTR SAID THE LEADING EDGE MUST HAVE DEVELOPED A CRACK AND STARTED TO DELAMINATE AND TEAR OFF THE UPPER SURFACE OF THE LEADING G EDGE. THE RPTR STATED ON THE GND A PIECE OF COMPOSITE FOUR FT LONG RUNNING ALONG THE UPPER LEADING EDGE OF THE SLAT AND FROM THREE INCHES AFT OF THE LEADING EDGE WAS FOUND MISSING. THE RPTR SAID WHILE THE COMPOSITE WAS OBSERVED VIBRATING STRONGLY NO VIBRATIONS WERE FELT IN THE COCKPIT.

Synopsis

A B757-200 FLT CREW ON CLB OUT DECLARED AN EMER AND DIVERTED DUE TO R WING LEADING EDGE INBOARD SLAT #6 VIBRATING AND SHEDDING FRAGMENTS.

ACN: 597768

Time

Date : 200310

Day : Sun

Local Time Of Day : 1201 To 1800

Place

Locale Reference.Airport : ATL.Airport

State Reference : GA

Altitude.AGL.Single Value : 0

Aircraft / 1

Make Model : B757 Undifferentiated or Other Model

Person / 1

Function.Flight Crew : First Officer

ASRS Report : 597768

Person / 2

Function.Oversight : PIC

Function.Flight Crew : Captain

Events

Anomaly.Aircraft Equipment Problem : Critical

Anomaly.Other Anomaly.Other : MISSING ENGINE COWLING

Independent Detector.Other.Flight CrewA : 1

Resolatory Action.None Taken : Detected After The Fact

Consequence.Other : Aircraft Damaged

Consequence.Other : Maintenance Action

Narrative

DURING POSTFLT FOR FLT, AND PREFLT FOR NEXT FLT, FOUND AREA OF DELAMINATION OF COMPOSITE PORTION OF R ENG COWL. THIS DELAMINATION WAS APPROX 6 FT HIGH AND OVER 4 FT WIDE. ALMOST THE ENTIRE OUTBOARD SKIN OF THE OUTBOARD REAR COWL WAS MISSING. NO OTHER DAMAGE FOUND. NOTHING DURING THIS FLT WAS IN THE SLIGHTEST ABNORMAL. THE WORST TURB ENRTE WAS LIGHT TO MODERATE. NO RAIN OR PRECIPITATION OF ANY KIND. THERE WERE NO SPD ANOMALIES OUT OF THE ORDINARY. SPOILERS WERE USED DURING DSCNT WITH PWR DUE TO AN OVER-FUELING EVENT AND LNDG WT LIMIT CONCERNS BUT NOTHING ABNORMAL WITH THIS. I HAVE NO EXPLANATION BUT MATERIAL FAILURE.

Synopsis

DURING ENRTE EXTERIOR INSPECTION FLT CREW OF B757 DISCOVER A LARGE PORTION OF THE R ENG COWLING TO HAVE SEPARATED FROM THE AIRFRAME AT SOME POINT DURING PREVIOUS FLT SEGMENT.

ACN: 657484

Time

Date : 200505

Day : Fri

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Altitude.AGL.Single Value : 0

Aircraft / 1

Make Model : B767-300 and 300 ER

Person / 1

Function.Maintenance : Technician

ASRS Report : 657484

Person / 2

Function.Oversight : Supervisor

Events

Anomaly.Aircraft Equipment Problem : Critical

Anomaly.Maintenance Problem : Improper Documentation

Anomaly.Maintenance Problem : Improper Maintenance

Anomaly.Maintenance Problem : Non Compliance With MEL

Anomaly.Non Adherence : FAR

Anomaly.Non Adherence : Published Procedure

Independent Detector.Other.Other : 1

Resolatory Action.None Taken : Detected After The Fact

Resolatory Action.Other : Item Deferred

Consequence.Other : Maintenance Action

Consequence.Other.Other : Item Deferred

Narrative

ENG #1 AND #2 INBD PYLON PANELS DELAM/OUTER ALUMINUM LAYER ERODED AWAY. HONEYCOMB LAYERS WERE EXPOSED. THESE PANELS WERE DEFERRED TO PERFORM REPAIR AT A LATER OPPORTUNITY. DISCREPANCIES ON BOTH PANELS BEYOND STRUCTURAL REPAIR MANUAL LIMITS. THE STRUCTURAL INTEGRITY OF BOTH PANELS IS COMPROMISED. ACFT X ARRIVED IN ZZZ MAY/FRI/05. MAINT FOUND #1 AND #2 ENG PYLON PANELS DELAMINATED AND A HOLE. ALLOWABLE DAMAGE BEYOND LIMITS PER STRUCTURAL REPAIR MANUAL. MAINT THREATENED BY MGMNT TO DISREGARD. MAINT FOUND CARRY FORWARD ITEM LIMITS OUTSIDE OF APPROVED DOCUMENTS. MGMNT HANDLED PAPERWORK AND MAINT IS TRYING TO WORK QUALITY ASSURANCE TO REMEDY THE PROB. CONDITION IS CLEARLY OUT OF LIMITS. CALLBACK CONVERSATION WITH RPTR REVEALED THE FOLLOWING INFO: THE RPTR STATED THAT WITH THE OUTER ALUMINUM COVERING STRIPPED OFF THE KEVLAR HONEYCOMB, YOU COULD OBSERVE VERTICAL GREY STREAKS IN THE COMPOSITE PANEL WHERE IT BUBBLED OR BULGED OUTWARD AND THE AIR STREAM POLISHED THE BULGED SURFACE. THE DELAMINATION REPORTEDLY WAS BEYOND THE STRUCTURAL LIMITS AND COULD NOT HAVE BEEN LEGALLY DEFERRED. AFTER ADVISING THE SUPVR OF THE CONDITION OF THE PANELS AND THE STRUCTURAL REPAIR LIMITS, THE RPTR WAS THREATENED WITH FIRING. THE PANELS WERE DEFERRED BY THE SUPVR TO BE REPLACED OR REPAIRED.

Synopsis

A B767-300 WAS FOUND TO HAVE LEFT AND RIGHT ENG INBOARD NACELLE STRUT COMPOSITE PANELS DELAMINATED AND OUTER ALUMINUM LAYER ERODED WITH HONEYCOMB EXPOSED BEYOND STRUCTURAL REPAIR MANUAL LIMITS.

ACN: 583742

Time

Date : 200306

Day : Tue

Local Time Of Day : 0601 To 1200

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Altitude.AGL.Single Value : 0

Aircraft / 1

Make Model : B737-300

Person / 1

Function.Maintenance : Technician

ASRS Report : 583742

Person / 2

Function.Maintenance : Technician

Events

Anomaly.Aircraft Equipment Problem : Critical

Anomaly.Maintenance Problem : Improper Documentation

Anomaly.Maintenance Problem : Improper Maintenance

Anomaly.Non Adherence : Company Policies

Anomaly.Non Adherence : FAR

Anomaly.Non Adherence : Published Procedure

Independent Detector.Other.Other : 2

Resolatory Action.None Taken : Detected After The Fact

Consequence.Other : Company Review

Consequence.Other : Maintenance Action

Narrative

ACFT'S R-HAND INBOARD FLAP WAS FOUND TO BE DELAMINATED. AFTER 3 DAYS OF MAINT THE AFT FLAP WAS REPLACED AND THE MID FLAP FAIRING WAS REINSTALLED. I HAD REPLACED THE CTR BOOST (FUEL) PUMPS AND SIGNED THEM OFF IN THE COMPUTER. AFTER SIGNING THEM OFF I CHKD AND ALL OTHER ITEMS WERE SIGNED OFF, SO I RELEASED THE AIRPLANE FOR SVC. AFTER 1 DAY OF FLYING IT WAS DISCOVERED THAT THE FLAP WAS NOT INSPECTED. THERE WAS NO INCIDENT AND SEEMED TO BE INSPECTED THE NEXT NIGHT IN ZZZ1. CALLBACK CONVERSATION WITH RPTR REVEALED THE FOLLOWING INFO: THE RPTR STATED HIS ACTUAL WORK ON THE FLAP REPLACEMENT WAS LIMITED TO A FEW HRS BUT THE PAPERWORK WAS COMPLETED BY THE RPTR. THE RPTR SAID AT MOST TECHNICIANS OFFICES AND WORK PLACES A NOTICE ON THE BULLETIN BOARDS HAVE A REQUIRED INSPECTION ITEM LIST POSTED. THE TECHNICIAN STATED NO WHERE ON THE MAINT MANUAL PROC IS A NOTE ADVISING THIS TASK IS AN FAA REQUIRED INSPECTION ITEM.

Synopsis

A B737-300 WAS DISPATCHED IN NON COMPLIANCE WITH A R INBOARD FLAP REPLACED DUE TO DELAMINATION WITH NO FAA REQUIRED INSPECTION ITEM ACCOMPLISHED.