



High Load Event Reporting

All pilots will encounter high load events over their flying career. The evaluation of the aircraft's airworthiness following these events is enabled by the pilot's report of any speed exceedance and excessive vertical or lateral accelerations caused by turbulence and hard landings. This article describes how to recognize and respond to all types of high load events and the evolution of the information available to support analysis of events, which will determine what maintenance actions are necessary to ensure an aircraft is safe to fly.

All aircraft are designed, tested and certified to avoid the possibility of exceeding its structural strength. Operational thresholds or limits define the envelope for the load conditions in normal operations, and there are design margins to cope with abnormal or excessive loads on the aircraft if they are experienced in-flight or on the ground.

The Pilot's report of a high load event in the logbook is the starting point to commence an evaluation of the event and determine if the abnormal load has affected the structure or systems of the aircraft. Early reporting enables efficient evaluation of the event by maintenance personnel and it can allow the aircraft to more rapidly return to service when the required maintenance tasks are completed.

WHAT IS A HIGH LOAD EVENT?

A high load event is any event that is outside of range of the load conditions an aircraft will experience in normal operations. The aircraft is designed to withstand a certain level of excessive loads in abnormal conditions or situations but this loading can have an effect on the components of the aircraft's structure, engines, engine mounts, pylons and its systems. When such a high load event occurs, with forces that exceed these thresholds, action is required to ensure the aircraft remains in a state continued airworthiness.

High load events can occur when an aircraft is either in flight or on the ground. For instance, a flight load exceedance may occur if the aircraft encounters severe turbulence and crosswind conditions, or when flown above its operational speed limits. This includes events where the aircraft's airspeed was above the allowable limits for extending or operating flaps, slats or the landing gear. A high load event on the ground is most commonly a hard landing or hard overweight landing, but it can also be caused by abnormal lateral loading when landing or taxiing in severe crosswinds.

The Importance of the Pilot's Report

The reporting of high load events relies on the pilot's awareness and experience as the primary means of detection. It is the responsibility of every pilot to report high load events by making a logbook entry. This will initiate an evaluation of the event on the ground that will determine what maintenance actions are required. A timely pilot report (or PIREP) of any high load event enables efficient evaluation that allows the aircraft to more rapidly return to operations when the required maintenance tasks are complete. This will also reassure the pilot that the aircraft remains in a continuous airworthy condition.

What happens following a pilot's report of a high load event?

Evolution of aircraft technology has introduced sensors and more sophisticated means of generating high load event alerts, but it's the pilot's ability to observe or sense a high load event, manage the event and then report it that is paramount. The pilot's report has remained the certification baseline for managing high load events on all Airbus aircraft families from the A300 / A310 and up to the latest A350 XWB. This is common practice across the industry for all aircraft.

“ ... it's the pilot's ability to observe or sense a high load event, manage the event and then report it that is paramount. ”

There have been successive improvements in sensing and recording high load event data, including the LOAD <15> reports introduced on A320 and A330/ A340 aircraft families and the Smart Access Recorder (SAR) data available on the A380 and A350 XWB. This data is provided to support the airline’s maintenance control evaluation and classification of a pilot reported high load event. The event’s classification will allow the airline’s maintenance personnel to more precisely determine which maintenance actions are necessary to ensure the aircraft’s continued airworthiness.

On the latest Airbus aircraft families of the A380 and A350 XWB, there is the capability to transfer recorded data from the aircraft’s Smart Access Recorder (SAR) to dedicated diagnostic ground support tools. These software tools will analyse the event’s recorded data and provide an optimised list of the maintenance actions that will focus only on the areas of the aircraft that were most likely affected. This detailed information provides more autonomy to the airlines in managing their pilot reported high load events and it minimises the time the aircraft is required to be on the ground for maintenance. ■

TYPES OF HIGH LOAD EVENTS

The type of high load event will be described by the Pilot Report (PIREP). There are generally two categories of high load events; those related aircraft speed exceedance **(fig.1)** and others related to rapid vertical or lateral accelerations of the aircraft **(fig.2)**.

(fig.1)
High load events related to aircraft speed exceedance include:

V_{MO} M_{MO} Exceeding the maximum operating speed of the aircraft	V_{LE} M_{LE} Exceeding the maximum speed/Mach at which the aircraft can fly with the landing gear extended	V_{LO} M_{LO} Exceeding the maximum speed/Mach to operate (both extend and retract) the landing gear	V_{FE} Exceeding the maximum speed** the aircraft can fly with the Slats/Flaps extended
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**Note: There is a VFE value per flaps/slats configuration

(fig.2)
High load events related to rapid vertical or lateral accelerations of the aircraft include:

Vertical Turbulence	Lateral Turbulence	Hard Overweight Landing	Hard Landing
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Avoidance of any high load event is often related to the pilot’s own awareness of the prevailing conditions and their effective management of the aircraft’s energy. In some cases, the conditions leading to a high load event are difficult to anticipate, such as inadvertently flying into pockets of severe clear air turbulence, or sudden crosswind gusts shifting the alignment of the aircraft moments before a touchdown. In the absence of these abrupt and unpredictable natural phenomena, a high load event is often the inevitable outcome for any flight crew who may not have effectively managed the aircraft’s energy, or if they have made a sudden and excessive control input inflight. ■

RECOGNISING AND RESPONDING TO HIGH LOAD EVENTS

Severe Turbulence High Load Events

Severe turbulence causes large, abrupt changes in altitude or attitude of the aircraft, often associated with variations in airspeed. Characteristically, turbulence can be considered as excessive or severe if passengers and crew report that they were moved violently against their fastened seatbelts or untethered objects were moved around the cabin with force.

What to do in case of severe turbulence high load events?

After experiencing a severe turbulence event, the pilot should make a logbook entry to trigger the evaluation of the event and assess the relevant maintenance actions to carry out when the aircraft arrives at its destination. If the event is classified as severe turbulence, the AMM / MP maintenance procedure will recommend contacting Airbus for support. The analysis of the recorded flight data by Airbus will assist the airline in identifying the areas of the aircraft that were most likely affected by the event. Airbus will also advise which supplementary maintenance actions should be completed with a tailored list of items that focus on the areas of the aircraft that were affected.

V_{MO} | M_{MO} Speed Exceedance High Load Events

Although intentional V_{MO} | M_{MO} exceedance cases are uncommon, this speed value can typically be overshoot when the aircraft is subject to unpredictable conditions such as sudden changes in outside air temperature or wind strength and direction. At lower altitudes, exceeding V_{MO} | M_{MO} can cause a significant high load event.

Whilst it is important to always respect V_{MO} | M_{MO} flight crew should keep in mind that a slight and temporary speed or Mach exceedance at high altitude will not lead the aircraft into an imminent hazardous situation. The aircraft is designed to fly safely at high altitude within a margin above V_{MO} | M_{MO} , as it must meet certification requirements to ensure that the aircraft remains safe to fly up to its design limit speed, or V_D | M_D .

What to do in case of V_{MO} | M_{MO} speed exceedance high load events?

If V_{MO} | M_{MO} is exceeded, an over speed warning is triggered in the cockpit that alerts the crew. The FCOM, QRH and FCTM provides pilots with procedures and the guidelines to both prevent and to recover from a speed excursion and describes how to calmly manage unexpected variation of airspeed. Any type of over speed must be reported by the flight crew so that analysis of flight data can allow maintenance to tell whether or not there was a high load event, and if maintenance actions are required when the aircraft is on the ground.



For information on managing threats to the airspeed and avoiding speed excursions, refer to the “Control Your Speed in Cruise” article published in Safety first issue #21, which includes tips for “How to anticipate a speed excursion”.

High loads event AMM tasks

AMM 05-51-11 Inspection after hard landing or hard overweight landing

AMM 05-51-12 Inspection after landing gear speed exceedance

AMM 05-51-13 Inspection after flap/slat speed exceedance

AMM 05-51-17 Inspection after turbulence or speed exceedance

AMM 05-51-44 Inspection after in-flight lateral loads

As a general rule, reported high load events requiring maintenance actions are referenced in any AMM/MP within chapter 05-51-xx

A modified LOAD<15> report triggering will introduce the means to detect high lateral loads on A320 family aircraft

Flaps or Slats Extended Speed Exceedance High Load Events

In the case of take-off, where the auto thrust is not active, flying with slats and flaps extended or extending slats and flaps above V_{FE} poses a risk of overloading the aircraft's structure through the slats and flaps track mechanisms. This could result in distortion of the flaps and slats, the extension mechanisms or potentially the structural components they are attached to.

What to do in case of flaps or slats extended speed exceedance high load events?

If V_{FE} is exceeded, an over speed warning is triggered in the cockpit that alerts the crew to take corrective action by reducing speed or retracting the flap and slats accordingly. The pilot should also report this high load event caused by V_{FE} exceedance in the logbook in case specific maintenance actions and trouble-shooting procedures need to be performed before the aircraft can continue operations.

Landing Gear Operated or Extended Speed Exceedance High Load Events

A high load event can occur if the landing gear is extended or retracted while the aircraft's speed is more than the maximum speed limit for operating the landing gear (V_{LO} / M_{LO}), or when an aircraft with its landing gear down and locked increases its speed above the maximum limit that it can fly with its landing gear extended (V_{LE} / M_{LE}).

What to do in case of landing gear operated or extended speed exceedance high load events?

If landing gear is operated or extended when the aircraft's speed is exceeding the allowable limit, an over speed warning is triggered in the cockpit that alerts the crew to take corrective action by reducing speed or retracting the gear. These abnormal events should be reported by the pilot as a logbook entry to be assessed maintenance personnel and determine which maintenance actions are requested by the AMM / MP.

In-flight Lateral High Load Event

Typical examples of conditions that can cause high lateral loads inflight include heavy turbulence in flight or large movements in yaw and roll, system failures such as rudder trim run-away with crew take-over. In all cases, the pilot report is the trigger for an assessment of the event's severity.

What to do in case of in-flight high lateral load events?

If a pilot senses that the aircraft experiences high lateral accelerations inflight, which are abnormal or excessive, they should report the event as a logbook entry. It should be noted that currently on the A320 family, a LOAD<15> report will not be generated high lateral accelerations if the loads were only lateral and without associated vertical accelerations above the limits. If there are high vertical accelerations above the limits during the turbulence event, then an automatic LOAD<15> report is generated, and the recorded high lateral accelerations can be checked. If the pilot reports that the aircraft experienced high lateral acceleration on the ground, then this should be analysed in accordance with the AMM / MP hard landing inspection criteria.

Hard Landing or Hard Overweight Landing

What differentiates a hard overweight landing from a hard landing? In the case of an in-flight turn back or diversion, a hard overweight landing may be unavoidable with the on-board fuel load. A hard landing can occur as a result of an unstable approach or if there are sudden lateral accelerations at the touchdown caused by severe crosswind gusts.

What to do in case of in-flight hard or overweight landing high load events?

In order to minimise the impact of unavoidable overweight landing events, it is recommended that the flight crew limit the vertical speed and ensure a symmetrical landing. After the flight crew report a hard or hard overweight landing, make an analysis of the landing's parameters from the LOAD<15> report or the SAR file and check the applicable AMM / MP to determine what maintenance tasks are required. ■



More detailed operational and maintenance recommendations for managing hard landings are available in the article “Hard Landing, a Case Study for Crews and Maintenance Personnel” published in Safety first issue #17.





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Encouraging Exceedance Event Reporting

Thomas Cook Airlines (TCX) operates the A321 on a medium range sectors such as Dalaman, Turkey (LTBS) to Manchester in the United Kingdom (EGCC). A fully loaded aircraft is operated close to the A321's Maximum Take-off Weight (MTOW), especially when flying out of warmer climate airports. With the combination of higher outside air temperatures and a heavy payload, 'S' speed (slat retraction speed) can be close to the flap-slat limiting speed or VFE. TCX pilots are reminded to ensure they have a clean configuration with the flaps fully retracted before accelerating on the climb and avoid the risk of an over speed with flaps extended.

On the occasion when there is an over speed, the Commander will make a logbook entry during the flight in the electronic technical log for maintenance action. TCX pilots are also requested to send an ACARS message to their operations control centre to alert maintenance that an over speed had occurred and that maintenance actions will be required at the destination airport. This is also the case when the flight crew experience severe turbulence during their flight or have a VMO | MMO exceedance in cruise.

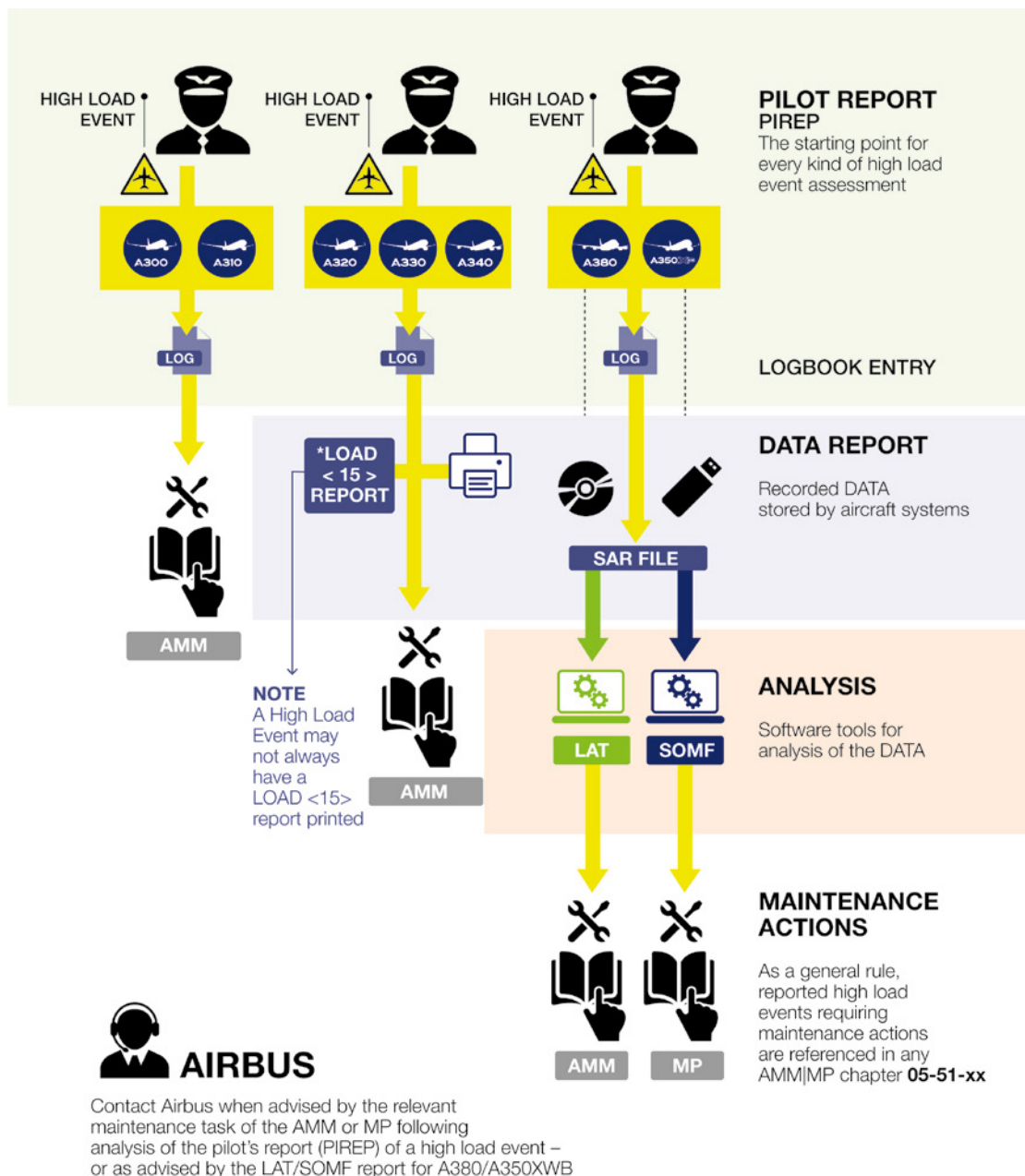
This early contact via ACARS facilitates additional time for maintenance operations to arrange for the appropriately qualified technicians to meet the aircraft upon its arrival and commence the maintenance actions. Being alerted ahead of time means that the ground engineers will have the opportunity to review the aircraft maintenance manual prior to the aircraft landing. This proactive coordination ensures that all of the equipment is available and maintenance personnel are ready to complete the tasks upon the arrival of the aircraft at its destination, assuring a timely assessment of the aircraft's continued airworthiness. Once the required maintenance activities are satisfactorily completed, and if there is no further rectification required, the aircraft is released back into line operations.

Thomas Cook Airlines encourages their pilots to report all defects or high load event with the confidence that their actions are putting safety at heart. We acknowledge that our pilot willingness to report events is essential and we fully encourage open and honest reporting to ensure our aircraft continue operating safely. **"Safe at Heart"** is the core philosophy of our company wide safety management system. The Safe at Heart message fosters a culture within the Thomas Cook family where we put safety at the heart of everything we do.



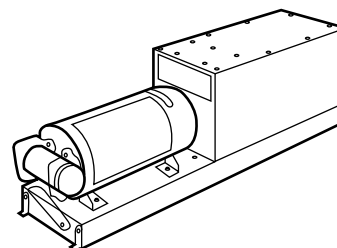
Picture courtesy
of Thomas Cook Group

EVOLUTION OF THE HIGH LOAD REPORT & ANALYSIS



HANDLING QUALITIES ANALYSIS

Handling Qualities Analysis is available for ALL Airbus aircraft when a high load event is classified as "severe" or "red" status. Helping airlines to better understand their high load events through a detailed analysis of Flight Data Recorder information.



(fig.3)

Info-graphic showing the evolution of high load event reporting and analysis across the successive Airbus Aircraft families

“ Airbus recommends that airlines check that their fleet has a consistent configuration to produce the LOAD<15> report at the required time... ”

“ If the LOAD<15> report is not generated, this does not always mean that there was not a high load event ... ”

For the A300/A310 aircraft, assessment of the maintenance actions required following a high load event relies completely on the pilot's report of the event and their recorded observations. Through many years of in-service experience, the scope of the maintenance actions have been optimised as far as possible to reduce the time necessary to complete the associated tasks. The maintenance actions will focus on the critical components that could have been affected during the event. If there are no defects found, then the aircraft can return to service with a shorter amount of time required on the ground.

On all of the Airbus aircraft families since the A300 / A310, we still rely on pilot's report and their recorded observations for managing high load events (**fig.3**). Using the available technology at the time of an aircraft's design phase, increasingly sophisticated means of high load sensing and recording were implemented, for example, the LOAD<15> report for A320 and A330/A340 families. For A330 / A340 aircraft, certain flight load events are generating a LOAD<35> report, for example VMO | MMO exceedance.

On the latest A380 and A350 XWB aircraft, the post-event analysis is further assisted by ground-support software tools. These tools will use flight data from a Special Access Recorder (SAR) to assess which of the aircraft's components were affected during the high load event. The resulting report provides an optimised list of targeted maintenance actions to perform that focuses on these areas.

A320 | A330 | A340 LOAD<15> Report

A high load event printed report, or LOAD<15> report can be customised and configured according to the operator's preferences. Airbus recommends that airlines check their fleet has a consistent configuration to produce the LOAD<15> report at the required time on all of their aircraft. The configurable settings include choosing if to print a report immediately after a high load event or only upon landing. The report's triggering limits are set by default to the values in the Aircraft Maintenance Manuals (AMM). However, these can be adapted by the operators to lower the LOAD<15> report's triggering thresholds, should more sensitive data monitoring be needed to pre-emptively identify any adverse operational trends. In practice, this generates more load reports and it could rapidly increase the number of operational load events to be analysed by the airline's maintenance control.

When flight crew report a hard landing or hard overweight landing, the maintenance personnel will use AMM instructions to analyse the LOAD<15> report and determine if any maintenance actions are necessary. The purpose of this report is to assist the decision making regarding the AMM tasks that should be carried out. Any intentional inhibition of the LOAD<15> report could therefore be detrimental to the accuracy of the analysis and this may adversely affect the dispatch time. If the LOAD<15> report is not generated, this does not always mean that there was not a high load event that could have caused a load exceedance. In all cases, the pilot's report remains the primary means for detecting a high load event and the LOAD<15> only supports the post flight analysis of the event.

If the assessment of the event in accordance with the maintenance manual requires maintenance actions and inspections, these are divided into four major zones to include fuselage, wings, nacelles-pylons and stabilizers. The inspection items are categorised into three phases (**fig.4**).

If no defects or damage is found during the inspection of the phase 1 items, then no further examination is necessary. If defects or damage is noted during the phase 1 inspections, then the phase 2 items must be completed. Depending on the severity of the event, it may be necessary to complete Phase 1 and Phase 2 inspections concurrently. Phase 3 inspection items must be accomplished only if defects or damage are noted during the phase 2 inspections. The AMM will advise if it is necessary to contact Airbus.

(Fig.4)
Inspection items are categorised into 3 phases following a high load event report and LOAD<15> report analysis on A320 | A330 | A340.

Phase 1 AMM Inspection Items	Phase 2 AMM Inspection Items	Phase 3 AMM Inspection Items
General inspection for primary damage to the airframe, engines and pylons and for any indication of internal damage	Detailed inspection of internal areas and some component removal may also be requested	Detailed inspections that may require component removal and strip down

The capability to transmit LOAD<15> reports by ACARS, combined with ground support tools for readout (e.g. AIRMAN), allows an airline to anticipate the maintenance actions required after a report is received. Maintenance personnel can prepare themselves and be ready to commence maintenance activity shortly after the aircraft arrives.

A380 Load Analysis Tool

Airbus developed software called Load Analysis Tool (LAT) for the entry into service of the A380. After a high load event is reported by an A380 crew, the LAT tool uses data from the aircraft's Special Access Recorder (SAR) to calculate the magnitude of the loads that may have affected areas of the aircraft's structure or systems during the event. If any of the aircraft's components were excessively loaded or stressed, it automatically provides a load report with cross-references to the relevant AMM subtasks that focus on the most affected areas.

A350 Structural Overload Monitor Function

The Structural Overload Monitor Function (SOMF) tool was developed for the A350 XWB. The SOMF tool uses the data recorded from a high load event on the Special Access Recorder SAR to produce a comprehensive load report. The detailed analysis in the report supports a more rapid return to service by listing the specific maintenance actions that are relevant to the event meaning that it describes the precise task to carry out for specific areas of the aircraft structure or systems that may have been exposed to any load exceedance.

Using Smart Access Recorder Data to Analyse High Load Events on A380 & A350 XWB

As for any other aircraft, the starting point is the pilot's report (or PIREP) of the event describing the conditions of the event, the configuration of the aircraft and the aircraft's situation following the event.

Structural

Assess the level of **structural** loads sustained by A/C.

Overload

Determine if design envelop has been exceeded and which areas have been **overloaded**.

Monitoring

Allow the operator to **monitor** abnormal events on its fleet.

Function

Final **function** is to generate a report with focused inspection program.

(fig.5)

Descriptions of which maintenance actions can be required from LAT or SOMF analysis and report

To assess the event and determine if additional maintenance actions are necessary, additional assistance is available using software tools called LAT on A380 and SOMF for the A350 XWB aircraft by following these steps:

- Use the flowcharts published in AMM / MP 05-51 and follow the guidelines step by step after any high load event PIREP
- The maintenance actions in the AMM / MP may request maintenance to download the SAR file from the aircraft onto a writable CD-ROM for A380, or transfer the file to a USB key for A350 XWB
- The downloaded SAR file is then sent to the Airline's maintenance centre responsible for assessing reported high load events
- The maintenance centre can then process the generated SAR file using LAT for an A380 event or SOMF for an A350 XWB event and produce a load report with descriptions of which maintenance actions are required and if it is advisable to contact Airbus for additional support **(fig.5)**.

A380 [LAT] "SEVERE LOADS" A350 [SOMF] "OVERLOAD [RED]" ALL inspections classified RED & AMBER	Notify Airbus of the event and send event data for analysis [A380] Inspect areas listed as Phase 1 & Phase 2 by the LAT report [A350 XWB] Perform RED & AMBER inspections listed in the SOMF report Inspect any additional areas as advised by Airbus following the analysis of the event
A380 [LAT] "HIGH LOADS" A350 [SOMF] "OVERLOAD [AMBER]" ALL inspections classified AMBER	[A380] Inspect areas listed as Phase 1 by the LAT report [A350 XWB] perform AMBER inspections listed in the SOMF report Follow any supplementary instructions provided by Airbus
A380 [LAT] "NORMAL LOADS" A350 [SOMF] "NO OVERLOAD"	Only preliminary inspection tasks are necessary that are listed in the AMM / MP

Refer to ISI 05.51.00019 for SOMF and ISI 05.51.00001 for LAT

A380 LAT or A350 XWB SOMF Reports

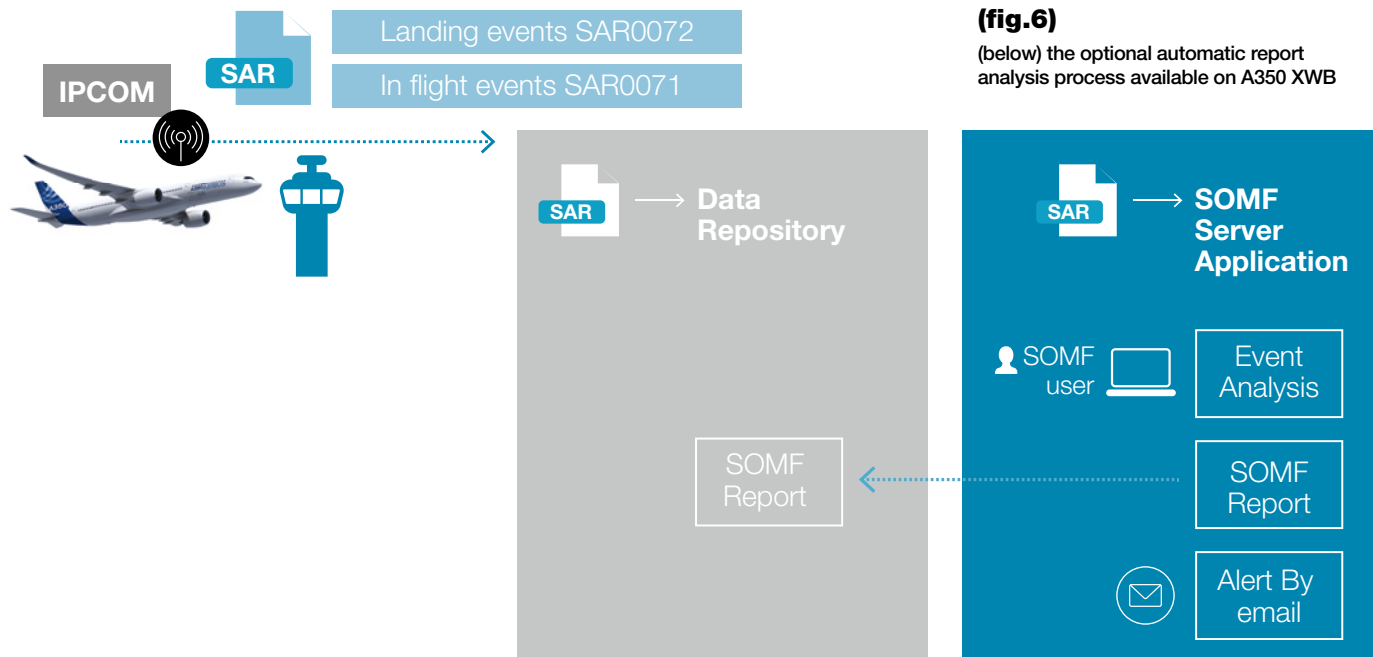
The LAT or SOMF will display a Load Report that will list the details of the "Aircraft and Event Information", an "Event Assessment – Summary", which describes severity of the load exceedance or "overload", the list the AMM / MP subtasks that are required and if it is advisable to contact Airbus before commencing the next flight.

LAT for the A380, and SOMF for A350 XWB, are free of charge software tools made available to operators of these aircraft at entry-into-service and via the Airbus World portal.

A350 XWB Optional Automatic Report Analysis

The A350 XWB has a configurable option that can automatically transfer the relevant Smart Access Recorder (SAR) data of a high load event to the airline's Maintenance Control Centre (MCC) via the IPCOM system. The SAR data file will be received in the 'inbox' of the data repository at the MCC and it is automatically analysed by SOMF application. An alert with the resulting the load report can be immediately sent by email to a distribution list defined by the airline **(fig.6)**.

This can help to prepare the maintenance teams who will be ready to perform the required maintenance actions as soon as the aircraft arrives at its destination. It reduces the risk of operational delays and allows the aircraft to be promptly returned to service if no defects or damage are found. The generated SOMF report will be stored in the data repository 'outbox' together with its associated SAR file. The archived load reports and SAR file can be easily recovered for data analysis to monitor trends or identify any common causes for a sharp increase of particular high load events observed across the fleet. ■



Main objectives of a HQA

- Understand an event and its origin
- Provide information to airlines on operational best practices to avoid a re-occurrence
- Monitor the fleet and system design consistency



For more information about the Airbus Handling Qualities Analysis (HQA), refer to the article in Airbus Technical Magazine - FAST #53 Available on airbus.com

AIRBUS ASSISTANCE FOR HIGH LOAD EVENT ANALYSIS

If a high load event is classified as “severe” or “red” status following the analysis of the data from an in-flight speed exceedance, severe turbulence, strong crosswind lateral loads and overweight or hard landings, Airbus will assist airlines with their analysis of the reported event. Airline maintenance personnel should contact Airbus via AIRTAC following a reported event when it is requested by the AMM / MP maintenance actions in chapter 05-51.

Handling Qualities Analysis

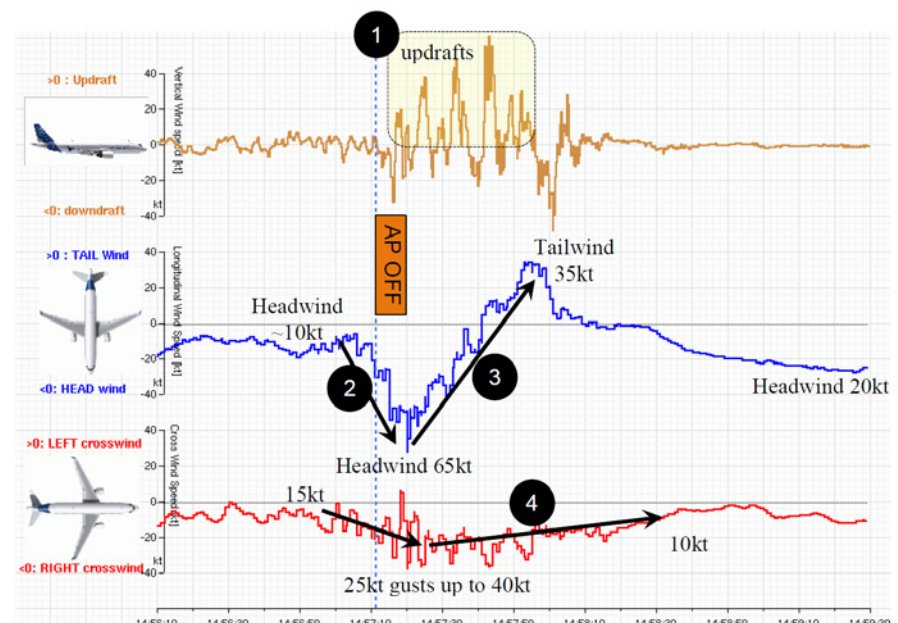
Beyond the technical assistance in response to the AMM / MP maintenance actions, Airbus offers to help airlines better understand their high load events through a detailed analysis, mainly based on raw data extracted from the Flight Data Recorder. This Airbus activity is called a “Handling Qualities Analysis” (HQA) for specific in-service events.

A HQA report from Airbus can be requested by Airlines for the high load events leading to additional maintenance actions, including load exceedance from significant over-speed, abnormal overweight or heavy landings, severe turbulence with excessive flight parameter deviations or for any incident where there were injuries caused to passengers and crew.

The HQA, based on the FDR raw data readout (**fig.7**), is carried out in parallel with the load analysis generally required for structural inspections. The aircraft’s release back into to service is out of the scope of the HQA. The main objectives of the HQA are to understand an event and its origin and to provide information on operational best practices to the airline to avoid re-occurrence. Through the HQA activity Airbus proactively supports airlines in maximizing the efficiency of their operations as well as monitoring the fleet for system and design consistency, with enhancing safety as its primary objective. ■

(fig.7)

An example of a Handling Qualities Analysis of wind evolution using flight recorder data from an excessive turbulence event showing that the aircraft experienced several vertical gusts at 4kt/s, which were mainly updrafts (1). The headwind sharply increased from 10kt to 65kt at a rate of ~4kt/s (2) then changed to a 35kt tailwind, with a gradient of 100kt in 35sec at ~3kt/s and significant gusts (3). The right crosswind component was around 15kt before encountering the turbulence when it increased up to 25kt with several gusts of up to 40kt (4).



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Airlines regularly train their pilots to avoid the conditions that can lead to high loads on the aircraft, but if a high load event occurs, it is important that pilots are also aware of the procedures to report these events. The pilot's report in the logbook is the starting point triggering the evaluation of high load events for all of the Airbus aircraft families. Additionally, by providing training to maintenance personnel in the evaluation of pilot reported high load events, they will more efficiently identify and carry out the appropriate maintenance tasks called out by the aircraft maintenance manuals, maintenance procedures or from the dedicated load event analysis software tools.

Load reports and available recorded data give airlines more autonomy to manage their high load events on their Airbus aircraft, such as the LOAD<15> reports on A320, A330 and A340 aircraft families, or post event analysis using software tools such as LAT for A380, and SOMF tool for the A350XWB. However, even if the information available is evolving to further enhance and optimize the management of reported high load events, the trigger for assessing any event has always, and will always rely on the pilot's report.

There are both safety and operational incentives for pilots to report high load events, most importantly ensuring that the aircraft can continuously operate in an airworthy condition. An airline that encourages a reporting mind-set and safety culture within its flight crews can benefit from their pilot's willingness to send early alerts to ground operations following an abnormal event in flight. This enables faster decision making by maintenance personnel who will then carry out the necessary maintenance actions, allowing the aircraft to safely return to line operations sooner.

Safety first

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