GHOST

GROUND HANDLING OPERATIONS SAFETY TEAM

Gross Error Checks

Before departure, the mass and balance documentation must reflect the actual loaded state of the aircraft. In order to comply with this legal requirement, checks to identify and correct any errors must be completed. A gross error can and has compromised flight safety, sometimes with fatal consequences.

It is good practice to correct every minor error, but a gross error is more important because it could compromise the safety of a flight. Due to the numerous formats of mass and balance documentation and different industry procedures, it is very difficult to provide definitive details of how to conduct gross error checks. But there are a number of fundamental and effective checks that can be completed.

The sole objective of these checks is to ensure that any significant discrepancies in the loading process are identified and corrected before departure.

Loadsheet

Basic checks of the loadsheet will minimise load control errors. The data provided by electronic systems should not contain any errors, but never assume it is correct as most of these systems can be manually adjusted and therefore could be susceptible to human error.

There are a number of key entries that must be checked for accuracy:

- Airline.
- Flight details (routing, flight number and date).
- Aircraft type, variant and registration.
- Crew configuration.
- Dry operating mass/dry operating index (not always available to ground handling agents).
- Zero fuel mass/take-off mass/landing mass are not exceeded.
- Take off and trip fuel.
- Load distribution in holds (load in compartments).
- Number of passengers and bags and their masses.

- Masses of other loads; cargo, ballast, spares, COMAT, and mail etc. Masses of special loads, electric mobility aids etc.
- Edition number of document (Edno).

Aircraft operations are generally determined by four maximum limitations which have been calculated and set by the manufacturer:

- Maximum zero fuel mass.
- Maximum ramp mass.
- Maximum take-off mass.
- Maximum landing mass.

While the maximum zero fuel mass and maximum ramp mass will not differ for most aircraft, the maximum take-off mass and the maximum landing mass will vary depending on certain things, such as take-off fuel, trip fuel, runway length and weather at departure and/or en-route.

The letter L next to a mass on a system generated loadsheet indicates the restricting limitation for a particular flight. This will change depending on the specifics mentioned above, and subsequently the allowable load may be reduced.

When completing a manual loadsheet, one simple gross error check is to add the take-off mass to the underload. If the figures on the document are correct, that calculation will equal the limiting mass allowed for that sector.

On a system generated loadsheet, be aware that the figures will always add up because that is what the system is supposed to do. However, the numbers can be put in incorrectly, so always check them to ensure that they appear as expected. If in doubt, refer to the supporting documentation, which could include the loading instruction/report form, the load form or the fuel receipt.

Checking the take-off mass shown on the loadsheet against the one on the flight plan may also reveal a significant miscalculation.

Note: If there is a company requirement to underline, circle or tick any of the data, be careful not to write over any of the information, otherwise it may not be possible for the flight/ground crews to accurately read, verify or reconcile the figures provided.

If a loadsheet shows a nil load in a compartment/hold that would normally be loaded or if a normally empty one is showing as loaded, raise this with the appropriate person. There may be good reason, but it could be a gross error.

Finally, when inputting mass and balance information into aircraft flight management systems, flight crews must ensure that they read the figures to verify accuracy. If in any doubt, they should refer to

any supporting documentation or raise the matter with the dispatch personnel. Across check of the input and output data with the other pilot will also minimise the chance of a gross error.

Load and Distribution

For every departure, a load instruction/report form will be issued to instruct loading teams how much is to be loaded and where. This document will be provided to the loading supervisor to formally record the actual loading and any subsequent deviations.

As with the loadsheet, there are a number of key entries that must be checked for accuracy:

- Airline.
- Flight details (Routing, Flight number and Date).
- Aircraft type, variant and registration.
- Distribution of hold loads (including baggage, cargo, ballast, spares, COMAT, and mail etc.).
- Void/nil fit positions.
- Bags per ULD/hold.
- Weight capacities in each compartment do not exceed limits.
- Edition number of document (If applicable).

This document typically contains a signed certificate which states that the person responsible for the supervision of the physical loading process has done so in accordance with the instruction specified.

The person responsible for signing this document must ensure that they have done everything possible to verify that the aircraft has been loaded and secured in accordance with the document, especially if they have not been working in the cargo holds during the loading process. If a hold/compartment is planned to be empty, it must be checked and reported that it is.

Never assume that all loads have been accounted for. The person responsible for loading must also report everything and anything in the hold on the loading instruction/report form, regardless of whether or not they loaded it. It may not have been offloaded from the previous flight. (This includes items such as ballast, spare wheels, towbars and catering, etc.) Even if the exact weight is unknown, it can be accounted for during the reconciliation process if it is reported.

Keep a look out for other clues during the loading process. Check if any items of the load look or feel significantly heavier or lighter than normal.

A check of the flight number and destination on checked baggage and cargo tags will also confirm that the destination is correct.

In the passenger cabin, cabin crew should also be aware of loading considerations. As well as checking the total number onboard against the passenger information list, make sure that everyone is sat in the correct seat, as specified on the loadsheet and/or load form. Whether it is an allocated or free seating flight, be aware of passengers playing musical chairs after the doors have been closed – if they move, the centre of gravity will change.

The most vital cross-check in the dispatch process is the reconciliation of the final loadsheet and loading instruction/report form. Regardless of any operational formats/variances, the aircraft should not be clear to depart until this reconciliation has taken place, taking into consideration any last minute changes (LMC).

Securing of Loads

It is important to prevent any load shift because it can have a hazardous effect on the centre of gravity, and it could damage the aircraft's structure and/or systems.

Loading staff have a responsibility to check that all restraint devices are fully secured, whether they are nets, locks or straps. When the aircraft has void/nil fit positions, double-check that it is impossible for a load to move. If a hold has been partially loaded, raise all locks and nets to prevent or limit any potential movement.

When checking the accuracy of documentation and/or the quantity, position and restraints of any load, never assume that somebody else has checked it. If any errors are identified, the appropriate person must be advised before departure.

Everyone involved in loading and securing an aircraft, from load control to the flight deck, must be aware of the importance of accurate mass, balance and loading. See our free DVD, Safety in the Balance on the CAA website at caa.co.uk/ghost

For any related comments, feedback or information please contact GHOST@caa.co.uk