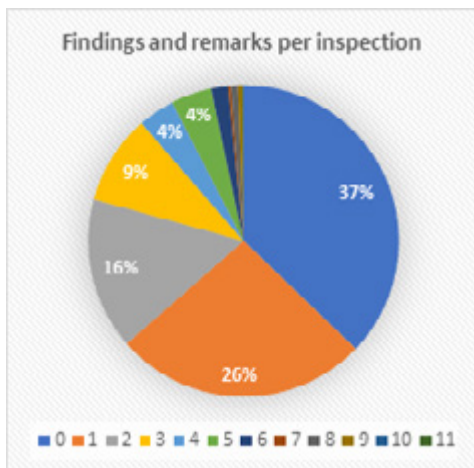


Results from Ramp Inspections in France - How Does Business Aviation Perform?

By Stéphane De Wolf, E.U. Operations Specialist

In this issue, Stéphane De Wolf, E.U. Operations Specialist unpacks the hundreds of deidentified Ramp Inspection findings transmitted by the French DSAC and analyses the most frequent CAT 2 and CAT 3 findings in business aviation. The cooperation between IBAC and DSAC is intended to raise the safety bar and to make Ramp Inspections faster and more efficient for everyone. We trust operators will extract valuable lessons from this unique source of information.

As a starting point of a regular stream of transmissions, the French Direction de la Sécurité de l'Aviation Civile (DSAC) shared deidentified data from Ramp Inspections (RI) they conducted on 39 types of business aviation aircraft in 2021 and in the first four months of 2022. For the first time, our sector can get a snapshot of its own performance during SAFA/SACA checks, since EASA's annual reports generally don't go far into the details. Although the dataset concerns only one of the 51 Participating States to the Ramp Inspection Programme, France is nevertheless a key nation for both business aviation and the RI Programme. In the four years preceding the Covid-19 pandemic, DSAC performed, on average, close to 1800 RIs per year and raised, on average, close to 1500 findings (all types of operations and aircraft combined). Over the last two years, these numbers closely followed the significant drop in traffic worldwide. However, in 2020 France remained the number one contributor to the RI Programme it has traditionally been, with 973 inspections in 59 airports.



Although the total number of all RIs performed in France in the last 2 years has not been made public yet, ± 460 were conducted on aircraft types commonly used in business aviation in 2021, and another ± 220 inspections were performed between January and April 2022. This recent increase in RIs probably signals that both aircraft and inspectors were back on French ramps as more and more countries and organisations lifted barriers to travel. In total, those ± 680 inspections are distributed almost evenly between so-called Community aircraft registered and/or based in a State that applies EU/EASA requirements and aircraft from foreign or 'Third Country' operators (i.e., there were 42% of SACA inspections versus 58% of SAFA inspections). A little more than a third of all the inspections ended without a single non-compliance. For the other two thirds of the ramp checks, 1003 findings and general remarks were raised.

Types of non-compliances

A General Remark refers to an observation (e.g., missing operator documents in EASA's TCO repository, doubts about the true nature of a passenger flight, etc.) or to a safety issue that isn't concerning enough to create a finding (e.g., a flashlight on the flight deck isn't working anymore but both the incoming and the departing flights was/will be in daylight, or some life jackets are missing but the flights were/will be over land only, etc.).

More pressing safety issues and non-compliances will lead to a finding, the severity of which will determine the extent of follow-up actions. There are three categories of findings of increasing severity: CAT1, CAT2, and CAT3. A Category 2 finding is considered as 'Significant' and will require a demonstration of corrective actions, to be coordinated between the operator and the inspecting authority after the departure of the aircraft. A Category 3 finding is considered as 'Major' and will also require corrective actions. Depending on the case, these will range from

operational restrictions to mandatory corrective actions before flight, to the immediate grounding of the aircraft, or even to an immediate operating ban of the operator.

These two categories of findings tend to attract most of the attention and efforts from Participating States. Patterns within CAT2 or CAT3 findings are then of particular interest since, in theory, every finding raised during a ramp check has led to corrections vetted by the inspecting State, which should normally prevent a reoccurrence. Patterns made of similar, repeating findings have therefore the potential to reveal deeper, systemic issues across all types of operators and aircraft.

The Big Picture

In the 16-month period covered by DSAC's data, the 1003 non-compliances can be broken down as follows:

- **General Remarks:** 455 observations
- **Category 1 – Minor:** 101 findings (or 18% of all 548 findings raised in 16 months)
- **Category 2 – Significant:** 291 findings (53% of the 548 findings)
- **Category 3 – Major:** 156 findings (28% of the 548 findings)

This distribution of the findings in business aviation (let's round it up to 20%-50%-30% for easier reference) is a bit different from the patterns found in the annual reports published by EASA. For instance, the 2020 RI Annual Report indicates that, in 2019 and 2020, both commercial and general aviation had comparatively higher ratios of CAT1 findings and lower ratios of CAT2 and CAT3 findings than business aviation in DSAC's sample. At the scale of the whole RI Programme, the distribution of the findings was roughly 35%-40%-20%. Put differently, business aircraft operators seem to have a slightly higher proportion of significant and major findings in comparison with other types of operations, and particularly passenger airlines (their distribution of the findings is closer to 40%-40%-20% or, in other words, more of the 'small safety issues' and less of the 'big issues').

This initial dataset indicates an average ratio of 0.8 findings per inspection, which is above the average ratio for the entire RI Programme (i.e., that fluctuated between 0.54 and 0.62 in the last 5 years). It also shows that when a ramp inspection leads to at least one non-compliance, Community aircraft have a lower ratio of non-compliances per inspection (2.0) compared to foreign/Third Country operators (3.0). Without diving into the details, it's worth mentioning that foreign/Third Country operators are expected to meet ICAO Standards, whereas Community aircraft are expected to meet Community/EASA requirements, which tend to be higher than ICAO Standards.

As hinted on the previous page, RIs with non-compliances generally had only a few of them, typically one or two remark(s) and/or finding(s). Fortunately, it was quite unusual that five or more non-compliances were raised (<5% of all RIs). In such cases, the inspection revealed a range of combinations of non-compliances (e.g., some with more observations, others with mainly CAT3 findings, etc.). By taking a closer look, some differences inevitably begin to appear between operators, depending on their primary regulatory framework and on their type of operation, as shown...

Total findings and general remarks = 1003 non-compliances (*) (From January 2021 through April 2022, business aviation aircraft only)				
	Community aircraft (EU/EASA)		Foreign aircraft (non-EU/EASA)	
	583 non-compliances in 291 SACA RIs		420 non-compliances in 139 SAFA RIs	
	Commercial ops	Non-commercial ops	Commercial ops	Non-commercial ops
Ramp Inspections (RI)	265 RIs (91% of the 291 SACA RIs)	26 RIs (9% of the 291 SACA RIs)	88 RIs (63% of the 139 SAFA RIs)	51 RIs (37% of the 139 SAFA RIs)
Non-compliances	528 NCs (91% of 583 NCs)	55 NCs (9% of 583 NCs)	295 NCs (70% of 420 NCs)	125 NCs (30% of 420 NCs)
General remarks	248 (47% of 528 NCs)	19 (35% of 55 NCs)	129 (44% of 295 NCs)	61 (49% of 125 NCs)
Findings	280 (53% of 528 NCs)	36 (65% of 55 NCs)	166 (56% of 295 NCs)	64 (51% of 125 NCs)
CAT1 findings	70	14	47	25
CAT2 findings	163	16	85	25
CAT3 findings	47	6	34	14
CAT 2+3 findings	210 (91% of the SACA findings)	22 (9% of the SACA findings)	119 (75% of the SAFA findings)	39 (25% of the SAFA findings)

(*: All numbers above only refer to the ±430 ramp inspections (RI) where at least one non-compliance was raised or noted.)

At first, it may not sound completely illogical that 91% of the 'unsatisfactory' SACA RIs led to both 91% of the non-compliances and 91% of the most serious findings amongst Community aircraft. Pretty much the same could be said about the 63% of 'unsatisfactory' SAFA RIs that led to both 70% of the non-compliances and 75% of the most serious findings amongst foreign aircraft. The apparently linear relationship within those trajectories suggests that a correlation could be found. However, one might wonder how the performance of those commercial operators during RIs doesn't better reflect the more robust systems and oversight they're required to have. Since RIs typically cover approximately 40 inspection items, shouldn't 91% of the 'unsatisfactory' RIs on commercially operated aircraft have nevertheless led to much less non-compliances, and in particular a much lower number of CAT2 or CAT3 findings? Is this symptomatic of deeper issues, or just an illusion emerging from incomplete data?

Three things are worth adding before moving on to the specific areas of concern. First, we must exercise caution since the current limits of the dataset don't allow us to integrate the number of satisfactory RIs in each group and sub-group yet. Currently, we only know that there were twice more 'unsatisfactory' RIs than 'satisfactory' ones, but not if the distribution between the groups and subgroups is the same. Second, let's not forget that a certain percentage of RIs are prioritized in case EASA, the FAA, or ICAO noted shortcomings at the operator or its CAA. This priority may potentially explain why some aircraft and some operators get more than their fair share of RIs, and in the process increase the number of non-compliances. On the other hand, RIs on aircraft used by operators that are on the Priority List have typically represented less than 20% of all RIs in the programme. So, the Priority List brings nuance but doesn't explain everything. Third, since IBAC doesn't receive data from other States participating to the RI Programme yet, there's not enough data to hint at the existence of national differences in the way inspections are performed in business aviation. EASA's RI Annual Reports indicate that France is not that different from other big contributors to the Programme such as Germany, Spain, or the UK (that routinely conducted over a thousand inspections per year before Covid-19). Participating States perform quite equally in terms of numbers of items checked per inspection but may differ on the numbers of findings raised per inspection.

Since the picture isn't complete, in part to ensure that no data can be traced back to a specific operator, IBAC will continue to work with DSAC to identify the most pressing issues and set priorities for further action.

Areas of Concern

The RI Programme and its checklist cover 52 inspection items spread over 5 areas: flight deck, cabin, aircraft condition, cargo, and general/other. Most inspection items address more than one topic and can lead to one or more findings. States like France, generally check an average of 40 items per ramp inspection. Naturally, some items generate more findings than others and this signals where efforts are particularly needed. In the case of business aviation, here are the top inspection items by number of CAT2 and CAT3 findings:

1. Flight preparation	(RI checklist item A13)
2. Mass and balance calculations	(A14)
3. Manuals	(A04)
4. MEL	(A07)
5. Checklists	(A05)
6. Defect notification and rectification	(A23)
7. Navigation/instrument charts	(A06)

Let's take a closer look at those CAT2 and CAT3 findings...

A13 – Flight Preparation

This is by far the inspection item with the most findings. A13 had more CAT2/3 non-compliances than A14 and A04 combined. Their descriptions reveal several issues, including but not limited to:

- Selection of a destination alternate that cannot be used as an alternate according to the French AIP (e.g., LFMD/Cannes airport) or to a NOTAM,
- No or incomplete weather briefing/charts,
- Selection of an alternate that requires Prior Permission (PPR), without having the said permission,
- Bogus flight planning to reach the destination alternate (e.g., in a straight line, or exceeding 250 kts below 10'000 ft/FL100, or with an unrealistic fuel computation).

Nearly a hundred business aircraft got such findings last year. On a more positive side, it doesn't seem too complicated to establish systemic measures to prevent recurrences. Operators, flight support companies, software developers and of course flight crews are therefore warmly encouraged to take note of the information provided by DSAC to ensure that every flight is adequately planned.

A14 – Mass and balance calculations

Numerous non-conformities were found where:

- The actual headcount or distribution of the passengers didn't match the loadsheet,
- The mass taken for the calculation didn't match the type of passenger,
- The mass or location of the luggage didn't match the loadsheet,
- Discrepancies or confusion regarding the various empty/operating/maximum masses of the aircraft, including situations with various versions of the same form found on board.

A04 – Manuals

The typical issues in this item pertain to the absence of updates to company documentation. However, in the most serious cases, complete manuals were even missing. Common concerns revolve around:

- Inadequate, outdated, or incomplete information on dangerous goods (e.g., referring to ICAO/IATA material that wasn't provided to the crew, lithium batteries incorrectly addressed or not addressed at all, etc.),
- Different versions of the same manual were found despite each EFB indicating that it is up to date,
- No instructions for challenging airports (a.k.a. category C airports in some parts of the world),
- No procedure for in-flight fuel checks.

A07 – MEL

As one would expect, most of the serious findings concern the absence or inadequacy of (O) or (M) procedures, or mismatches between equipment on the aircraft and the MEL. On a positive note, only very few findings were raised for the use of an MMEL instead of a MEL.

A05 – Checklists

Issues noted in A04 (manuals) were likely to also be found in this item and relate to document control procedures. More precisely:

- Different versions of the checklist(s) or QRH were found on board and/or were used by the crew,
- No QRH was found, or outdated versions were found on board,
- Mismatch between the aircraft configuration and the QRH,

A23 – Defect notification and rectification (including the Tech Log)

The most serious findings in this item concern the lack of reaction to a known malfunction, for instance:

- Maintenance action from the MEL/AMM not performed,
- Inoperative equipment not mentioned in the tech log or HIL,
- Incorrect, incomplete, or missing answers from maintenance personnel in the tech log,
- Flight operations conducted beyond the due date(s) from the HIL.

In other cases, damage or malfunctions were identified during the inspection but not reported.

A06 – Navigation, instrument charts

In comparison with all the other inspections items, A06 had a significant proportion of CAT3 findings (roughly half of all findings). This concerns:

- Outdated navigation databases or charts (in once case by up to a decade!),
- Absence of the necessary instrument charts,
- Use of an unapproved EFB,
- No storage device installed for the EFB.

It's worth noting that the areas of concern in business aviation are roughly the same than at the scale of the whole RI programme. In other words, the findings from items A14, A13, A04, A05, A07, etc. that stood out in the first dataset from DSAC are generally the main sources of findings in other types of operations too (e.g., airline, cargo, aerial work, etc.). However, our community shouldn't normalize the 'commonality' of these findings. These are not just non-compliances to regulatory requirements; these are real hazards and safety risks. Ramp Inspectors play a role in their mitigation, but it's limited since they're not the real owners of those risks. IS-BAO operators are therefore warmly encouraged to take good notice of current and future insights gained from DSAC data, as a source of inspiration to better design, operate, and monitor their systems, policies, processes, and procedures.