LOCAL SAFETY SURVEYS: FROM AUDITING TO UNDERSTANDING

When we think of audits, the gap between 'work-as-imagined' and 'work-as-done' often comes to mind. But with a complementary understanding from front-line operators, we can better learn from everyday work. **Patrick Gontar** and **Philipp Kurth** explain the approach in DFS.

KEY POINTS

- **There are differences between rules and standards and live traffic handling, which are often not detected or understood via traditional safety audits.**
- **Local safety surveys, involving several workshops with all levels of staff from the sharp end (e.g., ATCOs) to the blunt end (e.g., unit management), can help to bridge the gap.**
- **Trust, feedback and transparency are key ingredients for survey teams to get an unfiltered and behind-the-scenes insight into everyday work.**
- **Local safety surveys are useful for individual units, and for the entire organisation to understand interfaces between their units, and between different ANSPs.**
- **Both audits and surveys support us to achieve the highest level of safety that is reasonably possible within our organisation.**

In recent years, some excellent papers have been published exploring the field of work-as-imagined versus work-as-done (see *HindSight* 25). That is, understanding the differences between how operators actually work and how people think that they work. It is not our aim here to add to this research, but rather to apply these ideas to auditing an organisation and to learning from actual controllers' behaviour.

Why might there be differences between rules and standards and live traffic handling?

Originally described by Loukopoulos, Dismukes, and Barshi (2003), and later also found in our own research in airline operations (Gontar et al., 2017; Gontar, 2018), operational manuals and procedures often make three assumptions, which do not always hold true in actual operations. Those are: 1) linearity, assuming a linear consecutive order of tasks that have to be accomplished by the operator; 2) predictability, assuming operators' ability to anticipate tasks in terms of their occurrence and their content; and, 3) controllability, assuming operators' ability to control the execution of the task independently of anything else (Loukopoulos, Dismukes, and Barshi, 2009).

However, in the air traffic management (ATM) environment, air traffic control officers (ATCOs), at the sharp end, must cope with more complexity (e.g., go-around, medical emergency, unexpected traffic), reduced predictability (e.g., weather, estimated vs. actual departure time, direct routings) and limited controllability (e.g., due to aircraft performance constraints). ATCOs have to adjust using their expertise and might have to aim for an individual solution. This solution, which seems to be the safest and at the same time the most efficient, may depart from published procedures. This illustrates a gap between work-as-imagined and work-as-done.

So how does this relate to audits?

Over the last couple of years, we, as an air navigation service provider (ANSP), have learned that pure conformity audits are far from sufficient, if we want to achieve the highest possible level of safety. We are convinced that we must dig deeper and understand the operational viewpoint to identify further weaknesses within the system to improve already very safe operations. Improving the operations from a

system point of view means supporting the operators and enabling them to create safety by establishing rules and procedures that fit with the reality of the operations and allow ATCOs to respond appropriately to specific traffic situations.

The easiest way to find areas for improvement in rules and procedures is to ask the operators and consider their perspectives. And here comes the crucial point – if professionals are asked during an audit whether certain processes are in place, the answer is most often "yes". If they are asked whether they adhere to the process, the answer will also most often be "yes". These answers are usually correct, but not always. These 'not always', where work-as-done may differ from work-as-imagined, are opportunities to learn from everyday work.

An audit, however, is mostly designed and facilitated in a different way. The auditees, especially when they are operators, of course know how the work is imagined and believe that the audit is there to confirm that they follow the imagination of the work designers. During an audit, the auditees explain how work is mostly done and how it should be done. They do not tend to elaborate on situations where they cannot adhere to the standards and rules. This leads to the problem that is not possible to understand how the work is really done and how the rules and standards could be improved to better fit with the reality of the work.

This poses another problem. As soon as people start deviating from published procedures, it can be difficult to identify when they will stop and which procedures they will follow. So, if the difference between work-as-imagined and work-as-done is large, operators stop trusting the organisation. Classical audits do not enable an organisation to deal with these challenges since they do not provide insights into the variability of front-line operators' work.

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How do we better understand work-as-done?

To encourage professionals to open up about their everyday work, we believe that three major ingredients are necessary to establish a fruitful environment:

- *trust* that issues raised by operational staff are not used against them and are purely used to learn and improve safety
- *feedback* to enable employees to understand and track what happened with the issues they have raised, and
- *transparency* at the management level to seriously address, handle, and resolve the issues raised.

We facilitate such an environment by using a 'local safety survey' (LSS). The LSS involves several workshops with all levels of staff from the sharp end (e.g., ATCOs) to the blunt end (e.g., unit management). Such workshops give surveyors the opportunity to discuss potential issues with a group of ATCOs to get a picture of the actual situation, their daily routines, and why rules and norms may not always fit. The objective is to transform the role of an auditor, who addresses deviations with findings, into a surveyor, who acts as a co-worker and understands the different circumstances and why – in some cases – rules are interpreted differently. It is also acknowledged, that efficient work routines are often possible because of people's effective informal understanding, interpretation, and improvisations at the edges of those rules.

What are our experiences so far?

Within DFS we have been able to conduct LSSs at our tower, centre, systems and infrastructure, and aeronautical information service units, where we have always met operational colleagues who are committed to this approach. We believe that this commitment has been developed because we have been able to show that various issues that were brought up were solved within a short period of time. This fact was especially acknowledged by those colleagues who brought up the issues, as they were those affected. The workshops bring together two groups of people – operational and non-operational staff. Thus, the survey teams get an unfiltered and behind-the-scenes insight, which proves useful in all the different discussions concerning procedure design or change implementation.

All the issues raised by the workshop participants are categorised in a way that they can be retrieved from a database and used for further evaluation. Categorising the issues helps to connect topics raised in different LSSs at different units. On a larger scale, this approach allows us to identify issues that are important for the entire organisation (as a whole). Additionally, good practices can be adopted easily and help other units by giving examples of how specific topics are approached. Communicating issues across the organisation supports our proactive approach to solve issues before they become a problem at a specific unit.

What challenges have we faced with local safety surveys?

Running LSS workshops puts a new responsibility on the safety department. It is up to us to follow up on the issues raised in workshops, knowing that often there is no simple solution. Therefore, we rely on a continuous review process and we repeat LSSs at every unit. This continuity allows us to close the feedback loop and to discuss whether concerns still exist or have been solved in the meantime.

Another challenge for the survey team is to stay aware of the various viewpoints on the same subject in different workshop groups. We listen to groups of operational staff, but also to the supervisors and managers at the unit. A good survey team needs to recognise and understand what the underlying drivers for specific topics could be, and be aware that the same situation looks different from different viewpoints.

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What is the outlook?

Many small improvements and several large ones have led to great acceptance of LSS during the last five years. Building on this success within our organisation, the next step is to analyse interfaces between our units, and between different ANSPs. We recently undertook the first trials together with neighbouring ANSPs, where we could identify several aspects at our interfaces

and facilitate a beneficial exchange among the ATCOs as a by-product. Based on these experiences, we are planning to focus on cross-border and cross-unit surveys, and further elaborate on our LSS method.

Closing Note

Some readers might conclude that we consider audits to be outdated and to not add value. That is not the intention of this article and it does not reflect our attitude. We believe that audits are a strong pillar in keeping the organisation in line with regulations and standards, and thus support the overall safety of an organisation. As rules and regulations are adopted, it is essential to perform conformity checks across the organisation, for compliance and for safety. An LSS cannot and is not intended to substitute for audits. It is rather our experience, that making use of different sources of information, especially the direct contact to the sharp end, is of enormous value to improve safety. We are convinced that both methods – audits and LSS – support us in our efforts to achieve the highest level of safety that is reasonably possible within our organisation.

References

Gontar, P., Schneider, S. A. E., Schmidt-Moll, C., Bollin, C., & Bengler, K. (2017). Hate to interrupt you, but… analyzing turn-arounds from a cockpit perspective. *Cognition, Technology & Work*, *19*(4), 837-853.

Gontar, P. (2018). *Crew Resource Management Training: Reliability and Validity in Light of Training Transfer*. Doctoral dissertation, Technische Universität München.

Loukopoulos, L. D., Dismukes, R. K., & Barshi, I. (2003, October). Concurrent task demands in the cockpit: Challenges and vulnerabilities in routine flight operations. In *Proceedings of the 12th international symposium on aviation psychology* (pp. 737-742). The Wright State University Dayton, OH.

Loukopoulos,L.D., Dismukes, R.K., & Barshi, I. (2009). *The multitasking myth: Handling complexity in real-world operations*. Farnham: Ashgate Publishing Ltd.

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"Similar to organisational factors that affect ATCO performance, investigators are also affected by organisational blunt-end factors."