THE HIDDEN OBVIOUS

Observation is an important method to understand work-as-done (WAD), and various observational safety methods are in use in aviation and other industries. These provide data that can help to illuminate work-as-imagined (WAI). But for those observing work-as-done, familiarity can breed assumptions, and what you find may be what you look for.
As **Paula Santos and João Esteves** explain, 'stupid questions' are needed to close the WAI-WAD gap.

One basic method to capture work-as-done is to observe it and then to discuss it with those who have been observed. So in October 2015, NAV Portugal launched a project to start observational safety surveys in the control tower responsible for the provision of air traffic services in Faro International Airport.

The main objective was to capture real-time information related with the normal operation, to reduce the gap between work-as-done and work-as-imagined or described. In other words, to better understand work-as-done at the front line.

The approach was based on the Day 2 Day observation method developed by NATS, with the addition of a debriefing session after each observation. The focus of observations was on actions or aspects of work that positively contribute to safety. Several observation areas were agreed with multiple associated observation parameters. For example, in the observation area "Runway entrance and exit – timing of departure and arrival clearances" there were four observation parameters, one of them being the time of delivery of landing clearances.

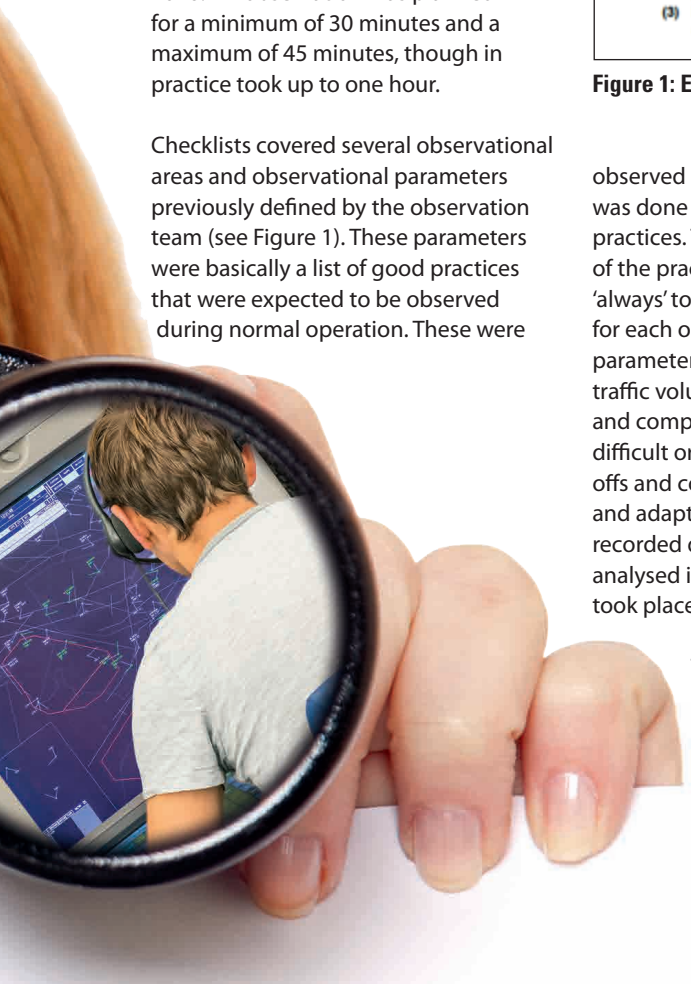
KEY LEARNING POINTS

1. **Observational checklists that prescribe what to look for give you numbers but can hinder observations. Keep your eyes and mind open.**
2. **Assumptions hide the obvious. What is obvious for a controller needs to be made explicit to be understood by non-controllers.**
3. **Questions and discussions are needed to understand the how and why of performance.**

Observational and data analysis protocols were developed and implemented for the project. The Portuguese ATCOs professional association was consulted and involved in the process from the very beginning. ATCOs from the concerned unit, all of them current and former OJTI's were selected and trained as Observers. This allowed a reduction of the required training time.

The planning foresaw six observational periods along the year of 2016, each one with two days duration, each with a total of six observations (three per day), resulting in 36 observations during 2016. An observation was planned for a minimum of 30 minutes and a maximum of 45 minutes, though in practice took up to one hour.

Checklists covered several observational areas and observational parameters previously defined by the observation team (see Figure 1). These parameters were basically a list of good practices that were expected to be observed during normal operation. These were observed and a frequency analysis was done on the application of these practices. The frequency of application of the practice was recorded, from 'always' to 'never' or 'not applicable' for each observation area and parameter. Also recorded were the traffic volume (low, medium or high) and complexity (routine, occasionally difficult or hard). Additionally, trade-offs and compromises, as well as drift and adaptation in work-as-done were recorded during the observations, and analysed in the debriefing sessions that took place immediately after.



The safety department was available for background support during each observational period, but never involved in the observations.

DSEQ/SEGNA — *Projecto OON*

OBSERVATIONAL CHECK-LIST

FARO CONTROL TOWER

Date	Observer	Day period (M / A / E)	Working Position observed

Traffic Volume (1) (*Low / Medium / High*)	Traffic complexity (2) (*Routine / Occasionally difficult / Difficult*)	METEO conditions (Normal / Adverse)	Operation type (NVO / LVO)

OBSERVATIONAL AREA	RUNWAY ENTRANCE AND EXIT – TIMING OF DEP AND ARR CLEARANCES *(TWR position)*	
OBSERVATIONAL PARAMETER	**FREQUENCY (3)**	**COMMENTS**
Landing clearance delivered before 2NM from TDZ		
Information on late landing clearance (if not delivered before 2NM from TDZ)		
Taxi instructions for landing aircraft delivered only after proper speed has been achieved		
Clearance for runway line-up only when the ATCO is sure that the aircraft is ready for departure		

OBSERVATIONAL AREA	*PUSH-BACK* PROCESSES vs ENTRANCE IN PARKING *STANDS (GND position)*	
OBSERVATIONAL PARAMETER	**FREQUENCY (3)**	**COMMENTS**
Compliance with rules defined in the tables for *push-back* and *breakaway points*		
Visual monitoring of the readiness status of aircraft for *push-back* and taxi		
Management of simultaneous exits from stands, avoiding delays		

(1) **Traffic Volume** – Low (up to 7 mov./hour); Medium (8 to 15 mov./hour); High (16 or more mov./hour)
(2) **Traffic Complexity** – Routine (small intervention of the ATCO); Occasionally Difficult (moderate intervention of the ATCO); Difficult (Great complexity, frequent intervention of the ATCO)
(3) **Frequency** – Always did it (**A – 100%**) / Almost Always did it (**AA - above 50%**) / did it Sometimes (**S - bellow 50%**) / Never did it (**N – 0%**) / Not Applicable (**NA**)

Figure 1: Example observational checklist

Each observational period resulted in a report, incorporating the observations and interpretations of the observers. This report was made available to all staff members of the ATC unit, to operational management, to safety management and to people trying to document work-as-done.

Besides the conclusions on the degree of adherence to good practices and the identification of certain operational constraints, the analysis provided important information on work-as-done.

The most relevant information was not the numbers but the additional records. Here is an example: there was a case reporting that "that the ATCO has actively cooperated with the APP position colleague, both informing

about the inexistence of departures, to ease the sequencing of departures, and handling the APP incoming calls when the colleague was busy." What can one ask about this report? It depends on what one is trying to find.

Here are some 'stupid questions' that were asked:

- What was the trigger for this ATCO to identify that his colleague needed help?
- How did he detect this need to help?
- Can it be described?
- Are there identifiable criteria?

Paula Santos has been working in ATM since 1990, in the areas of HMI development, Surveillance, quality of internal software developments and safety. She holds an Engineering degree and has worked in banking systems before coming to ATM. Currently she is responsible for the surveillance data processing systems and is leading the implementation safety and interoperability regulation in NAV Portugal.

João Esteves is currently working in NAV Portugal's Safety Department as the person responsible for the safety surveys programme, including normal operation observations, and for SMS training. His operational background encompasses both ATC and AIS/AIM functions. Besides the operational side, throughout his career he has experience in training and quality management functions. He has a degree in Social Sciences (Sociology) and a post-graduate qualification in Data Analysis in Social Sciences.

Through all of the observation reports the common pattern was attention to the surrounding environment and to the evolution of traffic, proactive actions to ease the workflow, and requests for help.

Through all of the observation reports the common pattern was attention to the surrounding environment and to the evolution of traffic, proactive actions to ease the workflow, and requests for help. In essence, this is what is required for a team to function, but it is not written in work descriptions. If it is not known to and understood by others beyond the ops room, then how can it be supported?

Some areas needed clarification in the reports. Some things were not captured in the observations because they were 'obvious' to the operational observers and thus not recorded. For instance, how did the ATCO in the example above detect that his colleague was busy? Well, he was not answering his calls as fast as he usually did. This is obvious to those who do the work(-as-done), but perhaps not to those further removed from the front-line.

It was verified that the ATCOs in that ATC unit are well aware of good practices and apply them systematically in their day-to-day operations. From the operational perspective, however, the results achieved were lower than expected, due to the fact that no major 'discoveries' were made regarding potential improvements in the operational routines and procedures.

Still, the observation project has helped to reduce the gap between work-as-done and work-as-imagined/described. There is a clearer perception of the subtle success factors for safety, and a better understanding of the role of resources and constraints in real-time operation.

Yes, teamwork is key for safety. That is obvious to those involved, but hidden from others.