SMS Best Practice/Good Practice Submission			
State whether this is a Best or Good Practice:			
ANSP	AirNav Ireland	Date of submission	19/08/2024
Contact Details			

SoE Study Area	SA 6.2
BP/GP title	Safety Performance and Risk Monitoring
In use since	2024
ANSPs using this practice (for BP specifically)	Unknown
Key Words	Risk monitoring, safety intelligence, safety performance, alert levels

Background

There are 5 Safety Performance Indicators (SPIs) that are subjected to continuous safety performance monitoring by AirNav Ireland, i.e.:

- Separation Minima Infringements
- Runway Incursions
- Airspace Infringements
- Deviations from ATC Clearance
- Level Bust

AirNav Ireland monitors the status of the SPIs with emphasis on trend performance and analysis at the unit level. The regulator monitors all units SPIs performance reports provided to them by the Safety Management Unit (SMU), monthly, quarterly and annually.

Additionally, to support performance-based monitoring, the Safety Management Unit utilises Risk Performance Monitoring (RPM), an in-house weighted risk measurement tool equivalent to the Aerospace Performance Factor (APF). The RPM is a strategic performance monitoring tool and contains identical Mind Maps and utilises the same data as its predecessor APF. The RPM has been designed through the Business Intelligence Tool (Targit) and successfully integrated with TOKAI, fully completing AirNav Ireland's strategic goal to develop an integrated safety intelligence picture.
Each occurrence type was assigned, by a group of Subject Matter Experts, a risk score 'weighting'. The RPM utilises this data and provides a 'weighted risk', normalised for traffic. This calculation is then pivoted around average baseline performance calculated utilising the associated occurrence data since 2013, indicating a 'relative weighted risk'.
The RPM provides standard deviation information graphically displayed, and colour coded. The Performance Bands in the RPM graph allows AirNav Ireland to see a level of performance relative to the "maximum" or "minimum", or the "best" and the "worst" levels of AirNav's own past performance in the Baseline period (**Green**, **Yellow**, **Red**). *(ICAO Doc 9859: Appendix 4 to Chapter 4:* "*The alert level setting is based on basic safety metrics standard deviation criteria, i.e. 1 SD, SD and 3 SD")*
The RPM analysis is based upon assessing the peaks into the 1/3-2/3 Max areas (yellow and red areas). The units' contribution to the peaks is then examined and actions to address those peaks are requested from the Unit Safety Managers.
This has enabled the ANSP to move away from a target-driven environment, allowing for prioritised, efficient, and proportionate resource allocation to address identified problem areas.

In 2021, in addition to the standard analysis methods utilised, AirNav started monitoring the SPIs in relation to the alert levels (Standard Deviation) based on the ICAO performance monitoring criteria *(ICAO Doc 9859: Appendix 4 to Chapter 4)*.
There have been several dashboards created in the BI tool:
-unit specific dashboards, presenting for each SPI, two trending charts, one on the total number of events and one on the events with ATM contribution
-national dashboard, presenting for each SPI, two trending charts, one on the total number of events and one on the events with ATM contribution.
These dashboards are populated automatically with the SPI data from TOKAI. Once the traffic data for the specific month becomes available, the dashboards refresh, providing an up to date and largely automated form of safety monitoring.
An alert (abnormal trend) is triggered if there is **one single point above Avg+ 3SD** line, **two or more consecutive points above Avg+ 2SD** line, or **three or more consecutive points above AVG+1SD** line. The alerts are recorded and analysed in the quarterly Safety Performance Reports in the specific SPI section (in the national report and in the unit specific annexes), including the necessary measures to address the identified issue (if applicable). The alerts are also discussed quarterly at the Safety Review Board. Moreover, the trending charts are available at any time to the managers through the BI tool.

2024 developments

To improve the total risk picture, the severity impact on the RPM peaks was assessed. This simulation confirmed that adding a weight on the severity and using it in correlation with the type of occurrence weight, gives a more direct indication of the risk areas. Different severity weights were trialled for suitability and practical implementation and the ones below were approved.

Severity	Weight
A	8
B	4
C	2
D	1
E	1

As a result, the new RPM score formula used is:

$$RPM\ score = \sum \frac{No\ of\ events\ *\ Severity\ weight\ *Type\ of\ occurrence\ weight}{FH\ or\ movements}$$

Figure 1 and Figure 2 below show the changes in the RPM and how, for example in June, the Air Incidents category included events with a severity higher than 'no safety effect'.

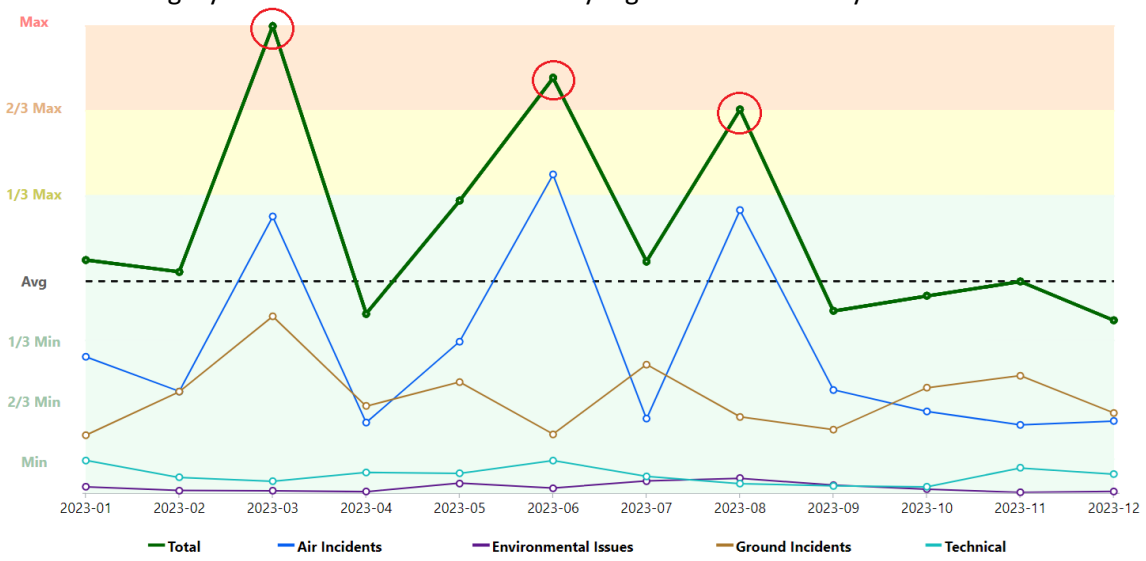

Figure 1: AirNav Ireland RPM without severity weighting

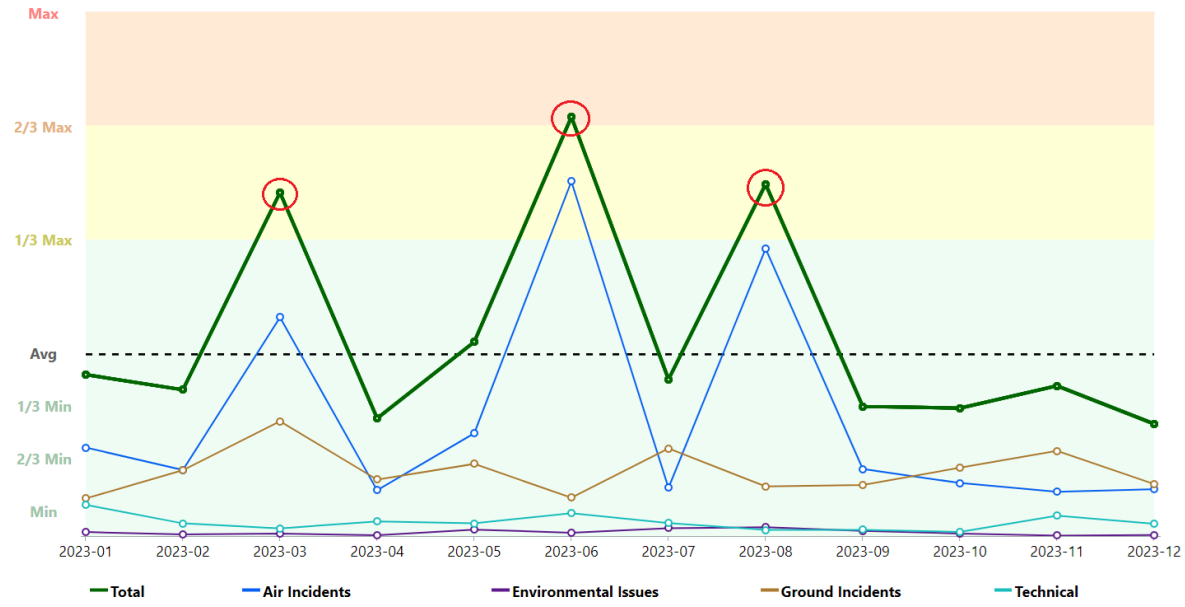

Figure 2: AirNav Ireland RPM with severity weighting

The alert levels (Standard Deviation) charts were also further developed to include the weight on the severity of events. In 2025, the SPIs are monitored in relation to the Standard Deviation based on the average of 2019, 2022, 2023 and 2024 performance, with two types of analysis conducted:

- One based on the raw number of events
- One based on the associated weighted severity of the events.

As before, if an alert is triggered in any of the above cases, the data is recorded and analysed.

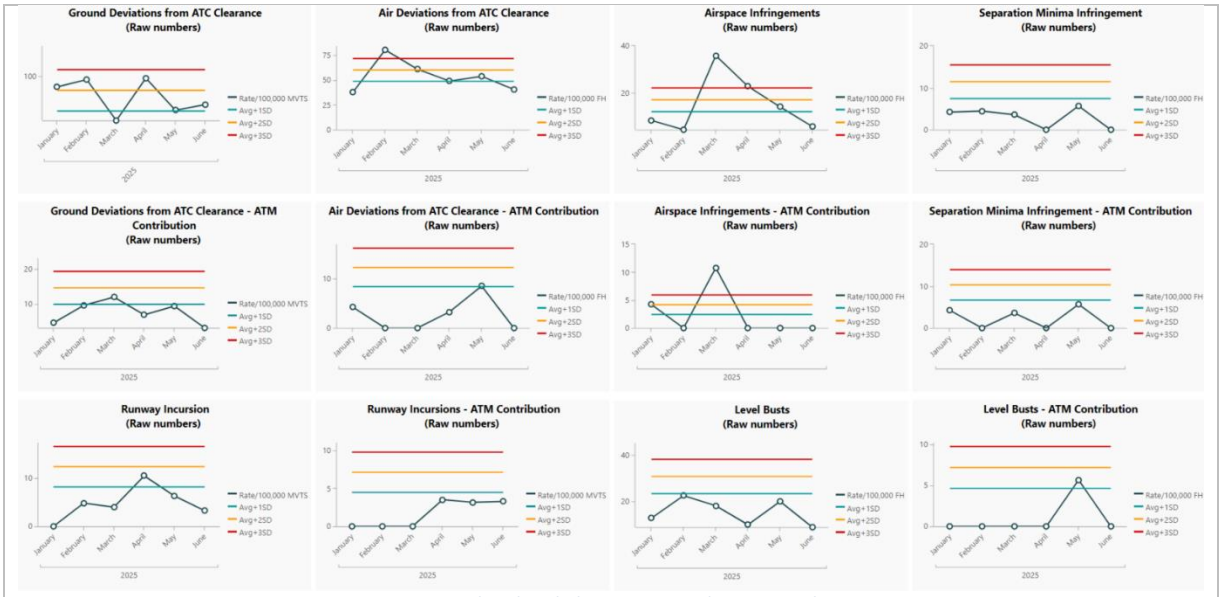

Figure 3: Alert level charts national -raw numbers

Figure 4: Alert level charts national – severity weighting

Including the weight on the severity in the RPM and the alert levels analysis, allows for a more focused performance measurement, improving the identification of the risk areas within AirNav Ireland, both at a national and at unit level, enabling the decision makers to make informed safety decisions, and thus improve the safety performance.

By submitting this document, your organisation is willing for the proposed Best or Good Practice to be shared with other ANSPs.

For Best Practices, this document should be sent together with the SoE in SMS questionnaire, to: soe_2025@eurocontrol.int **by 15th July, 2025 at the latest**.

Submissions for consideration as Good Practices may be sent by the above date. They may also be identified during the survey interview sessions with the assessment team, following which a Good Practice submission document will be requested.