SAFETY PERFORMANCE MANAGEMENT METHODOLOGIES SERIES

# RUNWAY EXCURSION


This document was developed to complement the guidance in the Safety Management Manual (Doc 9859). It is intended to support aviation safety professionals in establishing effective safety performance management for their organizations. Any comments should be forwarded to safetymanagement@icao.int.

**About This Template**

This document is one example in the Safety Performance Management Methodologies Series. It follows a standardized five-section structure that should be applied when developing examples for other aviation risk areas. The explanatory text in Sections 2, 3, and 4 is fixed and remains the same across all examples in the series. Only the risk-area specific content: the safety objectives, SPIs, SPTs, and key considerations changes from one example to the next.

## 1. INTRODUCTION

1.1 Runway excursions remain among the most significant operational risks in aviation, with the potential to result in loss of aircraft control on the ground, damage to the aircraft, damage to infrastructure, or the loss of lives

1.2 Monitoring these risks requires organizations to develop:

a) safety objectives - statements of desired safety outcomes aligned to the organization's top safety risks;

b) safety performance indicators (SPIs) - measurable indicators showing where the organization has been, where it is now, and where it is headed; and

c) safety performance targets (SPTs) -short- and medium-term milestones to track achievement of safety objectives, where appropriate.

The following sections provide practical guidance on how to structure these elements for runway excursion prevention.

## 2. SAFETY OBJECTIVES

2.1 In accordance with Section 5.2 of Doc 9859, safety objectives are statements of desired safety outcomes. They provide direction to the organization's activities and should reflect its most significant safety risks. Safety objectives may be:

a) Outcome-oriented - targeting the containment of accidents or operational losses (e.g. "Prevent…", "Reduce…"); or

b) Process-oriented - targeting safe behaviours or risk management actions (e.g. "Enhance…", "Increase…").

2.2 Organizations should develop a mix of both types. Where possible, objectives should be SMART - Specific, Measurable, Achievable, Relevant and Timely — and reviewed regularly, not treated as 'set and forgotten' (Sections 5.2.5 and 5.2.9 of Doc 9859).

2.3 The following safety objectives have been identified for this risk area:

**RE-1 Outcome-oriented**

Prevent runway excursions during landing and take-off through improved runway condition management.

**RE-2 Outcome-oriented**

Reduce operational risks contributing to runway excursions through improved approach stability.

## 3. SAFETY PERFORMANCE INDICATORS AND TARGETS

3.1 Safety performance indicators (SPIs) provide a view of the organization's safety performance — where it has been, where it is now, and where it is headed (Section 5.3 of Doc 9859). SPIs are classified as:

a) Leading — measuring processes and inputs being implemented to improve or maintain safety (activity or process-based); and

b) Lagging — measuring outcomes that have already occurred (outcome-based).

A combination of leading and lagging SPIs is recommended for a complete and accurate picture of an organization's safety performance (Section 5.3.12 of Doc 9859).

3.2 Safety performance targets (SPTs) define short- and medium-term milestones that provide confidence the organization is on track to achieve its safety objectives (Section 5.5 of Doc 9859). Not all SPIs require a defined SPT — some are better monitored for trends. Where targets are marked as indicative, organizations should establish a baseline monitoring period before setting their own figures (Sections 5.5.7 to 5.5.9 of Doc 9859).

3.3 The following tables present sample SPIs and indicative SPTs for each safety objective. SPIs are organized by stakeholder responsibility: ✓ Primary (holds primary responsibility), ✓ Contributes (provides data or actions), ✓ Uses (uses the data), or — (not applicable).

**RE-1 - Prevent runway excursions during landing and take-off through improved runway condition management.**

| Safety Performance Indicator (SPI) | Type | Aerodrome Operator | ANSP | Aircraft Operator |
|---|---|---|---|---|
| % compliance with runway surface condition reporting (RCR/RWYCC) | Leading | ✓ Primary | ✓ Uses | ✓ Uses |
| *SPT (indicative): ≥ 98% compliance. Establish baseline before setting target. Monitor: monthly.* | | | | |
| Number of reported runway surface deficiencies (friction, contamination) | Leading | ✓ Primary | ✓ Contributes | ✓ Contributes |
| *SPT: Monitor for trend. An increasing trend reflects a maturing reporting culture.* | | | | |
| Rate of runway excursions per 100,000 movements | Lagging | ✓Contributes | ✓Primary | ✓Uses |
| *SPT (indicative): To be defined after establishing baseline. Rate normalizes for traffic volume changes (Section 5.4.6 of Doc 9859).* | | | | |
| Number of excursions linked to runway surface condition | Lagging | ✓ Primary | ✓ Contributes | ✓ Contributes |
| *SPT (indicative): 0 excursions linked to an unaddressed or unreported surface deficiency.* | | | | |

**RE-2 - Reduce operational risks contributing to runway excursions through improved** *approach stability*

| Safety Performance Indicator (SPI) | Type | Aerodrome Operator | ANSP | Aircraft Operator |
|---|---|---|---|---|
| % of stabilized approaches (per defined criteria) | Leading | — | — | ✓ Primary |
| *SPT: To be defined by the aircraft operator based on FDM programme thresholds. Typical industry benchmark: ≥ 99%.* | | | | |
| Number of unstable approaches detected via Flight Data Monitoring (FDM) | Leading | — | — | ✓ Primary |
| *SPT: To be defined by the aircraft operator. Monitor for trend after baseline established.* | | | | |
| Number of long landings / high-speed approaches | Lagging | — | ✓ Contributes (sequence/spacing) | ✓ Primary |
| *SPT: To be defined in coordination between the aircraft operator and ANSP.* | | | | |
| % of excursions preceded by an unstable approach | Lagging | — | ✓ Contributes | ✓ Primary |
| *SPT: To be established after baseline data collection. Validates effectiveness of approach stability programmes (Section 5.3.5 of Doc 9859).* | | | | |
| % of published vertically guided approaches (ILS / GNSS) | Leading | ✓ Primary | ✓ Contributes | ✓ Uses |
| *SPT (indicative): To be defined by the aerodrome operator based on infrastructure plans.* | | | | |

** A combination of leading and lagging SPIs is recommended for a complete picture of safety performance (Section 5.3.12 of Doc 9859).*

** Where SPTs are not yet defined, organizations should establish a baseline monitoring period before setting realistic targets (Sections 5.5.7 to 5.5.9 of Doc 9859).*

## 4. KEY CONSIDERATIONS

4.1 In line with Section 5.7 of Doc 9859, SPM is a cyclical process and SPIs and SPTs should be reviewed periodically to ensure they remain meaningful and aligned with safety objectives. The following considerations apply to this risk area:

a) Start simple and refine over time: Initial SPIs for runway excursion may be developed using limited data. As reporting matures and flight data monitoring programmes expand, organizations should refine the scope of SPIs and SPTs to better align with their safety objectives (Section 5.7.3 of Doc 9859).

b) Scale to organizational complexity: Aerodrome operators managing complex, high-traffic runways may require deeper-scope SPIs combining generic and activity-specific indicators. Smaller and new organizations may begin with broader indicators and build over time (Section 5.7.4 of Doc 9859).

c) Review SPIs regularly: SPIs that consistently report the same value, duplicate another indicator, or relate to an objective that has been met or superseded should be updated or discontinued (Section 5.7.5 of Doc 9859).

d) Ensure targets remain realistic: SPTs should be reviewed to confirm they continue to reflect achievable performance levels as baseline data accumulates and operational conditions change, and that they do not drive undesirable behaviour (Section 5.7.2 of Doc 9859).

## 5. REFERENCES

a) Doc 9859 -*Safety Management Manual* - Chapter 5 (Safety Performance Management), in particular Sections 5.2, 5.3, 5.5, and 5.7.

b) Annex 19 -*Safety Management* -Chapter 3 and Appendix 2.

c) ICAO Global Runway Safety Action Plan

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