



Kuwait Aviation SSP

Safety Performance (SPIs - SPTs)

CAP-704

Foreword

With this, the Aviation Safety Department approves the issuance of CAP 704 - Guidance for DGCA SPIs Reporting, effective December 2023. This document provides comprehensive guidelines for all aviation organisations certified by the DGCA regarding the reporting and monitoring of Safety Performance (SPIs, SPTs).

We are confident that the implementation of CAP 704 will significantly enhance aviation safety in Kuwait by:

- Standardizing SPI reporting across all aviation organisations.
- Improving the DGCA's ability to monitor and analyse safety performance.
- Facilitating data-driven decision-making for safety improvement initiatives.

Aviation Safet Director
Engr. Hussam Al-Rasheed
Aviation Safety Director

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1. Definitions

These definitions are relevant to the development of Safety Performance Management (SPM) at the State level:

- **State Safety Programme (SSP):** An integrated set of regulations and activities aimed at improving safety objective: brief, high-level statement of safety achievement or desired outcome to be accomplished by the State Safety Programme.
- **Safety Performance:** A State or service provider's safety achievement as defined by its safety performance targets and safety performance indicators (KCASR 19).
- **Safety Performance Indicator (SPI):** A data-based parameter used for monitoring and assessing safety performance (KCASR 19)
- **Safety Performance Target (SPT):** The planned or intended objective for safety performance indicator(s) over a given period (KCASR 19).
- **High-Consequence Indicators (HCI):** Safety performance indicators on the monitoring and measuring of high-consequence occurrences, such as accidents or serious incidents. High-consequence indicators are sometimes referred to as reactive indicators.
- **Lower-Consequence Indicators (LCI):** Safety performance indicators on the monitoring and measuring of lower-consequence occurrences, events or activities such as incidents, non-conformance findings or deviations. Lower-consequence indicators are sometimes referred to as proactive/predictive indicators.

2. Introduction

Safety management mechanisms comprise the system-level methods used to maintain and improve aviation safety at the international, national and organisational levels. We strive to maintain the high level of safety already achieved, improve it and build up our ability to respond to future threats and changes posing challenges to us in a performance-based operating environment.

The strategic safety objectives and the safety performance indicators are for monitoring the achievement of best safety in practice. Ultimately, this is about implementing safety policy into everyday actions.

Regulation evolving towards a performance-based direction sets the boundary conditions for the operations and their performance.

Service Providers are required to draw up aviation safety programmes and plans, thus reinforcing the use of existing safety management elements, which the states were already obliged to have under KCASRs.

Provisions on these obligations are available in the KCASR 19.

As part of the Kuwait Aviation State Safety Programme SSP, service providers are to establish an acceptable level of national safety performance in relation to the aviation activities under its responsibility.

When specifying this performance, the safety target levels set by Kuwait DGCA -ASD level must be considered.

The safety performance indicators and targets set for service providers in this document specify the safety indicators that aviation organisations shall monitor as a minimum and may add their respective indicators in their daily operations as required.

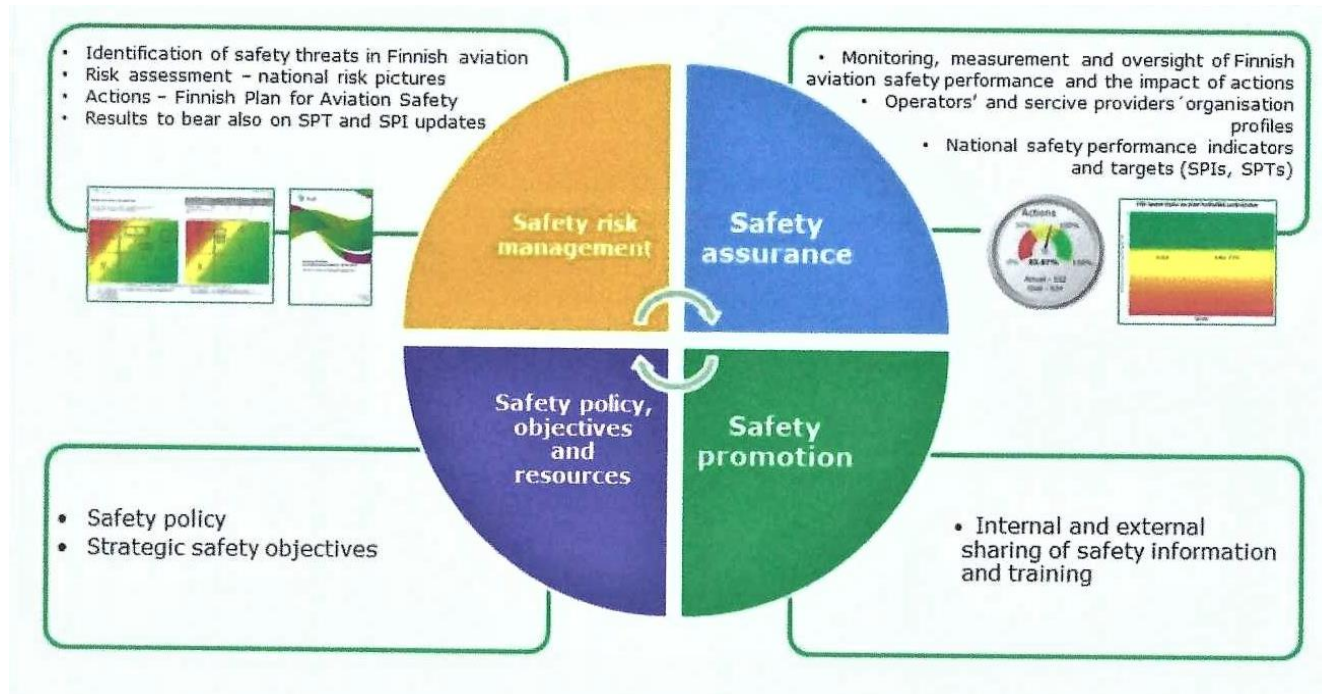
A precondition for using advanced safety management mechanisms is dialogue and cooperation between the ASD organisations. Transitioning to risk and performance-based operation requires setting clear targets and sustained work, sharing best practices and lessons learned, and continuous joint development.

Other vital elements highlight the role of safety information, more flexible responses to identified threats, safety promotion, and risk performance-based oversight.

The role of the SPI/SPT indicators and the methods of cooperation in aviation safety management are described in section 2.1.

2.1 The role of safety performance indicators and targets in safety management

The Aviation Safety Programme SSP in KCASR describes the national aviation safety management system. It comprises the same primary Components as the organisations' safety management systems (SMS).



The Figure above shows the Components of national safety management and their relationship with performance measurement. These elements are:

- 1) **Safety policy, objectives and resources:** Safety policy provides the top-down direction for our activities, the safety policy and objectives are updated based on new information and needs emerging in other operations. Strategic safety objectives are required in order to translate safety policy into concrete terms.
- 2) **Safety risk management:** We identify key threats and strengths to be maintained in aviation, assess the risks and complete the measures required to manage the risks. The organisations play a key role as producers of national safety information and participants in the national risk picture work. Key national risk management measures are updated annually to the Kuwait Plan for Aviation Safety and implemented by aviation organisations. New information obtained through risk assessment also influences the updates of safety policy, objectives and indicators.
- 3) **Safety assurance:** Comprises the monitoring, assessment and oversight of aviation safety level, or the safety performance and the impact of the measures. The tools used for this include the organisations' profile information and national safety performance indicators and targets. The result is assessed in terms of the safety policy and strategic safety objectives: did the safety work carried out by the authorities and organisations reach the targeted safety level? If the targets are not achieved, the level of performance is not adequate in these respects. In particular, the result indicates what positive outcomes need to be fostered and which areas of performance must be improved.
- 4) **Safety promotion:** Contains the internal and external sharing of safety information and training. This Component includes a significant volume of cooperation between DGCA-ASD and the organisations, for example, in workshops, seminars and sparring. The various components overlap in a risk and performance-based operating environment, and safety promotion is also a natural part of oversight.

2.2 Safety performance indicators and targets – Organisations' obligations

Each aviation organisation is responsible for the safety of its activities.

Organisations must identify any threats to their operations, assess risks and take the required action to eliminate or mitigate them to an acceptable level as part of their safety management.

The organisations` safety management must also include safety performance monitoring and measurement. National SPIs complement the safety level monitoring carried out by the organisations and are a link between national and organisation-level safety management. In addition to national indicators, each organisation shall specify any other indicators and targets required for their safety management.

DGCA/ASD oversees the organisation's safety management performance, using national SPIs in their safety management is part of the organisations' safety management performance.

Below is an example of the target set for the indicator of Runway Incursions:

“Management of RI risks (target):

Processing of RI threats in the organisations' safety management processes - Conducting a risk assessment of own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of those actions.”

In practice, this target:

- Draws attention to critical threats.
- Obliges the organisation to process the threat from the perspective of their operations in their safety management processes. The operator is free to assess the risk level of the danger in their operations, determine an acceptable level of safety and identify their own need for action. Monitoring the impact of the actions is essential. Rather than assessing the effects of actions aiming to prevent RI cases exclusively through the actual number of RI cases per individual operator, it would be more appropriate to evaluate whether or not the actions succeeded in eliminating or reducing the probability or seriousness of RI cases, that is, their risk. This may be achieved by strengthening safety barriers associated with RI cases or eliminating triggering factors contributing to their occurrence.
- DGCA/ASD oversees the processing of SPIs and implementation of monitoring by the organisations.

The organisation needs to identify safety issues that they can control, additionally, the organisation must pass on information about the national risk picture on problems, which require cooperation between the organisations and ASD or, for instance, international influencing to metagate the risk.

3. Appendices A-F: SPI/SPT Base for aviation organisations

3.1 Instructions for reading the Base tables

The base tables listed below as Appendices comprise the SPIs and SPTs. Aviation organisations, shall go through the Base tables applicable to their activities and assess the suitability of the indicators and targets from the perspective of their operations.

The organisations shall integrate the SPIs and SPTs compatible with their activities in their safety management processes. The organisations should also go through the national SPIs and SPTs monitored by Kuwait DGCA-ASD.

The ASD's safety performance is covering the safety objectives that are of concern to the state of Kuwait in the aviation sector.

Both ASD and the organisations contribute to the success of objective achievement. By specifying and publishing SPTs, which it is responsible for monitoring, ASD also communicates the focus areas of the critical objectives for the effectiveness of this process.

The base tables for the ASD and the organisations define the direction of development aviation safety will take in the coming years. The following list contains the headings used in the base tables. In the base tables of DGCA-ASD's indicators, the last column has been replaced by one showing the information source of the indicator in question.

Strategic safety objective	Identifier	Safety performance indicator, SPI	Safety performance target (SPT) set for the indicator
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- **Strategic safety objective:** the SPI in question and the SPT specified for it have been determined to monitor the implementation of this objective
- **Identifier:** the identifier of the SPI in question.
- **Safety performance indicator, SPI:** description/heading of the indicator and, if necessary, a more detailed definition
- **Safety performance target (SPT) set for the indicator:** the concrete target set for the indicator in question and, if necessary, a more detailed definition

An effort has been made to set out the SPIs and SPTs in the base tables so that they are as relevant as possible to the organisations of the aviation sector in question, and to specify the operations for which the SPI is appropriate in the indicator definitions. Due to differences between operations and operating environments, however, the organisations must assess the suitability of the indicators, introduce the SPIs relevant to their operations, and be able to justify why the other SPIs in the base table are not relevant to their operations.

3.1.1 Indicators for different levels of operations

The base tables contain both system-level and operational-level targets and indicators. See below for a brief explanation of the different levels of the indicators.

Use of tiers/levels 1, 2 and 3 in the indicators

A three-tiered definition based on threat identification is used. In this update, the definition of indicators is based on a division between the system level and operational level used in the state safety plan. In addition to identifying threats, the updated indicators are, in particular, focusing on the monitoring of strengthening system-level issues. Those include system-level performance and activities with positive outcomes identified to be fostered. The activities and the competence through which the current level of safety performance has been achieved will be maintained and strengthened.

a three-tiered/level model:

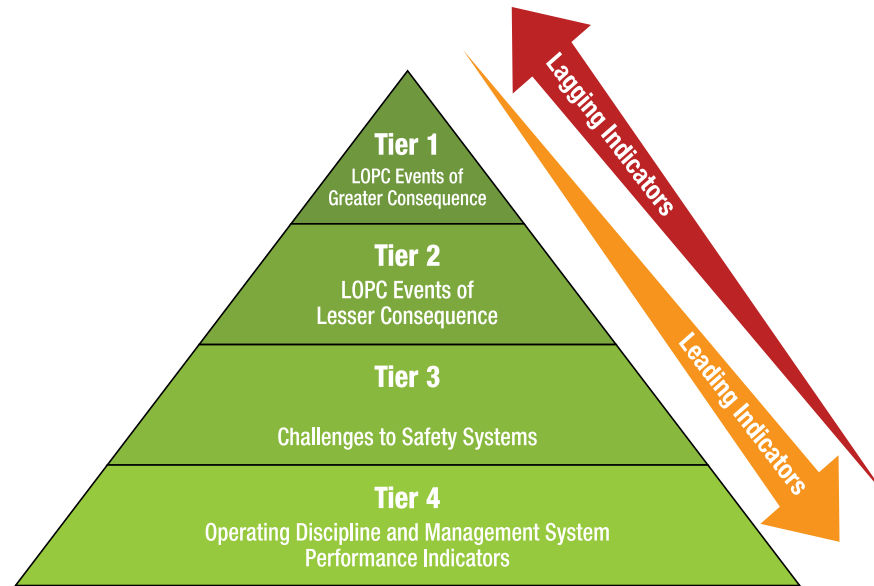
Tier/level 1 SPIs refer to the number of accidents, the associated fatalities and serious incidents. This is the final publicly.

Seen the result of the safety level in aviation, which is monitored in Kuwait, at the regional level and globally. However, this monitoring provides little support for the day-to-day safety work.

Tier/Level 2 SPIs measure the system's functionality and focus on specific key operational threats identified as the common direct factors leading to accidents. Their definitions are in line with international definitions (including those of ICAO). Some of the tier/level 2 SPIs have remained unchanged, or they have been modified for the organisations' base tables.

Tier/level 3 SPIs were developed by reflecting on the contributing factors of tier 2 threats. Tier/level 3 SPIs may be contributing factors in one or several tier/level 2 threats. In these cases, the most significant identified link has been included in the SPI identifier, for example

RE/UA (Runway excursion/ Unstable approach). Some of the tier 2 SPIs have remained unchanged, or they have been modified for the organisations' base tables.



Organisation-Level



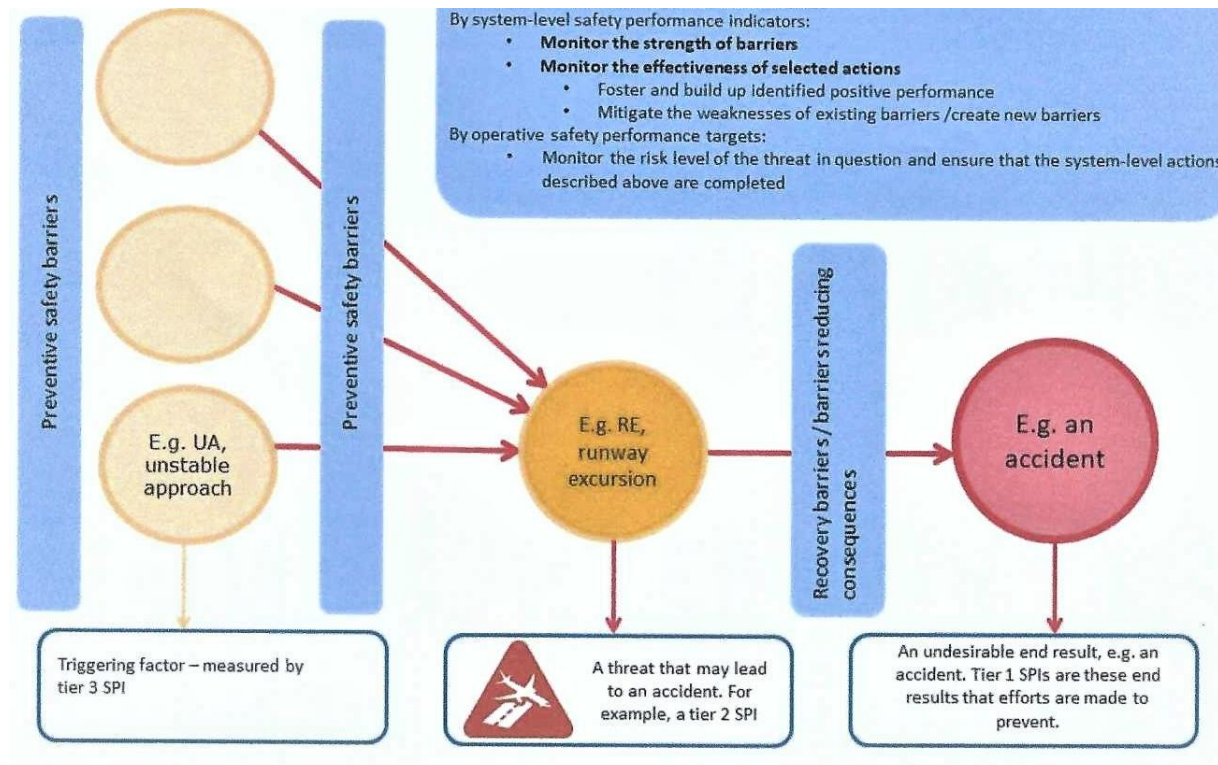
States' safety programme (SSP) and the organisations' safety management systems (SMS) comprising of safety Organisation-levels. Organisation safety level are issues that concern an individual organisation, a system sector or the entire aviation system. Organisation-level performance monitoring and targets set for improving the performance improve the safety level of the aviation across a broad front while maintaining and strengthening the activities and competence through which the current safety level has been achieved.

Organisation-level themes do not necessarily have a direct, short-term link with individual occurrences, incidents or accidents. Organisation-level threats are background factors, either easily identifiable or latent. For example, they may be associated with shortcomings in processes, procedures or operating cultures. If Organisation-level threats are not identified and if the risks caused by them are not managed, they may trigger or contribute to an occurrence, an incident or an accident.

Operational level



Operational-level themes have more direct links with the actions of a person, organisation, domain or environmental factors, including weather phenomena. Operational-level threats may have direct links with a situation developing into an occurrence, an incident or an accident. Operational-level threats and safety factors are often identified by analysing information in occurrence reports and occurrence data and carrying out risk assessments. Risk management actions seek to mitigate the probability of events that result in occurrences, incidents and accidents and to mitigate the seriousness of their consequences. The Figure below clarifies the levels and the tiers in performance measurement.



3.2 SPI-SPT base tables for the aviation organisations:

- **Appendix A:** National aviation safety performance indicators and targets (SPIs/SPTs) monitored by Commercial Air Transport Operators (aircraft, CAT-OPS).

- **Appendix B:** National aviation safety performance indicators and targets (SPIs/SPTs) monitored by Flight Training Organisations (Complex *ATO* and Non-Complex *ATO*)
- **Appendix C:** National aviation safety performance indicators and targets (SPIs/SPTs) monitored by Air Navigation Service Providers (ANS) and, where applicable, meteorological service providers (MET).
- **Appendix D:** National aviation safety performance indicators and targets (SPIs/SPTs) monitored by Aerodrome Operators (ADR).
- **Appendix E:** National aviation safety performance indicators and targets (SPIs/SPTs) monitored by Ground Handling Service Providers (GH).
- **Appendix F:** National aviation safety performance indicators and targets (SPIs/SPTs) monitored by Aviation Airworthiness and Maintenance Organisations (AIR).

Appendix A (Commercial Air transport Operators CAT-SPIs)

<i>Strategic safety objective</i>	<i>Identifier</i>	<i>Safety performance indicator, SPI</i>	<i>Safety performance target (SPT) set for the indicator</i>
<i>Continuous development of safety performance in all domains of the organizations</i>	CAT -SPI-1	Performance of the organization's safety management system (SMS)	Improving the performance of the operators' safety management systems (SMSs). - organization profile data is used as criteria. uses a total performance assessment tool for conducting evaluations. Operators can also utilize the assessment tool for self-evaluations and development of SMS performance. Background to the target: The purpose of the target is that the operators will measure and evaluate their safety management performance and identify areas in which performance should be improved, and work to improve their performance.
<i>The level of runway safety remains high.</i>	CAT -SPI-RE	SPI LEVEL 2: Runway excursion, RE A runway excursion is an uncontrolled exit by an aircraft from a runway during takeoff or landing. This may be unintentional or intentional, for instance as the result of an evasive maneuvers.	Management of RE, UA, ARC and RTO risks: - Operators have processed RE and RE/UA, ARC and HS RTO threats in their own safety management processes - Conducting a risk assessment of their own operations,

	CAT- SPI-RE/UA	<p>SPI LEVEL 3: RE/ Unstable approaches, UA An unstable approach is any situation where the approach of an aircraft is not stable as per the criteria in the Flight Operations Manual (OM-A)</p>	<p>defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.</p>
	CAT- SPI-RE/ARC	<p>SPI LEVEL 3: RE/Abnormal runway contact, ARC Cases involving any takeoff or landing where the aircraft makes abnormal contact with the runway (or other landing area). Examples include hard/heavy landings, long/fast landings, off-centre landings, significant crabbed landings, nose wheel first touchdown, tail strikes and wing tip/nacelle strikes as well as landing gear failure caused by abnormal runway contact. Excludes cases of technical malfunction of landing gear</p>	
	CAT -SPI-RE/RTO	<p>SPI LEVEL 3: RE/ rejected takeoff RTO Cases where a rejected takeoff was executed after the speed callout that, as per standard operating procedure (SOP), indicates the transition from the</p>	

		low-speed regime to the highspeed regime of the takeoff roll	
<i>The level of runway safety remains high.</i>	CAT -SPI-RI	<p>SPI LEVEL 2: Runway incursion - vehicle, aircraft or person, RI-VAP</p> <p>A runway incursion is any situation where an aircraft, vehicle or person is present on the runway or its protected area, without clearance or otherwise incorrectly. This includes low approaches executed without clearance or otherwise incorrectly</p>	<p>RI and RI/AC risk management:</p> <p>- Operators have processed RI and RI/AC threats in their own safety management processes – Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions</p>
	CAT- SPI-RI/AC	<p>SPI LEVEL 3: Runway incursions by aircraft (RI/AC)</p>	
<i>The safety level of aviation remains high.</i>	CAT- SPI-MAC	<p>SPI LEVEL 2: Mid-air collisions (MAC) and near misses</p> <p>In mid-air collisions of aircraft (manned, unmanned) and AIRPROX (aircraft proximity, near miss) situations, the distance between aircraft as well as their relative positions and speed have been such that the</p>	<p>Management of MAC, SMI AC, AI, LB, TCAS IGN and NAV ERROR risks:</p> <p>- Operators have processed MAC, SMI AC, AI, LB, TCAS IGN and NAV ERROR threats in their own safety management processes – Conducting a risk assessment of their own</p>

		safety of the aircraft involved may have been compromised	operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.
	CAT- SPI- MAC/ SMI AC	<p>SPI LEVEL 3: Separation minima infringements caused by aircraft (MAC/SMI AC)</p> <p>Cases where an aircraft movement (e.g. action contrary to ATC clearance) caused an infringement of a separation minimum between aircraft, between aircraft and terrain, or between aircraft and controlled airspace</p>	
	CAT- SPI- MAC/AI	<p>SPI LEVEL 3: MAC/ Airspace infringement,</p> <p>AI Cases where an aircraft entered controlled or restricted airspace or an ADIZ without appropriate clearance or permission</p>	

	CAT- SPI MAC/LB	SPI LEVEL 3: Level busts of more than 300 feet or more than 200 feet in RVSM airspace (MAC/Level bust, LB)	
	CAT- SPI- MAC/ TCAS IGN	SPI LEVEL 3: Incorrect response to TCAS-RA (MAC/ TCAS IGN)	
	CAT- SPI- MAC/ NAV ERROR	SPI LEVEL 3: Lateral deviations from cleared flight path (MAC/NAV ERROR) Cases where an aircraft deviated laterally from its cleared flight path or ATC clearance, e.g. following the wrong SID/STAR or deviating from the assigned SID/STAR or track by more than the maximum defined for the track in question.	
<i>The safety level of aviation remains high.</i>	CAT- SPI- CFIT	SPI LEVEL 2: Controlled flight into or towards terrain (CFIT) and similar incidents Controlled flight into (or towards) terrain occurs when an airworthy aircraft under the control of the pilot is inadvertently flown (or nearly flown) into terrain, water or an obstacle. This includes all cases of separation minima	CFIT, QNH, GPWS and CHART risk management: - Operators have processed CFIT, QNH, GPWS and CHART threats in their own safety management processes - Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary

		infringement between airborne aircraft and obstacles.	control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions
	CAT- SPI CFIT/QNH	SPI LEVEL 3: Incorrect altimeter pressure settings (CFIT/QNH)	
	CAT- SPI CFIT/GPWS	SPI LEVEL 3: Ground Proximity Warning System terrain warnings (CFIT/GPWS)	
	CAT- SPI CFIT/CHART	SPI LEVEL 3: Errors, omissions and inconsistencies in aeronautical charts (CFIT/CHART) Errors, omissions and inconsistencies in aeronautical chart data in aircraft databases, involving incorrect or outdated SID/STAR/waypoint information, or errors, omissions or inconsistencies in AIS publication charts, e.g. permanent obstacles not marked on the chart.	

<p><i>The safety level of aviation remains high.</i></p>	<p>CAT- SPI-LOC-I</p>	<p>SPI LEVEL 2: Loss of control in flight, LOC Loss of control in flight means a situation where the pilot loses control of an airborne aircraft totally or momentarily, resulting in a significant deviation from the aircraft's intended flight path</p>	<p>LOC-I, LASER, SPEED, WAKE, FIRE, ICE, LS, LOADING, TIEDOWN and FCONT risk management: - Operators have processed LOC-I, LASER, SPEED, WAKE, FIRE, ICE, LS, LOADING, TIEDOWN and FCONT threats in their own safety management processes – Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels,</p>
	<p>CAT- SPI-LOC-I/ LASER</p>	<p>SPI LEVEL 3: Laser interference (LOC-I/LASER) Cases where laser interference was perpetrated</p>	
	<p>CAT- SPI-LOC-I/ SPEED</p>	<p>SPI LEVEL 3: Low speed and high speed cases (LOC-I/SPEED) Cases where the airspeed of an airborne aircraft was above the situation-specific maximum or below the situation-specific minimum during any phase of flight, including stick shaker cases</p>	
	<p>CAT- SPI-LOC-I/ LOADING</p>	<p>SPI LEVEL 3: Shortcomings, errors and occurrences related to aircraft weight or balance/ Actual loading different from loading instructions/loadsheet, work error (LOC/LOADING)</p>	

	CAT- SPI- LOC-I/ TIEDOWN	SPI LEVEL 3: Shortcomings, errors and occurrences related to aircraft weight or balance/ incorrect or deficient load tiedown (LOC-I/TIEDOWN)	identifying and implementing the actions required and monitoring the efficiency of these actions.
	CAT- SPI- LOC-I/ FCONT	SPI LEVEL 3: Control system failures (LOC-I/FCONT) Cases involving failures in the control systems of an aircraft, including flight control surface failure, autoflight system failure and control indicator failure (e.g. airspeed and attitude data). Control system failure affects the controllability of the aircraft and the situational awareness of the flight crew, and hence may lead to loss of control or a runway excursion	
	CAT- SPI- LOC-I/BIRD	SPI LEVEL 3 : Bird Strike (LOC-I/BIRD)	
	CAT- SPI- LOCI/WAKE	SPI LEVEL 3: Wake turbulence incidents (LOC-I/WAKE) Cases where an aircraft encountered the wake turbulence of another aircraft and this precipitated an incident. Excludes loss of wake vortex	

		separation, unless it precipitates an incident	
	CAT- SPI- LOCI/FIRE	<p>SPI LEVEL 3: Fire or smoke on aircraft (LOC-I/FIRE)</p> <p>All cases where fire was detected on an aircraft and cases where smoke was detected that put or could have put the aircraft's safe operation at risk</p>	
	CAT- SPI- LOC-I/ICE	<p>SPI LEVEL 3: Deicing and anti-icing errors (LOC-I/ICE)</p> <p>Cases in which:</p> <ul style="list-style-type: none"> - deicing or anti-icing was not performed or was performed incorrectly/inadequately, or the aircraft departed after the holdover time had elapsed - deicing or anti-icing fluid residue caused problems - the aircraft's own deicing systems cannot cope with icing in flight, or the aircraft has no deicing system and encounters icing conditions. <p>Excludes malfunctions in the deicing/anti-icing system</p>	
	CAT- SPI- LOC-I/LS	<p>SPI LEVEL 3: Shortcomings, errors and occurrences related to</p>	

		aircraft weight or balance / difference between actual weight and loadsheet weight (LOC-I/LS)	
<i>The safety level of aviation remains high.</i>	CAT- SPI- GCOL	<p>SPI LEVEL 2: Ground collisions – collisions while taxiing to or from a runway in use (GCOL)</p> <p>A situation where an aircraft comes into contact with another aircraft, a vehicle, a person, an animal, a structure, a building or any other obstacle while moving under its own power in any part of the airport other than the active runway, excluding power pushback.</p>	<p>GCOL risk management: - Operators have processed GCOL threats in their own safety management processes - Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.</p>
		OTHER LEVEL 3 CONTRIBUTING FOR ANY LEVEL 2	
	CAT -SPI- PHUF	<p>SPI LEVEL 3: Human error and other disruptions in taxi or line-up, leading to wrong configuration, wrong weight, wrong FMS data or wrong location upon takeoff. (PHUF)</p>	<p>Management of risks related to taxi and line-up upon takeoff: - Operators have processed threats caused by human error in taxi or line-up upon takeoff in their own safety management processes – Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions</p>

	CAT -SPI-FUELING	SPI LEVEL 3: Refuelling incidents and occurrences (FUELING)	Refuelling risk management: - Operators have processed threats related to refuelling in the operators' own safety management processes - Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.
	CAT -SPI-FAT OPS	SPI LEVEL 3: Fatigue during occurrences in flight operations (FAT OPS) Cases where fatigue results in a mistake or other occurrence	Management of risks related to fatigue management: - Operators have processed fatigue management related threats in their own safety management processes - Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.
	CAT -SPI-FAT ORG	SPI LEVEL 3: Cases of fatigue/decreased alertness during flight operations (FAT ORG) Cases where fatigue or decreased alertness is experienced. Causal factors for this may be found in the organization's operation (e.g. shift planning/implementation, failure to rest) or an individual's actions	Management of risks related to fatigue management: - Operators have processed fatigue management related threats in their own safety management processes - Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.
	CAT -SPI-INCAPA	SPI LEVEL 3: Flight crew incapacitation (INCAPA) Flight crew incapacitation, in which a crew member is unable to manage his/her duties during	Flight crew incapacitation risk management: - Operators have processed flight crew incapacitation threats in their own safety management processes - Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary

		the flight. Typical causal factors may include food poisoning or an attack of illness	control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.
	CAT -SPI- UNRULY	SPI LEVEL 3: Unruly passenger at airport or on aircraft (UNRULY) Cases referred to in ICAO Convention Annex 17: "A passenger who fails to respect the rules of conduct at an airport or on board an aircraft or to follow the instructions of the airport staff or crew members and thereby disturbs the good order and discipline at an airport or on board the aircraft.	Unruly passenger risk management: - Operators have processed threats related to unruly passengers in their own safety management processes - Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.

Appendix B (Aviation Airworthiness and Maintenance Organisations AIR-SPIs)

<i>Strategic safety objective</i>	<i>Identifier</i>	<i>Safety performance indicator, SPI</i>	<i>Safety performance target (SPT) set for the indicator</i>
<i>Continuous development of safety performance in all domains of the organizations</i>	AIR-SPI-1	Performance of the organization's safety management system (SMS)	Safety objective: improving the performance of the operators' safety management system - organization profile data is used as criteria. Background to the target: - The purpose of the target is that the operators will measure and evaluate their safety management performance and identify areas in which performance should be improved, and work to improve their performance.
<i>The safety level of airworthiness and maintenance operations in aviation remains high</i>	AIR-SPI-ORG	Occurrences related to the maintenance organization's operations Shortcomings in the safe operation of an organization engaging in maintenance activities at a level that may put aviation safety at risk. NB. maintenance errors, see AIR-SPI-IM. Examples of potential system-level threats: 1. Significant lack of resources - lack of personnel - shortage of spare parts or materials	Management of risks related to the maintenance organization's activities: - Organizations have processed system-level threats related to the maintenance organization's activities in their own safety management processes - Conducting a risk

	<ul style="list-style-type: none"> - lack of required instructions - lack of required tools or service equipment - lack of required premises (e.g. hangar space or workshop facilities) - the organization's financial situation 2. Significant shortcoming in training or qualifications <ul style="list-style-type: none"> - required training has not been provided 3. Significant shortcoming or fault related to management <ul style="list-style-type: none"> - shifts or tasks planned in violation of regulations, in a manner that does not support safe operation. - serious shortcoming in the organization's change management - an order to perform a (maintenance) tasks in violation of regulations issued by supervisor/management 4. Significant shortcoming in quality assurance or subcontractor supervision <ul style="list-style-type: none"> - failure to perform audits in compliance with regulations - absence of required supervision 5. Significant lack of communication <ul style="list-style-type: none"> - lateral level (e.g. among maintenance staff, team work) - vertical level (e.g. between supervisor level and maintenance staff) - between departments or other organization units - between organizations 6. Significant shortcoming in the organization's safety culture <ul style="list-style-type: none"> - Sanctions for human errors or reporting - General attitude that allows violations of regulations or incorrect action 7. Significant shortcoming or failure in the management or planning of production <ul style="list-style-type: none"> - in a procedure or an information system 8. Significant disruption in production <ul style="list-style-type: none"> - Fire, flood, serious information system failure, strike 	<p>assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.</p>
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<i>The level of runway safety remains high.</i>	AIR- SPI-RE	SPI LEVEL 2: Runway excursion, RE A runway excursion is an uncontrolled exit by an aircraft from a runway during takeoff or landing. This may be unintentional or intentional, for instance as the result of an evasive maneuvers.	RE and LG+REV risk management: - Organizations have processed RE and LG+REV threats in their own safety management processes – Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions
	AIR- SPI-RE/ LG+REV	SPI LEVEL 3: Landing gear and reverse thrust malfunctions (RE/LG+REV)	
<i>The safety level of aviation remains high.</i>	AIR-SPI-MAC	SPI LEVEL 2: Mid-air collisions (MAC) and near misses In mid-air collisions of aircraft (manned, unmanned) and AIRPROX (aircraft proximity, near miss) situations, the distance between aircraft as well as their relative positions and speed have been such that the safety of the aircraft involved may have been compromised.	MAC and TRANS risk management: - Organizations have processed MAC and TRANS threats in their own safety management processes - Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary

	AIR-SPI- MAC/ TRANS	SPI LEVEL 3: Transponder faults and failures (MAC/TRANS) Cases where the data returned by the transponder system are missing or incorrect, for instance if the transponder on an aircraft does not respond to interrogations or fails, or if an incorrect code has been entered in the transponder	control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.
<i>The safety level of aviation remains high.</i>	AIR-SPI- LOC-I	SPI LEVEL 2: Loss of control in flight, LOC Loss of control in flight means a situation where the pilot loses control of an airborne aircraft totally or momentarily, resulting in a significant deviation from the aircraft's intended flight path	LOC-I, FIRE and FCONT risk management: - Organizations have processed LOC-I, FIRE and FCONT threats in their own safety management processes – Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.
	AIR-SPI- LOC-I/ FIRE	SPI LEVEL 3: Fire or smoke on aircraft (LOC-I/FIRE) All cases where fire was detected on an aircraft and cases where smoke was detected that put or could have put the aircraft's safe operation at risk	
	AIR-SPI- LOC-I/ FCONT	SPI LEVEL 3: Control system failures (LOC-I/FCONT) Cases involving failures in the control systems of an aircraft, including flight control surface failure, auto flight system failure and control indicator failure (e.g. airspeed and attitude data). Control system failure affects the controllability of the aircraft and the situational awareness of the flight crew, and hence may lead to loss of control or a runway excursion	

<p><i>The safety level of airworthiness and maintenance operations in aviation remains high..</i></p>	<p>AIR-SPI-MEL</p>	<p>SPI LEVEL 3: Occurrences in Minimum Equipment List and technical log use (MEL)</p> <ol style="list-style-type: none"> 1. Exceeding the repair period allowed by the Minimum Equipment List (MEL). 2. Incorrect use or interpretation of the Minimum Equipment List 3. One-off extension of the repair period allowed by the Minimum Equipment List (RIE, Rectification Interval Extension) through an approved procedure. 4. Errors and shortcomings related to technical log book use (regarding cockpit crew entries). <p>Certain types of aircraft in specific operation must have a Minimum Equipment List, MEL. The MEL is a document listing the systems, instruments and equipment on the aircraft which may be temporarily out of order, as well as the conditions, restrictions and procedures related to this. A one-off extension of the repair period allowed by the MEL may be made if the operator has an approved procedure for this. If this so-called RIE procedure is used frequently, it may be an indication of shortcomings in airworthiness management. Technical faults noted by the flight crew are entered by them in the aircraft's technical log. If such an</p>	<p>MEL risk management:</p> <ul style="list-style-type: none"> - Organizations have processed MEL threats in their own safety management processes - Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.

		<p>entry is incorrect or incomplete, repair of the fault may be delayed or ignored. Data sources 1. MEL RIE: operators' MEL RIE reports and Air Safety Reports.</p>	
<p><i>The safety level of airworthiness and maintenance operations in aviation remains high..</i></p>	<p>AIR-SPI-MC</p>	<p>SPI LEVEL 3: Occurrences in Airworthiness Management 1. Shortcomings in airworthiness management that may undermine aviation safety (occurrence concerning the Part-M airworthiness management organization, or CAMO). Examples: - Airworthiness data is incomplete, incorrect or inconsistent - Shortcomings and errors in maintenance programme - Errors in job queue management - Errors and shortcomings in component administration - Errors and shortcomings in maintenance job order or work order - Shortcomings in AD monitoring - Errors in management/supervision of modifications - Errors and shortcomings in technical log book system, - also errors when importing data into the management system - Errors in management of deferred defects - Shortcomings in the management and storage of maintenance records - Shortcomings/errors in maintenance instructions (to the extent these are a Part-M responsibility) - Errors and shortcomings in airworthiness reviews - Shortcomings/errors in Permits to Fly issued by Part-M organization - Errors/shortcomings in pre-flight check or instructions issued for it - Errors and shortcomings in assessing defects and damages</p>	<p>MC risk management - Organizations have processed MC threats in their own safety management processes - Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions</p>

		<ul style="list-style-type: none"> - Errors and shortcomings in monitoring weight and balance data - Errors and shortcomings in control of flight hours and cycles - Shortcomings in supervision of Part-M subcontracting <p>2. Shortcomings in the activities of Part-M organization monitoring airworthiness at a level that may undermine aviation safety. Examples:</p> <ul style="list-style-type: none"> - Significant lack of resources - Significant shortcoming or disruption in information systems - Significant shortcoming in training or qualifications - Significant shortcoming or risk related to management - Significant shortcoming in quality assurance or subcontractor supervision - Significant lack of communication - Significant shortcoming in the organization's safety culture 	
<p><i>The safety level of airworthiness and maintenance operations in aviation remains high..</i></p>	AIR-SPI-IM	<p>SPI LEVEL 3: Occurrences in maintenance operations (IM)</p> <p>Cases where a maintenance procedure was incomplete or incorrectly carried out and did not fulfil its intended purpose. Examples:</p> <ul style="list-style-type: none"> - Initial tasks of maintenance operation not performed appropriately (grounding, docking, protective pins, safety equipment) - Instructions misunderstood or not complied with - Item installed incorrectly, in incorrect location or not at all. Also chemicals, sealants etc. - Defect or damage missed in inspection - Errors in adjustment, testing, test run etc. - Use of wrong material or component - Switch, circuit breaker etc. left in wrong position or item left in wrong state 	<p>IM risk management:</p> <ul style="list-style-type: none"> - Organizations have processed IM threats in their own safety management processes - Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions

		<ul style="list-style-type: none"> - Failure to remove landing gear pins, protective plugs or tapes (Cases often associated with shortcomings in the final tasks of a maintenance operation) - Deviation from maintenance procedure - Performing maintenance work with significantly lowered work capacity (significant fatigue, stress, illness, effects of medications or disturbances in the work environment) - Errors or shortcomings in documenting maintenance work - Tool left in aircraft 	
<i>The safety level of airworthiness and maintenance operations in aviation remains high</i>	AIR-SPI-TECHNICAL	<p>SPI LEVEL 3: Serious malfunctions in aircraft (TECHNICAL)</p> <p>Cases where a technical fault caused a flight to be aborted, an emergency to be declared or an aircraft to be grounded. Examples:</p> <ul style="list-style-type: none"> • engine failure • malfunction of a control, compression or other critical system or device (e.g. propeller or rotor) • serious damage to electrical wiring interconnection system (EWIS) • significant fluid leak or fluid spoiling (e.g. fuel or hydraulic fluid) • significant structural flaw, including rupture, corrosion, wear and tear or delamination • significant maintenance error observed in connection with normal operation <p>Different technical problems in an aircraft may cause a serious incident or an accident if not reacted to in time. Engine failure, especially on a single-engine aircraft, will immediately precipitate a serious incident</p>	<p>TECHNICAL risk management: - Organizations have processed TECHNICAL threats in their own safety management processes - Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.</p>

Appendix C (Flight Training Organisations – Complex and Non-Complex ATO-SPIs)

<i>Strategic safety objective</i>	<i>Identifier</i>	<i>Safety performance indicator, SPI</i>	<i>Safety performance target (SPT) set for the indicator</i>
<i>Continuous development of safety performance in all domains of the aviation organizations</i>	C-ATO-SPI-1	Performance of the organization's safety management system (SMS)	<p>Safety objective: improving the performance of the organisations' safety management system (SMS)</p> <ul style="list-style-type: none"> - organisation profile data is used as criteria. In this respect, uses a total performance assessment tool to evaluate the SMS performance .Organisations can also utilise the assessment tool for self-evaluations and development of SMS performance. - Examples of key SMS areas for ATO organisations include: <ul style="list-style-type: none"> o comprehensive and timely change management o monitoring and measuring of the safety level o updating the risk register and timely response to risks o monitoring the impact of risk management measures – impact on the risk and the safety level <p>Background to the target: The purpose of the target is that the organisations will measure and evaluate their safety management performance and identify areas in which performance should be improved, and work to improve their performance.</p>

<p><i>The level of runway safety in aviation remains high.</i></p>	<p>C-ATO- SPI-RE</p>	<p>LEVEL 2: Runway excursion, RE A runway excursion is an uncontrolled exit by an aircraft from a runway during takeoff or landing. This may be unintentional or intentional, for instance as the result of an evasive maneuver</p>	<p>RE and ARC risk management: - Organisations have processed RE and ARC threats in their own safety management processes – Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.</p>
	<p>C-ATO- SPI-RE/ARC</p>	<p>SPI LEVEL 3: RE/Abnormal runway contact, ARC Cases involving any takeoff or landing where the aircraft makes abnormal contact with the runway (or other landing area). Examples include hard/heavy landings, long/fast landings, off-centre landings, significant crabbed landings, nose wheel first touchdown, tail strikes and wing tip/nacelle strikes as well as landing gear failure caused by abnormal runway contact. Excludes cases of technical malfunction of landing gear</p>	
<p><i>The level of runway safety in aviation remains high.</i></p>	<p>C-ATO- SPI-RI</p>	<p>SPI LEVEL 2: Runway incursion - vehicle, aircraft or person, RI-VAP A runway incursion is any situation where an aircraft, vehicle or person is present on the runway or its protected area, without clearance or otherwise incorrectly. This includes low approaches executed without clearance or otherwise incorrectly.</p>	<p>RI and RI/AC risk management: - Organisations have processed RI and RI/AC threats in their own safety management processes – Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and</p>

	C-ATO- SPI-RI/AC	SPI LEVEL 3: Runway incursions by aircraft (RI/AC)	implementing the actions required and monitoring the efficiency of these actions.
<i>The safety level of aviation remains high</i>	C-ATO-SPI-MAC	<p>SPI LEVEL 2: Mid-air collisions (MAC) and near misses</p> <p>In mid-air collisions of aircraft (manned, unmanned) and AIRPROX (aircraft proximity, near miss) situations, the distance between aircraft as well as their relative positions and speed have been such that the safety of the aircraft involved may have been compromised.</p>	<p>Management of MAC, AI, LB and NAV ERROR risks: - Processing MAC, AI, LB, and NAV ERROR threats in the organisations' own safety management processes – Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.</p>
	C-ATO-SPI-MAC/AI	<p>SPI LEVEL 3: MAC/ Airspace infringement, AI Cases where an aircraft entered controlled or restricted airspace or an ADIZ without appropriate clearance or permission.</p>	
	C-ATO-SPI-MAC/LB	<p>SPI LEVEL 3: Level busts of more than 300 feet or more than 200 feet in RVSM airspace (MAC/LB)</p>	
	C-ATO-SPI-MAC/ NAV ERROR	<p>SPI LEVEL 3: Lateral deviations from cleared flight path (MAC/NAV ERROR)</p> <p>Cases where an aircraft deviated laterally from its cleared flight path or ATC clearance, e.g. following the wrong SID/STAR or deviating from the assigned SID/STAR or track by</p>	

		more than the maximum defined for the track in question.	
<i>The safety level of aviation remains high.</i>	C-ATO-SPI-CFIT	SPI LEVEL 2: Controlled flight into or towards terrain (CFIT) and similar incidents Controlled flight into (or towards) terrain occurs when an airworthy aircraft under the control of the pilot is inadvertently flown (or nearly flown) into terrain, water or an obstacle. This includes all cases of separation minima infringement between airborne aircraft and obstacles.	CFIT, CFIT/QNH and CFIT/ CHART risk management: - Service providers have processed CFIT, CFIT/QNH and CFIT/ CHART threats in their own safety management processes – Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these action
	C-ATO--SPI-CFIT/QNH	SPI LEVEL 3: Incorrect altimeter pressure settings (CFIT/QNH)	
	C-ATO--SPI-CFIT/CHART	SPI LEVEL 3: Errors, omissions and inconsistencies in aeronautical charts (CFIT/CHART) Errors, omissions and inconsistencies in aeronautical chart data in aircraft databases, involving incorrect or outdated SID/STAR/waypoint information, or errors, omissions or inconsistencies in AIS publication charts, e.g. permanent obstacles not marked on the chart	
<i>The safety level of aviation remains high.</i>	C-ATO-SPI-LOC-I	SPI LEVEL 2: Loss of control in flight, LOC Loss of control in flight means a situation where the pilot loses control of an airborne aircraft totally or momentarily, resulting in a	

		significant deviation from the aircraft's intended flight path.	<p>LOC-I, WAKE, LOAD and WX risk management: - Organisations have processed LOC-I, WAKE, LOAD and WX threats in their own safety management processes – Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions..</p>
C-ATO-SPI-LOC-I/WAKE	<p>SPI LEVEL 3: Wake turbulence incidents (LOC-I/WAKE)</p> <p>Cases where an aircraft encountered the wake turbulence of another aircraft and this precipitated an incident. Excludes loss of wake vortex separation, unless it precipitates an incident.</p>		
C-ATO-SPI-LOC-I/LOAD	<p>SPI LEVEL 3: Shortcomings, errors and occurrences related to aircraft weight or balance (LOC-I/LOAD)</p> <p>Shortcomings, errors and occurrences related to the weight, balance or loading of aircraft.</p> <p>In flight training, the indicator has special reference to flight preparation by the student.</p>		
C-ATO-SPI-LOC-I/WX	<p>SPI LEVEL 3: Errors in accounting for or interpreting weather observations and incidents caused by weather (LOC-I-WX)</p> <p>Flight training cases where weather data has not been accounted for sufficiently in flight preparation, or they have been interpreted incorrectly, and cases where poor weather</p>		

		and/or insufficient or incorrect decisions as the weather changed precipitated an incident during a training flight. In addition to LOC-I, WX- SPI is linked to CFIT.	
<i>The safety level of aviation remains high.</i>	C-ATO-SPI- OPS	SPI LEVEL 3: Fatigue during occurrences in flight operations (OPS) Cases where fatigue results in a mistake or other occurrence.	Management of risks related to fatigue management: - Organisations have processed fatigue management related threats in their own safety management processes - Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.
	C-ATO-SPI- ORG	SPI LEVEL 3: Cases of fatigue/decreased alertness during flight operations (ORG) Cases in which fatigue or decreased alertness is experienced. Causal factors for this may be found in the organisation's operation (e.g. shift planning/implementation, failure to rest) or an individual's actions.	
<i>The safety culture in aviation has a high standard. Good safety culture is maintained and developed.</i>	C-ATO-SPI-JUST	SPI LEVEL 3: Number and type of occurrence reports The indicator contains the number of occurrence reports in the organisation's operations in proportion to flight hours. It is also used to monitor the number of occurrence reports in proportion to flight hours where the reporter relates a mistake made by them as part of the occurrence.	The objective of the monitoring is maintaining and developing a good reporting culture in the organisation: - ensuring a sufficient number of reports and receiving the safety information by monitoring and setting targets for the trends and level of report numbers and reporting quality - evaluating whether the atmosphere is trustful and encouraging enough to promote the reporting of your own mistakes, and defining the measures required for maintaining and/or developing the atmosphere.

			<p>A good safety culture contains a trustful atmosphere in which encouragement is provided for producing and sharing safety information openly. In an atmosphere of this type, persons dare also report their own mistakes. This first-hand information produced by reporters is a highly valuable information source for safety work</p>
<p><i>The safety level of aviation remains high.</i></p>	<p>C-ATO-SPI-TECHNICAL</p>	<p>SPI LEVEL 3: Serious technical problems in aircraft (TECHNICAL) Cases where a technical fault caused a flight to be aborted, an emergency to be declared or an aircraft to be grounded. Examples:</p> <ul style="list-style-type: none"> • engine failure • malfunction of a control, compression or other critical system or device (e.g. propeller or rotor) • serious damage to electrical wiring interconnection system (EWIS) • significant fluid leak or fluid spoiling (e.g. fuel or hydraulic fluid) • significant structural flaw, including rupture, corrosion, wear and tear or delamination • significant maintenance error observed in connection with normal operation <p>Different technical problems in an aircraft may cause a serious incident or an accident if not reacted to in time.</p>	<p>TECHNICAL risk management: - Organisations have processed TECHNICAL threats in their own safety management processes - Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions</p>

		Engine failure, especially on a single-engine aircraft, will immediately precipitate a serious incident.	
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Appendix D (Air Navigation Service Providers ANS and MET-SPIs)

<i>Strategic safety objective</i>	<i>Identifier</i>	<i>Safety performance indicator, SPI</i>	<i>Safety performance target (SPT) set for the indicator</i>
<i>Continuous development of safety performance in all domains of the aviation organizations</i>	ANS-SPI-1	Performance of the organization's safety management system (SMS)	Safety objective: improving the performance of the service providers' safety management system (SMS) - organization profile data is used as criteria. Background to the target: The purpose of the target is that the service providers will measure and evaluate their safety management performance and identify areas in which performance
<i>The level of runway safety in aviation remains high.</i>	ANS- SPI-RE	LEVEL 2: Runway excursion, RE A runway excursion is an uncontrolled exit by an aircraft from a runway during takeoff or landing. This may be unintentional or intentional, for instance as the result of an evasive maneuver	RE risk management: - Service providers have processed RE and UA threats in their own safety management processes – Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions
	ANS- SPI-RE/UA	SPI LEVEL 3: RE/ Unstable approaches, UA An unstable approach is any situation where the approach of an aircraft is not stable as per the criteria in the M DOC 4444	

<p><i>The level of runway safety in aviation remains high.</i></p>	<p>ANS- SPI-RI</p>	<p>SPI LEVEL 2: Runway incursion - vehicle, aircraft or person, RI-VAP A runway incursion is any situation where an aircraft, vehicle or person is present on the runway or its protected area, without clearance or otherwise incorrectly. This includes low approaches executed without clearance or otherwise incorrectly.</p>	<p>RI risk management: - Service providers have processed RI risks in their own safety management processes - Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.</p>
	<p>ANS- SPI-RI/ATCO</p>	<p>SPI LEVEL 3: Runway incursions with direct/indirect ATC contribution (RI-VAP/RI ATCO)</p>	
<p><i>The safety level of aviation remains high</i></p>	<p>ANS-SPI-MAC</p>	<p>SPI LEVEL 2:Mid-air collisions (MAC) and near misses In mid-air collisions of aircraft (manned, unmanned) and AIRPROX (aircraft proximity, near miss) situations, the distance between aircraft as well as their relative positions and speed have been such that the safety of the aircraft involved may have been compromised.</p>	<p>MAC, SMI ATCO, AI and MAC/LB risk management: - Service providers have processed MAC, SMI ATCO, AI and MAC/LB threats in their own safety management processes – Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.</p>
	<p>ANS-SPI-MAC/SMI ATCO</p>	<p>SPI LEVEL 3: Separation minima infringements with direct/indirect ATC contribution (MAC/SMI ATCO)</p>	
	<p>ANS-SPI-MAC/AI</p>	<p>SPI LEVEL 3: MAC/ Airspace infringement, AI Cases where an aircraft entered controlled or restricted airspace or an ADIZ without appropriate clearance or permission. Also includes</p>	

		failure of coordination between ATS bodies, resulting in an aircraft entering controlled airspace without the receiving ATS being aware of it.	
	ANS-SPI-MAC/LB	SPI LEVEL 3: Level busts of more than 300 feet or more than 200 feet in RVSM airspace (MAC/LB)	
<i>The safety level of aviation remains high.</i>	ANS-SPI-CFIT	SPI LEVEL 2: Controlled flight into or towards terrain (CFIT) and similar incidents Controlled flight into (or towards) terrain occurs when an airworthy aircraft under the control of the pilot is inadvertently flown (or nearly flown) into terrain, water or an obstacle. This includes all cases of separation minima infringement between airborne aircraft and obstacles.	CFIT, CFIT/QNH and CFIT/ CHART risk management: - Service providers have processed CFIT, CFIT/QNH and CFIT/ CHART threats in their own safety management processes – Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these action
	ANS-SPI-CFIT/QNH	SPI LEVEL 3: Incorrect altimeter pressure settings (CFIT/QNH)	
	ANS-SPI-CFIT/CHART	SPI LEVEL 3: Errors, omissions and inconsistencies in aeronautical charts (CFIT/CHART) Errors, omissions and inconsistencies in aeronautical chart data in aircraft databases, involving incorrect or outdated SID/STAR/waypoint information, or errors, omissions or inconsistencies in AIS publication charts, e.g. permanent obstacles not marked on the chart	
<i>The safety level of aviation remains high.</i>	ANS-SPI- LOC-I	SPI LEVEL 2: Loss of control in flight, LOC Loss of control in flight	LOC-I and LOC-I/ WAKE risk management: - Service providers have processed LOC-I

		means a situation where the pilot loses control of an airborne aircraft totally or momentarily, resulting in a significant deviation from the aircraft's intended flight path.	and LOC-I/ WAKE threats in their own safety management processes – Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.
	ANS-SPI- LOCI/WAKE	SPI LEVEL 3: Wake turbulence incidents (LOC-I/WAKE) Cases where an aircraft encountered the wake turbulence of another aircraft and this precipitated an incident. Excludes loss of wake vortex separation, unless it precipitates an incident.	
<i>The safety level of aviation remains high.</i>	ANS-SPI- GCOL	SPI LEVEL 2: Ground collisions – collisions while taxiing to or from a runway in use (GCOL) A situation where an aircraft comes into contact with another aircraft, a vehicle, a person, an animal, a structure, a building or any other obstacle while moving under its own power in any part of the airport other than the active runway, excluding power pushback	GCOL risk management: - Service providers have processed GCOL threats in their own safety management processes - Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions
<i>The safety level of aviation remains high.</i>	ANS-SPI- TECH	SPI LEVEL 2: Air navigation service technical systems and functions	Management of risks related to air navigation service technical systems and functions: - Service providers have processed threats related to air navigation service technical systems and functions, including cybersecurity, in their own safety management processes – Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying
	ANS-SPI- TECH/WX	SPI LEVEL 3: Serious problems, errors or shortcomings of aviation weather service (TECH/WX) Includes serious, long-lasting or extensive disruptions during which the aviation weather service was not available for operators or ATC (e.g. AFTN connection, weather observation	

		system) and cases where aviation safety was or could have been put at risk due to a significant error or inadequacy in the service (e.g. incorrect QNH data, missing TAF AMD or SIGMET).	<p>and implementing the actions required and monitoring the efficiency of these actions. Background: A number of technical systems are used to provide air navigation services. Many of them have back-up systems for providing the service in case of an error or a fault in the main system. In this case, aircraft are not necessarily aware of the fault. In some cases, however, no backup system existed or the backup system was inadequate, and the error or fault affected service provision, which was seen e.g. as compromised safety or significant delays.</p>
	ANS-SPI-TECH/COM	<p>SPI LEVEL 3: Air navigation services communications system malfunctions or disruptions (TECH/COM)</p> <p>Cases where air navigation services communications systems (e.g. phone, FPL, OLDI, airspace coordination) experienced an ATM-specific occurrence with airspace control ESARR 2 severity classification C (Ability to provide safe but degraded ATM service) or above. The severity of the incident may be assessed using the Risk Analysis Tool developed by airspace control.</p>	
	ANS-SPI-TECH/NAV	<p>SPI LEVEL 3: Air navigation services navigation system malfunctions or disruptions (TECH/NAV)</p> <p>Cases where air navigation services navigation systems (e.g. ILS, VOR, DME) experienced an ATM-specific occurrence with air space control ESARR 2 severity classification C (Ability to provide safe but degraded ATM service) or above. The severity of the incident may be assessed using the Risk Analysis Tool developed by airspace control.</p>	

	ANS-SPI-TECH/MAC/SUR	<p>SPI LEVEL 3: Air navigation services surveillance system malfunctions or disruptions (TECH/COM)</p> <p>Cases where air navigation services surveillance systems (e.g. radar) experienced an ATM-specific occurrence with airspace control (Ability to provide safe but degraded ATM service) or above. The severity of the incident may be assessed using the Risk Analysis Tool developed by airspace control.</p>	
<i>The safety level of aviation remains high.</i>	ANS-SPI-ASM	<p>SPI LEVEL 3: Errors in airspace reservations and their processing (ASM)</p> <p>Errors in the ASM reservation process, including active DANGER/PROHIBITED /RESTRICTED areas in a situation where NOTAM shows the area as deactivated, incorrect area data or late area reservation.</p>	<p>Management of risks related to airspace reservations and their processing: - Service providers have processed threats related to airspace reservations and their processing in their own safety management processes - Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.</p>

Appendix E (Aerodrome Operators (ADR-SPIs))

<i>Strategic safety objective</i>	<i>Identifier</i>	<i>Safety performance indicator, SPI</i>	<i>Safety performance target (SPT) set for the indicator</i>
<i>Continuous development of safety performance in all domains of aviation organizations'</i>	ADR-SPI-1	Performance of the organization's safety management system (SMS)	Safety objective: improving the performance of the operators' safety management system (SMS) - organization profile data is used as criteria. Background to the target: The purpose of the target is that the operators will measure and evaluate their safety management performance and identify areas in which performance should be improved, and work to improve their performance.
<i>The level of runway safety in aviation remains high.</i>	ADR- SPI-RE	SPI LEVEL 2: Runway excursion, RE A runway excursion is an uncontrolled exit by an aircraft from a runway during takeoff or landing. This may be unintentional or intentional, for instance as the result of an evasive maneuvers.	RE and RWY CON risk management: - Operators have processed RE and RWY CON threats in their own safety management processes – Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.
	ADR- SPI-RE/RWY CON	SPI LEVEL 3: Deficiencies in runway condition and related information (RE/RWY CON)	
<i>The level of runway safety in aviation remains high.</i>	ADR- SPI-RI	SPI LEVEL 2: Runway incursion - vehicle, aircraft or person, RI-VAP A runway incursion is any situation where an aircraft, vehicle or person is present on the runway or its protected area, without clearance or	RI risk management - Operators have processed RI risks in their own safety management processes - Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels,

		otherwise incorrectly. This includes low approaches executed without clearance or otherwise incorrectly.	identifying and implementing the actions required and monitoring the efficiency of these actions.
	ADR- SPI-RI/VEHICLE	SPI LEVEL 3: Runway incursions caused by ground vehicles (RI-VAP/RI VEHICLE)	The SPI has been divided into two separate SPIs: RI VEHICLE and RI OTHER . RI-VEHICLE contains runway incursions caused by ground vehicles, the causes of which include maintenance, rescue services or temporary arrangements with their convoys.
	ADR- SPI-RI/OTHER	SPI LEVEL 3: Runway incursions caused by persons (RI-VAP/RI OTHER)	
<i>The safety level of aviation remains high.</i>	ADR-SPI-CFIT	<p>SPI LEVEL 2: Controlled flight into or towards terrain (CFIT) and similar incidents Controlled flight into (or towards) terrain</p> <p>occurs when an airworthy aircraft under the control of the pilot is inadvertently flown (or nearly flown) into terrain, water or an obstacle. This includes all cases of separation minima infringement between airborne aircraft and obstacles.</p>	<p>CFIT and CFIT/OBSTACLE risk management: - Operators have processed CFIT and CFIT/OBSTACLE threats in their own safety management processes – Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.</p>
	ADR-SPI-CFIT/OBSTACLE	<p>SPI LEVEL 3: Lack of information on obstacles (OBSTACLE)</p> <p>Shortcomings and errors related to temporary obstacles to air navigation: temporary obstacles to air navigation erected without an</p>	

		appropriate permit or in violation of published procedures, including cranes etc., or cases with errors or shortcomings in the examination of obstacles to air navigation	
<i>The safety level of aviation remains high</i>	ADR-SPI- GCOL	<p>SPI LEVEL 2: Ground collisions – collisions while taxiing to or from a runway in use (GCOL)</p> <p>A situation where an aircraft comes into contact with another aircraft, a vehicle, a person, an animal, a structure, a building or any other obstacle while moving under its own power in any part of the airport other than the active runway, excluding power pushback</p>	<p>GCOL risk management: - Operators have processed GCOL, GCOL/APRON and GCOL/FOD threats in their own safety management processes – Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.</p>
	ADR-SPI- GCOL/APRON	<p>SPI LEVEL 3: Insufficient supervision at apron and other apron related occurrences (GCOL/APRON)</p> <p>Cases where supervision on the apron is lacking and/or passengers gained access to areas where they should not be. Also includes other occurrences in apron level activities, for example shortcomings in paint markings and incorrect</p>	

		placement of fleet. Excludes SEC cases (security)	
	ADR-SPI-GCOL/FOD	<p>SPI LEVEL 3: Foreign Object Debris in the maneuverings area and apron, and damage caused (GCOL/FOD)</p> <p>Includes all cases where objects and materials in the maneuvering area and apron in places where they should not be caused or could have caused damage or risk to aircraft, the environment or persons. Also includes cases where the required FOD inspection was not carried out. FOD cases may also be linked to LOC-I cases.</p>	
The safety level of aviation remains high	ADR-SPI-TECH	SPI LEVEL 3: Aerodrome technical systems and functions	Management of risks related to aerodrome technical systems and functions: - Operators have processed threats related to aerodrome technical systems and functions, including cybersecurity, in their own safety management processes – Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels,
	ADR-SPI-TECH/PEPA	<p>SPI LEVEL 3: Shortcomings in airport rescue services (PEPA) Cases where shortcomings or faults are noted in airport rescue services, e.g. personnel numbers, equipment or the alert system</p>	

	SPI-TECH/APIS	<p>SPI LEVEL 3: APIS equipment malfunctions (APIS)</p> <p>Cases with shortcomings or errors in the functioning or work of the APIS system, a signaler or a Marshaller.</p>	identifying and implementing the actions required and monitoring the efficiency of these actions.
<i>The safety level of aviation remains high.</i>	ADR-SPI-LIGHTS	<p>SPI LEVEL 3: Shortcomings in aerodrome lights (LIGHTS)</p> <p>Faults and shortcomings in aerodrome light systems, e.g. PAPI or runway lights</p>	<p>Management of risks related to shortcomings in aerodrome lights: - Operators have processed threats related to shortcomings in aerodrome lights in their own safety management processes - Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.</p>

Appendix F (Ground Handling Service Providers GH-SPIs)

<i>Strategic safety objective</i>	<i>Identifier</i>	<i>Safety performance indicator, SPI</i>	<i>Safety performance target (SPT) set for the indicator</i>
<i>Continuous development of safety performance in all domains of the organizations</i>	GH-SPI-1	Performance of the organization's safety management system (SMS)	Safety objective: improving the performance of the service providers' safety management system Background to the target: The purpose of the target is that the service providers will measure and evaluate their safety management performance and identify areas in which performance should be improved, and work to improve their performance
<i>The level of runway safety remains high.</i>	GH-SPI-RI	SPI LEVEL 2: Runway incursion - vehicle, aircraft or person, RI-VAP A runway incursion is any situation where an aircraft, vehicle or person is present on the runway or its protected area, without clearance or otherwise incorrectly. This includes low approaches executed without clearance or otherwise incorrectly.	RI risk management - Service providers have processed RI risks in their own safety management processes - Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.

	GH- SPI-RI/ VEHICLE	SPI LEVEL 3: Runway incursions caused by ground vehicles (RI-VAP/RI VEHICLE)	
<i>The safety level of aviation remains high.</i>	GH-SPI- LOC-I	SPI LEVEL 2: Loss of control in flight, LOC -I Loss of control in flight means a situation where the pilot loses control of an airborne aircraft totally or momentarily, resulting in a significant deviation from the aircraft's intended flight path	LOC-I and ICE risk management: - Service providers have processed LOC-I and ICE threats in their own safety management processes – Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions
	GH-SPI- LOC-I/ LS	SPI LEVEL 3: Shortcomings, errors and occurrences related to aircraft weight or balance / difference between actual weight and loadsheet weight (LOC-I/LS)	LOC-I, LS, LOADING, TIEDOWN and GH risk management: - Service providers have processed LOC-I, LS, LOADING, TIEDOWN and GH threats in their own safety management processes – Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.
	GH-SPI- LOC-I/ LOADING	SPI LEVEL 3: Shortcomings, errors and occurrences related to aircraft weight or balance/ Actual loading different from loading instructions/loadsheet, work error (LOC-I/LOADING)	
	GH-SPI- LOC-I/ TIEDOWN	SPI LEVEL 3: Shortcomings, errors and occurrences related to aircraft	

		weight or balance/ incorrect or deficient load tiedown (LOC-I/TIEDOWN)	
	GH-SPI- LOC-I/GH	SPI LEVEL 3: Ground handling damage (LOC-I/GH) Cases involving damage to an aircraft during ground handling. The aircraft may be stationary, towed or in pushback	
<i>The safety level of aviation remains high.</i>	GH-SPI- GCOL	SPI LEVEL 2: Ground collisions – collisions while taxiing to or from a runway in use (GCOL) A situation where an aircraft comes into contact with another aircraft, a vehicle, a person, an animal, a structure, a building or any other obstacle while moving under its own power in any part of the airport other than the active runway, excluding power pushback	GCOL risk management: - Service providers have processed GCOL, GCOL/PB, APRON and FOD threats in their own safety management processes – Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.
	H-SPI- GCOL/PB	SPI LEVEL 3: Pushback or taxi interference (GCOL/PB) Cases involving interference with the pushback or taxiing of an aircraft, including interference with power pushback.	

	H-SPI-GCOL/APRON	<p>SPI LEVEL 3: Insufficient supervision at apron and other apron related occurrences (GCOL/APRON)</p> <p>Cases where supervision on the apron is lacking and/or passengers gained access to areas where they should not be. Also includes other occurrences in apron level activities, for example shortcomings in paint markings and incorrect placement of fleet. Excludes SEC cases (security).</p>	
	H-SPI-GCOL/FOD	<p>SPI LEVEL 3: Foreign Object Debris in the manoeuvring area and apron, and damage caused (GCOL/FOD)</p> <p>Includes all cases where objects and materials in the manoeuvring area and apron in places where they should not be caused or could have caused damage or risk to aircraft, the environment or persons. Also includes cases where the required FOD inspection was not carried. FOD cases may also be linked to LOC-I cases</p>	

<p><i>The safety level of aviation remains high.</i></p>	<p>GH-SPI-FUELING</p>	<p>SPI LEVEL 3: Refuelling incidents and occurrences , FUEL spillage (FUELING)</p>	<p>Refuelling risk management: - Service providers have processed threats related to refuelling in the service providers' own safety management processes - Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions</p>
<p><i>The safety level of aviation remains high.</i></p>	<p>GH-SPI-UNRULY</p>	<p>SPI LEVEL 3: Unruly passenger at airport or on aircraft (UNRULY) Cases referred to in ICAO Convention Annex 17: "A passenger who fails to respect the rules of conduct at an airport or on board an aircraft or to follow the instructions of the airport staff or crew members and thereby disturbs the good order and discipline at an airport or on board the aircraft."</p>	<p>Unruly passenger risk management: - Service providers have processed threats related to unruly passengers in their own safety management processes - Conducting a risk assessment of their own operations, defining an acceptable level of safety and the necessary control/response levels, identifying and implementing the actions required and monitoring the efficiency of these actions.</p>

END