Session 11

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Measuring Safety Performance

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Overview

- National safety performance

- Use of GASP indicators for NASP (Doc 10162)

- GASP indicator guidance + selection & validation

- SPM: from planning to measuring

- Role of NASP development team in SPM

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National Safety Performance

- Through NASP, State sets national goals & targets
  - and determines series of SEIs to achieve them

- State also uses NASP indicators related to targets
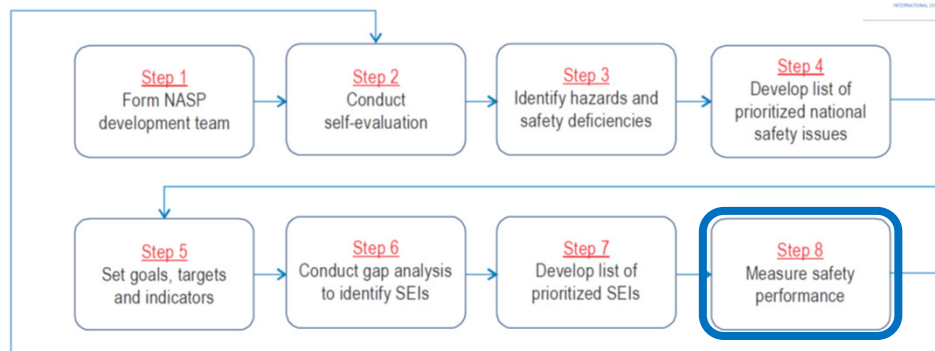 - to measure if SEIs attain their desired outcomes

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NASP Development Process

| Step 1 Form NASP development team | Step 2 Conduct self-evaluation | Step 3 Identify hazards and safety deficiencies | Step 4 Develop list of prioritized national safety issues |
| Step 5 Set goals, targets and indicators | Step 6 Conduct gap analysis to identify SEIs | Step 7 Develop list of prioritized SEIs | Step 8 Measure safety performance |

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Measuring Safety Performance (Step 8)

- Defining process to monitor (planning)
  - NASP implementation
  - NASP effectiveness

- Actually measuring safety performance (doing)
  - has safety improved nationally?
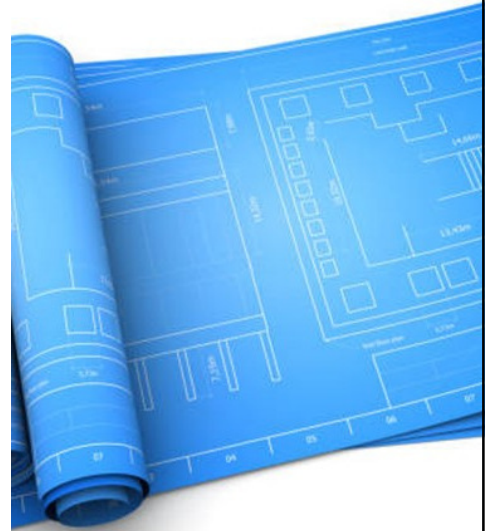
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Use of GASP Indicators for NASP

- Indicators for SPM of NASP
  - should be consistent or linked to GASP

- GASP indicators are only examples

- When GASP is adapted at national level
  - team may use examples of indicators
  - to develop NASP indicators

- Not all indicators presented in GASP
  - need to be duplicated in NASP

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GASP
Indicator Guidance

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Doc 10162

Manual on Monitoring Implementation of
Regional and National Aviation Safety Plans

First Edition, 2023

- Doc 10162 provide guidance on data sources
  - for indicators to measure achievement of NASP goals

- Guidance addresses
  - how to measure indicators
  - how to gather data

- GASP Indicator Form was developed for each indicator
  - to provide clear guidance & definitions
  - ensure ICAO collects consistent, reliable data

Approved by and published under the authority of the Secretary General

INTERNATIONAL CIVIL AVIATION ORGANIZATION

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Rationale	How indicator connects to a target What measurement and monitoring it supports
Limitations	Scope of what indicator measures
Definition of terms	Definition of terminology used in naming or defining indicator
Calculation method	Specific or technical formula available for calculation of indicator value
Data set(s)	Data needed for measuring indicator
Availability	Listed datasets may have different levels of availability Varying from 1 (unavailable) data to 3 (fully available)
Provider	Provider where data comes from

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Example of GASP-I Form

GASP-I.1.1.02	Number of accidents per million departures (accident rate)
Rationale	Related to Global Aviation Safety Plan (GASP) Target 1.1: Maintain a decreasing trend of global accident rate. This safety indicator has been widely used by ICAO since 2008. It can be found in the global Annual Safety Reports and on the ICAO public website. It is the most common reactive indicator measuring safety levels and is connected to risk exposure (number of million departures).

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Example of GASP-I Form (2)

Limitations	– The State of Occurrence shall forward a notification of an accident to ICAO when the aircraft involved is of a maximum mass of over 2 250 kg or is a turbojet-powered aeroplane, as required by Annex 13 – *Aircraft Accident and Incident Investigation*, paragraph. 4.1. – The State conducting the investigation shall send Accident/Incident Data Reporting (ADREP) to ICAO for accidents to aircraft over 2 250 kg, as required by Annex 13, Chapter 7. – ICAO maintains an ADREP database with the notifications and ADREPs it receives. – A validation of the ADREP database is performed annually by a group of experts (the Occurrence Validation Study Group (OVSG)) only for accidents and some serious incidents involving civil-operated fixed-wing aircraft of a maximum mass of over 5 700 kg. This validation does not include, as of April 2020, helicopter accidents or aircraft between 2 250 kg and 5 700 kg. – Validated ADREP data for year n is available in March of year $n+1$. – The Official Airline Guide (OAG) makes available to ICAO traffic data for scheduled operations with aircraft > 5 700 kg. – Validated OAG traffic data for year n is available in March of year $n+1$.

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Example of GASP-I Form (3)

Definition of terms	The term "accident" is defined in Annex 13, Chapter 1. Definitions ADREP: Accident/Incident Data Reporting
Calculation method	Indicator = N/D, where: a) N is the number of accidents involving scheduled commercial operations with aircraft of maximum mass of over 5 700 kg for the year in question; and b) D is the number of scheduled commercial departures (from iSTARS 'State Traffic' application), divided by 1 000 000.
Data sets	Notifications and ADREP reports sent by States to ICAO under Annex 13 obligations. OAG dataset for ICAO.

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Example of GASP-I Form (4)

Availability (1-3)	3: Accident notification and ADREP reports are already available in the ICAO ADREP database. No further reporting by States is required.
Provider	– ICAO ADREP database – iSTARS Application "ADREP et al." – iSTARS Application "State Traffic"

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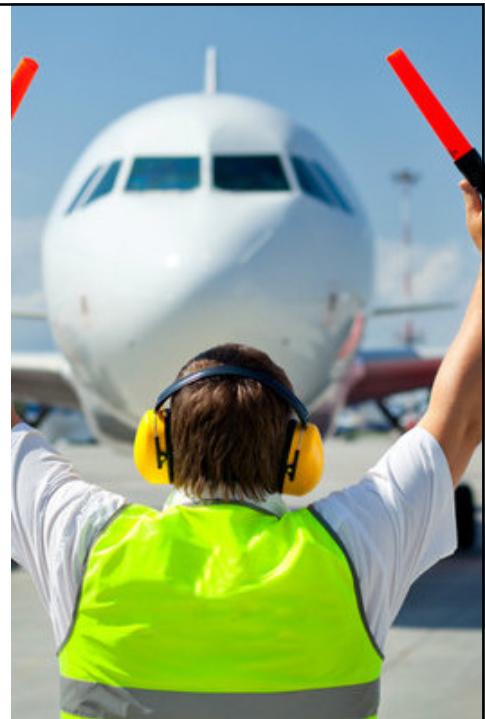# Indicator Selection: Validation Process

- Vet each indicator before publication
  - by populating fields from Doc 10162
  - to ensure indicators are realistic

- Specify for each NASP indicator
  1. rationale
  2. limitations
  3. definition of terms
  4. calculation method
  5. data set(s)
  6. availability
  7. provider

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From Planning to Measuring

- Targets in NASP are achieved by action plan(s)
  - contain set of SEIs
  - each SEI should identify responsible entity

- Once NASP development is complete
  - responsible entities lead implementation

- At this stage team measures safety performance
  - to monitor NASP implementation
  - assess effectiveness in terms of improving safety

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N-HRC 2: LOC-I							
Goal 1: Achieve continuous reduction of operational safety risks **Target 1.1: Maintain a decreasing trend of national accident rate**							
SEI	*Action*	*Timeline*	*Responsible entity*	*Stakeholders*	*Metrics*	*Priority*	*Monitoring activity*
Mitigate contributing factors to LOC-I accidents & incidents	Require upset prevention and recovery training in all full flight simulator type conversion and recurrent training programmes	Q1 2023 to Q4 2025	CAA	• Operators • ATO • Flight simulator product and service providers • Pilots' associations • CAA inspectors	• Training programmes updated with UPRT • Number of pilots completing UPRT • Upset occurrence rates in voluntary reporting • Stick-shaker activation events in FDA data • LOC-I occurrence rates	High	Surveillance of operator & ATO training activities

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Role of Team in SPM

- Periodically monitor SEIs implementation
  - ensure actions are being accomplished
  - they are effective
  - address difficulties in implementation

- This ensures NASP is implemented
  - by sum of SEIs in action plan

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Points to Remember

- NASP should include indicators related to its targets

- Need to define specifics for NASP indicators

- Use of guidance in Doc 10162 for adapting GASP indicators nationally

- Use of action plan to measure NASP implementation

- Importance of defining responsibility & metrics for SEIs

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Facilitated Exercise IV

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Define Safety Performance Measurement

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Your Tasks

- Based on national goals, targets and indicators (Ex II)
  - select 1 indicator (associated with a target)
  - complete form in Appendix A

- Based on prioritized list of SEIs (Ex III)
  - select 1 SEI related to ops safety risks (such as N-HRC)
  - select 1 SEI related to ORG challenges
  - complete the forms in Appendix B

- Time allocated: 2h00

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N-HRC x: [name of N-HRC]							
Goal x: [name]							
Target x.x: [description]							
Safety enhancement initiative	Action	Timeline	Responsible entity	Stakeholders	Metrics	Priority	Monitoring activity
[name of SEI and ICAO SEI number, as well as RASP SEI number, if applicable]	[describe action(s)]	[insert time frame for completion]	[name]	[list stakeholders]	[list metrics]	[Low/ Medium/ High]	[list mechanisms for verifying SEI implementation]

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