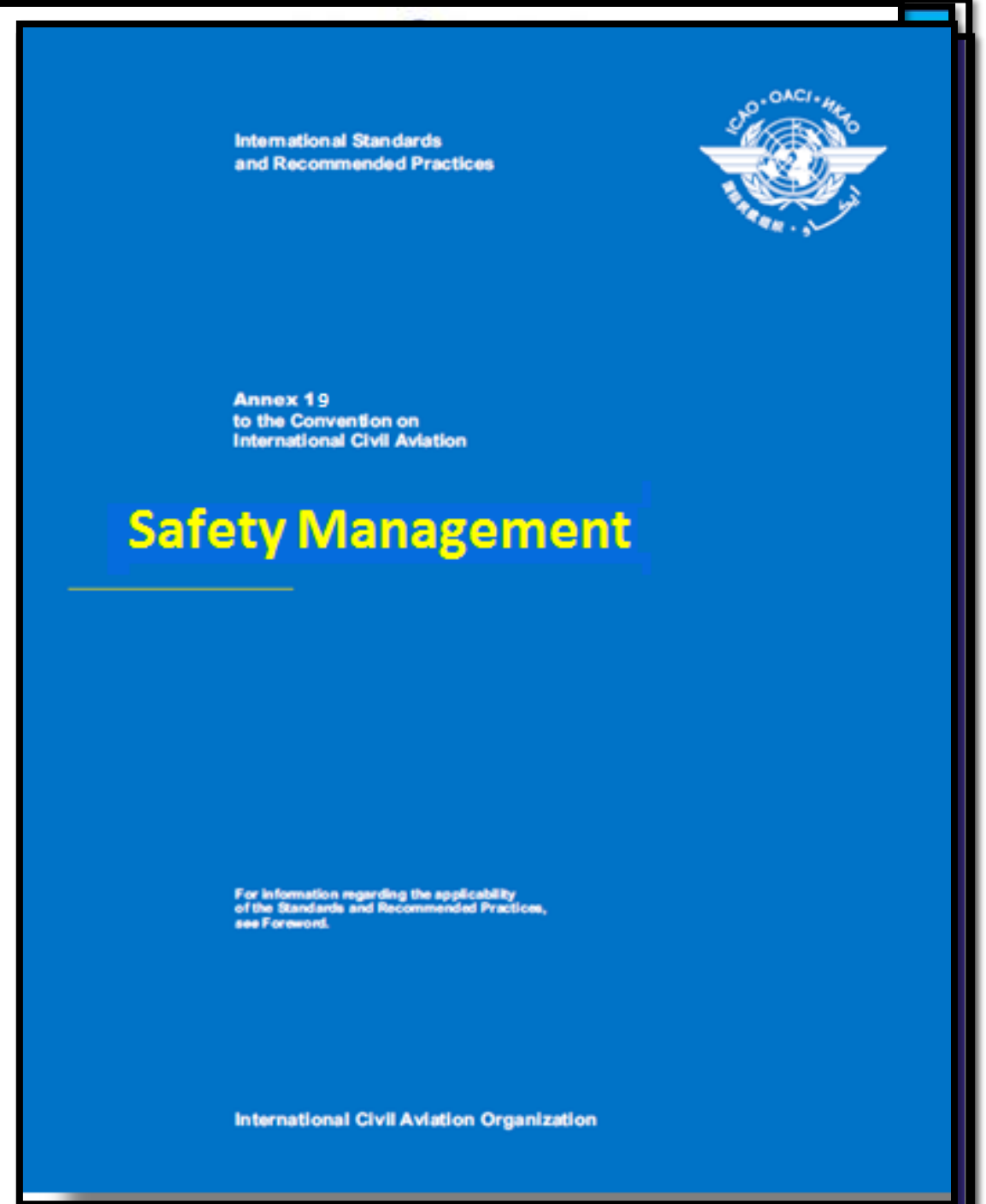


Safety Assessment Case

भारतीय विमानपत्तन प्राधिकरण
AIRPORTS AUTHORITY OF INDIA

The Regulations

- ICAO Annex 19
- ICAO Doc 9859 - Safety Management Manual
- State Safety Programme
- Civil Aviation Requirement Section - 1 General Series 'C' Part I
- Corporate SMS Manual – Airports Authority of India



State Safety Programme

- **Develop and embed a safety culture that**
 - **recognizes the importance and value of effective aviation safety management, &**
 - **acknowledges at all times that safety is paramount.**
- **Ensure that acceptable levels of safety are**
 - **set, measured and achieved, &**
 - **expressed in terms of safety performance indicators and safety performance targets.**

Civil Aviation Requirement Section - 1 General Series 'C' Part I

Lays down aviation safety-related

- **processes,**
- **procedures and**
- **activities**

for the establishment of SMS by the service provider

C SMS Manual - AAI

- **Provides guidance for the establishment of Safety Management System in Airports Authority of India**
- **Sets “Safety Requirements” which must be met to achieve this objective.**
- **Details the practices, processes and procedures to achieve these Safety Requirements**

C-SMS MANUAL - AAI

- Mentions top down safety accountability/responsibility for all AAI personnel
- Emphasizes on the need to-
 - Learn from mistakes,
 - Strive to reduce instances of human error, &
 - Develop systems that are more error-tolerant.

...provides standardized methodology for carrying out SMS activities...

AAI Safety Policy

- regard safety as first priority
- provide highest reasonable standard of safety within Air Navigation Services and Airport operations.
- adopt, plan and establish an explicit, proactive and systematic Safety Management System for core activities.

...all employees are accountable and responsible for safety while delivering service.

AAI Safety Culture


- *'No disciplinary action will be taken against personnel who reports an incident or occurrence involving human error'.*
- However, not applicable to employees who have behaved in a 'reckless' or illegal manner or who have committed a series of human errors that indicates a general lack of care and professionalism.

Safety Performance Indicator/Target

- SPI have been developed taking into account 3 safety critical operational sectors of AAI –
 - ATM,
 - CNS &
 - Aerodrome Operations
- SPI are aligned with State Safety Program.
- SPT are defined taking into account available historical data
- Detailed booklet on SPIs/SPTs of the main stream directorates containing methodology to determine annual SMS performance summary

Change Management Requirements - AAI

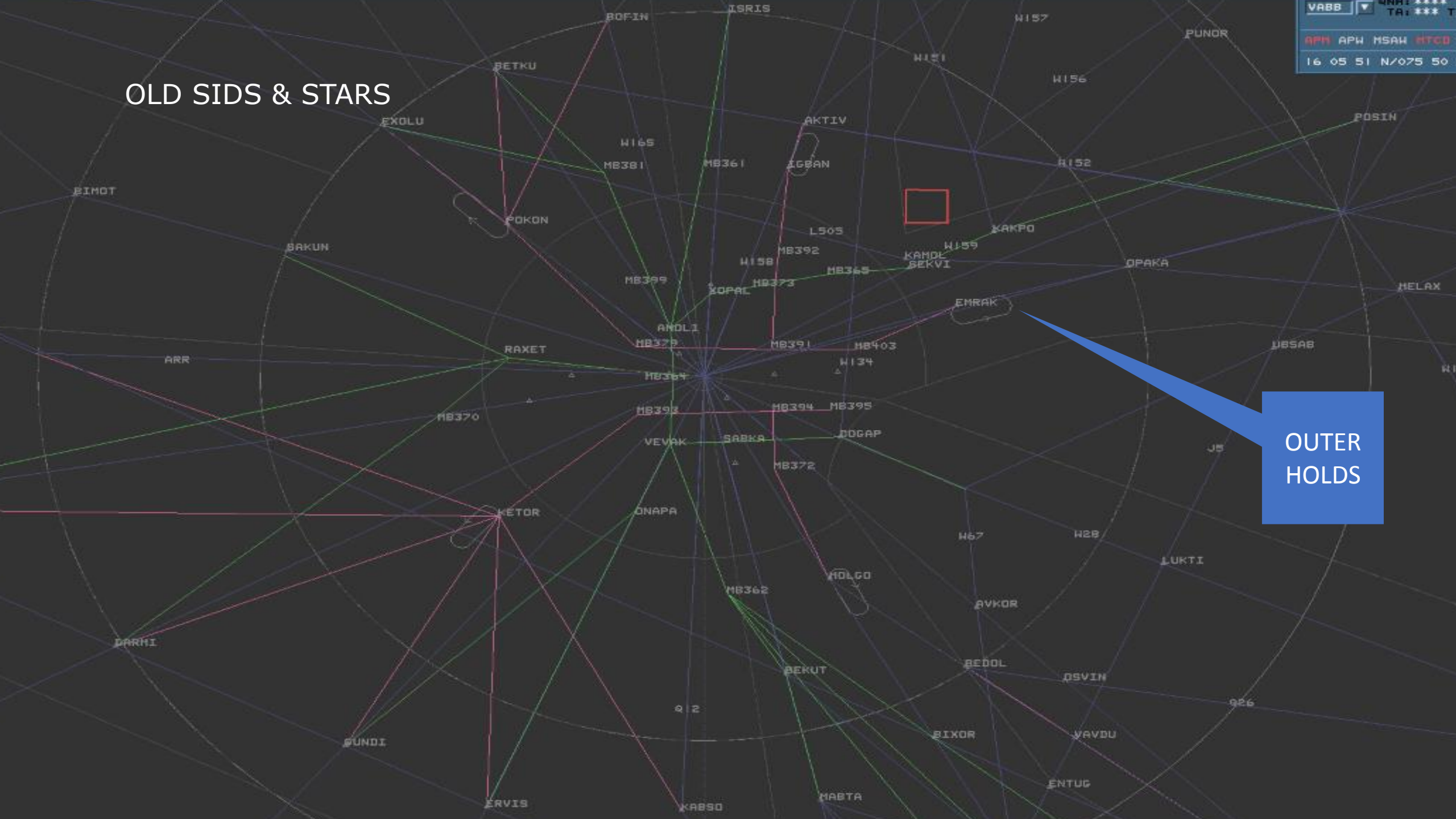
- The Safety Requirements for “Change Management” are applicable to all:
 - services and products provided by AAI that may affect operational safety
 - all AAI employees
- All changes to ATM, CNS and Airside Operations of service levels, procedures or equipment which will affect the Performance MUST be assessed to determine the safety magnitude of the change by using SCARS Form (AAI SAF-103)



The Safety Case
Safety Assessment
for
Implementation of revised SIDs/STARs
at
CSMIA Mumbai Airport

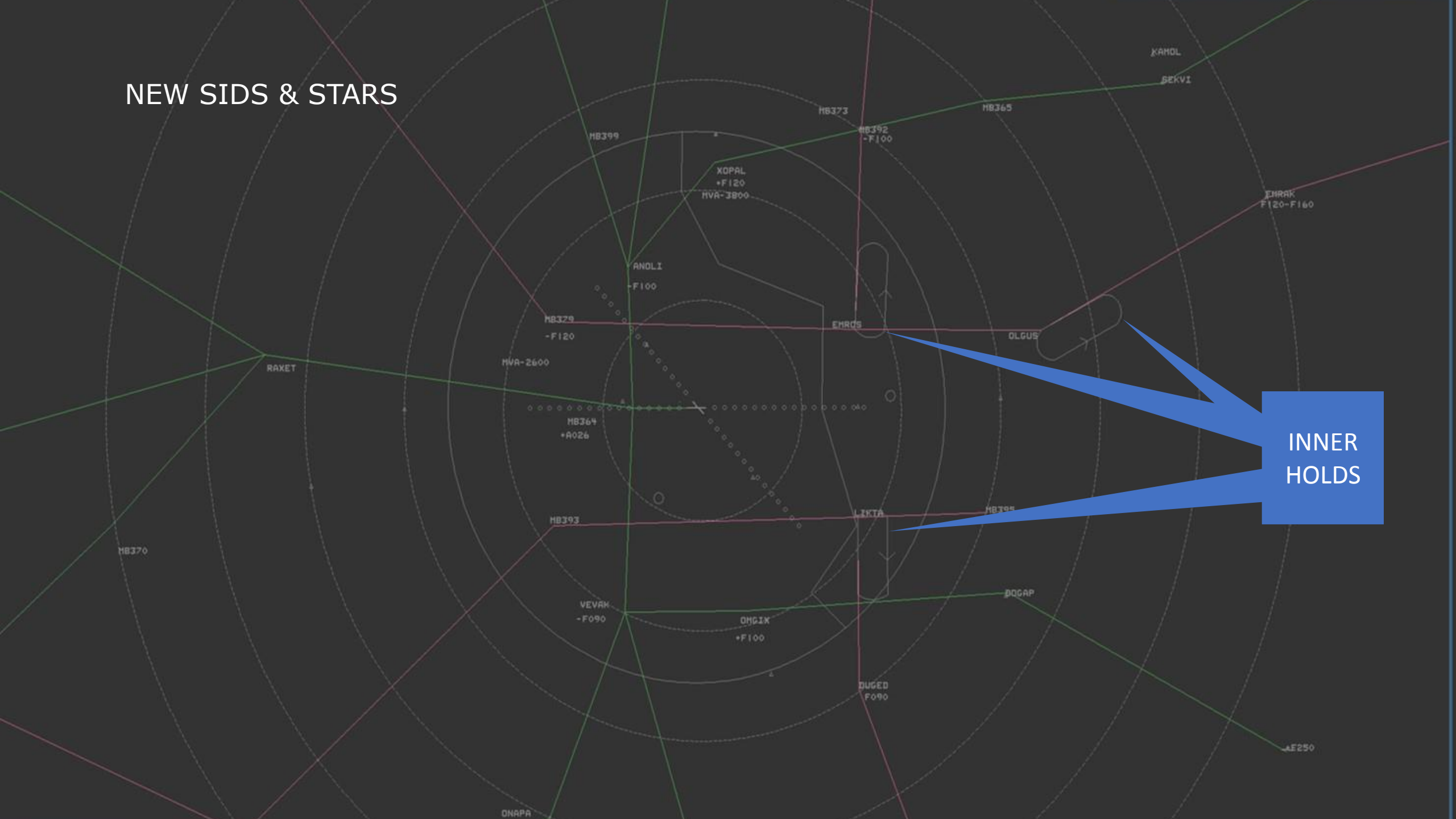
भारतीय विमानपत्तन प्राधिकरण
AIRPORTS AUTHORITY OF INDIA

OLD SIDS & STARS



OUTER HOLDS

NEW SIDS & STARS



INNER
HOLDS

The Project

- Revising SPD/ALT restrictions of the published terminal procedures.
- Introduction of Inner Holds (recommended by consultants too!)
- Change of nomenclature of way points.

Essence of the CHANGE

- Publish what we practice!
- Practice what we have published.
- Introduction of INNER Holds

भारतीय विमानपत्तन प्राधिकरण
AIRPORT AUTHORITY OF INDIA

Challenges

- Overcoming the inertia ATCOs established on a 12 year old proc.!
- Prevalence of attitude to tactically intervene
- Familiarization to a 'non-contact' platform - limited scope of 'contact interaction'
- Safety concepts (identification & naming of hazards..)
- Post Implementation Challenge of tactical mgmt. of tfc in Inner Holds post the pandemic!

Strengths

- Conduct of contact interactive sessions for sensitization on the project for internal/external stake holders in the past
- Familiarization sessions on a non contact platform for ATCOs so as to ensure robust interaction
- Availability of PBN Proc. Design/SMS trained personnel locally
- Higher management commitment!

Data Driven Decision Making

- Although NIL data incidents directly attributable to the published terminal procedures, increase in inefficiencies (owing to increase in tfc.) over a long period of time *could* induce safety concerns!
- Few incidents in the past (in the absence of Inner Holds) wherein breach in separation betn ARRrS subjected to hold randomly along the procedure.



SCARS ACTIVITY – SAF 103

भारतीय विमानपत्तन प्राधिकरण
AIRPORTS AUTHORITY OF INDIA

The SCARS activity – assess size of change

- Significance of change within and beyond AAI
- Safety significance of services affected
- Training component (ANS)
- Complexity of transition.
 - Size of Change ----SMALL(18)

The SCARS activity-assess safety outcome

- Hazards-
 - Inner holds infringe SIDs
 - For RWY CHG, inner holds for the 2 RWYs mutually conflict
 - Issuance of ATCC not meeting the REVISED constraint
 - On board data not updated
 - Non availability of appropriate SUR (S Band Radar)
 - Generation of frequent TA/RA due higher climb/descend rate owing to 1000 ft sepn. between ARR/DEP.
 -some (identified) hazards were down played and finally eliminated..
- 40%----MINIMAL

The SCARS activity – assess overall safety magnitude of CHANGE

- Size of Change – Small
 - Safety outcome of Change – Minimal
 - Resultant overall safety magnitude – MINOR
 - Safety reporting determination – Safety Statement
-
- *'I approve the change and accept the Safety Assessment'*

Challenges & the way forward

- Test of Efficacy of new procedures and safety issues, if any, would have to wait till traffic attains pre pandemic levels.
- Skill for accurate identification of hazards by stake holders
- Apt Justification while assessing size of change could elicit accurate rating values.
- Further sensitization on principles of Safety Management!
 - Various training institutes of AAI have been conducting online SMS courses quite frequently..



QUESTIONS ?

भारतीय विमानपत्तन प्राधिकरण
AIRPORTS AUTHORITY OF INDIA



Airports Authority of India

Safety Case Assessment and Reporting System (SCARS)

The SCARS form must be used to assess permanent as well as temporary changes to service levels, procedures or equipment, which will affect the performance, functional or technical specification of a system, facility or service and for organisational changes affecting safety accountabilities.

This form must be completed by the process owner possessing specialist knowledge about the proposed change with inputs from other group members (stakeholders) through a process of discussion and then be reviewed and approved by the appropriate Manager.

Introduction:

This form must be used to determine the overall safety magnitude of a project/change and the type of safety report required to be produced and the associated requirements for sign-off acceptance. This completed form is NOT a safety assessment report but the first step in the safety analysis of change.

Project Number	File Number

Project Title		
Location	Unit	
Brief Description of the Project / Change		



Step 1: Assess the SIZE OF THE CHANGE

Complete the following questions to determine the size of the change. For each question, choose a rating from 1 to 7 as defined below and provide justification.

**1 - Extremely Low; 2 - Very Low; 3 - Low; 4 - Moderate; 5 - High;
6 - Very High; 7 - Extremely High**

NOTE: These questions are not definitive and are aimed at providing a generalised framework for the initial assessment of the overall safety magnitude of the change.

No.	Description	Rating
1	Assess the significance (scope/scale) of the project/change within AAL. Consider the number of work areas affected: ATM, CNS, Airport Airside Operations, ARFS, etc. Also consider disciplines, systems, locations, business processes and organisation structures.	1 2 3 4 5 6 7
Justification:		
2	Assess the significance of the project/change outside AAL. Consider the number of services users and/or stakeholders affected, including the interfaces between these parties, eg government departments, customers and other ANSPs.	1 2 3 4 5 6 7
Justification:		
3	Assess the level of new functionality introduced, or removed, by the proposed project/change, as opposed to the existing system, facility or service. Does the new system enhance/reduce existing functionality or provide different functionality? Consider new technology.	1 2 3 4 5 6 7
Justification:		
4	Assess the safety significance of the systems, facilities or services affected by the project/change? Consider for example radar systems, communication systems, data systems, AFTN, Runways, Taxiways and any organisation systems such as safety reporting etc (People/Procedures/Technology)	1 2 3 4 5 6 7
Justification:		



5	Assess the training component associated with implementing the project/change? Consider type of training required, classroom or simulation, time lines, resources, recency requirements, etc.	1	2	3	4	5	6	7
Justification:								
6	Assess the complexity of the transition from the existing system, facility or service? Consider resources available, documentation, time lines, approvals, contingency arrangements, organisational changes, multiple locations etc.	1	2	3	4	5	6	7
Justification:								
7	Size of Project/Change Rating. Total the scores from questions 1 to 6 and compare to the values below.	TOTAL						
	Select the resultant size.							
Small = 6 to 18			Medium = 19 to 30			Large = 31 to 42		

**Step 2: Assess the SAFETY OUTCOME OF THE CHANGE**

To assess the safety outcome of the project/change, conduct a preliminary hazard analysis to determine the likely hazards that may result from the project/change and complete the table below. Giving consideration to the effect of consequences of the likely hazards with existing Controls, assign the ratings from 1 to 7 [1 (No effect), 2 (little effect), 3 (Some effect), 4 (reasonable effect), 5 (high effect), 6 (very high effect), 7 (extremely high effect)], estimate the Safety Outcome as Minimal, Reasonable or Substantial and enter this below

Hazard (as defined in Doc 9859):

A condition or an object with the potential to cause injuries to personnel, damage to equipment or structures, loss of material, or reduction of ability to perform a prescribed function

Hazard no	Hazard Description	Consequences of Hazard	Existing Controls	Assign Rating based on effect on Safe operations with existing Controls							Brief justification for assigning Rating
				1	2	3	4	5	6	7	
Hazard 1											
Hazard 2											
Hazard 3											
Hazard 4											
Hazard 5											
				TOTAL:							

List all persons assisting in the analysis process:

*Must include representatives from all significant Stakeholder Groups (eg ATM/CNS, GFS, Aviation Safety)

Name:	Position:	Signature with Date:
Name:	Position:	Signature with Date:
Name:	Position:	Signature with Date:
Name:	Position:	Signature with Date:
Name:	Position:	Signature with Date:

Enter the estimated Safety Outcome of the change.	Result:
---	---------

Equation for Percentage:

$$\frac{\text{Total score}}{(\text{7x No. of Hazards})} \times 100 = \text{xxx}\%$$

Safety Outcome Result:

Substantial: 73% or more
Reasonable: 45% - 72%
Minimal: Up to 44%

Step 3: Assess the OVERALL SAFETY MAGNITUDE OF THE CHANGE

The Overall Safety Magnitude of the Change is a combination of the size of the change and the safety outcome of the change. Apply the results obtained from Steps 1 and 2 to the matrix below and tick the appropriate box to determine the Overall Safety Magnitude of the Change.

Overall Safety Magnitude of the Change					
Overall Change Magnitude	Safety Outcome of the Change				
	Substantial		Reasonable		Minimal
Size of the Change					
Large	Major	<input type="checkbox"/>	Major	<input type="checkbox"/>	Moderate <input type="checkbox"/>
Medium	Major	<input type="checkbox"/>	Moderate	<input type="checkbox"/>	Minor <input type="checkbox"/>
Small	Moderate	<input type="checkbox"/>	Minor	<input type="checkbox"/>	Minor <input type="checkbox"/>

Step 4: Safety Reporting Determination

Tick the box in the table below to indicate the type of safety report to be prepared for the change.

Overall Safety Magnitude of Project/Change	To be reported as.....
Major <input type="checkbox"/>	Safety Case + Safety Plan + HAZLOG
Moderate <input type="checkbox"/>	Safety Statement + HAZLOG
Minor <input type="checkbox"/>	Safety Statement

Step 5: Safety Statement (For Minor or Moderate Change)

Name:	Position:	Date:
Statement: I confirm that using the processes described above that I am satisfied that the proposed project/change is of a minor or a moderate safety magnitude. I am satisfied that the safety implications of the proposed change will be identified and adequately addressed via AAI's safety management and project management procedures.		

NOTE: Please attach HAZLOG report as required.

Step 6: HAZLOG Register (For Moderate or Major Change)

HAZLOG Register Title:	
Dated:	
Location:	
Unit:	

Step 7: Safety Case (For Major change)

(Tick Required box)

Preparation of Safety Case assigned to:

Name:	Position:	Signature/Date:

Step 8: Sponsor

To be completed by the person, or Project Manager, who initiated the change.

Name:	Position:	Signature/Date:

Step 9: Certification

To be completed by the person who facilitated the Safety Assessment.

I certify that the Safety Assessment was conducted, fulfilling the requirements of the SMS.

Name:	Position:	Signature/Date:

Step 10: Approvals

Relevant Service Delivery Unit Manager-GM (Aerodromes/ATM/CNS/Ops & ASM) or APD.

I approve the change and accept the Safety Assessment.

Name:	Position:	Signature/Date:

Step 11: Review

Reviewed and agreed by CHQ (if deemed necessary):

Name:	Position:	Signature/Date: