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PERFORMANCE OF STATE SAFETY PROGRAMME IN INDIA

(Presented by India)

EXECUTIVE SUMMARY	
This paper outlines the progress made in implementation of State Safety Programme (SSP) in India. India has identified its State safety priorities and is working towards its mitigation.	
Strategic Objectives:	This information paper relates to the Safety Strategic Objective.
Financial implications:	Nil
References:	Annex 1 — *Personnel Licensing* Annex 6 — *Operation of Aircraft* Annex 8 — *Airworthiness of Aircraft* Annex 11 — *Air Traffic Services* Annex 13 — *Aircraft Accident and Incident Investigation* Annex 14 — *Aerodromes* Annex 19 — *Safety Management* Doc 9859, *Safety Management Manual (SMM)* SSP India, State Safety Plan 2015-2016 State Safety Plan Handbook, http://www.dgca.nic.in

1.   **INTRODUCTION**

1.1   Traditionally, safety has been managed through prescriptive regulation i.e. the regulator defines the rules and standards to be followed by the service providers and evaluate their compliance through audit and surveillance. This approach requires a great deal of specialist resource on the part of the regulator and is often over-constraining for the regulated entity, particularly in the introduction of new processes and technologies.

The International Civil Aviation Organization (ICAO), through its Standard and Recommended Practices (SARPs), as contained in Annex 19 — *Safety Management,* and the *Safety Management Manual (SMM)* (Doc 9859), has adopted the concept of Acceptable Level of Safety (ALoS) in aviation. This objective approach for managing the safety recognises the limitations of the prescriptive approach and the fact that the absolute safety is generally an unachievable and very expensive goal. This provides a structured and balanced approach for managing the risks which are existing in a State/organisation. Here managing the safety is much more clearly the responsibility of the operator/service provider, the regulator's role being mainly to ensure that the service provider discharges his responsibilities properly.

1.2   The ALoS expresses the safety goals of an oversight authority, an operator, or a services provider. The concept of acceptable level of safety is expressed by two specific metrics, namely safety performance targets and safety performance indicators. The regulator sets objectives for the achievement and demonstration of safety - acceptable (or tolerable) safety levels - and the service provider has to demonstrate that those objectives have been met while conducting their core business functions. Factors such as the complexity of operations, the operational context, past safety performance, existing safety regulatory framework, applicable safety standards, etc. are considered while accepting the Safety performance indicators.

1.3   While following a phase wise programme India defined it ALoS in terms of seven key safety priorities. For each State safety priority, we have developed safety objectives; proposed a desired safety outcome and developed a safety action plan and a number of safety performance indicators (SPIs). These are explained in more detail in State Safety Plan Handbook, available on DGCA website www.dgca.nic.int.

2.   **DISCUSSION**

2.1   Legislative provisions

2.1.1   In the year 2010, Rule 29C was incorporated in the Aircraft Rules 1937 for the establishment of the State Safety Programme by the State followed by incorporation of Rule 29D for the introduction of safety management system by the service providers as mandated in ICAO Annex 1 — *Personnel Licensing,* Annex 6 — *Operation of Aircraft,* Annex 8 — *Airworthiness of Aircraft,* Annex 11 — *Air Traffic Services,* Annex 13 — *Aircraft Accident and Incident Investigation* and Annex 14 — *Aerodromes.*

2.2   2.2   State Safety Programme-India

2.2.1   To provide direction in the implementation of the State Safety Programme (SSP) at the State level and SMS at the service provider level, SSP – India, a higher level document was issued in the year 2010. The SSP-India provides a framework to meet the safety management provisions contained in

ICAO Annexes 1, 6, 8, 11, 13 and 14 and to progressively improve safety performance across all affected aviation service providers.

2.3   To ensure the implementation of the State Safety Programme, Phase wise Implementation Plan was made. Each phase defined a set of activities required to be accomplished.

2.3.1   Phase 0:

a)   initial implementation of SSP and basic safety oversight functions;
b)   establish processes to ensure safety legislation remains relevant;
c)   ensure service providers are using HIRM techniques and are implementing risk controls;
d)   establish State safety database and library; and
e)   provide safety training to DGCA staff .

2.3.2   Phase 1:

a)   initial implementation of SSP and basic safety oversight functions;
b)   establish processes to ensure safety legislation remains relevant;
c)   ensure service providers are using HIRM techniques and are implementing risk controls;
d)   establish State safety database and library; and
e)   provide safety training to DGCA staff .

2.3.3   Phase 2:

a)   review enforcement policy to reflect principles of SMS;
b)   determine current level of safety performance and develop a State-level Acceptable Level of Safety Performance (ALoSP) for high consequence events;
c)   establish an internal SSP audit function (IAQA); and
d)   develop training and guidance material for service providers.

2.3.4   Phase 3:

a)   determine current level of safety and develop a State-level Acceptable Level of Safety Performance (ALoSP) for lower consequence events;
b)   measure the safety performance of service providers;
c)   develop a State-level plan to achieve target ALoSP ;
d)   develop a risk-based approach to safety oversight inspections etc.; and
e)   develop and implement means of internal and external communication.

3.   **STATE SAFETY PLAN AND ACCEPTABLE LEVEL OF SAFETY:**

3.1   The Director General of Civil Aviation (DGCA) -India has developed State Safety Plan 2015-2016. It is an outcome of some of the activities described in the SSP and implemented in accordance with the with the phase wise activities as set forth in Para 2.2 above. It has been supported by the work

undertaken by stakeholders in the development and implementation of their (SMS). It has been developed in partnership with the service providers and sets out the States' safety priorities, objectives, safety performance indicators and associated action plans with the sole aim of further improving safety across the civil aviation industry.

3.2 Key Safety Priorities

3.2.1 By reviewing the global best practices and using its own experience, supported by data from the State Safety Database, DGCA India is targeting seven State Safety Priorities which are:

a) airborne conflict;
b) controlled flight into terrain;
c) runway excursions and overruns;
d) wildlife and bird strikes;
e) loss of control in flight;
f) ground collisions and ramp safety; and
g) deficient maintenance

3.2.2 These safety priorities provide a focus for the DGCA and the wider-aviation community during the year 2015 and 2016.

3.3 **Performance of Key Safety Priorities**:

3.3.1 Performance of each key safety priority is being measured in terms of certain indicators. Matrix for each key safety priority, indicating the targets and achieved performance for the year 2015 are placed below.

3.3.2 Airborne Conflict:

S.No.	Performance Indicators	Target	Achieved Performance for the year 2015
1	Number of risk bearing AIRPROX per 10, 00,000 flights over Indian airspace.	1.53	1.41
2	Number of TCAS RA in controlled airspace leading to breach of separation per 10,00,000 flight over Indian airspace.	11.71	11.75
3	Number of aircraft not or incorrectly complying with ATC instructions (including level bust) per 10,00,000 flights over Indian airspace	5.60	2.82
4	Number of AIRPROX attributable to ATC/system failure per 10,00,000 flights over Indian airspace	9.16	8.93

3.3.2.1 The TCAS RA in controlled airspace have marginally overshot the target however the risk bearing Airprox are within the manageable limits.

3.3.3   Controlled Flight into Terrain:

S.No.	Performance Indicators	Target	Achieved Performance for the year 2015
1	Number of GPWS/EGPWS warnings (Scheduled airlines)per 10,000 departures	0.072	2.58
2	Number of helicopter VFR flights that make emergency landing due to degraded visual environment per 10,000 departures	0.92	0.225

3.3.3.1   Number of GPWS/EGPWS warnings have increased, many are due to equipment issues, unstabilised approaches, issues specific to the system. Matter is being further analysed.

3.3.4   Runway Excursions and Overruns:

S.No.	Performance Indicators	Target	Achieved Performance for the year 2015
1	Number of unstabilised approaches per 10,000 approaches	9.51	16.35
2	Number of unstabilised approaches that continue to land per 10,000 approaches	1.281	14.5
3	Number of unstabilised approaches when performing a precision approach per 10,000 approaches.	4.98	9.66
4	Number of unstabilised approaches when performing a non-precision approach (no vertical guidance) per 10,000 approaches.	1.558	3.18
5	Number of unstabilised approaches when performing a visual approach per 10,000 approaches	2.97	3.51
6	Number of 'near' runway excursions per 10,000 approaches	0.042	0
7	Number of runway excursions per 10,000 approaches	0.072	0.045

3.3.5   Wildlife and Bird Strikes:

S.No.	Performance Indicators	Target	Achieved Performance for the year 2015
1	Number of reported bird strikes at Indian airports per 10,000 movements (movements only for 18 Major Airports in India)	4.68	3.16
2	Number of reported wildlife strikes at all Indian airports per day.	1.99	2.1

3	Number of runway incursions by wildlife at all Indian airports per day	0.075	0.041

3.3.6   Loss of Control in Flight:

S.No.	Performance Indicators	Target	Achieved Performance for the year 2015
1	Loss of control precursor events per 10000 departures: • Actual stick-shake and alpha floor • Low speed during approach events • Low speed during cruise events • Bank angle exceeding maximum permitted as per AFM for aircraft type • Wind shear below 500 feet	2.58	1.043
2	Proportion of aircraft operators that actively monitor loss of control precursor measures (Only Scheduled operators)	100%	100%
3	Number of operators that have implemented loss of control training	100%	100%

3.3.7   Ground Collision and Ramp Safety

S.No.	Performance Indicators	Target	Achieved Performance for the year 2015
1	Number of runway incursions (aircraft)	(15)	(10)
2	Number of runway incursions (vehicle)	(1)	(2)
3	Number of runway incursions (person)	(4)	(2)
4	Number of ramp incidents that result in damage to aircraft, vehicles or loss of life/serious injury to personnel	(42)	(43)

3.3.8   Deficient Maintenance:

S.No.	Performance Indicators	Target	Achieved Performance for the year 2015
1	Incident involving component/system failure	(398)	(394)
2	Number of Maintenance errors	(22)	(54)

3.4   From above it is seen that the unstabilised approaches which continue to land together with ground collision and Ramp safety are issue of concern for India. Reporting of the maintenance errors have increased and we expect further rise.

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