6 January 2023

Shri Akhilesh Kumar Trivedi
Advisor (Networks, Spectrum and Licensing)
Telecom Regulatory Authority of India
Mahanagar Doorsanchar Bhawan,
Jawahar Lal Nehru Marg,
New Delhi - 110002

Email: advmn@trai.gov.in

Dear Shri Akhilesh Kumar Trivedi,

Consultation Paper No. 14/ 2022: "Consultation Paper on Data Communication Services Between Aircraft and Ground Stations Provided by Organizations Other Than Airports Authority of India"

The International Air Transport Association (IATA) is the global trade association for the airline industry, representing some 300 member airlines in 120 countries. Carrying 83% of the world's air traffic, IATA members include the world's leading passenger and cargo airlines. We appreciate your efforts of following due process, prior consultation and inviting comments for the proposal.

Our opinions and comments about the referred Consultation Paper, particularly about Question 1, are as below:

Q1. Whether there is a need to bring data communication services between aircraft and ground stations provided by organizations other than AAI (Airport Authority of India) under service licensing regime? Kindly provide a detailed response with justification.

IATA response:
IATA believes that there is no need to bring Aircraft-Ground Station Data Communication services under the licensing regime. A licensing regime or an auction price method to assign VHF licenses will likely cause an increase in fees for said services which are critical for Aviation safety. The passthrough of any such increased costs to the airlines and passengers may negatively impact the overall air traffic growth as well as the ability to comply with international & national regulatory requirements.

There is a continuing need to allow data communication service providers - other than the Airports Authority of India (AAI) to provide the data communication service between the aircraft and ground stations. However, the same does not need to be brought under a licensing regime or an auction price method.

IATA would like to highlight the following for your consideration:

- Band reserved for a specific purpose: The frequency band 117.975–137 MHz is kept reserved by the International Telecommunication Union (ITU) for Air Ground and Ground-Air critical "voice" and "data communications."

- Operational Safety purpose: Data communication in this frequency band establishes reliable surveillance and communication between aircraft airborne systems, pilots and air traffic control, and the airline flight operation control Centre. It is utilised by service providers other than just AAI (which currently includes SITA and Collins Aerospace – represented by Bird Consultancy Services in India) for aircraft-to-airline operational control communication.

- ICAO Mandates for Normal Aircraft Tracking: All air operators are responsible for compliance with the mandate of the International Civil Aviation Organisation (ICAO) for global aircraft tracking with a time interval of every 15 minutes (whenever air traffic services obtain an aircraft's position information at 'greater than 15-minute intervals'). Thus Air-Ground Data Communication is an important means to comply with the mandatory aircraft tracking requirement. The Directorate General of Civil Aviation for India (DGCA) too has accordingly mandated and emphasised normal aircraft-tracking as a pre-emptive step[1] towards Safety enhancement.

- Chicago convention: A licensing regime or an auction price method to assign VHF licenses (other than AAI) may go against the spirit of the Convention on International Aviation, usually referred to as the Chicago Convention's Article 15[2], which specifically mentions **radio services.**

- Global Practice: Across most countries, these services are 'seamlessly' made available in line with the basic principles of the Chicago convention, the categoric reservation of this frequency band by the ITU, and the operational-safety purpose, mandatory aircraft tracking requirement fulfilled with the air-ground datalink. To avoid operational compromises, **it is not the norm that an ICAO contracting state imposes an auction pricing-based licensing regime for these services.** Most Licensors globally levy a nominal administrative fee from the Communication Service Provider.

India is a signatory to the Chicago convention and ICAO contracting state. India also chairs the ICAO's Air Transport committee. We do hope that India would allow VHF Data communication service providers (other than the Airports Authority of India) to provide these services between the aircraft and ground stations without any auction pricing-based licensing regime.

In case of further clarifications are required, we will be glad to provide you with additional inputs upon your request.

IATA thanks you for your cooperation.

Yours sincerely,

Amitabh Khosla
Country Director - India
khoslaa@iata.org

Encl:
- ICAO Update on GADSS Global Aircraft Tracking Initiatives
- DGCA Operations Circular – OC NO 7 of 2018
- Chicago convention at link

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[1] *DGCA OC NO 7 of 2018: Monitoring of aircraft is an integral part of an operator's aircraft tracking capability. One by-product of such routine operational monitoring is the potential for an operator to take the pre-emptive steps necessary to identify, query and monitor a flight that may be experiencing an **abnormal operation or event**. In many cases, this can be readily accomplished using the existing operator systems, aircraft technologies and related resources already dedicated to aircraft tracking under normal conditions.*

[2] *Extract from the Article 15 of the Chicago convention:*
Airport and similar charges:
- *Every airport in a contracting State which is open to public use by its national aircraft shall likewise, subject to the provisions of Article 68, be open under uniform conditions to the aircraft of all the other contracting States. The like uniform conditions shall apply to the use, by aircraft of every contracting State, of all air navigation facilities, **including radio** and meteorological services, which may be provided for public use for the safety and expedition of air navigation.*

Appendix 1

Update on GADSS Global Aircraft Tracking Initiatives
March 2016

Normal Aircraft Tracking

On 10 November 2015, the ICAO Council adopted Amendment 39 to Annex 6 — *Operation of Aircraft*, Part I — *International Commercial Air Transport — Aeroplanes* which included the normal aircraft tracking Standards and Recommended Practices (SARPs). These SARPs became effective on 20 March 2016 and will be applicable on 8 November 2018. Amendment 39 will be issued in April 2016.

The normal aircraft tracking SARPs establish the air operator's responsibility to track its aircraft throughout its area of operations. It establishes an aircraft-tracking time interval of 15 minutes whenever air traffic services obtain an aircraft's position information at greater than 15-minute intervals for aeroplanes with a seating capacity greater than nineteen. This aircraft-tracking time interval further applies as a recommendation to all operations of aircraft with a take-off mass of 27 000 kg and as a requirement to all operations of aircraft with a take-off mass of 45 500 kg when flying over oceanic areas.

The SARPs also establish the requirements for data retention to assist search and rescue (SAR) in determining the last known position of the aircraft. Finally, the SARPs establish when an air operator needs to report missing aircraft position information.

Location of an aeroplane in distress (ADT – Autonomous Distress Tracking)

On 2 March 2016, the ICAO Council adopted Amendment 40 to Annex 6, Part I which included, among other elements, SARPs relating to the location of an aeroplane in distress. These SARPs address the Global Aeronautical Distress Safety System (GADSS) autonomous distress tracking (ADT) concept. The SARPs will become effective on 11 July 2016 and will be applicable on 1 January 2021. Amendment 40 will be issued in July 2016.

The SARPs relating to the location of an aeroplane in distress establish the requirement for an aeroplane to autonomously transmit information from which a position can be determined at least once every minute when in a distress condition. An aircraft is in a distress condition when it is in a state that, if the aircraft behaviour event is left uncorrected, could result in an accident. The SARPs are applicable to new aeroplanes with take-off mass greater than 27 000 kg from 1 January 2021. The requirement also recommends that it applies to new aeroplane with take-off mass greater than 5 700 kg from the same date.

The SARPs specify that autonomous transmission of position information needs to be active when an aircraft is in a distress condition. This will provide a high probability of locating an accident site to within a 6 NM radius. It also specifies that the transmission can be activated manually. The SARP is not technology-specific and will allow for various solutions, including a triggered transmission system. It specifies performance criteria such as that the autonomous transmission of position information needs

to be capable of transmitting the information in the event of aircraft electrical power loss, at least for the expected duration of the entire flight.

The SARP also establishes the requirements for making this information available to the relevant authorities such as SAR Regional Coordination Centers and air traffic services. Finally, although these SARPs apply only to newly manufactured aircraft, there is an incentive to retrofit aeroplanes with ADT systems since they can replace one of two required emergency locator transmitters (ELT).

Ongoing work

The above-mentioned adopted SARPs (Amendments 39 and 40) provide clarity on the information that will be available when they become applicable. ICAO is now working on reviewing procedures for air navigation services (PANS), and possibly other Annexes, to ensure that the flow of information is well-established by the time these new systems come online.

These SARPs will be available in the ICAO online store at http://store1.icao.int/ on the above-mentioned issuance dates.

Appendix 2

GOVERNMENT OF INDIA
CIVIL AVIATION DEPARTMENT
DIRECTOR GENERAL OF CIVIL AVIATION

OC NO 7 OF 2018
Date: 29th October 2018

OPERATIONS CIRCULAR

File No AV 22024/12/2018-FSD

Subject: Aircraft Tracking Requirements.

1. INTRODUCTION

Routine aircraft tracking under normal conditions is a core component of Global Aeronautical Distress & Safety System (GADSS), it addresses the growing consensus in the global aviation community that the location of an aircraft should always be known.

The need for aircraft tracking has gained importance following the mysterious loss of a large passenger aircraft, while on a scheduled passenger flight. ICAO initiated several studies on the subject and has subsequently issued Standards and Recommended Practices (SARPs) relating to aircraft tracking requirements in ICAO Annex 6 Part 1.

Aircraft tracking is a near-term solution intended to leverage existing technologies to:

a) Assist in the timely identification and location of aircraft;

b) Reduce the reliance on the procedural methods used for determining aircraft position;

c) Help to ensure the availability and sharing of accurate aircraft position data (with the relevant entities); and

d) Help to improve the effectiveness of air traffic services unit (ATSU) alerting and support SAR (Search and Rescue).

Monitoring of aircraft is an integral part of an operator's aircraft tracking capability. One by- product of such routine operational monitoring is the potential for an operator to take the pre-emptive steps necessary to identify, query and monitor a flight that may be experiencing an abnormal operation or event. In many cases, this can be readily accomplished using the existing operator systems, aircraft technologies and related resources already dedicated to aircraft tracking under normal conditions.

2. PURPOSE

The SARPs in ICAO's Annex 6 — Operation of Aircraft, Part I — International Commercial Air Transport — Aeroplanes, Section 3.5 were adopted by the ICAO Council to expedite the implementation of a near-term and routine aircraft tracking solution. DGCA has implemented these SARPs by incorporating them in CAR Section 8 Series O Part II. This circular is intended to support the implementation of operator aircraft tracking policies, processes and procedures. Its purpose is to provide Information for stake holders and operators on how to implement these aircraft tracking provisions of CAR Section 8 Series O Part II which will become applicable on 8 November 2018.

The information contained in this circular is based on current industry best practices and on the use of readily available or emerging technologies. It is intended to support the uniform implementation of the aircraft tracking

3. Applicability

This circular contains supplementary information relating to requirements promulgated in paragraph 3.5 of CAR Section 8 Series O Part II. This circular is applicable to Scheduled, Scheduled Commuter and Non-Scheduled operators.

4. Abbreviations

ATSU	-	Air Traffic Service Unit
ACARS	-	Aircraft Communication Addressing and Reporting System
ADS-B	-	Automatic Dependent Surveillance - Broadcast
ADS-C	-	Automatic Dependent Surveillance - Contract
OCC	-	Operations Control Centre
RCC	-	Rescue Coordination Centre
SAR	-	Search and Rescue
SATCOM	-	Satellite Communication
SMS	-	Safety Management System

5. General

5.1 General tracking requirements

4D/15 tracking (4 dimension aircraft position tracking / position obtained every 15 minutes) by operators is recommended in all areas of operation. 4D/15 tracking by operators are mandatorily required in oceanic / remote areas unless ATC provides a 4D/15 service. It should therefore be reflected in operator policy that it is incumbent on the operator to make the determination which routes or route segments will be reliant on participation in a ATSU 4D/15 service and, if applicable, which will require 4D/15 operator tracking. Operator shall;

a) Identify the duties, tasks and actions (and interactions) necessary to track a specific flight or series of flights;

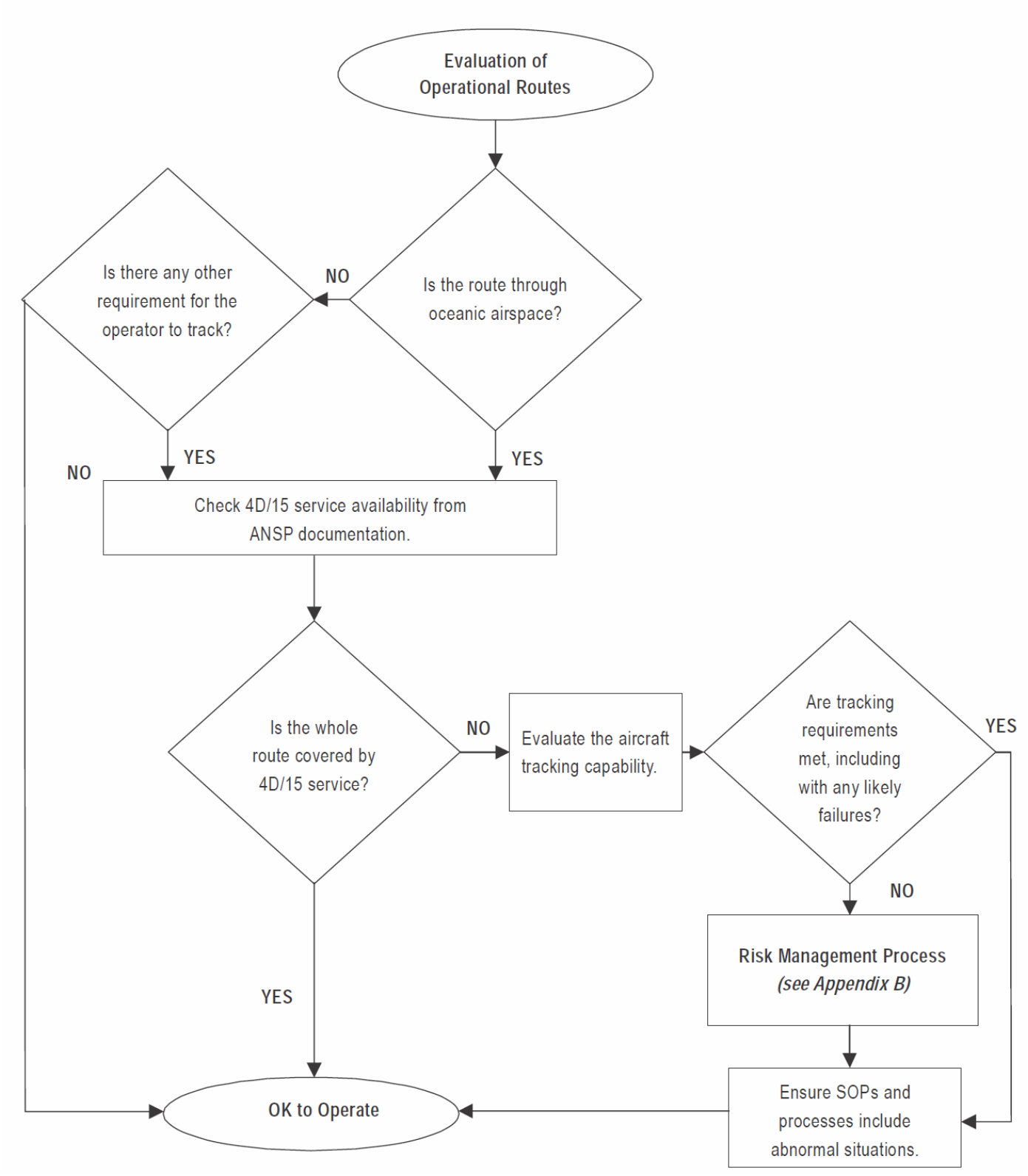
b) Ensure that the duties, tasks and actions related to the tracking of each flight are assigned to the appropriate personnel;

c) Ensure that routes are reviewed, using whatever means available at the flight planning stage to determine whether or not a 4D/15 service is available along an intended route;

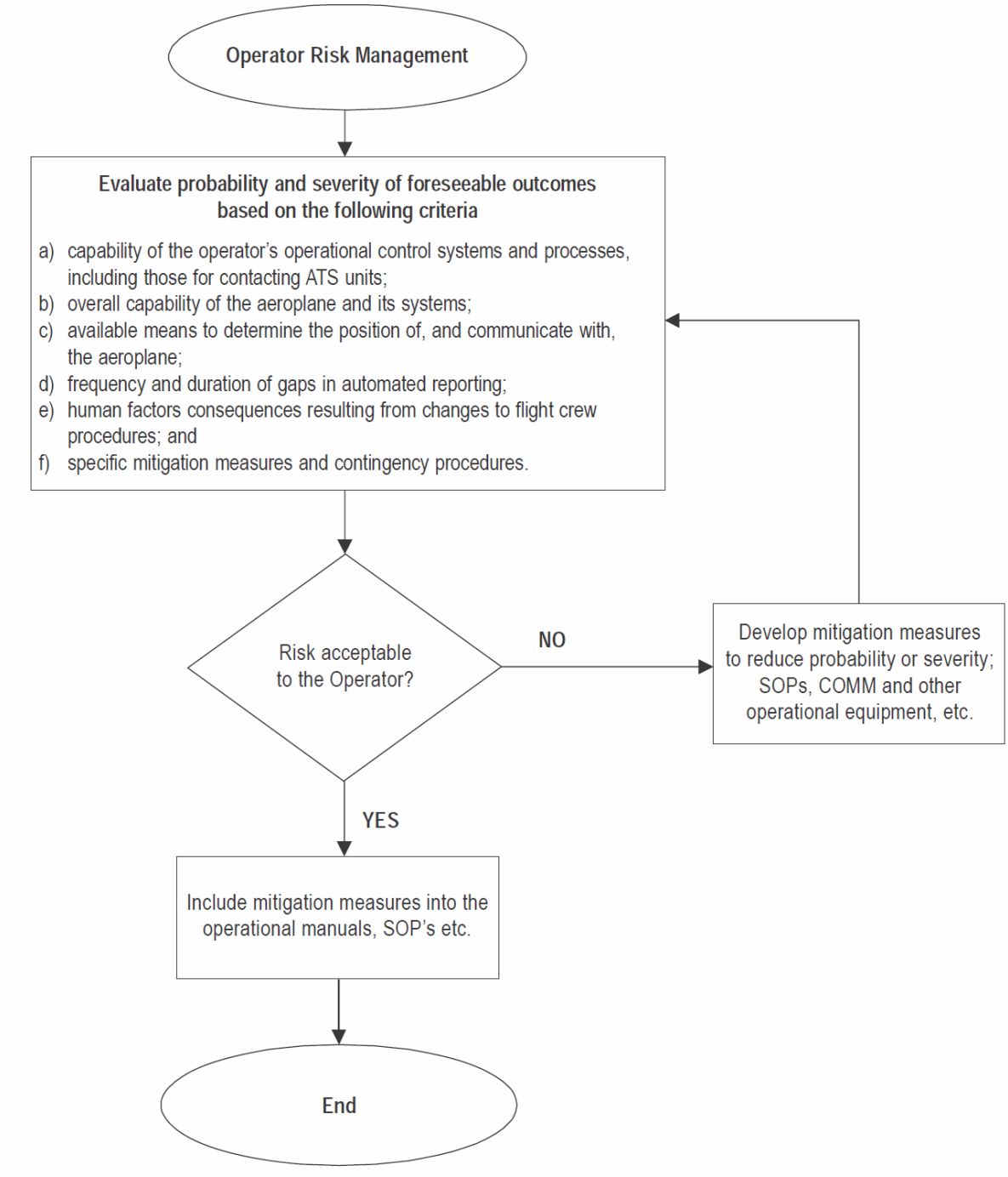
d) Ensure that aircraft equipage matches the 4D/15 service in use;

e) Identify the areas, routes or route segments where 4D/15 tracking would be undertaken by the operator; and

f) Identify when 4D/15 tracking is no longer required (e.g. flight re-enters surveillance airspace or 4D/15 service is otherwise available).



The same shall be reflected in operator policy that if the operator determines (at the planning stage) that a flight or series of flights will not meet (oceanic area) 4D/15 requirements by either means, such flight(s) must have been subjected to a risk assessment process to determine if mitigation measures are necessary in accordance with CAR Section 8 Series O Part II paragraph 3.5.4.


Operator Risk Management
Evaluate probability and severity of foreseeable outcomes based on the following criteria
a) capability of the operator's operational control systems and processes, including those for contacting ATS units;
b) overall capability of the aeroplane and its systems;
c) available means to determine the position of, and communicate with, the aeroplane;
d) frequency and duration of gaps in automated reporting;
e) human factors consequences resulting from changes to flight crew procedures; and
f) specific mitigation measures and contingency procedures.
Risk acceptable to the Operator?
NO
Develop mitigation measures to reduce probability or severity; SOPs, COMM and other operational equipment, etc.
YES
Include mitigation measures into the operational manuals, SOP's etc.
End

5.2 Operational control of tracking

Tracking information shall be monitored by designated operators' personnel such as OCC / flight dispatch for timely detection of abnormal events. Abnormal events are those occurrences, defined by the operator, with the potential to develop into a condition of distress. By defining such events in the context of aircraft tracking, an operator with the requisite capabilities can routinely identify and, when practicable, more closely monitor an aircraft that may potentially be in distress. When such an aircraft is identified, an operator would use all available means to determine its operational state and monitor its position. This may include coordinating with the appropriate ATSU to the extent necessary and when attempts to communicate with the aircraft are unsuccessful.

The aircraft tracking and related monitoring activities rely solely on a missed 4D/15 tracking report as the triggering event for communicating with an aircraft in order to determine its operational state. Under normal conditions, therefore, required operator activities related to the determination of an aircraft's operational state may not begin until a scheduled automated position report is missed.

In contrast, the identification and monitoring activities are triggered by the detection of an aircraft experiencing an abnormal event. They are based on the operator's determination that an abnormal event may have occurred. Such a determination may be based on technologies purposed for aircraft tracking under normal conditions and/or on actionable operational data or information received from other sources.

The abnormal events are those that become known to the operator and can be broadly categorized as follows:

a) events discovered as a consequence of activities related to aircraft tracking under normal conditions (e.g. 4D/15 tracking data received from an aircraft does not coincide with an aircraft's planned, projected or expected 4D position); and

b) any other abnormal event or occurrence, as defined by the operator, that becomes known to the operator and that would, as practicable, need to be communicated to or reconciled with, the flight crew.

If an emergency situation which endangers the safety of the aeroplane or persons becomes known first to the flight operations officer/flight dispatcher, action by that person in accordance with CAR Section 8 Series O Part II, 4.6.2 shall include, where necessary, notification to the appropriate authorities of the nature of the situation without delay, and requests for assistance if required.

In the event of an emergency, the personnel monitoring aircraft tracking/ OCC / flight operations officer/flight dispatcher shall:

a) initiate such procedures as outlined in the operations manual while avoiding taking any action that would conflict with ATC procedures; and

b) convey safety-related information to the pilot-in-command that may be necessary for the safe conduct of the flight, including information related to any amendments to the flight plan that become necessary in the course of the flight.

Note.— It is equally important that the pilot-in-command also convey similar information to the flight operations officer/flight dispatcher during the course of the flight, particularly in the context of emergency situations.

5.3 Resolution of abnormal events

After an abnormal event is detected, the primary objective of the operator is to establish communication with the aircraft by any available means. Operators with access to rapid and reliable communications systems will be able to determine the operational state of aircraft much faster than those with less developed communication capabilities. The capability of an operator to communicate with its aircraft therefore should be addressed by procedure as it may determine when the assistance and support of a relevant ATSU will be required. Operator policy, process and procedures related to resolving detected abnormal events should aim to:

a) determine in a timely manner and by any available means, the operational state of the aircraft;

b) notify the relevant ATSU, under the conditions defined by the operator, including when attempts to contact the aircraft are unsuccessful;

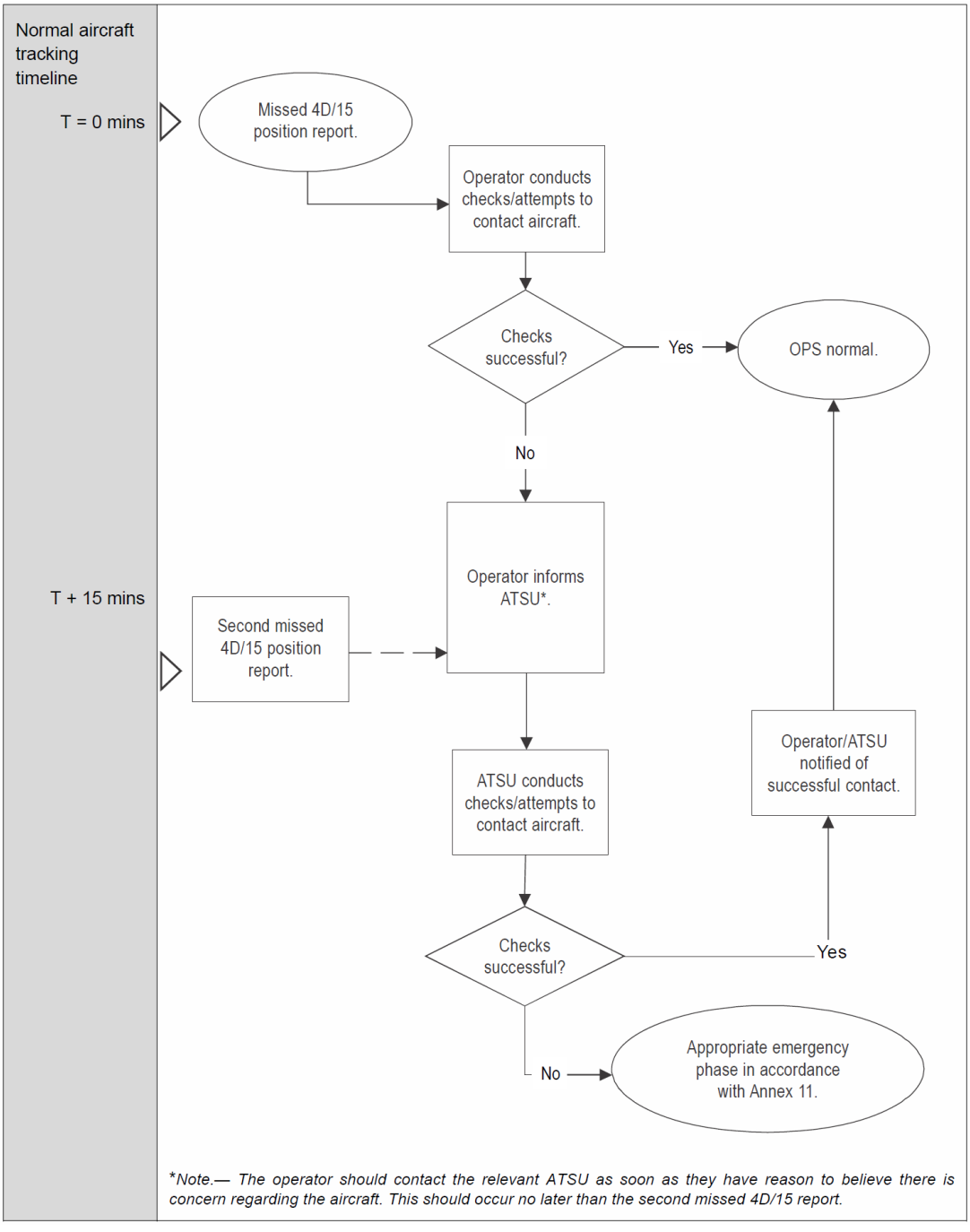
c) ensure operators notify the relevant ATSU immediately should they regain contact with their aircraft;

d) if achievable, trigger an increased automated position reporting interval; and

e) when an abnormal event is resolved and contact re-established with an aircraft, trigger a return to the normal tracking interval.

5.4 ATS unit (ATSU) notification and coordination

Operators shall continually monitor the aircraft tracking process and adopt the following flow process for notifying the appropriate ATS unit.



ATSUs are responsible for providing alerting services that notify appropriate organizations when an aircraft is considered to be in state of emergency. This involves notifying the Rescue Coordination Centers (RCCs). The ATSU serves as the central point for collecting all information relevant to the emergency state of an aircraft operating within the flight information region or control area concerned, and for forwarding such information to the appropriate RCC. However, ATSUs may not always have direct access to the most recent 4D aircraft position data.

When an abnormal event is detected during operator aircraft tracking, and the operational state of the aircraft cannot be determined, the operator contacts the ATSU(s) corresponding with the last known position of the aircraft and expected track. The operator may use the contact directory service for obtaining the ATSU ID and point of contact. Once the ATSU establishes that there may be an emergency, the operator must make available on request, all information which may be of use to the ATSU and/or SAR, including aircraft tracking information.

5.5 Contents of a notification report

The notification report should include, at a minimum, the following information:

1. Initial or subsequent notification indication
2. Flight number and call-sign
3. Aircraft type
4. Last known position (place, time)
5. Time of last communication
6. Last known altitude or flight level
7. Next expected 4D/15 position (if known), and estimate
8. Name of ATSU notified
9. Name of operator
10. Contact details of operator primary point of contact for this event

Supplementary information, if available

11. Contact actions attempted
12. Registration
13. SAR info: colour and distinctive marking
14. Fuel endurance or fuel endurance remaining at last known position
15. Total persons on board
16. Alternate or possible alternates
17. Any other relevant information (e.g. dangerous goods on board, etc.)

Note.— Every attempt should be made to include items 11 – 17 in subsequent reports.

5.6 Follow-up of a notification report

On receipt of such a report, the ATSU would conduct their own attempts to contact the aircraft, in line with their established procedures.

5.7 Action when communication in re-established

Should the ATSU establish contact with the aircraft, the ATSU needs to notify the operator so that the operator may verify if there are any system failures that caused the missed 4D/15 reports. The flight will continue without this capability in the event of a failure, subsequently the operator will re-establish 4D/15 tracking if possible.

5.8 Action when communication is not established: emergency phase declarations

If the ATSU is not able to establish contact with the aircraft, the ATSU will declare the appropriate emergency phase. When determining which emergency phase to initiate, the ATSU will build on the sequence of events that led to the present situation and will consider that, for the event to have progressed to this stage, the following had occurred:

a) one 4D/15 report was missed (possibly more) and the operator was unable to contact the aircraft; and

b) the ATSU was also unable to contact the aircraft.

In the absence of any recent communication between the ATSU and the aircraft, the additional information provided to the ATSU as a result of operator aircraft

tracking will therefore provide direct support to the provision of the appropriate alerting service. The time of the first missed 4D/15 position report, could, in particular, be used as the time at which a loss of communication with the aircraft is assumed to have begun. This may provide enough justification for the ATSU to begin an alert phase because attempts to establish communication with the aircraft or enquiries to other relevant sources have failed. Initiating the alert phase in a timely manner increases the likelihood of finding survivors after an accident.

5.9 Obligations of ATS Units

Should there be an upgrade of the emergency phase after the initial declaration, the ATSU, in accordance with Annex 11, Chapter 5, must inform the RCC immediately. When the ATSU is informed that an aircraft has resumed normal operations or has landed safely following the declaration of an emergency phase, the RCC is informed, without delay, that the emergency situation no longer exists. All information notified to the RCC by an area control or flight information centre should, whenever practicable, also be communicated without delay, to the operator.

6. Understanding the aircraft tracking requirements.

CAR Section 8 Series O Part II defines aircraft tracking provisions that encompass operator responsibilities related to establishing the following:

a) processes to maintain a ground-based record of the position of individual aircraft in flight and that underlie all aircraft tracking SARPs (CAR Section 8 Series O Part II, 3.5.1);

b) automated aircraft position determination and tracking interval recommended in all areas of operation (CAR Section 8 Series O Part II, 3.5.2);

c) automated aircraft position determination and tracking interval required in oceanic areas (CAR Section 8 Series O Part II, 3.5.3);

d) tracking data retention requirements (CAR Section 8 Series O Part II, 3.5.5);

e) risk assessment process required when a flight or series of flights will commence when a recommended or required automated reporting interval is unachievable (CAR 8O2, 3.5.4); and

f) ground-based flight monitoring and ATSU notification requirements (CAR Section 8 Series O Part II, 4.6.1).

7. Implementation planning.

In developing an implementation plan for tracking flights under normal conditions, operators should first perform a self-assessment to determine whether or not they possess or have access to the requisite knowledge, skills and expertise to support the implementation of aircraft tracking as defined in CAR 8O2. Such an assessment would also take into account the ground-based and airborne systems and technologies necessary and available to support tracking activities. The practical outcome of this initial assessment is the definition of the operator's current level of performance with respect to aircraft tracking as defined by the CAR.

7.1 After determining the present state of performance with respect to the desired or required level of aircraft tracking performance, the operator should conduct a formal gap analysis. Such an analysis would identify the components already in place and any additional components necessary to achieve the desired or required level of performance. In many cases, existing systems, technologies, policies, processes and procedures can simply be modified to meet future needs. In other cases, there will be a requirement to close the gap between current and required aircraft tracking performance.

7.2 The operator's aircraft tracking implementation plan, including the desired end-state for its tracking capability, should be subjected to pre/post-implementation risk assessments. This is necessary to identify any existing and potential risks to the operation as well as preclude the introduction of new operational risks as an unintended consequence of implementation. This could be accomplished using a stand-alone risk management component or by addressing intended tracking capabilities (ground-based and airborne) within the operator's safety management system (SMS).

7.3 Consideration should also be given in the implementation plan to developing the risk management component that would ultimately interface with the aircraft tracking component(s) as well as with the SMS (as applicable) and quality systems. This integration would, in turn, ensure that future aircraft tracking systems, processes and activities are subjected to the organization's overarching safety and quality assurance processes.

7.4 Operator processes for the tactical assessment and management of potential risks to the operation should also have sufficient maturity, precision and sophistication to assess the types of risks inherent in the use (or the lack) of particular ground-based and/or airborne aircraft tracking processes or capabilities. In all cases, the aim of the operator's internal processes and controls should be to ensure that there is no reduction in operational performance and/or safety resulting from the implementation of any aircraft tracking capability that meets the criteria of CAR Section 8 Series O Part II, 3.5.2 and 3.5.3 or the mitigation measures resulting from the application of 3.5.4.

8. Evaluation of existing aircraft tracking technologies.

8.1 To determine the best combination of technology, process and procedure to satisfy existing and future aircraft tracking needs, operators need to take a well-considered, methodical and risk-based approach. Any decisions made by an operator should be based on existing/emerging equipage options, area(s) of operation and services provided, regional versus global mandates and any other factors that could influence tracking decisions and/or minimize the introduction of new or unintended risks to the operation or impact to ATS.

8.2 As described in the previous section, it is necessary for operators to have a basic understanding of whether or not the current tools and technologies at their disposal could be used to support automated aircraft tracking activities. Where automated solutions are not currently in place, and depending on the complexity of the operation, operators may have to evaluate new technologies or services.

8.3 As a starting point, an operator would review its existing flight planning/flight tracking systems and aircraft equipage to determine if they are sufficient to meet future or "end-

state" requirements. To satisfy ground-based and airborne aircraft tracking needs, for example, an existing flight planning system and/or flight tracking system could be used to identify areas where tracking is required or recommended in accordance with the aircraft tracking CAR requirements.

8.4 Subsequently, the operator would typically review the means by which aircraft position data can be obtained, particularly in areas where a 4D/15 service is unavailable. In many cases, required reports can be automatically sent to the operator from those aircraft which are suitably equipped. Aircraft tracking requirements can be satisfied in many ways and 4D/15 position data obtained when required. Such methods typically fall under one or more of the broad categories depicted in the following table, as applicable to the operator.

8.5 After reviewing flight planning system and aircraft position data sources, ground-based monitoring processes should be reviewed. One common example of how information from flight planning and airborne systems or sources can be used is a ground-based graphical flight following display. Such displays can potentially be tailored to provide alerting for:

a) non-compliance with the operational flight plan (OFP);
b) no position report received;
c) flight level discrepancy;
d) time over fix discrepancy; and
e) other user defined discrepancies necessary to meet monitoring and notification requirements as defined in CAR Section 8 Series O Part II.

8.6 As part of this pre-implementation evaluation, operators may discover that they already possess some or all of the requisite technologies and have access to the required services necessary to meet aircraft tracking requirements. In other cases, operators will need to methodically identify and evaluate the new (to the operator) technologies and services necessary to meet those requirements.

AIRBORNE AICRAFT TRACKING CAPABILITY				
Methods		Suitable to meet tracking requirements		
		4D/15 tracking	**4D/15 service**	**None**
1. Electronically and automatically exploiting existing and emerging surveillance technologies relying on ADS-C and/or ADS-B equipage and infrastructure.				
a. ADS C				
Note: *Periodic contracts of 15 minutes or less.*	x		x	
	x		x	
b. ADS B				
Note: *Dependent on the deployment of terrestrial and/or*				

Methods		Suitable to meet tracking requirements		
		4D/15 tracking	**4D/15 service**	**None**
2. Electronically, using ACARs that relies on existing HF/VHF/SATCOM datalink capabilities/equipage. *Note.— The use of ACARs datalink can be further subdivided into manual and automatic position reporting depending on the level of ACARs sophistication. This differentiation is important from a flight crew workload perspective and should be evaluated by an operator during pre- implementation SRM activities.* a. ACARs automatic.	x		x	x*
3. Electronically, automatically and autonomously re-purposing existing on board systems modified to transmit 4D position data at the desired interval. *Note.— Any modification to existing equipment should meet appropriate airworthiness requirements.* a. Engine condition monitoring systems. b. Satellite based inflight entertainment systems (IFE)	x x			
4. Electronically, automatically, and in some cases autonomously, using new and emerging dedicated aircraft tracking technologies. a. Dedicated aircraft tracking solutions that meet	x			
5. Procedurally, using long-established position reporting methods that rely on HF/VHF/SATCOM voice.				x*

** Manual ACARs and procedural voice position reporting, however, is unsuitable for use to meet automated 4D/15 Aircraft Tracking requirements as the additional flight crew workload required to maintain 4D/15 reporting intervals could have a negative impact on the overall safety of the operation. It is required that 4D/15 tracking be met with automated systems only. This does not preclude, however, subject to risk assessment, the limited use of manual position reporting (ACARs or Voice) to meet 4D/15 tracking in cases for example, where there are small gaps in 4D/15 service coverage, to reset 4D/15 after a missed report or as part of established contingency procedures.*

However, If used for aircraft tracking purposes, the practicality of manual ACARs and procedural voice position reporting must also be assessed from a crew workload and

9. Training of ground personnel and flight crew

9.1 Training must be given in the operator's aircraft tracking policy, process and procedure to ensure that personnel are current, competent and qualified. Training materials must also be developed to ensure operational control personnel are aware of and can use the various tools available to track flights.

9.2 Such training should be given to flight crew and flight operations officers/flight dispatchers (if used in conjunction with a method of control and supervision of flight operations) or other relevant operational control personnel, as applicable. Training should also emphasize the specific requirements associated with each aircraft tracking activity to include operational monitoring and the support of ATSU alerting services.

Note.— The details of the flight operations officer/flight dispatcher training programme when one is employed in conjunction with a method of flight supervision is in accordance with Annex 6, Part I, 10.3 a).

10. Aircraft tracking exercises and trials

10.1 Before implementing their aircraft tracking capability, operators may wish to conduct internal exercises and trials to validate its preparedness. Such activities would normally take place after the initial development of policy and procedure and could be used as a training tool for operational control personnel. Trials and exercises should be scripted, realistic and based on the operator's areas of operation and tracking technologies to be used. The objectives should be clearly defined and could include:

a) To validate 4D/15 tracking assumptions and procedures (e.g. routes/areas where 4D/15 tracking is required/recommended) to include:

   i) Determining operator responsibility to track;
   ii) Determining 4D/15 tracking capability at the preflight planning stage;
   iii) Exercising the risk assessment process if 4D/15 tracking is required but cannot be achieved (at the planning stage and/or up to the point of dispatch);

b) To assess/validate the technologies to be implemented or more broadly applied (e.g. expanded use of ADS-C);

c) To assess and refine new monitoring procedures to be implemented, including:

   i) Procedures for use in the event of missed 4D/15 tracking reports;
   ii) Procedures for verification of system integrity;
   iii) Procedures for re-establishing contact with an aircraft within prescribed timeframes;
   iv) Communication protocol between operator and air navigation service provider (ANSP) including the delivery of missed report forms to the ATSU in the correct format as per Appendix 'A' of this Operations Circular.

d) To assess the accuracy/accessibility of ATSU contact information; *ICAO Circular 347-AN/205 1*

e) To assess the reliability and efficacy of communication capabilities between and among aircraft, ATSUs and the operator; and

f) To exercise and validate aircraft tracking data collection and retention systems or processes.

10.2 Any information or experience obtained from the exercises and trials should be carefully analysed for the purpose of improving the operator's overall capability to track its aircraft, monitor their position and support ATSU alerting services.

11. Data collection and retention

11.1 Another important element of an operator's aircraft tracking policy and ATSU notification procedures is the collection and retention of tracking data. Through data collection tools, an operator should be able to effectively acquire and retain tracking information. The responsibility for collecting and retaining operational data should also be clearly communicated to the relevant operational staff.

11.2 CAR Section 8 Series O Part II, 3.5.5, stipulates that aircraft tracking data be retained as necessary to determine the known position of an aircraft. After an aircraft has landed safely, an operator does not need to retain tracking data.

12. Continuous improvement

12.1 Continuous improvement is a formal process to identify the causes of poor operational performance or outcomes that do not meet the specifications defined by the operator for aircraft tracking. Such a process can also determine what action needs to be taken to ensure that operational performance meets or exceeds expectations.

12.2 Continuous improvement is achieved in practice through an internal (to the operator) adjustment component or subsystem that responds to any underperformance or deviation identified through internal or external quality assurance and safety assurance processes. The foundation for continuous improvement is the collection and analysis of operational data relevant to the actual and expected performance of aircraft tracking activities.

13. Verification of compliance.

13.1 Aircraft tracking methodology, processes and procedures are required to be documented in detail in the operations manual, FSD, DGCA shall evaluate and approve / accept the proposed processes to ensure adequacy. This will be accomplished as a part of the operations manual approval process.

13.2 Associated risk evaluation and mitigation studies shall be submitted to the FSD, DGCA for approval / acceptance before commencing operations on affected routes.

13.3 Operator shall preserve tracking records for a period of 90 (ninety) days. Data may be verified during routine DGCA audits.

13.4 Live aircraft tracking process may be verified by the DGCA during audits.

Sd/-
(Capt Atul Chandra)
Chief Flight Operations Inspector
For Director General of Civil Aviation

Appendix A

MISSED 4D/15 POSITION REPORT FORM FOR OPERATOR

Required Information		
1.	Initial or subsequent notification indication	
2.	Flight number and call-sign	
3.	Aircraft type	
4.	Last known position (place, time)	
5.	Time of last communication	
6.	Last known altitude or flight level	
7.	Next expected 4D/15 position (if known), and estimate	
8.	Name of ATSU notified	
9.	Name of operator	
10.	Contact details of operator primary point of contact for this event	
Supplementary information, if available		
11.	Contact actions attempted	
12.	Registration	
13.	SAR info: colour and distinctive marking	
14.	Fuel endurance or fuel endurance remaining at last known position	
15.	Total persons on board	
16.	Alternate or possible alternates	
17.	Any other relevant information (e.g. dangerous goods on board, etc.)	