International Civil Aviation Organization
North American, Central American and Caribbean Office

DISCUSSION PAPER

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Eighth North American, Central American and Caribbean Working Group (NACC/WG) Aeronautical Information Management Implementation Task Force Meeting (AIM/TF/08).

México City, Mexico, 8 to 11 July 2025

Agenda Item 7: **Sub-groups Progress in Breakout Working Sessions: 7.2 Aerospace Aircraft operations NOTAM**

ESTABLISHMENT OF A SPECIAL SERIES NOTAM TO TREAT WITH AEROSPACE OPERATION

(Presented by *Ad hoc* Group Aerospace Aircraft operations NOTAM)

EXECUTIVE SUMMARY	
The purpose of this Working Paper is to outline a framework for the operation of special series NOTAMs related to spacecraft launches. This framework is submitted for the meeting's consideration and approval.	
Strategic Objectives:	• Safety • Air Navigation Capacity and Efficiency • Economic Development of Air Transport • Environmental Protection
References:	• ICAO DOC 8126 • ICAO Annex 15 • ICAO DOC 10066 • ICAO DOC 8400 • ICAO NACC AIM TF/7 Meeting (2024) • States' AIPs

1. Background

1.1 The rapid growth of the commercial and tourism spaceflight sector has led to a significant increase in the frequency and complexity of spacecraft launch and re-entry activities. These operations affect national and international airspace, presenting potential hazards to aircraft, especially in the vicinity of launch corridors, splashdown areas, and trajectory overflight zones.

1.2 Currently, there is no structure within which notification of these events are published. Most States announces this activity via general NOTAMs (Notice to Airmen), often under the same series used for other types of temporary flight restrictions. This has led to challenges in timely dissemination, filtering, identification, and prioritization of information directly relevant to spaceflight operations. For example, delays due need to plot coordinates on Google Earth and overlay the area on Flight Information Region (FIR) Maps.

1.3 Spacecraft operations often intersect both controlled and uncontrolled airspace, creating potential risks to aircraft operations from high-velocity debris, sonic booms, and unpredictable failure scenarios. The use of clearly identifiable NOTAMs with standardized, specific wording will enhance situational awareness and enable airspace users to more confidently assess and avoid designated hazardous areas.

2. General

2.1 Notification of spacecraft activity by operators shall be submitted to the States' Regulatory body for assessment and approval at least 10 days before launching. The notification shall include all pertinent details including the type of operation, graphical area of the space operation (Coordinates in WGS-84 format), timeline of the launch and any other relevant information that could impact safety.

2.2 This notification timeline will allow for approval process, plotting the area and overall processing and dissemination of the NOTAM. In addition, it will enable effective planning and coordination to minimize disruption as well as financial and other losses stem from extra fuel, deviations, delays, congestion, missed connections, disrupted cargo logistics and reputational damage. It also supports better slot management at congested airports and facilitates coordination with international FIRs to maintain safety and efficiency.

2.3 A small window, perhaps up 6 hours, will be allowed for cancellation before scheduled time of operation. This will account for any changes such as weather or mechanical issues that may be encountered, The NOTAM will automatically cancel post-event or upon confirmation from the Regulatory Body that the spacecraft launch company requested cancellation.

2.4 Letters of Agreement (LOAs) should be established with stakeholders/Launchers, as necessary. Air navigation services provider (ANSPs) should utilize templates in the Doc. 8126 as a guide to draft LOAs with the launch agency. At minimum, the LOA shall ensure that the following elements, duties and responsibilities:

a) Space agencies to establish two-way communication with ATC regarding scheduling of launching and returning.
b) Air traffic control (ATC) and ANSPs to coordinate with International NOTAM office (NOF) and Air traffic services reporting office of aerodrome (AD/ARO) as required.
c) The trajectory which describes the planned flight path of the spacecraft shall be clearly outlined, as necessary

3. Coordination

3.1 This proposal will require coordination between:

- National Spacecraft Authority (e.g., Space Agency and responsible government Ministry)
- Civil Aviation Authority (CAA)
- AIS/AIM Department
- Military airspace users (if applicable)
- ANSP and Air traffic management (ATM) units
- Maritime Authority (for waterborne risks)
- ICAO (for future global registry and standardization)

3.2 Letters of agreement with ANSPs and Spacecraft launchers to be established. This will ensure safe, coordinated, and predictable use of shared airspace. The agreements will formalize the roles, responsibilities, and procedures to be followed before, during, and after space launch activities, including airspace closures, notification timelines, coordination protocols, and contingency plans in the event of anomalies

4. Recipients

a) Coastguard (to provide alerts, notices to boat operators. May have to restrict that area of water (if necessary) when the spacecraft will be operating)
b) ANSPs (ATC, Communications, Navigation and Surveillance, Safety & Compliance)
c) Pilots and Aircraft Operators
d) Flight Safety (Regulators)
e) AIS/AIM of Other States
f) Adjoining States, not in launch zone, but could be impacted by a possible catastrophe of planned spacecraft activities

5. Scope

5.1 The NOTAM to announce Spacecraft will apply to:

- Orbital and sub-orbital launches
- Rocket stage separation events
- Controlled and uncontrolled re-entries
- Launch pad closures
- Marine hazard zones (for downrange splashdowns)
- Temporary restricted airspace linked to space activities
- Safety corridors associated with spacecraft ascent/descent profiles

6. NOTAM Format

6.1 The existing NOTAM format will be maintained to promulgate this type of information. The few changes proposed are confined to the E-Line and are intended to:

- Heighted safety
- Manage aerospace activities that could affect flight safety and airspace efficiency
- Minimize costs occasioned by deviations, fuel, delays
- Supports future integration into DORIS and SWIM systems

6.2 It is suggested that an international series be used for dissemination. A state can choose a series already established or dedicate a new series for this type of NOTAM. In any case, procedures governing spacecraft launches and usage must be published in the AIP.

6.3 It is proposed that the Q-line accurately reflects the status of the airspace or nature of the navigation warning. The NOTAM should use the **QRTCA (Temporary Restricted Area Activated)** code, along with the appropriate traffic (IV), purpose (BO), and scope (W), in accordance with the NOTAM Selection Criteria (NSC) outlined in ICAO Doc 8126. The launcher is responsible for providing the lower and upper altitude limits; if not specified, the default values of 000/999 shall be applied. Coordinates and radius should be defined based on data supplied by the launcher.

6.4 The A Line shall represent the FIR(s) of the States; example, MKJK. MWCR.

6.5 B, C, and D lines shall be provided by the launcher and must be formatted in accordance with ICAO Standards and Recommended Practices (SARPs). The time between B) and C) must represent the duration of the airspace hazard. For instance, if debris is anticipated, it should be expected to have impacted the ground before the time indicated in item C). The D-Line must be clear to avoid confusion by users/recipients.

6.6 Item E shall start with key words **TEMPORARY RESTRICTED AREA DUE SPACECRAFT OPERATIONS** to quickly identify the type of operations and attention to users. This shall also include all essential information such as area affected and what is happening (launch, return, etc) what is permissible or prohibited in the area, start time/date, end time/date. Information to be considered: debris, etc.

6.7 Items F and G, as necessary, to be provided by the Launcher to the Regulators.

7. Staff Training and Sensitization

7.1 Given the requirement to plot coordinates and overlay them onto the FIR map, a dedicated staff member may be assigned to this task, subject to availability. AIM personnel will receive the necessary training to address any existing skills gaps. Additionally, relevant stakeholders will be informed and sensitized on the established procedures for spacecraft launches.

8. Incorporation of Procedures into the State's AIP

8.1 Procedures, once established, understood and agreed, will be incorporated in the States Aeronautical Information Publication.

9. Sample Spacecraft NOTAM

(A0008/25 NOTAMN
Q) MKJK/QRTCA/IV/BO/W/000/999/1828N07757W999
A) MKJK
B) 2508290630
C) 2508311230
E) **RESTRICTED AREA DUE SPACECRAFT OPERATIONS** - SAFETY OF ACFT IN AN AREA BOUNDED BY COORD: 182734.63N0775704.29W - 82737.51N0775701.08W - 182733.92N0775700.88W - 182733.40N0775705.23W - 182734.63N0775704.29W MAY BE AFFECTED. ALL ACFT SHALL AVOID THIS AREA OR SUBJ TO ATC CLEARANCES. EXPECT DALAYS. CTN ADZ)

10. Recommendations

10.1 The meeting is invited to:

a) Review the information presented in this WP
b) take note of the information presented in this paper
c) Provide necessary comments, recommendations and guidance for its improvement
d) Consider other actions deemed necessary

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