

**57<sup>th</sup> CONFERENCE OF  
DIRECTORS GENERAL OF CIVIL AVIATION  
ASIA AND PACIFIC REGIONS**

*Incheon, Republic of Korea*

*4 – 8 July 2022*

AGENDA ITEM 4:

AIR NAVIGATION

**PROPOSAL TO IMPROVE THE INTERNATIONAL  
COORDINATION PROCEDURES FOR SAFETY AND  
EFFICIENCY OF BALLISTIC LAUNCH VEHICLE**

Presented by Republic of Korea

**SUMMARY**

APANPIRG provides guidance for States with plans to conduct ballistic launch or space re-entry activities on consultation and information sharing with relevant States that may be affected by such activities. This paper provides that we propose the following improvements to prepare a more effective risk information sharing system based on the problems discovered during discussions with neighboring States regarding ballistic launch vehicle activities in the Republic of Korea (ROK).

**PROPOSAL TO IMPROVE THE INTERNATIONAL COORDINATION PROCEDURES  
FOR SAFETY AND EFFICIENCY OF BALLISTIC LAUNCH VEHICLE**

**1. INTRODUCTION**

- 1.1. With the development of the aviation industry, the activities of ballistic launch vehicles are frequently occurring. These activities may affect the launch path and impact point area of a ballistic launch vehicle as well as aircraft operations in the Flight Information Region (FIR) of the launching State, so prior consultation and information sharing with affected States is essential.
- 1.2. States shall consult with the air traffic service authorities of the States concerned on activities potentially hazardous to civil aircraft on their territory or over the high seas in accordance with Annex 11.2.19.
- 1.3. In addition, ICAO APAC also discussed procedures for “Ballistic Launch/Space Re-entry Management” and “Ballistic Launch/Space Re-entry Notification and Response” at the 29th APANPIRG meeting in September 2018 and the 30th APANPIRG meeting in November 2019.
- 1.4. Recently, as the activity of space launch vehicles has increased, international cooperation among the States concerned has become essential. Although the ICAO Asia Pacific Seamless ANS Plan presents procedures related to ballistic launch vehicles, international cooperation procedures are necessary for more effective information sharing.

**2. DISCUSSION**

*Current ICAO Asia Pacific Seamless ANS Plan (V3.0) Procedure*

- 2.1. The procedures for the ballistic launch vehicle, specified in ICAO Asia Pacific Seamless ANS Plan (V3.0) 7.45, are as follows:

**7.45 All States with organisations that conduct ballistic launch or space re-entry activities should ensure:**

- a) the development of written coordination agreements between the State civil aviation authority and the launch/re-entry agency concerned;
- b) that strategic coordination is conducted between the State civil aviation authority and any States affected by the launch/re-entry activity at least 14 days prior to the proposed activity, providing notice of at least:
  - i) three days for the defined launch window; and
  - ii) 24 hours for the actual planned launch timing;
- c) that consideration of affected airspace users and ANSPs is made after consultation, so that the size of the airspace affected is minimized and the launch window is optimized for the least possible disruption to other users; and
- d) that communication is established with affected ANSPs to provide accurate and timely information on the launch/re-entry activity to manage tactical responses (for example, emergencies and activity completion) (Priority)

*Note 1: increasingly, ballistic launch and space re-entry activity is being conducted by commercial organisations, so this element applies equally to State or private operations*

*Note 2: guidance for States on ballistic launch and space re-entry activity is available on the ICAO Asia/Pacific eDocuments webpage.*

*International Cooperation Case of the Republic of Korea*

- 2.2. ROK launched a “Korean space launch vehicle” in October 21, 2021. In relation to the launch, ROK analyzed the impact of the launch on the affected States (Japan, the Philippines, and the United States), informed them through AIRAC and NOTAM in accordance with the ICAO Asia Pacific Seamless ANS Plan (V3.0) procedures and provided sufficient time and details so that the affected States can take appropriate response measures. (Attachment 1)
- 2.3. In addition, the expected launch time, actual launch time, and the completion time, specified in minutes on the day of launch, were provided in real-time by telephone and AFTN to the officials of each State to minimize the operation restrictions of the relevant States due to the ballistic launch vehicle. (Attachment 2)

Problems and Suggestions for Improvement in the Process of Republic of Korea’s international cooperation

- 2.4. ROK identified the person in charge of the relevant States with the support of ICAO APAC, but it was difficult to locate the person in charge of handling information on ballistic launch vehicle such as control, airspace, and other information. Even when providing additional launch-related information scheduled for June 15, 2022, we faced difficulty in information sharing due to change of the person in charge in the affected States.
- 2.5. Accordingly, we propose that APANPIRG consider practical platforms to share information more efficiently for space launch vehicle activities, such as establishing an information sharing platform.
- 2.6. We propose that the details of the above proposal be discussed through the ATM Sub-Group of APANPIRG.

**3. ACTION BY THE MEETING**

- 3.1 The meeting is invited to:
- a) Note that the information sharing and coordination with relevant States is essential to address the potential risk of civil aircraft that may be affected by ballistic launch vehicle and re-entry activities;
  - b) Encourage the States/Administrations to consider about improving an effective and timely information sharing procedure

## ① Issuance particulars of AIRAC AIP SUP

AIRAC AIP Supplement**GEN : NIL****ENR : Enroute****A D : NIL****KSLV II (Korean Space Launch Vehicle II) Launch****Launch organization**

Korea Aerospace Research Institute (KARI)

**KSLV-II (Korea Space Launch Vehicle-II) Launch Schedule**

Planned Launch date	21 OCT 2021
Planned Launch window	15:00 ~ 19:00 (KST) 06:00 ~ 10:00 (UTC)
Reserved launch date	22 OCT 2021 ~ 28 OCT 2021

**Launch Site**

Naro Space Center, KARI (34°25'55"N 127°32'04"E)

**Launch direction**

170 degrees (clockwise) from the true north

<b>Planned falling objects</b>		
Falling objects	Falling time	Falling area coordinates
1 <sup>st</sup> stage	15:10 ~ 19:10 (KST) 06:10 ~ 10:10 (UTC) ※ 569 seconds after launch	31°21'37"N, 127°33'20"E 31°27'40"N, 128°32'13"E 30°07'04"N, 128°43'01"E 30°01'01"N, 127°44'56"E
Payload fairing	15:20 ~ 19:20 (KST) 06:20 ~ 10:20 (UTC) ※ 1,237 seconds after launch	21°40'47"N, 128°45'38"E 21°47'53"N, 129°48'59"E 20°03'30"N, 130°01'57"E 19°56'24"N, 128°59'19"E
2 <sup>nd</sup> stage	15:19 ~ 19:19 (KST) 06:19 ~ 10:19 (UTC) ※ 569 seconds after launch	11°33'22"N, 129°30'38"E 11°43'08"N, 131°09'11"E 07°02'29"N, 131°36'57"E 06°52'44"N, 129°59'42"E
<b>Remarks</b>		
Further information of airways (A586, A595, etc.) affected by launching will be		

## ② Issuance particulars of NOTAM

Count down	KST (day)	Details
D-20 (day)	10.1. (Fri)	<input type="checkbox"/> <b>AIP amendment NOTAM</b> - (Detail) Correction of the expected area range of falling objects and the expected falling time - (Means) NOTAM
D-7 (day)	10.14. (Thur)	<input type="checkbox"/> <b>Publishing NOTAM of airspace control</b> - (Detail) Airspace control with a radius of 5 NM from the launch site and in the launch direction - (Remark) Clarifying exceptions such as mission aircraft with prior permission
D-2.5 (hr)	10.21. (Thur) 14:40	<input type="checkbox"/> <b>Publishing and disseminating NOTAM of airspace control</b> - (Detail) Airspace and ATS route control in the launch direction (Control Time/16:20-17:10)
D+0.5 (hr)	10.21. (Thur) 17:29	<input type="checkbox"/> <b>Publishing cancellation NOTAM relevant to the launch</b> - (Detail) Total 3 cases of early termination related to AIP SUP

## Attachment 2. Provision particulars of real-time information

Count down	Date (hr) KST	Details
<b>D-5.5hr</b>	<b>10.21. (Thur) 11:35</b>	<ul style="list-style-type: none"> <li>· <b>Launch time notification</b></li> <li>- (Subject) <b>Affected countries (Japan/Philippines/USA) ATS unit</b></li> <li>- (Means) AFTN/Email/Phone</li> <li>- (Other) Planned launch time (16:00)</li> </ul>
<b>D-2.5hr</b>	<b>10.21. (Thur) 14:40</b>	<ul style="list-style-type: none"> <li>· <b>Confirmative launch time notification</b></li> <li>- (Subject) <b>Affected countries (Japan/Philippines/USA) ATS unit</b></li> <li>- (Means) AFTN/Email/Phone</li> <li>- (Other) Confirmative launch time (17:00)</li> </ul>
<b>D-0hr</b>	<b>10.21. (Thur) 17:03</b>	<ul style="list-style-type: none"> <li>· <b>Actual launch time notification</b></li> <li>- (Subject) <b>Affected countries (Japan/Philippines/USA) ATS unit</b></li> <li>- (Means) AFTN/Email/Phone</li> </ul>
<b>D+0.5hr</b>	<b>10.21. (Thur) 17:29</b>	<ul style="list-style-type: none"> <li>· <b>Termination notification of launch-related situation</b></li> <li>- (Subject) <b>Affected countries (Japan/Philippines/USA) ATS unit</b></li> <li>- (Means) AFTN/Email/Phone</li> </ul>