



**THE FORTY-FOURTH MEETING OF THE
 INFORMAL PACIFIC ATC CO-ORDINATING GROUP
 (IPACG/44)**

(Honolulu, Hawaii, 22 & 23 August 2018)

Agenda Item 6: Air Traffic Management (ATM) Issues

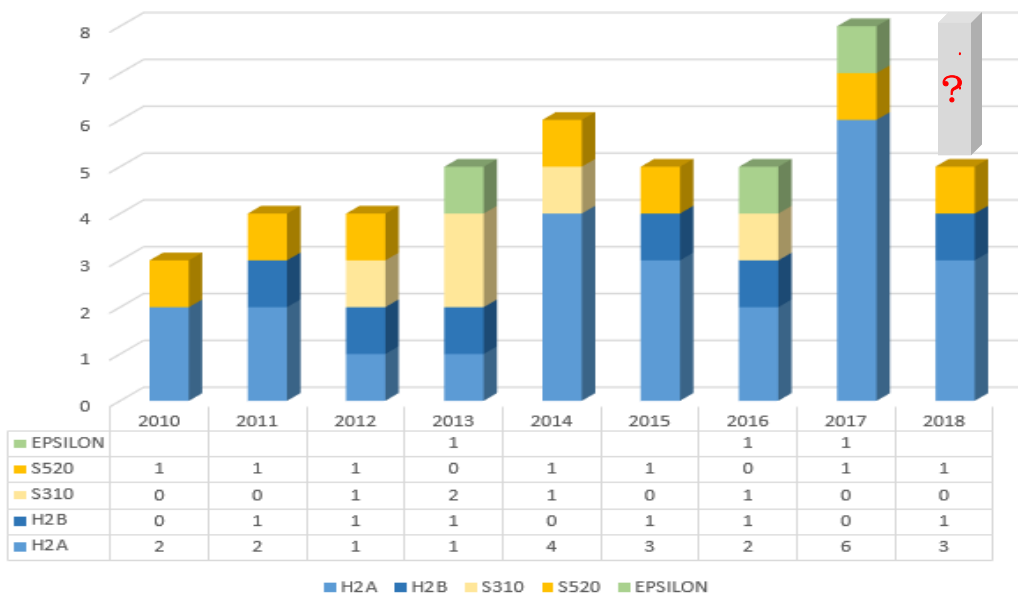
Rocket Activity
 (Presented by JCAB ATMC)

SUMMARY

A rocket launch from the Tanegashima Space Center in Japan has a big impact on the operations of civil aviation beyond the FIR. We have obtained cooperation from concerning FIRs. The mission of the rocket is not only launching but reentering the earth's atmosphere. Reentering affects the operations over a wider area. We would like to share information on detouring routes when H2B rocket (KOUNOTORI) scheduled around the end of October to November reenters the earth's atmosphere.

1. Introduction

1.1. The figure shows the number of rockets that ATMC has received coordination requests from JAXA since 2010. In the figure, the bar in blue shows large-sized rockets and the one in yellow shows small-sized rockets. The bar of 2018 is as of July, and it excludes the missions that are under coordination or indefinite. It may increase some more. The total amount of launch has been increasing regardless of the size.



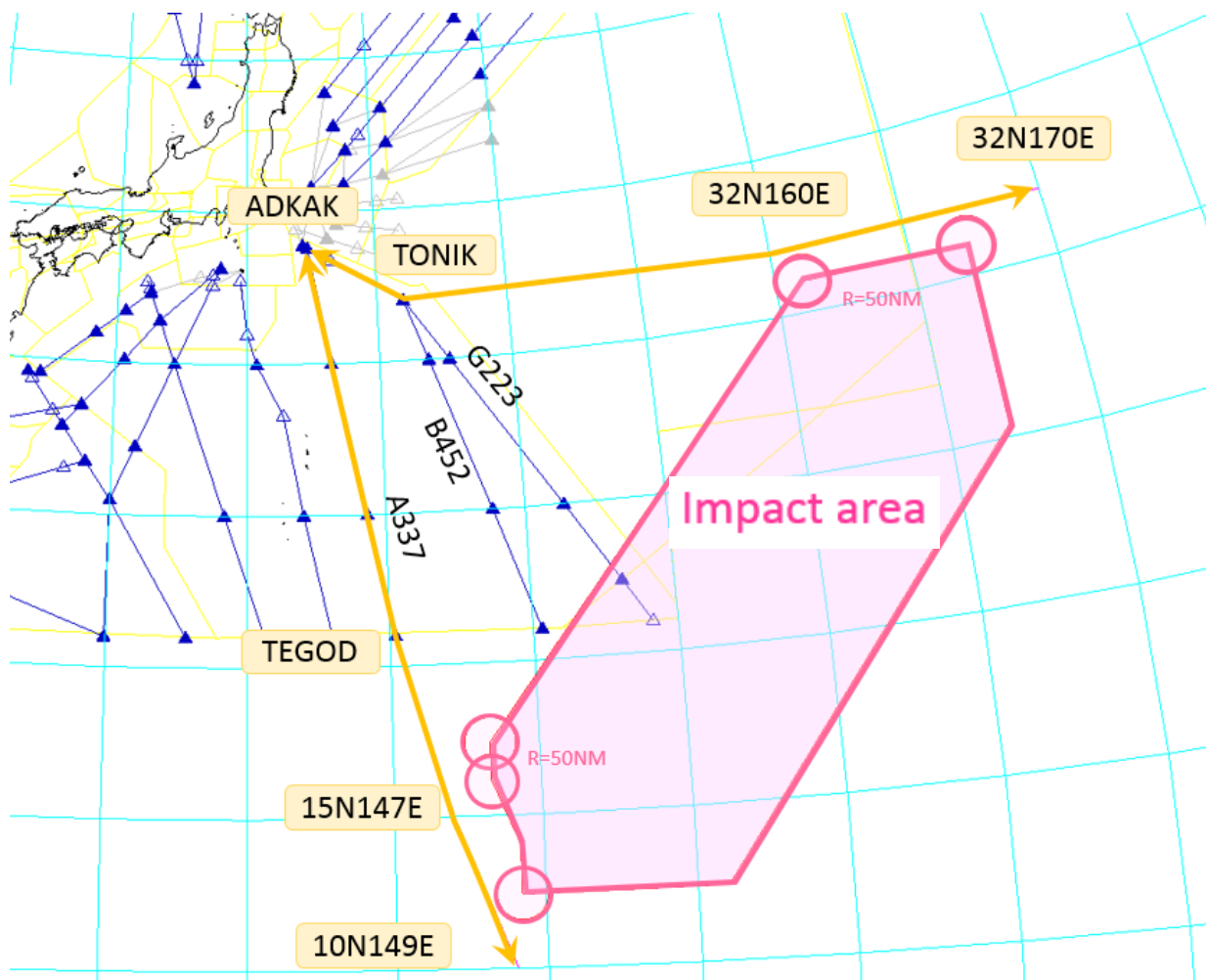
1.2. ATMC receives information on the launch of large-sized rocket 5 months prior to the mission. After receiving the information on the impact areas from JAXA, we evaluate the routes and plan detouring routes if necessary. We publish AIP SUP after coordinating with JAXA.

1.3. The rocket activities were mainly launching before, however, JAXA has been developing small capsules to collect items from the International Space Station. This time, Reentering over the sea around Japan is required in order to demonstrate the technology. Available air routes are going to be limited because H2B-7 is scheduled to reenter over the Pacific Ocean around Japan in end of October to November.

1.4. The reentering routes are now planned either south or north bound. The impact area are different from each route. JAXA is going to decide the route a week prior to reentering and it is going to be distributed as NOTAM. It affects both Fukuoka FIR and Oakland FIR. The detouring routes within Fukuoka FIR are as follows. We plan to coordinate the detouring routes within Oakland FIR in the future.

2. Discussion

2.1. The routes that are affected if the activity is carried out on north-bound route:
G223 and B452



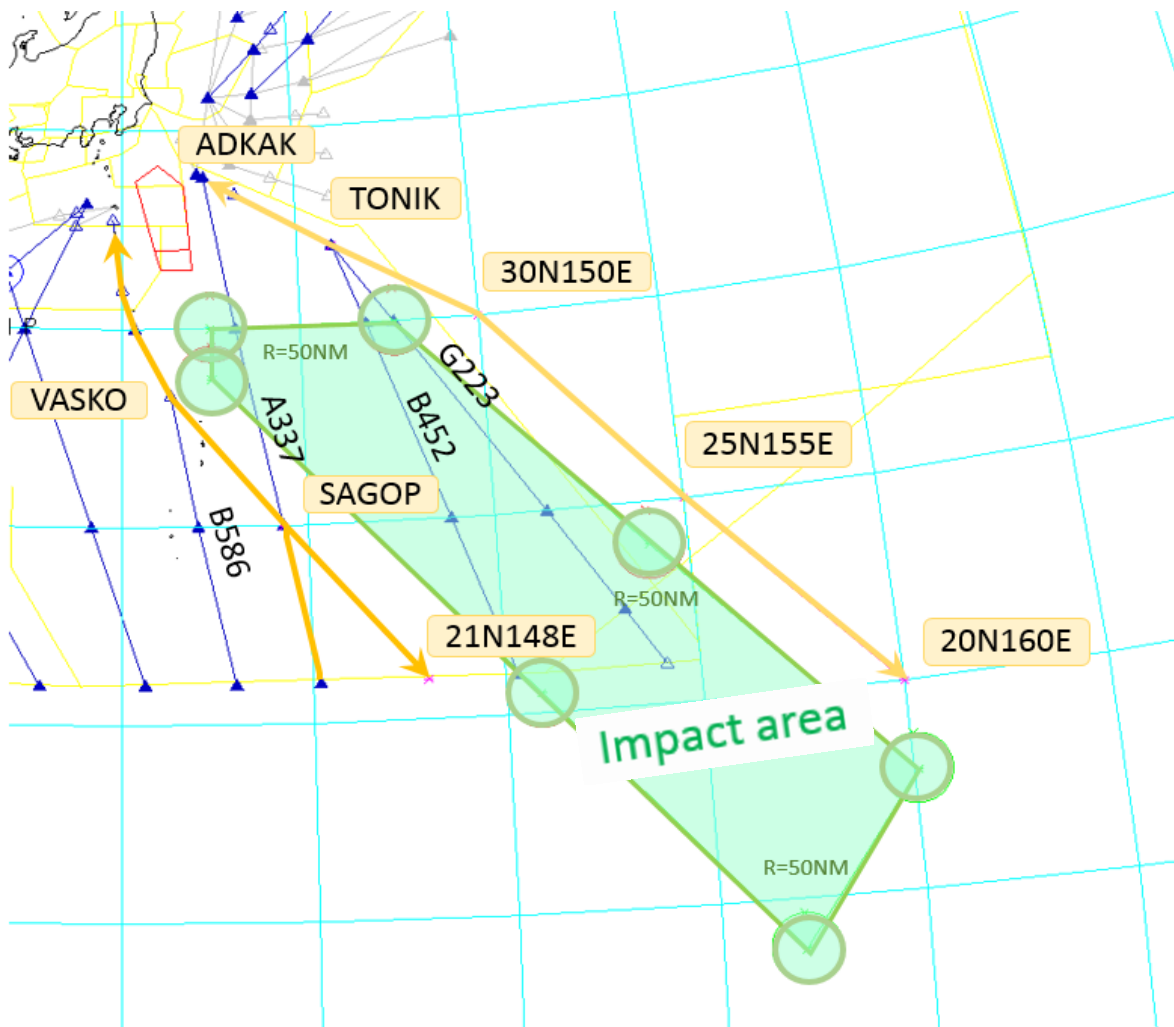
Proposed detouring route

B452, G223 ; A337 TEGOD...

The southern limit of the routes for PACOTS on the day will be

G223 TONIK 32N150E 32N160E 32N170E...

2.2. The routes that are affected if the activity is carried out on south-bound route:
G223, B452 and A337



Proposed detouring route

G223 ; B586 TOMOL SAGOP 21N148E **13N156E OLGIS**
or TONIK 30N150E 25N155E **20N160E BIGRA**
B452 ; B586 TOMOL SAGOP 21N148E **KERRY**
A337 ; B586 TOMOL SAGOP

The red letters mean the FIXs within Oakland FIR that we haven't finished coordination yet.

2.3. As mentioned before, JAXA are going to decide either south or north bound route a week prior to reentering. The detouring routes are going to be decided afterwards. The airspace restriction is going to last for about 2 hours but the specific time period is undecided. The detouring routes are going to be distributed as NOTAM. NOTAM are going to be distributed 3 days prior to the activity. Although we only have a short span, please make sure to file detouring routes if necessary. Besides, ATMC are going to monitor the routes carefully and give route change instructions properly. We appreciate your understanding and cooperation

2.4. Validation by ENRI

Extending routes due to rocket activities

We calculated extending length of routes for rocket activities provided at IPACG pre-conference. We set the basic routes and avoidance routes are as follows in order to compare the each length.

◆ B452_base (basic route)

RJAA CUPID SUNNS RENAU ADKAK TONIK UPDOB NITOT ATIGO KERRY KRONK

◆ B452_north (north route avoidance)

RJAA CUPID SUNNS RENAU ADKAK DAGDA NOGAK SAGOP TEGOD 15N147E 10N149E
KRONK

◆ B452_south (south route avoidance)

RJAA PAPAS APPLE GYANG VANDM FITTO SABRI CADDY UKATA TOMOL SAGOP 21N148E
KERRY KRONK

◆ G223_base (basic route)

RJAA CUPID SUNNS RENAU ADKAK DAGDA BEGAD TONIK KAKNI SEGRO BEEBO RISBA
PHILY OLGIS MUBITBIGRA

◆ G223_north (north route avoidance)

RJAA CUPID SUNNS RENAU ADKAK DAGDA NOGAK SAGOP TEGOD 15N147E 10N149E
MUBIT BIGRA

◆ G223_south_1 (south route avoidance)

RJAA PAPAS APPLE GYANG VANDM FITTO SABRI CADDY UKATA TOMOL SAGOP 21N148E
13N156E OLGIS MUBIT BIGRA

◆ G223_south_2 (south route avoidance)

RJAA CUPID SUNNS RENAU ADKAK DAGDA BEGAD TONIK 30N150E 25N155E 20N160E
MUBIT BIGRA

◆ A337_base (basic route)

RJAA CUPID SUNNS RENAU ADKAK DAGDA NOGAK SAGOP TEGOD

◆ A337_south (south route avoidance)

RJAA PAPAS APPLE GYANG VANDM FITTO SABRI CADDY UKATA TOMOL SAGOP TEGOD

<Results>

The route length of B452_base = 1799.09 NM

The route length of B452_north = 1943.87 NM

The route length of B452_south = 1866.93 NM

Extra route length of B452_north = 144.78 NM

Extra route length of B452_south= 67.84 NM

The route length of G223_base = 2482.30 NM
The route length of G223_north = 2752.84 NM
The route length of G223_south_1 = 2633.79 NM
The route length of G223_south_2 = 2549.21 NM

Extra route length of G223_north = 270.55 NM
Extra route length of G223_south_1 = 151.49 NM
Extra route length of G223_south_2 = 66.91 NM

The route length of A337_base = 940.67 NM
The route length of A337_south = 1006.16 NM

Extra route length of A337_south = 65.50 NM

3. Conclusion

3.1 The meeting is invited to note the information provided.