



**THE FORTIETH MEETING OF THE
INFORMAL PACIFIC ATC CO-ORDINATING GROUP
(IPACG/40)
THE TWENTY-SEVENTH MEETING OF THE FANS
INTEROPERABILITY TEAM (FIT/27)**

(Washington, DC, USA 11 September 2014)

Agenda Item 3: Reports on the relevant activities

Initial Review of VHF Transition Area in Fukuoka FIR

(Presented by CRA JAPAN)

This information paper is to present the viewpoint for the suggestion from the Boeing on reconfiguring of VHF preferential mapping which has been proposed at IPACG39/FIT26 held in Fukuoka.

1. Introduction

1.1. In Fukuoka FIR, the problems that transitions of media have been still reported on the transferring DLK Communications between VHF and SATCOM in the overlapping area with VHF coverage. Those are well recognized as considerable issues for present and future operation to apply 30/30 reduced separation minima, especially on NOPAC/PACOTS routes.

1.2. Boeing suggested “Advance reconfiguring the avionics VHF subnetwork coverage as preferred area is effective.” at FIT26 (WP/03) to mitigate those issues. And this paper includes that the frequent switchover between VHF and SATCOM are controlled by mapping of coverage area in the airspace where VDL communication is not required (SATCOM preferred usage area) in accordance with the data of past PRs etc. in the North of Pacific airspace and the location of VDL ground stations, to make continuous and stable DLK operations. Boeing is asking aircraft operators to study preferential mapping of Satellite Communication Coverage as their proposal.

1.3. CRA JAPAN reviewed Boeing’s proposal on those issues as a specific measure in North Pacific Airspace. This paper presents discussion progress with Japanese airlines for their viewpoints from technical, operational issues and cost.

2. Discussion

2.1. As 30NM longitudinal and lateral separation is mostly applied on the routes in NOPAC and Northern part in Fukuoka FIR, the applicable conditions and situation has to be maintained in order to continue those reduced separation minima stably. CRA JAPAN reviewed and drew up positions on the chart where those failures are reported by PRs submitted as initial approach to verify actual situation.

2.2. Figure1 shows VHF coverage (VDL mode2 AOA 28,000ft, estimated value). And, Figure2 shows the estimated transition points according to media advisory information recorded in DLCS at Kobe Aeronautical Satellite Center. These data reveal the transition point between VHF and SATCOM occurred in the vicinity of 145E to 150E mostly. And it is estimated that those transition occurred on NOPAC route in the vicinity of the boundary Fukuoka FIR and Anchorage FIR, too. It is considered that the cause might be affected by DLK ground stations in the Kamchatka peninsula.

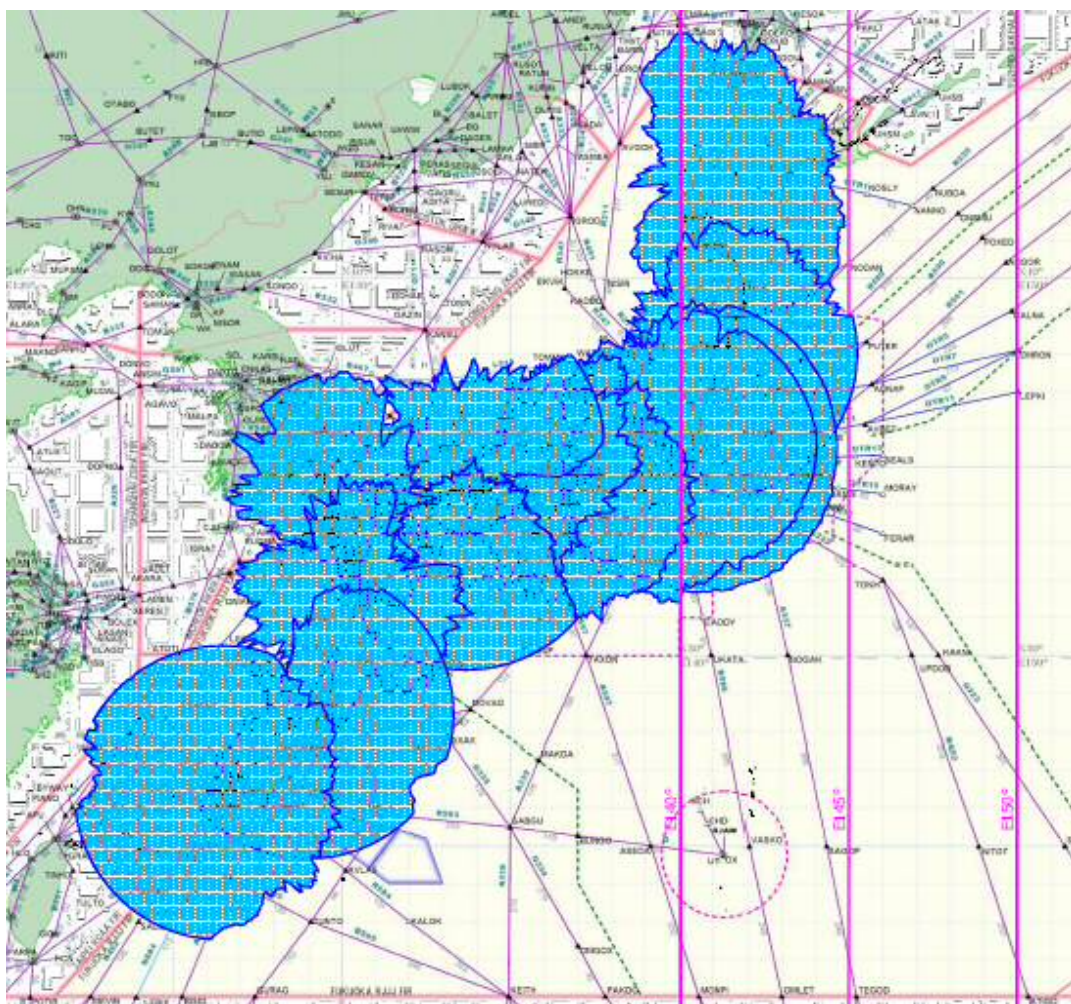


Figure1. VHF coverage surrounding Japan (VDL mode2 AOA Altitude: 28,000ft)

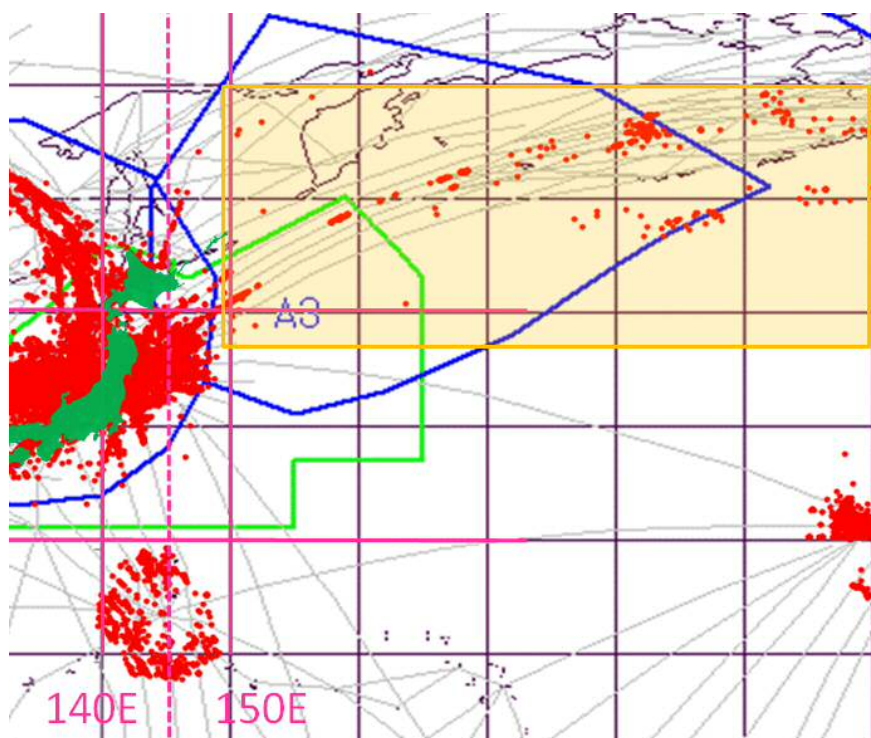


Figure2. The positions received media advisory

2.3. Figure3 shows the positions of 8 PRs' occurrence from 140E to 150E which have the potential to be caused by transition between VHF and SATCOM. These PRs had filed more than once at same position and these had occurred on aircrafts from Japan to foreign countries. This corresponds with description in IP02 (FIT/27) presented by FAA "The tendency that RSP performance of transition from VHF to satellite is inferior to that of satellite to VHF".

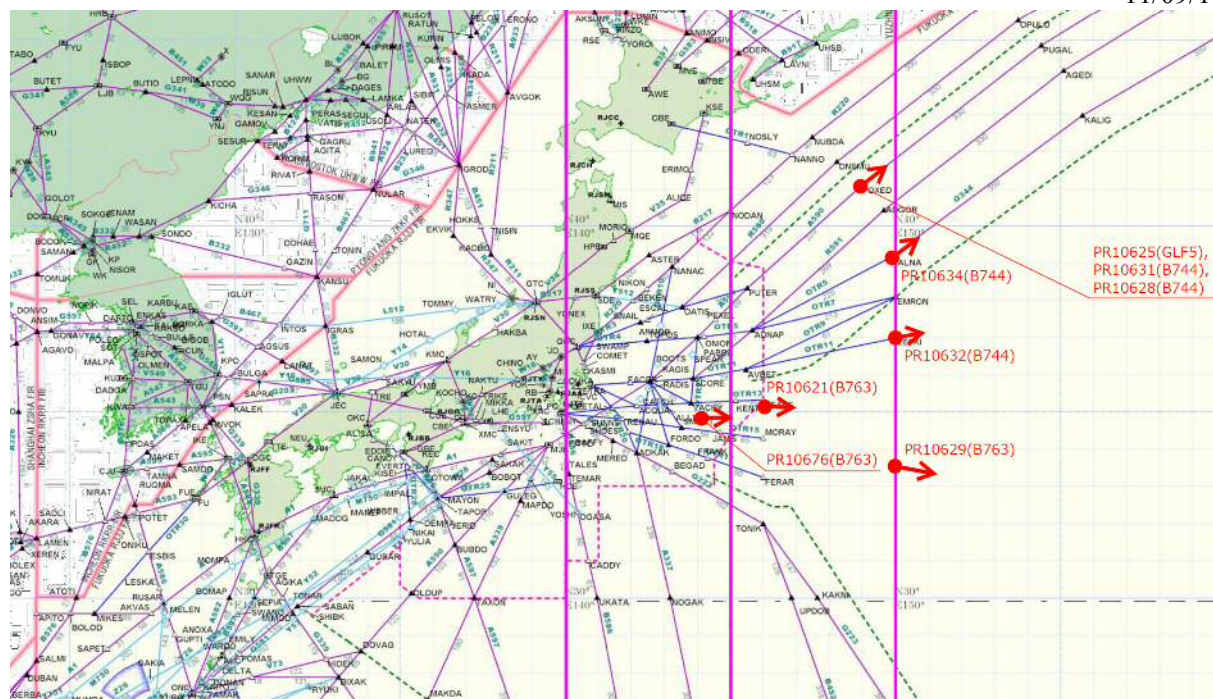


Figure3. The positions of PRs' occurrence in Fukuoka FIR (140E – 150E)

2.4. As described in WP03 (FIT/26), operators are able to configure SATCOM preferred usage area uniquely. Additionally, it is well known that the availability is differed depending on avionics capabilities. In mind these situations, CRA JAPAN has investigated Japanese airline's viewpoints for pre-mapping of SATCOM preferred usage area, and summarized those comments into technical, operational and cost issues respectively. Table1 shows the outlines of those comments.

Table1. Outlines of Japanese airlines' comment (summarized by CRA JAPAN)

| Viewpoint | OUTLINES OF COMMENTS |
|-------------------------|---|
| Technical (avionics) | <ul style="list-style-type: none"> • No capability of mapping on specified type of aircraft. • The configurable area are differed depending on the avionics installed. (Some aircraft have no capability to set a diagram of polygon) • Due to limitation of total number to be figured out, there are few possibility to set up additional areas. • No staff is available to set up mapping in a specified airline. |
| Operational | <ul style="list-style-type: none"> • No issue is reported because of no additional workload. |
| Cost | <ul style="list-style-type: none"> • Most airlines are to be deeply concerned that an increment of SATCOM instead of VDL communication might be increased communication charge. (IF configuration airspace is small, there is no heavy outlay) • It is considered that payment of cost may be arisen as additional commission work to rewrite mapping area in case of no expertise available by themselves. |

2.5. As a result of hearing of viewpoints from airlines, it is recognized that no operational difficulty, but there are several issues likely to be solved on the technical and costly matters in mapping new shapes. On the other hand, as the point of view from ANSP in order to maintain stable connection of DLK communication, it is common understanding that any measure like the Boeing proposal to solve the current issue will be essential for further development in the Oceanic airspace.

2.6. At present time, in the consideration of airlines' concerns described above, it is difficult to apply uniform procedures to all operators and in the area. Considering those situations, it is better to deal with an advance from the available approach to improve step by step, and to take that an action inspecting an effect is appropriate

2.7. In light of operators and ANSP, JCAB will continue further study more deeply for the proposal in the cooperation with the Boeing in further details.

3. Conclusion

3.1. The meeting is invited to note the information provided in this paper.