International Civil Aviation Organization

Tenth Meeting of the Air Traffic Management Sub-Group (ATM/SG/10) of APANPIRG

Video Teleconference, 17 – 21 October 2022

Agenda Item 6: ATM Coordination (Meetings, Route Development, Contingency Planning)

AKARA CORRIDOR PROGRESS AND UPDATE

(Presented by Japan)

SUMMARY

This paper presents the progress report and update for the AKARA – FUKUE Corridor.

1. INTRODUCTION

1.1 China, Japan and the Republic of Korea (ROK) held online meetings to discuss the improvement plan of the AKARA – FUKUE Corridor in November and December 2020. Three States agreed to conduct the improvement plan with a phased approach. The plan reported to the ICAO Headquarters was endorsed on 25 December 2020.

2. DISCUSSION

Phase 1 implementation

2.1 Phase 1 has been implemented since 25 March 2021, and Phase 1 is the current status. **Figure 1** shows the ATS route structure of Phase 1.

2.2 A new southern RNAV2 route, Y590, is established between SADLI and BEDAR and used for only eastbound traffic from China to Japan. Broken lines in the light blue mean flight routes expected RADAR vector.

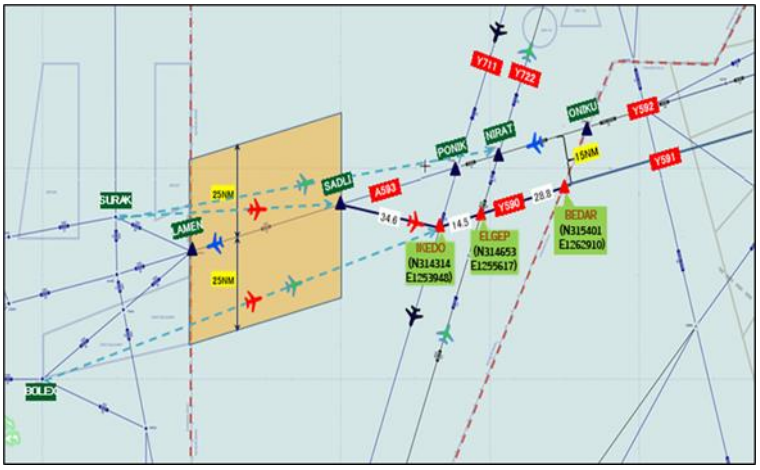


Figure 1: ATS route structure of Phase 1

2.3 Air Traffic Control (ATC) responsibility of A593 between ONIKU and SADLI has been taken over from Japan to ROK, from Fukuoka Area Control Center (ACC) to Incheon ACC since Phase 1. On the other hand, the Flight Level Allocation Scheme (FLAS), a special and unique altitude operation restricted to four flight levels (FL) to eastward and westward, respectively, remains after implementing Phase 1.

2.4 **Figure 2** shows FLAS operation in the AKARA corridor airspace, eastbound flights operate on FL250, FL290, FL310, and FL390 and westbound flights operate on FL240, FL280, FL300, and FL400.

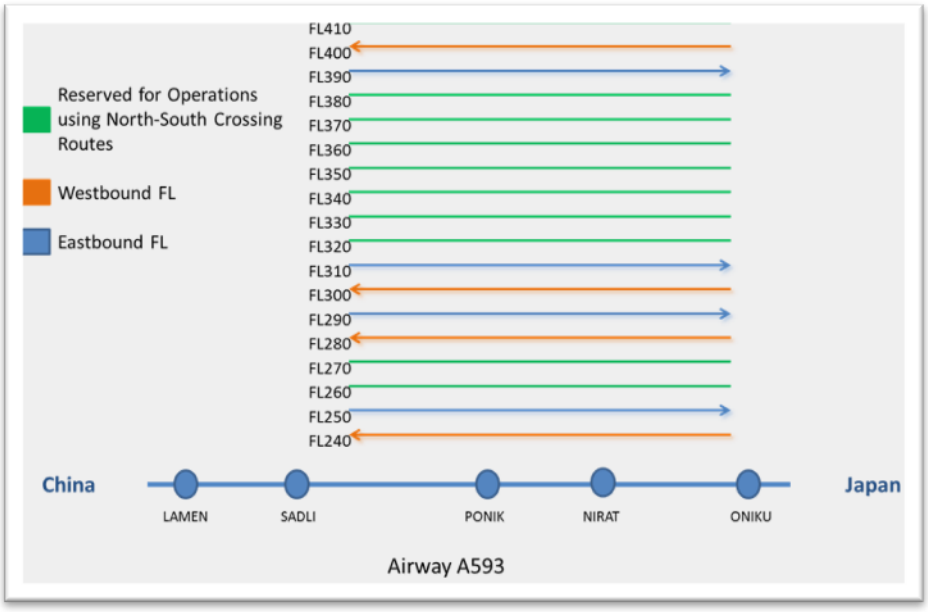


Figure 2: Flight Level Allocation Scheme (FLAS) in the AKARA Corridor airspace

Phase 2 plan and progress

2.5 **Figure 3** shows the ATS route structure of Phase 2. A new northern RNAV2 route will be established between SURAK and VELVA. The southern RNAV2 route will be stretched to BOLEX, and two new routes will be established to connect the northern RNAV2 route and the southern RNAV2 route.

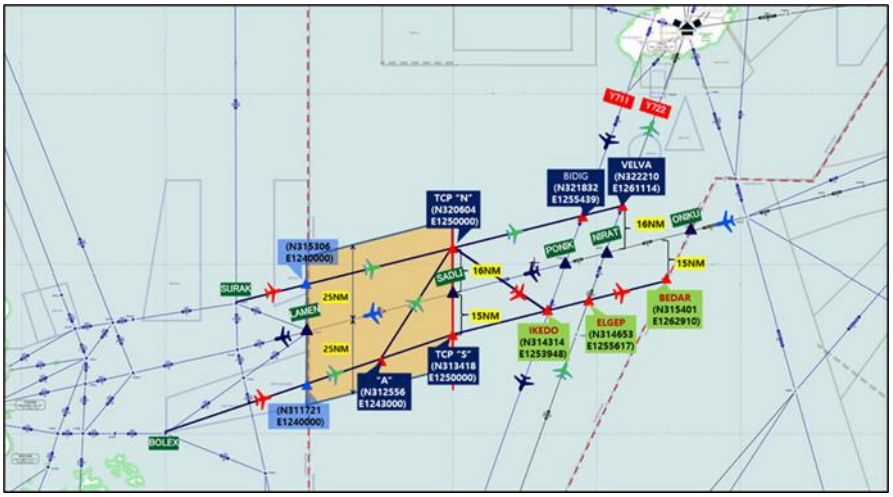


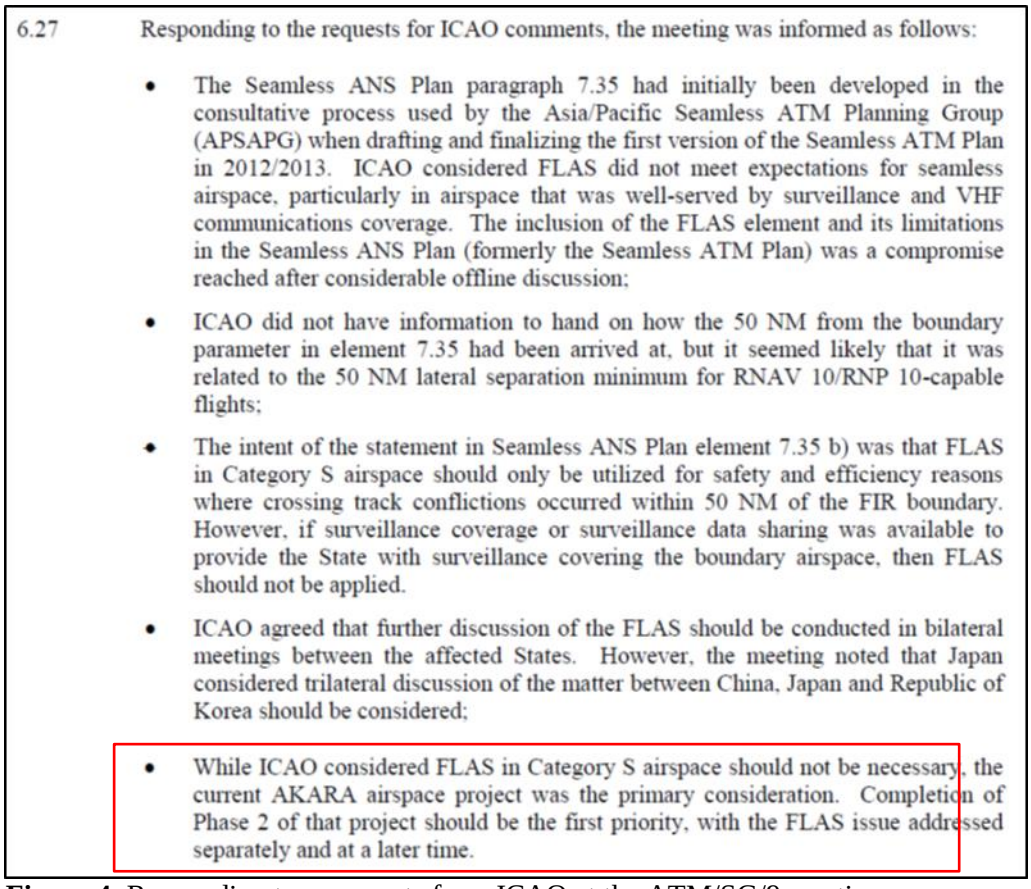
Figure 3: ATS route structure for Phase 2

2.6 The transition from Phase 1 to Phase 2 has been discussed between China and ROK. However, the transition date is not determined as of September 2022.

Discussion at the ATM/SG/9 meeting

2.7 At the Ninth ATM Sub-Group (ATM/SG/9) meeting in November 2021, Japan recalled what ROK presented that the ADS-B establishment in all areas of Incheon FIR was completed on 20 May 2020 and ADS-B allowed air traffic controllers to identify more accurate data blocks and significantly improved blind area at the ATM/SG/8 meeting. Japan also asked ICAO to comment on the rationale for the Seamless ANS Plan 50 NM parameter for determining whether a FLAS should be implemented.

2.8 **Figure 4** shows the responding comments from ICAO, which are quoted from the final report of the ATM/SG/9 meeting.



6.27 Responding to the requests for ICAO comments, the meeting was informed as follows:

- The Seamless ANS Plan paragraph 7.35 had initially been developed in the consultative process used by the Asia/Pacific Seamless ATM Planning Group (APSAPG) when drafting and finalizing the first version of the Seamless ATM Plan in 2012/2013. ICAO considered FLAS did not meet expectations for seamless airspace, particularly in airspace that was well-served by surveillance and VHF communications coverage. The inclusion of the FLAS element and its limitations in the Seamless ANS Plan (formerly the Seamless ATM Plan) was a compromise reached after considerable offline discussion;
- ICAO did not have information to hand on how the 50 NM from the boundary parameter in element 7.35 had been arrived at, but it seemed likely that it was related to the 50 NM lateral separation minimum for RNAV 10/RNP 10-capable flights;
- The intent of the statement in Seamless ANS Plan element 7.35 b) was that FLAS in Category S airspace should only be utilized for safety and efficiency reasons where crossing track conflictions occurred within 50 NM of the FIR boundary. However, if surveillance coverage or surveillance data sharing was available to provide the State with surveillance covering the boundary airspace, then FLAS should not be applied.
- ICAO agreed that further discussion of the FLAS should be conducted in bilateral meetings between the affected States. However, the meeting noted that Japan considered trilateral discussion of the matter between China, Japan and Republic of Korea should be considered;
- While ICAO considered FLAS in Category S airspace should not be necessary, the current AKARA airspace project was the primary consideration. Completion of Phase 2 of that project should be the first priority, with the FLAS issue addressed separately and at a later time.

Figure 4: Responding to comments from ICAO at the ATM/SG/9 meeting

2.9 ICAO commented that FLAS in Category S airspace should not be necessary. Additionally, ICAO commented that Phase 2 of that project should be the first priority, with the FLAS issue addressed separately and at a later time at the meeting.

Bilateral consideration and discussion between Japan and ROK

2.10 Japan and ROK conducted a bilateral consideration and discussion so that aircraft flying in the AKARA – FUKUE corridor airspace could be taking non-FLAS altitude, which would provide more preferred and efficient operation to aircraft operators and would contribute to decreasing the technical risk estimates.

2.11 Consequently, Japan and ROK agreed interimly that Fukuoka ACC and Incheon ACC conducted altitude coordination positively to assign non-FLAS altitude for aircraft desiring it if the altitude was not assigned to other aircraft.

2.12 Fukuoka ACC controllers plan to change the non-FLAS altitude of westward aircraft flying to the AKARA – FUKUE corridor airspace to a FLAS altitude by the aircraft reaches CHINU or DGC (Fukuoka VORTAC), which is approximately 200 NM before ONIKU, a waypoint of the east edge of the AKARA – FUKUE corridor airspace.

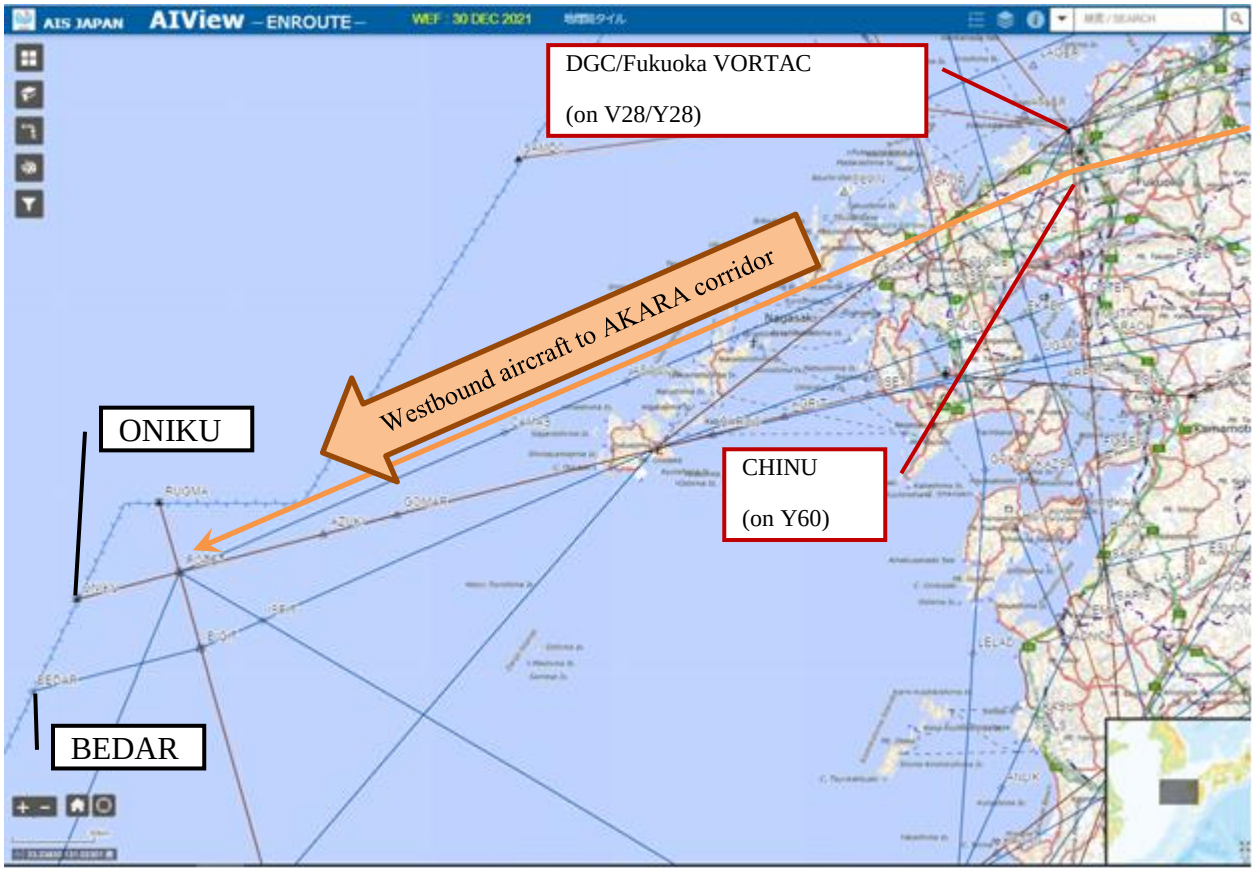


Figure 5: Location of waypoints to assign non-FLAS altitude

2.13 Japan would like to stress that if an aircraft flying at non-FLAS altitude desires to maintain the same altitude in the AKARA corridor airspace, the aircraft should request it to Fukuoka ACC by the waypoints, CHINU or DGC.

Evaluation of non-FLAS altitude usage

2.14 **Table 1** and **Figure 6** show monthly data of FLAS and non-FLAS altitude usage at ONIKU which is the FIR boundary between Fukuoka and Incheon FIRs for westward flights which were transferred from Fukuoka ACC to Incheon/Shanghai ACC for the period from September 2020 to September 2021.

2.15 It is shown that the number and percentage of non-FLAS altitude usage, especially FL320, FL340, FL360 and FL380, had significantly increased after phase 1 implementation, which means Fukuoka ACC started to try positive coordination for non-FLAS altitude usage to Incheon ACC and Incheon ACC approved it.

A593								Phase 1					
Westward	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21
FL450	0	0	0	0	0	0	0	0	0	0	0	1	0
FL430	0	0	0	0	0	0	0	1	0	1	3	3	1
FL410	0	0	0	0	0	0	0	0	0	0	0	0	0
FL400	527	495	475	405	376	274	485	451	367	428	463	411	371
FL390	0	0	0	0	0	0	0	0	0	0	0	0	0
FL380	10	5	0	1	2	1	2	22	39	26	70	58	67
FL370	0	2	0	0	0	0	0	0	0	0	0	0	0
FL360	9	5	3	0	0	0	6	66	55	68	100	92	77
FL350	0	1	0	0	0	0	0	0	0	0	0	0	0
FL340	6	4	2	1	0	1	6	90	81	104	126	133	134
FL330	0	0	0	0	0	0	0	0	1	0	1	0	0
FL320	1	5	2	0	2	1	3	42	44	86	86	91	91
FL310	0	0	0	0	0	0	0	0	0	0	0	0	0
FL300	795	800	840	759	715	618	899	820	745	747	742	627	611
FL290	0	0	0	0	0	0	0	0	0	0	0	0	0
FL280	127	145	199	285	242	176	177	155	125	105	76	50	51
FL270	0	0	0	0	0	0	0	0	0	0	0	1	0
FL260	0	0	0	3	3	1	4	2	1	1	0	0	3
FL250	0	0	0	1	0	0	0	0	0	0	0	0	0
FL240	17	10	17	83	163	104	53	20	25	7	3	6	12
Total	1492	1472	1538	1538	1503	1176	1635	1669	1483	1573	1670	1473	1418

Table 1: Number of FLAS and non-FLAS altitude usage for westward flights from September 2020 to September 2021

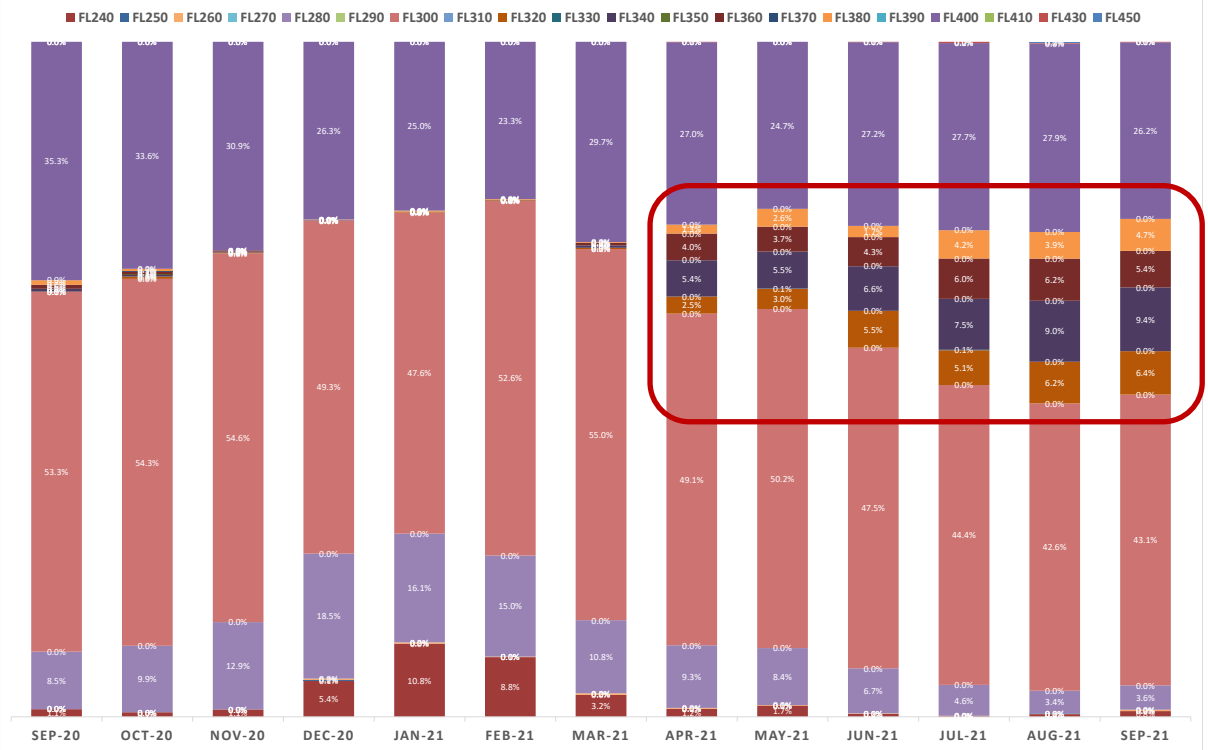


Figure 6: Percentage of FLAS and non-FLAS altitude usage for westward flights from September 2020 to September 2021

2.16 **Table 2** and **Figure 7** show monthly data of FLAS and non-FLAS altitude usage at ONIKU for westward flights which were transferred from Fukuoka ACC to Incheon ACC for the period from April 2021 to August 2022.

2.17 As it is mentioned in above paragraphs 2.10 and 2.11, Japan and ROK agreed interimly in October 2021 that Fukuoka ACC and Incheon ACC conducted altitude coordination positively to assign non-FLAS altitude for aircraft desiring it if the altitude was not assigned to other aircraft.

2.18 Although usage of FL320, FL340, FL360 and FL380 dropped and usage of FL240 increased temporarily from October 2021 to February 2022, usage of FL320, FL340, FL360 and FL380 seem to be a recovery and growing trend in recent 6 months.

A593	Phase 1						FLAS Coordination										
Westward	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22
FL450	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0
FL430	1	0	1	3	3	1	1	0	0	1	1	3	3	0	2	2	4
FL410	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FL400	451	367	428	463	411	371	472	438	394	404	283	509	319	405	506	548	633
FL390	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FL380	22	39	26	70	58	67	52	48	46	48	36	77	65	97	91	114	115
FL370	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FL360	66	55	68	100	92	77	113	93	83	80	56	118	115	136	139	156	148
FL350	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
FL340	90	81	104	126	133	134	129	118	96	76	58	152	181	176	208	240	217
FL330	0	1	0	1	0	0	3	0	0	1	0	0	0	0	0	0	0
FL320	42	44	86	86	91	91	96	99	94	63	37	119	139	153	167	205	240
FL310	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FL300	820	745	747	742	627	611	700	520	588	487	420	660	493	606	751	755	764
FL290	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FL280	155	125	105	76	50	51	119	168	181	208	165	172	92	121	155	101	76
FL270	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
FL260	2	1	1	0	0	3	2	29	30	20	17	13	11	9	12	0	2
FL250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FL240	20	25	7	3	6	12	3	75	91	153	156	69	22	29	31	8	4
Total	1669	1483	1573	1670	1473	1418	1690	1588	1603	1541	1229	1892	1440	1733	2062	2132	2203

Table 2: Number of FLAS and non-FLAS altitude usage for westward flights from April 2021 to August 2022

Figure 7: Percentage of FLAS and non-FLAS altitude usage for westward flights from April 2021 to August 2022

2.19 **Table 3** and **Figure 8** show monthly data of FLAS and non-FLAS altitude usage at ONIKU/BEDAR which is the FIR boundary between Fukuoka and Incheon FIRs for eastward flights which were transferred from Incheon/Shanghai ACC to Fukuoka ACC for the period from September 2020 to September 2021.

2.20 It is shown that non-FLAS altitude, especially FL330, FL350, FL370 and FL410, has been assigned to eastward flights before phase 1 implementation.

A593/Y590								Phase 1					
Eastward	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21
FL450	0	1	0	0	0	0	0	1	1	0	0	0	1
FL430	0	0	0	0	0	0	0	0	0	0	0	0	0
FL410	55	71	74	41	63	49	80	90	94	91	84	107	93
FL400	0	0	0	0	0	0	0	0	0	0	0	0	0
FL390	151	199	263	347	363	329	317	295	170	161	172	142	165
FL380	0	0	0	0	0	0	0	0	0	0	0	0	0
FL370	94	80	121	129	138	117	114	96	124	100	70	88	81
FL360	0	0	0	0	0	0	0	0	0	0	0	0	0
FL350	164	134	172	178	180	107	146	230	259	269	230	196	215
FL340	0	0	0	0	0	0	0	0	0	0	0	0	0
FL330	101	89	106	85	80	65	76	116	127	133	165	156	138
FL320	0	0	0	0	0	0	0	0	0	0	0	0	0
FL310	627	711	891	842	796	543	615	779	759	767	753	653	568
FL300	0	0	0	0	0	0	0	0	0	0	0	0	0
FL290	471	443	597	581	580	450	483	554	487	492	489	393	384
FL280	0	0	0	0	0	0	0	0	0	0	0	0	0
FL270	5	4	5	4	2	5	3	8	11	12	7	13	6
FL260	0	0	0	0	0	0	0	0	0	0	0	0	0
FL250	324	406	429	437	427	374	340	382	340	345	303	184	230
FL240	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1992	2137	2658	2644	2629	2039	2174	2550	2371	2370	2273	1932	1880

Table 3: Number of FLAS and non-FLAS altitude usage for eastward flights from September 2020 to September 2021

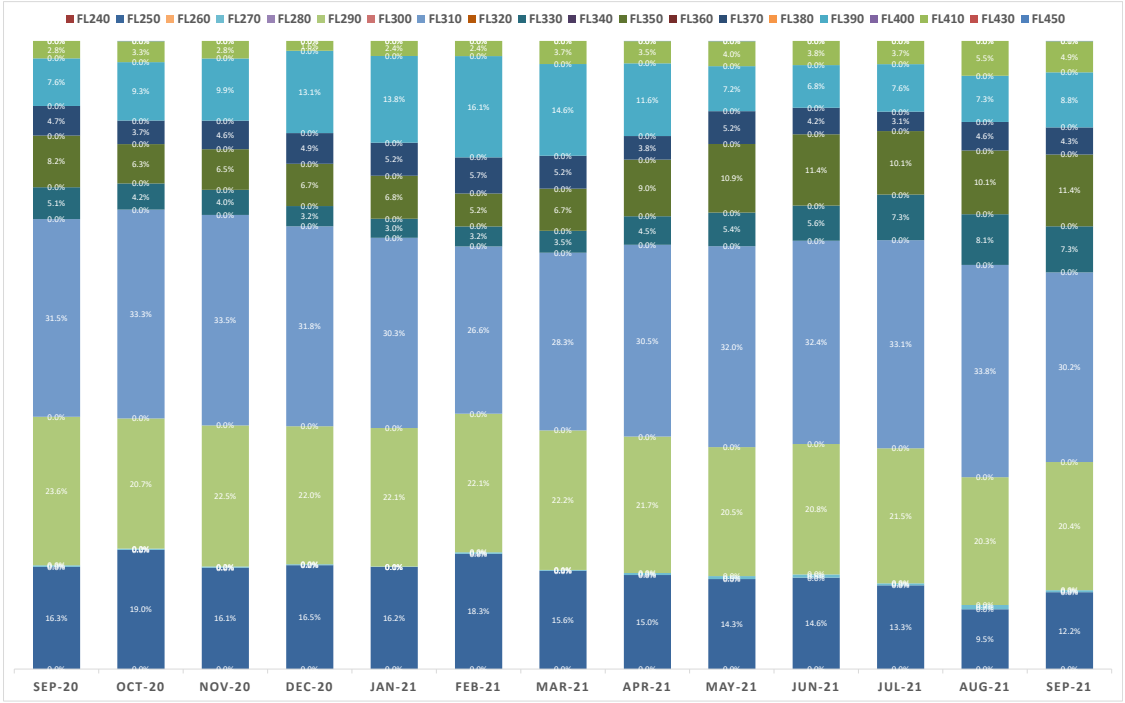


Figure 8: Percentage of FLAS and non-FLAS altitude usage for eastward flights from September 2020 to September 2021

2.21 **Table 4** and **Figure 9** show monthly data of FLAS and non-FLAS altitude usage at BEDAR for eastward flights which were transferred from Incheon ACC to Fukuoka ACC for the period from April 2021 to August 2022.

2.22 Usage of FL330, FL350, FL370 and FL410 has gradually increased since October 2021.

A593/Y590	Phase 1						FLAS Coordination										
Eastward	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22
FL450	1	1	0	0	0	1	0	0	1	0	1	4	0	2	2	2	0
FL430	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FL410	90	94	91	84	107	93	143	128	129	83	69	124	124	125	172	151	123
FL400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FL390	295	170	161	172	142	165	220	236	269	252	250	251	209	236	214	211	238
FL380	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FL370	96	124	100	70	88	81	111	168	183	183	209	248	159	183	144	104	121
FL360	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FL350	230	259	269	230	196	215	290	324	324	336	310	461	364	366	333	256	255
FL340	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FL330	116	127	133	165	156	138	178	219	238	217	186	275	263	261	280	265	239
FL320	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FL310	779	759	767	753	653	568	735	704	641	566	476	726	595	661	705	799	793
FL300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FL290	554	487	492	489	393	384	450	471	462	504	379	514	239	360	518	546	564
FL280	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FL270	8	11	12	7	13	6	12	15	15	12	8	11	4	8	10	15	13
FL260	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FL250	382	340	345	303	184	230	318	283	340	301	274	287	49	153	227	197	210
FL240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2550	2371	2370	2273	1932	1880	2457	2548	2601	2454	2161	2897	2006	2353	2603	2544	2556

Table 4: Number of FLAS and non-FLAS altitude usage for eastward flights from April 2021 to August 2022

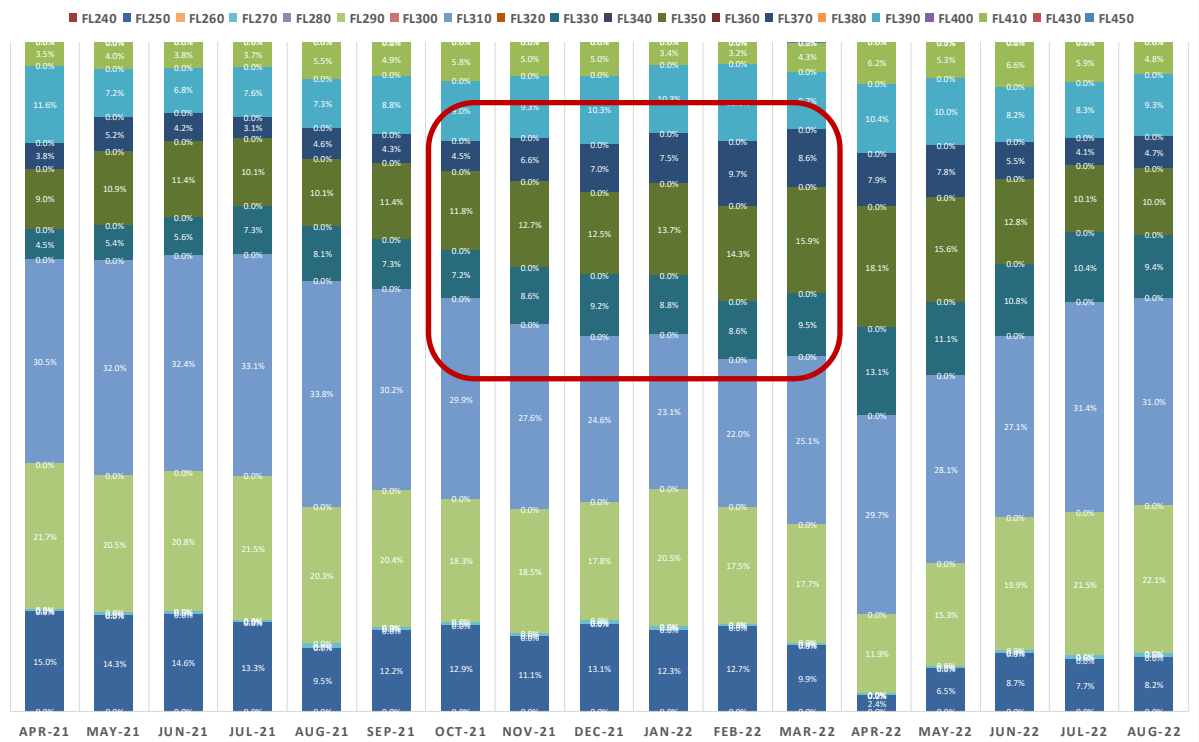


Figure 9: Percentage of FLAS and non-FLAS altitude usage for eastward flights from April 2021 to August 2022

2.23 Japan would continue to consider and discuss with ROK that Fukuoka ACC and Incheon ACC could assign non-FLAS altitude for aircraft flying in the AKARA corridor airspace to allow those aircraft operators to obtain more safety and efficiency.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper; and

b) discuss any relevant matters as appropriate.

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