International Civil Aviation Organization

NINETEENTH MEETING OF THE COMMUNICATIONS/NAVIGATION AND SURVEILLANCE SUB-GROUP (CNS SG/19) OF APANPIRG

Bangkok, Thailand, 20 – 24 July 2015

Agenda Item 4: Aeronautical Mobile Service (AMS)

4.3 Other AMS related issues

THE UPDATING OF DEPARTURE CLEARANCE TRIAL OPERATION IN JAPAN

(Presented by Japan)

SUMMARY

Japan Civil Aviation Bureau (JCAB) has implemented the trial operation of DEPARTURE CLEARANCE by DATA-LINK SERVICE (DCL) at Tokyo international airport (RJTT) and Narita international airport (RJAA) since June 28, 2012. The trial operation is going to be completed on Aug. 19 2015 and move to official start of operations on Aug. 20, 2015. This paper reports the performance of the trial operation.

1. INTRODUCTION

1.1 Japan Civil Aviation Bureau (JCAB) has implemented the trial operation of DEPARTURE CLEARANCE by DATA-LINK SERVICE (DCL) at Tokyo international airport (RJTT) and Narita international airport (RJAA) since June 28, 2012. The trial operation of DCL has been implemented by step-by-step progress divided into 3 phase. (Table 1.2) In the Phase 3 applicable city-pairs of Operational trial for DCL was expanded at Tokyo International Airport and Narita International Airport without limitation in the arrival airport.

1.2 The purpose of the trial operation

- To evaluate the validity of the operation method
- To determine the transition to the next phase based on the evaluation results at each stage
- To decide to move on full operation with the coordination with airlines after the evaluation of the validity of the operation method in all phases
- The target period of the trial operation will be three years

1.3 JCAB had evaluated the DCL performance during the trial operation.

Table 1.2 [**Trial operation plan**]

Phase	Targeting flights
Phase 1 (Jun28, 2012 – Jun26, 2013)	Domestic flight
Phase 2 (Jun 27, 2013 – Aug. 20, 2014)	Addition of international flight, East Asian and European region
Phase 3 (Aug.21, 2014 – Aug.19, 2015)	Addition of all Domestic/International Departures

2. DISCUSSION

2.1 Evaluation

2.1.1 Utilization Rate in the Phase-III

The utilization rate of DCL has been gradually increasing. (Figure 2.1.1). This increase is because of the expansion of the target scope when the trial was moved to Phase-III. Currently 7 domestic airlines and 55 foreign airlines have participated in the trial operation. Utilization rate is about 59% at Tokyo international airport and about 54% at Narita international airport.

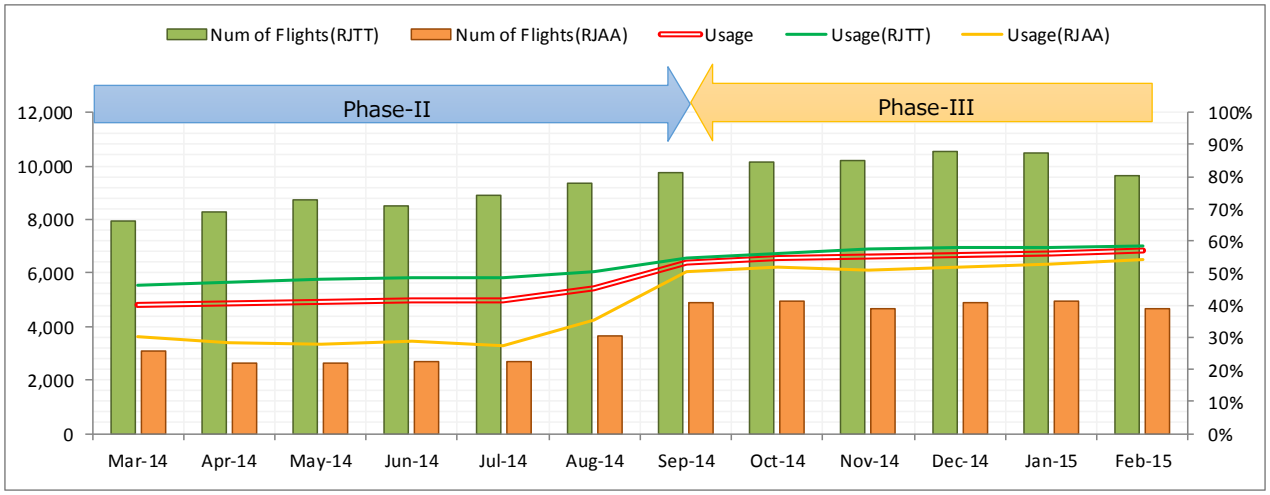


Figure 2.1.1 [**Utilization rate of DCL**]

2.1.2 Success Rate

The success rate of DCL has kept high level since DCL trial operation was started (Figure 2.1.2). When the trial was moved to the phase-II, the success rate went down from 90% to 75% at RJAA. This was because the phase-II only treated the East Asian and European region, but there were many requests not to care for this restriction. Currently there is no condition in the phase-III, so the success the rate returns to high rate.

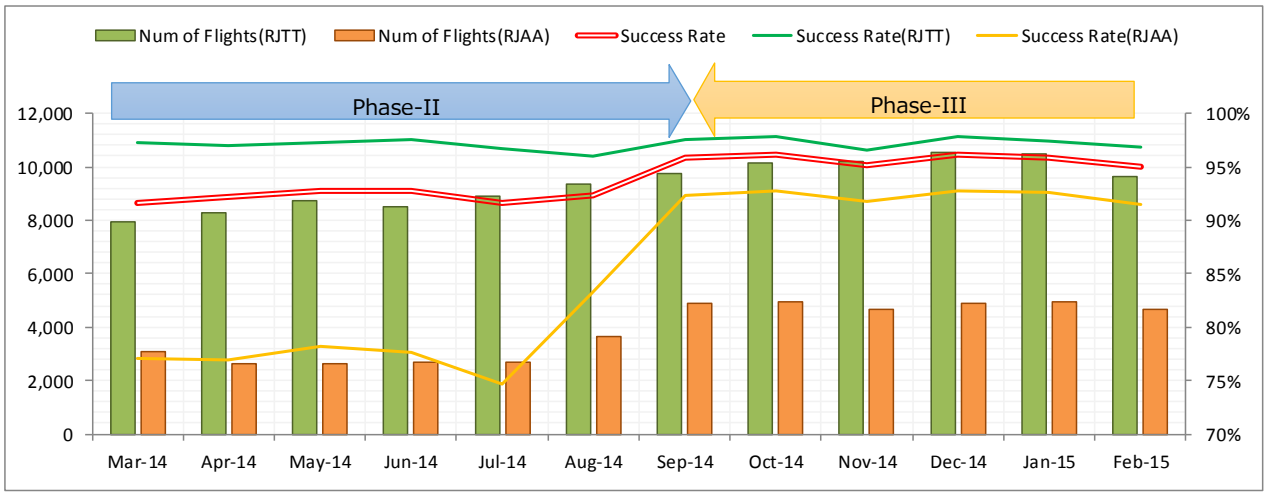
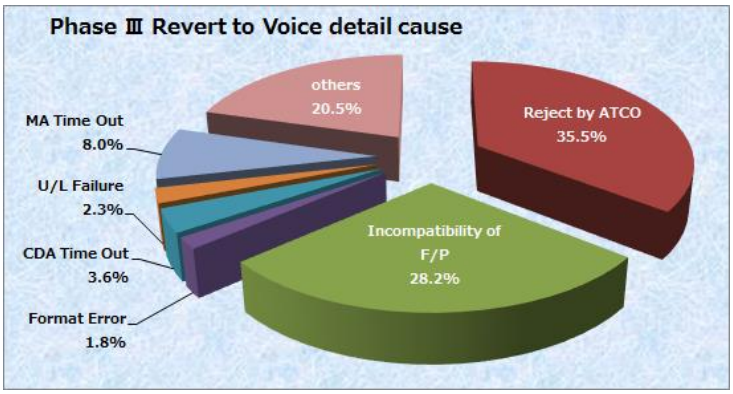
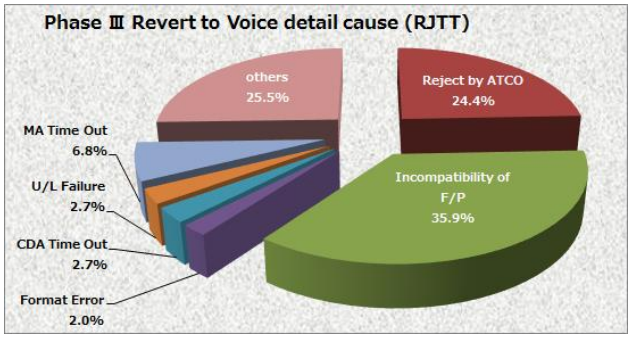


Figure 2.1.2 [**Success rate of DCL**]

2.1.3 Cause of Failure

In case of DCL process interrupted by Air Traffic Controllers (ATCO) or failed, the process is supposed to revert to voice. The causes of failure are summarized in Figure 2.1.3. There are cases that ATCO cancelled the request clearance to relieve traffic congestion appropriately at RJAA. In that case, ATCO reply "REVERT TO VOICE" message to change the voice communication.





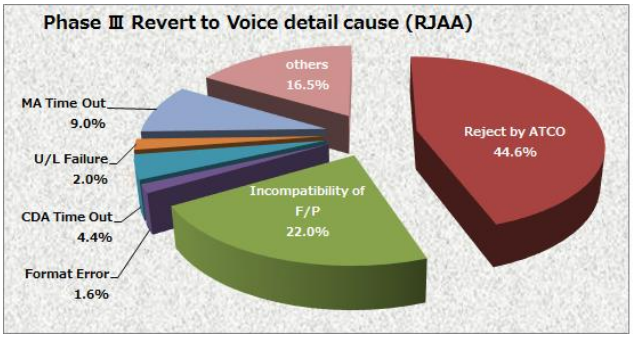


Figure 2.1.3 [**Revert to voice detail cause**]

2.1.4 Performance

We quantitatively evaluated the performance requirement which was provided in EUROCAE ED-85A (Table 2.1.4a). The measurement point is defined at Figure 2.1.4b. We checked all paths through VHF data link, INMARSAT and MTSAT and confirmed all to meet the performance requirement (Figure 2.1.4c). As an additional information, the path through ARINC is supported by DCL from Apr. 1, 2015, after JCAB contracted with ARINC. During the trial period, the performance meets the requirement all the time.

Table 2.1.4a [**Performance Requirement**]

ED-85A requirement		Specified value	Measured figure
Time sequence diagram	t0	95% < 65s	5s
		Maximum value of t0 for 95 % of the total volume of delivered messages: t0<65s	
	t2	95% < 65s	4s
		Maximum value of t2 for 95 % of the total volume of delivered messages: t2<65s	
Corrupted message ratio		$1x10^{-2}$	0
Lost message ratio		$1x10^{-2}$	0

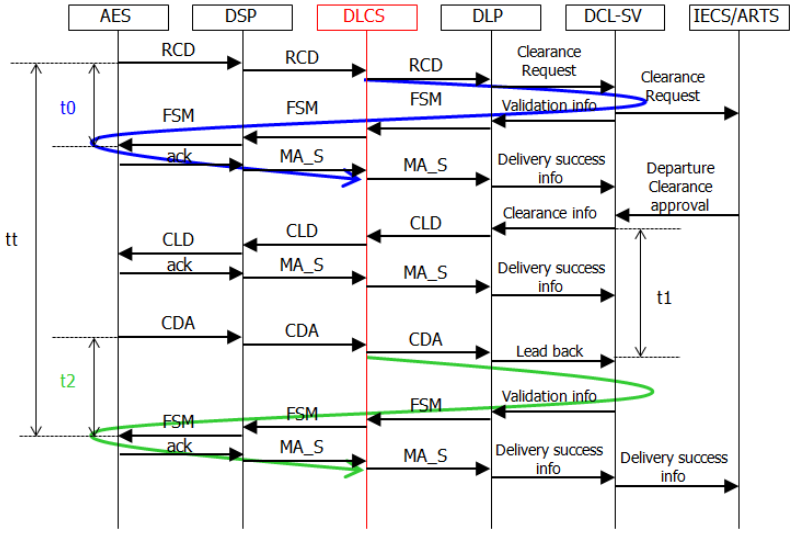
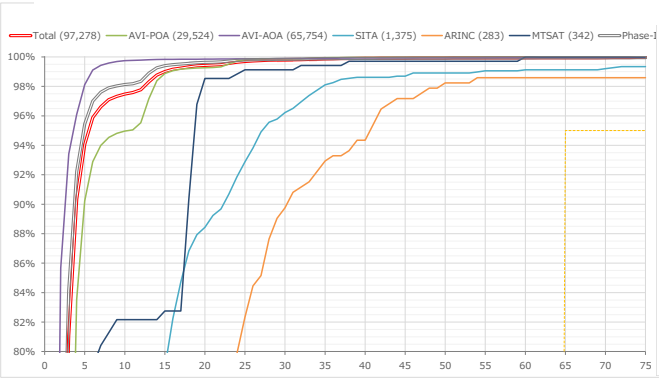


Figure 2.1.4b [**Measurement Point**]

T0 Performance



T2 Performance

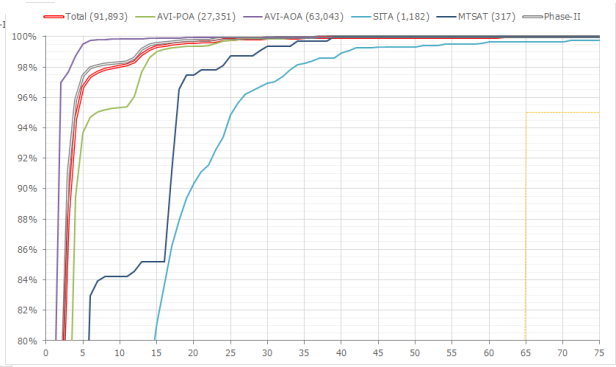


Figure 2.1.4c [**Performance of DCL based on ED-85A**]

2.1.5 Result

Departure clearance using voice takes 1 minutes so far. But using DCL is shortened to 10seconds and enables to check with text message. This contributes to the reduction of workload and prevention of human error. Especially pilots are very busy before the engine start for preparation. We heard good reputation from airline operators through the trial operations.

2.2 Conclusion

2.2.1 Toward the completion of trial

The trial operation is going to be completed on August 19, 2015, and moves to official start of operations on Aug. 20, 2015. JCAB will continue to evaluate the performance and continue to analyze the problem report to improve the performance.

During the trial operation period, all communication fee is charged to JCAB. But after DCL moves to official start of operation, communication fee for downlink will charge to airlines.

Please confirm the AIC Nr. 012/15 (issued on 2 Apr. 2015) about the detail information for the trial operation and the AIP ENROUTE 1.5-20 (Effective date 20 Aug. 2015) about the official start of operations.

2.2.2 Related information
AIS JAPAN : https://aisjapan.mlit.go.jp/Login.do

3. ACTION BY THE MEETING

3.1 The meeting is invited to: take note of the progress made by Japan in updating the DCL trial operation in Japan.

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