TWELFTH AIR NAVIGATION CONFERENCE

Montréal, 19 to 30 November 2012

Agenda Item   2: Aerodrome operations – improving airport performance
2.1: Airport capacity

REMOTELY OPERATED AERODROME FLIGHT INFORMATION SERVICE

(Presented by Japan)

SUMMARY

This paper briefly describes the remote air-ground communication service in Japan as a reference to ASBU Module B1-81 (remotely operated control towers) and provides materials to be sufficiently considered in the discussion of Module B1-81 from our experience.

Action: The Conference is invited to note the information in this working paper and agree to the recommendation in paragraph 5.

1.   **INTRODUCTION**

1.1   The aviation system block upgrade (ASBU) Module B1-81 (remotely operated control towers) sets forth the many benefits by introducing remotely operated aerodrome ATC/AFIS with the utilization of new technologies on the visual surveillance.

1.2   Japan has implemented similar service since 1974: remotely operated AFIS called remote air-ground communication service. This paper is prepared to provide materials to be sufficiently considered in the discussion of Module B1-81 from our experience. The service is basically different from remotely operated aerodrome AFIS explained in Module B1-81 in respect of the visual surveillance.

2.   **REMOTELY OPERATED AFIS IN JAPAN**

2.1   There are eighty-seven civil airports including joint civil/Japan Self Defence Force airport in Japan, in which aerodrome ATC/AFIS is provided. Aerodrome ATC/AFIS in Japan is generally categorized depending on traffic volumes as follows.

> a) aerodrome control service: it is provided at thirty-nine medium to large airports;
>
> b) aerodrome air-ground communication service: it means AFIS and is provided at 19 small airports; and

c) remote air-ground communication service: it means remotely operated AFIS and is provided at thirty smaller airports such as airport in the isolated island. The service is provided from eight Flight Service Centres (FSCs) not located at airport itself.

2.2   Outline of remote air-ground communication service.

2.2.1   The airports in which remote air-ground communication service is provided and FSC providing the service are as follows.

FSC	Airport in which RAG communication service is provided
New Chitose FSC	Rishiri, Monbetsu, Okushiri, Nakashibetsu (4)
Sendai FSC	Sado, Odatenoshiro (2)
Tokyo FSC	Niijima, Kozujima, Miyakejima (3)
Chubu FSC	Fukui (1)
Osaka FSC	Tajima, Oki, Iwami (3)
Fukuoka FSC	Kamigoto, Ojika, Saga (mid night only), Iki (4)
Kagoshima FSC	Yakushima, Kikaijima, Tokunoshima, Okierabu, Yoron (5)
Naha FSC	Minami/Kita daito, Kumejima, Aguni, Yonaguni, Hateruma, Tarama, Kerama (8)
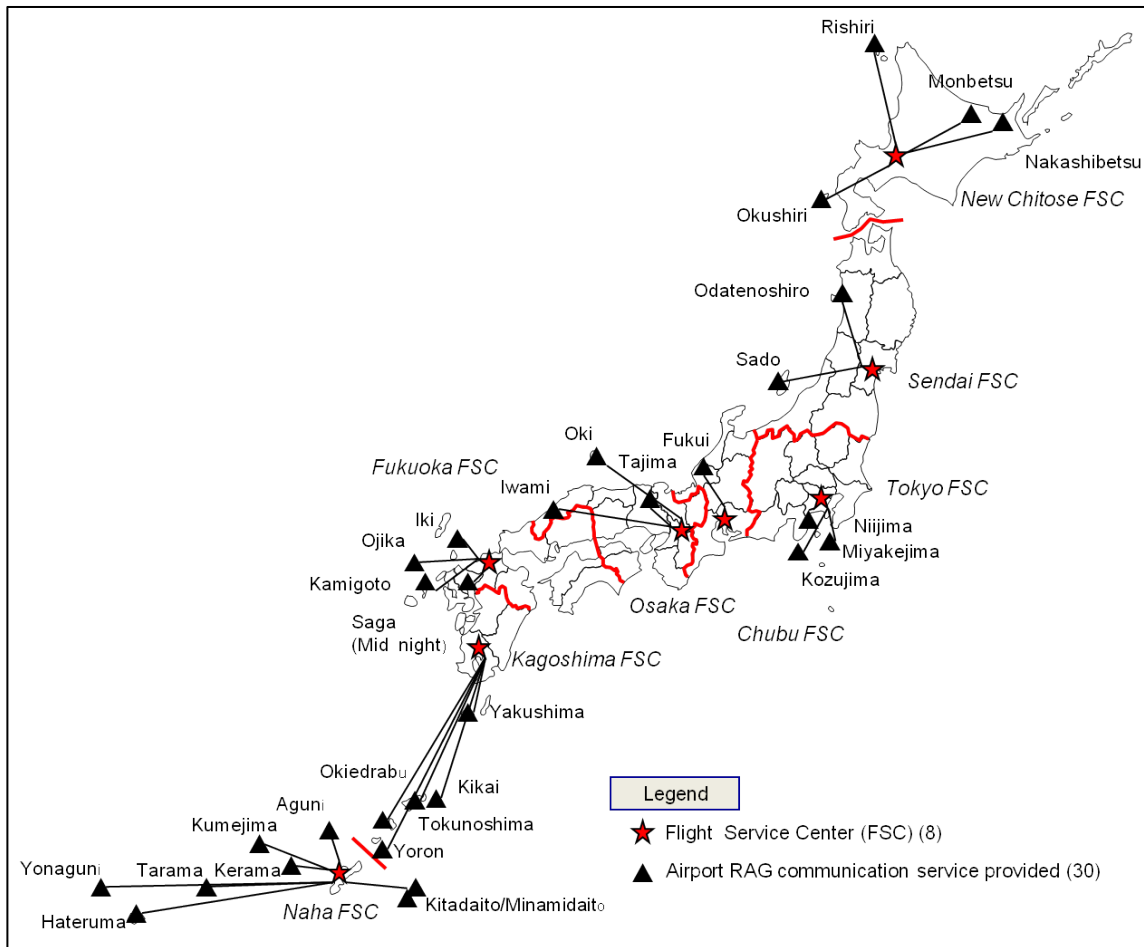
Note.– FSC is located at the eight core airports. Besides remote air-ground communication service, FSC is providing flight information service for IFR/VFR aircraft by radio communication, flight plan briefing, flight watch and so on within its jurisdiction area, and ATIS, aerodrome management at the airport itself for 24 hours.

2.2.2   The service is to provide information necessary for the safe aircraft operation at or around the airport. Airspace is designated as class E named "Information zone" with a radius of 5 nautical miles below generally 3 000 ft. Aircrafts are obliged to keep in contact with FSC with call sign "REMOTE" following the name of the airport e.g. Yakushima REMOTE within information zone and to get necessary information provided by FSC. It is regulated by the Civil Aeronautics Act.

2.2.3   The basic elements of information provided to aircraft by FSC are as follows:

   a) the most suitable runway for use;

   b) meteorological information (latest surface wind speed and direction, QNH, weather observation data);

   c) aerodrome information (construction work, runway snow condition etc.);

   d) traffic information on the surface and in the vicinity of airport. The responsibility of ensuring the safety with other aircraft rests with aircraft; and

   e) any other information that is necessary to the safety.

   For IFR aircraft, FSC relays departure/approach clearance issued by ACC as appropriate.

2.2.4   Personnel assignment

2.2.4.1   ATS flight information officer (hereinafter referred to as FIO) qualified by Japan Civil Aviation Bureau (JCAB) provides the service as well as aerodrome air-ground communication service. FSC provides many kinds of services for 24 hours and appropriate number of FIO are assigned depending on the business volume of each FSC. Basically, one FIO takes care of two airports.

2.2.5   The following equipment is installed at each FSC:

   a) remote air-ground communication facility (VHF);

   b) communication line with relevant ACC, meteorological office, and airport authority, etc.;

   c) weather receiving unit (wind speed and direction indicator, QNH, weather observation data etc.);

   d) aircraft position display unit (APDU): this unit is for FIO to grasp aircraft position and altitude flying around the airport, and to provide traffic information as necessary. Aircraft position and altitude are distributed from secondary radar data detected by air route surveillance radar;

   e) ITV: is the auxiliary device for FIO to grasp the condition of airport movement area; and

   e) flight information handling system (FIHS): is to grasp flight plan, aeronautical information etc. through aeronautical fixed communication service network.

APDU

Weather
receiving
unit

ITV

FIHS

COMM unit
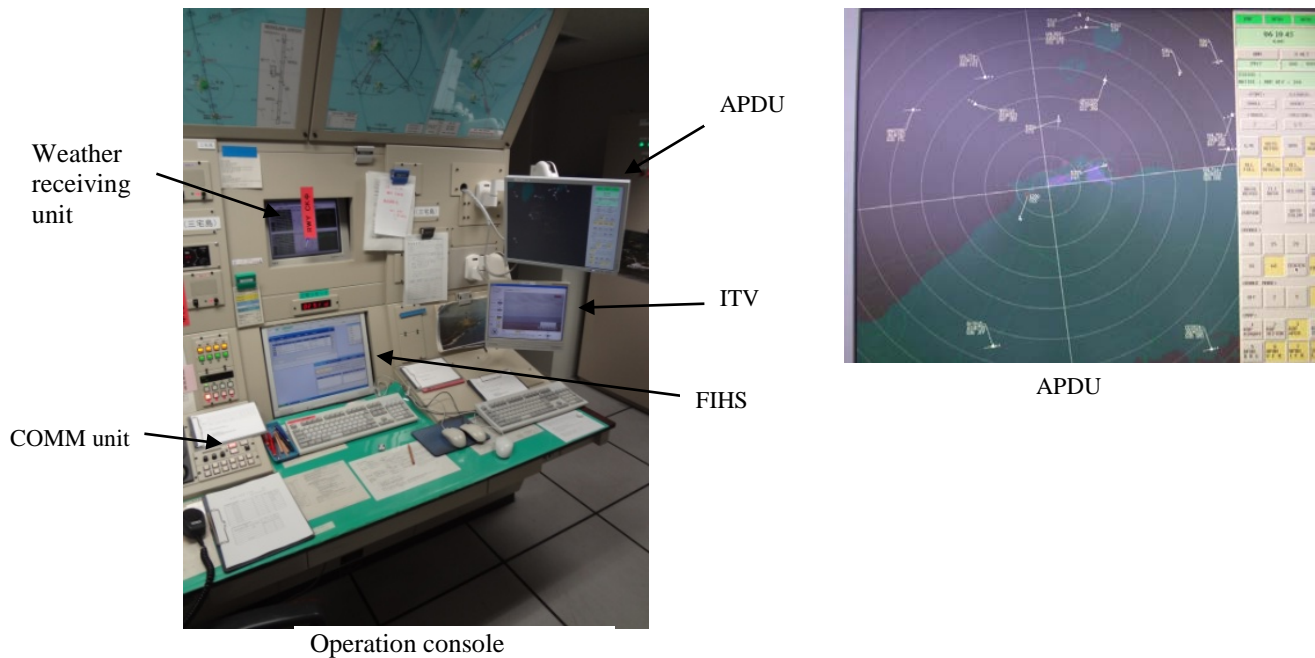
Operation console

APDU

2.2.6   The basic elements of information exchanged daily between FSC and airport authority are as follows:

   a)   from airport authority to FSC:

      1) runway condition according to the result of runway inspection;
      2) notification of runway entrance and exit;
      3) construction work; and
      4) status of lights (Lights are controlled by airport authority);

   b)   from FSC to airport authority:

      1) flight plan and estimated arrival time; and
      2) runway number for use.

3.   **BENEFITS**

3.1   From 1974 to 1994, remote air-ground communication service had been introduced at eighteen small airports mainly located in the isolated island to ensure the safety of scheduled flight. Since 1994, with decreased traffic volumes, JCAB has introduced remote air-ground communication service at ten airports in place of aerodrome air-ground communication service taking account primarily the safety, then the conditions of airport location and resource efficiency. There was an airport for which JCAB stopped providing remote air-ground communication service. Three airports are newly added.

3.2   Appropriate number of staff needs to be allocated per one airport according to its operating hours when providing aerodrome air-ground communication service. Therefore, with the implementation of remote air-ground communication service in place of aerodrome air-ground communication service from 1994 to the present, a number of FIO have been reduced and nowadays it brings reduction of staffing cost with more than

300 million yen every year. In addition, maintenance costs for control tower building become no longer necessary and overall maintenance costs for the service are less expensive.

3.3   Thus, introducing remote air-ground communication service brings benefits with regard to staffing and maintenance costs without reducing the level of the safety.

4.   **MATTERS TO BE CONSIDERED**

4.1   As FIO is providing the service from FSC which is not located at the airport itself, it is impossible to take in information at or around airport by hearing and eyesight. For example, FIO can't directly notice sudden weather change around the airport.

4.2   FIO can only grasps information by other sources: traffic information by the report of aircraft through radio communication, weather information by the weather unit through the weather receiving unit, airport condition by the airport authority through telephone etc.

4.3   In the past, although extremely rare, there were cases that FIO didn't notice wrong weather data soon or scheduled flight was affected because of failure of communication line between FSC and airport authority.

4.4   Therefore, the following matters are of significant importance on remote air-ground communication service:

a) assuring the accuracy of information delivered from relevant units at airport; and

b) assuring the reliability of communication line with relevant units at airport.

5.   **CONCLUSION**

5.1   Remotely operated ATC/AFIS using new technology will bring many benefits on the whole. It is important to consider the requirements for communication between the airport side and remote ATC/AFIS facilities.

5.2   The Conference is invited to:

a) note the information contained in this paper and;

b) recommend ICAO to consider how to assure the accuracy of information delivered from relevant units at airport and the reliability of communication line with relevant units at airport in the discussion of Module B1-81 (remotely operated control towers).

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