1. Function summary and flow of information of ATC Data Processing System

1) Function summary and flow of information about FDMS (FDPS)
FDMS is a computer system set up in Air Traffic Management Center in Fukuoka; manages and processes flight plan information etc., intensively, that are related to each control center in Sapporo, Tokyo, Fukuoka and Naha. It provides information necessary for the air traffic control like Flight Data Sheet via Enroute data processing and distribution equipment set up in each control center, and provides information to other ATC Data Processing System.

The main function is as follows, and flow of information shown in page 41.

1. Automatically outputs flight data sheet from printer at assigned console concerned, in each control center.
2. Outputs necessary flight data sheets to printer at assigned console in Sapporo, Tokyo, Fukuoka, and Naha Area Control Center and 26 national airports like Tokyo, Narita, Kansai.
3. Sends necessary flight plan information for indication to RDP, ODP, ATFM, ARTS, and TRAD system.
4. Automatically receives and processes departure messages from ARTS and TRAD system and aircraft’s position information from RDP, and indicates to CRT at assigned console.

2) Function summary and flow of information about RDP
RDP is a system set up in each Area Control Center in Sapporo, Tokyo, Fukuoka, and Naha; processes Radar Data from 20 national ARSRs and indicates symbols which shows aircraft’s position with informations like flight number using alphanumeric characters on radarscope of each assigned console.

The main function is as follows, and flow of information shown in page 42.

1. Digitally processes aircraft’s position information and altitude information from primary and secondary radars, and performs tracking based on secondary radar datas and flight plan route from FDMS(FDPS).
2. Performs multiplex radar processing by radar information from the plural radars that cover level repeats.
3. Indicates informations like aircraft symbol, flight vector, and flight plan etc. on radarscope of each assigned console by matching flight plan information and radar information.
4. Exchanges radar hand-off with ARTS, TRAD and adjacent RDP system via data communication line.
5. Sends aircraft’s position information from radar to FDMS(FDPS).
6. Digitally processes and indicates radar information about bad weather on radarscope.

3) Function summary and flow of information about ARTS
ARTS is a system which processes Radar Data from ASRs and indicates symbols which shows aircraft’s position with informations like flight number using alphanumeric characters on radarscope of each assigned console in Radar approach control facility. TRAD is a system which also processes Radar Data from ASRs set up in airports unable to have ARTS. Although TRAD system, compared to ARTS system, handles less numbers of aircrafts and so on, but is provided with major functions of ARTS system.

The main function is as follows, and flow of information shown in page 43, also display examples on page 44.

1. Digitally processes primary and secondary radars and performs tracking based on primary and secondary radars.
2. Indicates informations like aircraft symbol and flight plan etc. on radarscope of each assigned console by matching flight plan information and radar information.
3. Exchanges radar hand-off with RDP and adjacent ARTS via data communication line.
4. Sends aircraft’s departure information from radar to FDMS(FDPS).
5. Indicates information like aircraft’s position symbol, flight number and altitudes etc.

4) Function summary about ODP
ODP is a system set up in Air Traffic Management Center; predicts and calculates aircraft’s position flying a very large air boundary on the very large Pacific, and indicates traffic situation and aircraft’s position information given from ADS using the satellite on the monitor.

The main function is as follows.
1. Calculates the predicted location of aircraft position from the flight plan and the position report from the aircraft.
2. Indicates aircraft flight direction and flight path.
3. Receives ADS, sends/receives CPDLC and AIDC.

5) Function summary about ATFM
ATFM is a system consisted of Air Traffic Flow Management system set up in Air Traffic Management Center, and of terminals set up in each area control center in Sapporo, Tokyo, Fukuoka and Naha; predicts appropriate traffic volume based on radar information from RDP, flight plan data from FDMS and Notice to Airmen etc., in order to avoid excessive traffic congestion on specific airways or airports.

The main function is as follows.
1. Calculates reasonable air traffic amount from various informations.
2. Indicates current air traffic flow and traffic volume.
3. Indicates predicted air traffic flow and traffic volume.
4. Indicates air space information, traffic density monitor information and flow control information etc.
2. Function summary about Air Traffic Data System (CADIN)

Air Traffic Data System (CADIN) is the general term of data terminals set up in airports all over Japan, information and communication network of those, FDMS (FIMS) which is the main communication of that network, DTAX and terminals; connects to AFTN, ATC Data Processing System, system of the Meteorological Agency, the Defense Agency and airline companies etc., and conducts to deliver, exchange, handle and process plentiful kinds of information such as flight plan, NOTAM, weather needed for aircraft operation, and information necessary for SAR.

The main function is as follows, and composition chart show in page 45, concept chart shown in page 46, and also Aerouautical Fixed Telecommunication Network (AFTN) shown in page 49.

(1) Relays and exchanges various messages needed for aircraft operation between domestic and foreign Facilities concerned with speed and accuracy.
(2) Sends aircraft flight plans to ATC data processing system and airport facilities concerned.
(3) Keeps the Data Base systematically arranged and stored of data such as NOTAM, airport information (using runway, approach procedures, wx, etc.) and pilot reports in flight to allow airmen and relevant aviation facilities efficient use of this information.

3. Function summary of SDECC Test System

This system is designed for the development and evaluation of programs for ATC data processing systems to have ATC services etc, operate smoothly. And also it plays an important role of contingency management as a back-up system for operating systems installed at ACC and so on.

The main function is as follows, and outline shown in page 90.

(1) Develops and evaluate the programs of FDMS (FDPS, FIMS), RDP, ARTS, DTAX, ODP, ATFM.
(2) Evaluates the programs by connecting more than one system, and performs total systems simulation.
(3) Have the function of contingency management concerning FDMS (FDPS, FIMS) and ODP.