NAHA AREA CONTROL CENTER

Historical Outline and Organization

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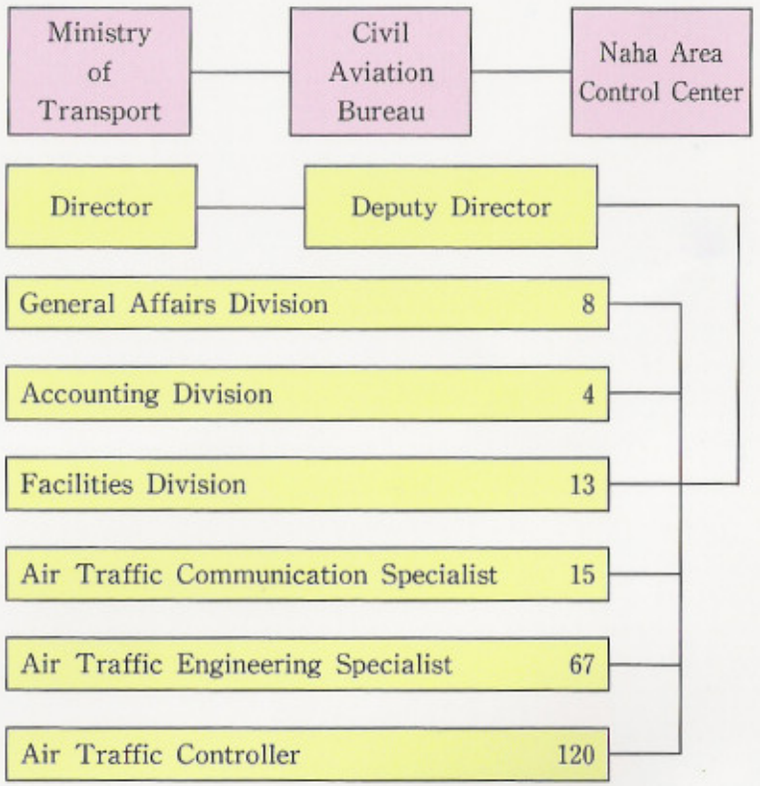
On May 15th, 1974, Japan Civil Aviation Bureau (JCAB) got back the authority to provide an air traffic service in Okinawa region which had been long provided by the U.S. military unit. Naha Area Control Center (ACC) was inaugurated on the same day.

May	15,1972	The establishment of Naha Area Control Center preparatory office.
May	13,1974	Ministry of Establishment Law was amended to inaugurate Naha ACC (the number of personnel: 152) ; General Affairs Division, Communication Division, Communication Engineering Division, Air Traffic Control Engineering Division and Air Traffic Controller were established.
May	15,1974	The commencement of air traffic service, which had been still provided by the United States even after the reversion of Okinawa to Japan, in Naha Flight Information Region. Yaedak Air Route Surveillance Radar (ARSR) started its operation.
May	10,1976	The establishment of Facilities Division and System Engineering Division.
Apr.	11,1978	The establishment of Deputy Director.
Oct.	1,1978	The abolition of Communication Division and the establishment of Air Traffic Communication Specialist. The commencement of operation of Aeronautical Enroute Information Service (AEIS) .
Apr.	5,1980	The abolition of Communication Engineering Division, Air Traffic Control Engineering Division, and System Engineering Division. The establishment of Air Traffic Engineering Specialist.
Apr.	3,1981	The establishment of Accounting Division.
May	1,1983	The commencement of operation of Miyakojima ARSR.
Jul.	1,1985	The commencement of operation of Amami ARSR.

Organization Chart



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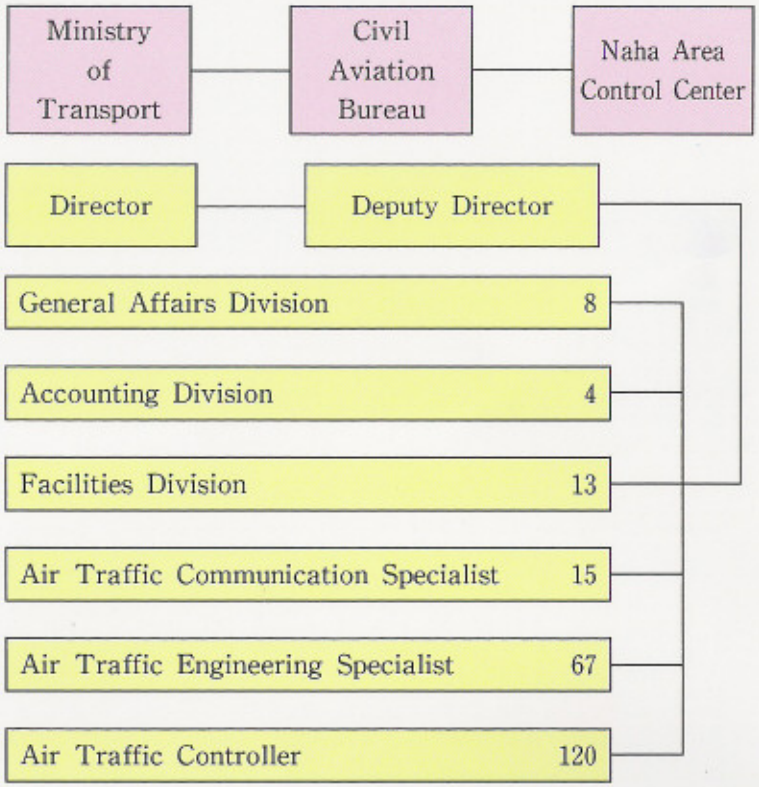
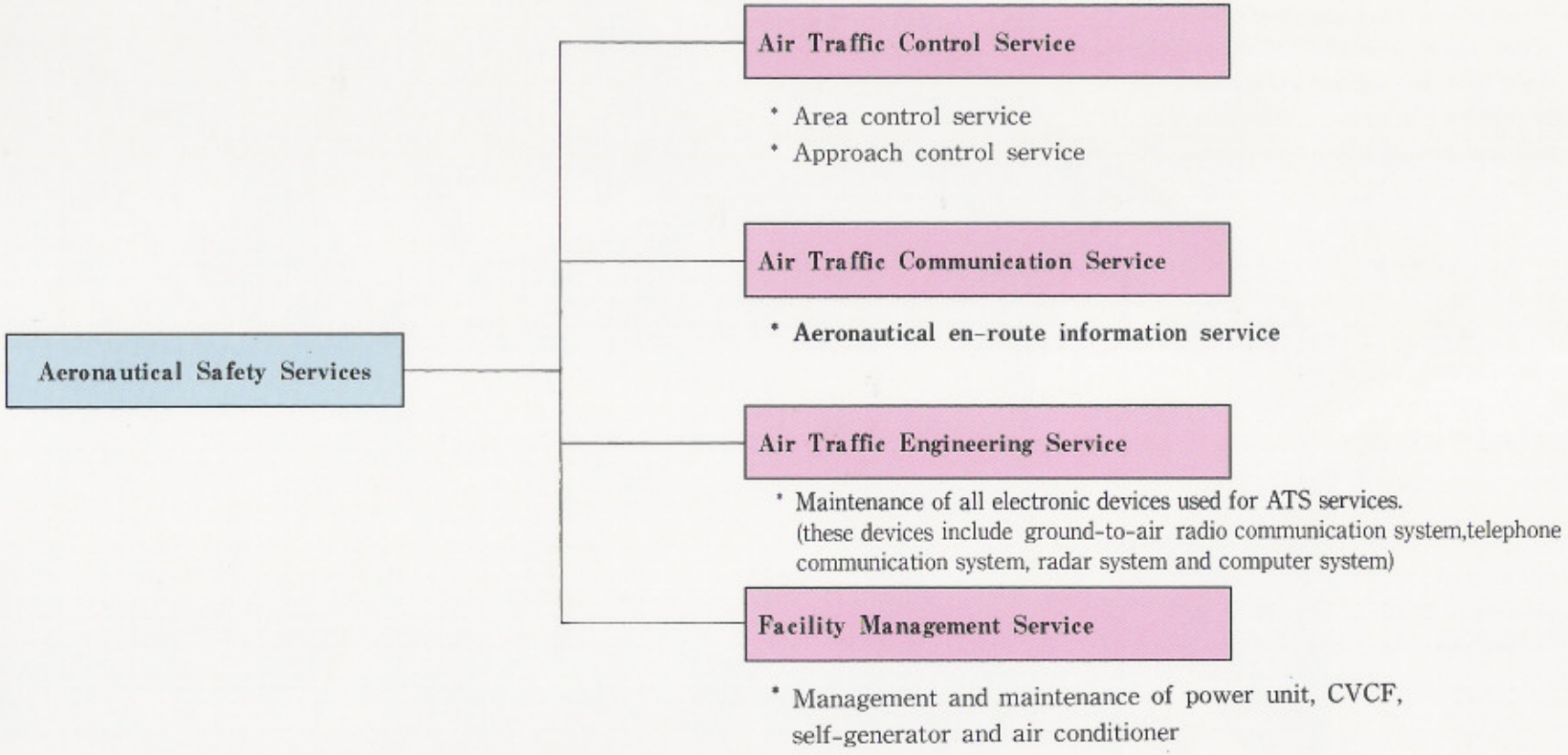
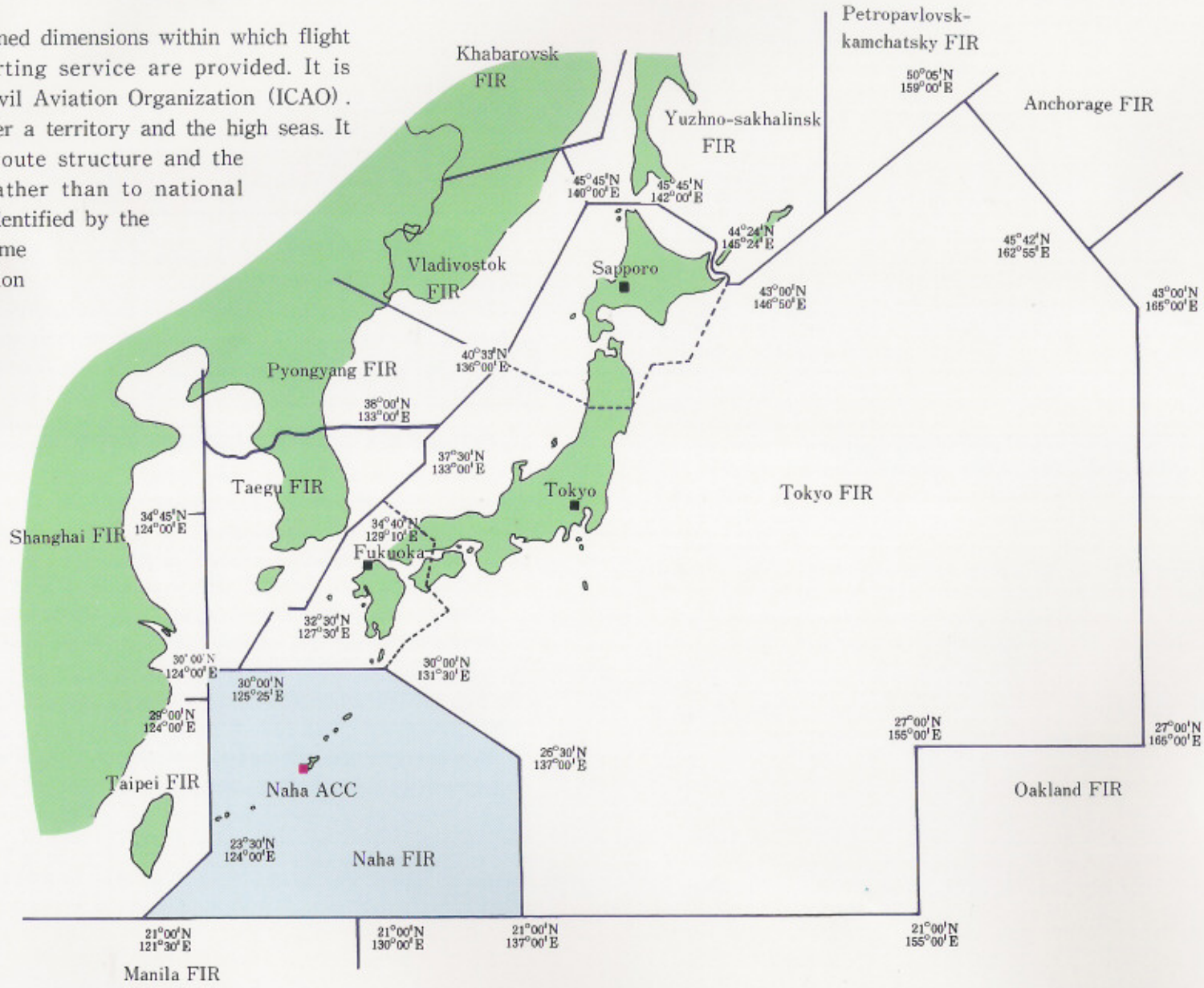


Aeronautical Safety Services



Flight Information Region (FIR) and ACC Jurisdiction Area

An FIR is an airspace of defined dimensions within which flight information service and alerting service are provided. It is established by International Civil Aviation Organization (ICAO). A FIR consists of airspace over a territory and the high seas. It is delineated in relation to route structure and the need for efficient service rather than to national sovereignties. An FIR is not identified by the name of a state but by the name of the unit which has jurisdiction over the airspace.



There are four area control centers, namely, Sapporo, Tokyo, Fukuoka and Naha.

Air Traffic Control Services provided by Naha ACC

Categories of Air Traffic Control

1. Area control
2. Approach control
3. Terminal radar control
4. Aerodrome control
5. Ground controlled approach (GCA)

Naha ACC provides area control and approach control services

Area Control Service

clears flight plans for aircraft departing from airports in Naha FIR and provides an air traffic control service for aircraft principally during the en route phase of flight.

Approach Control Service

provides an air traffic control service for the arriving/departing aircraft to/from the remote islands such as Ishigaki and Amami.

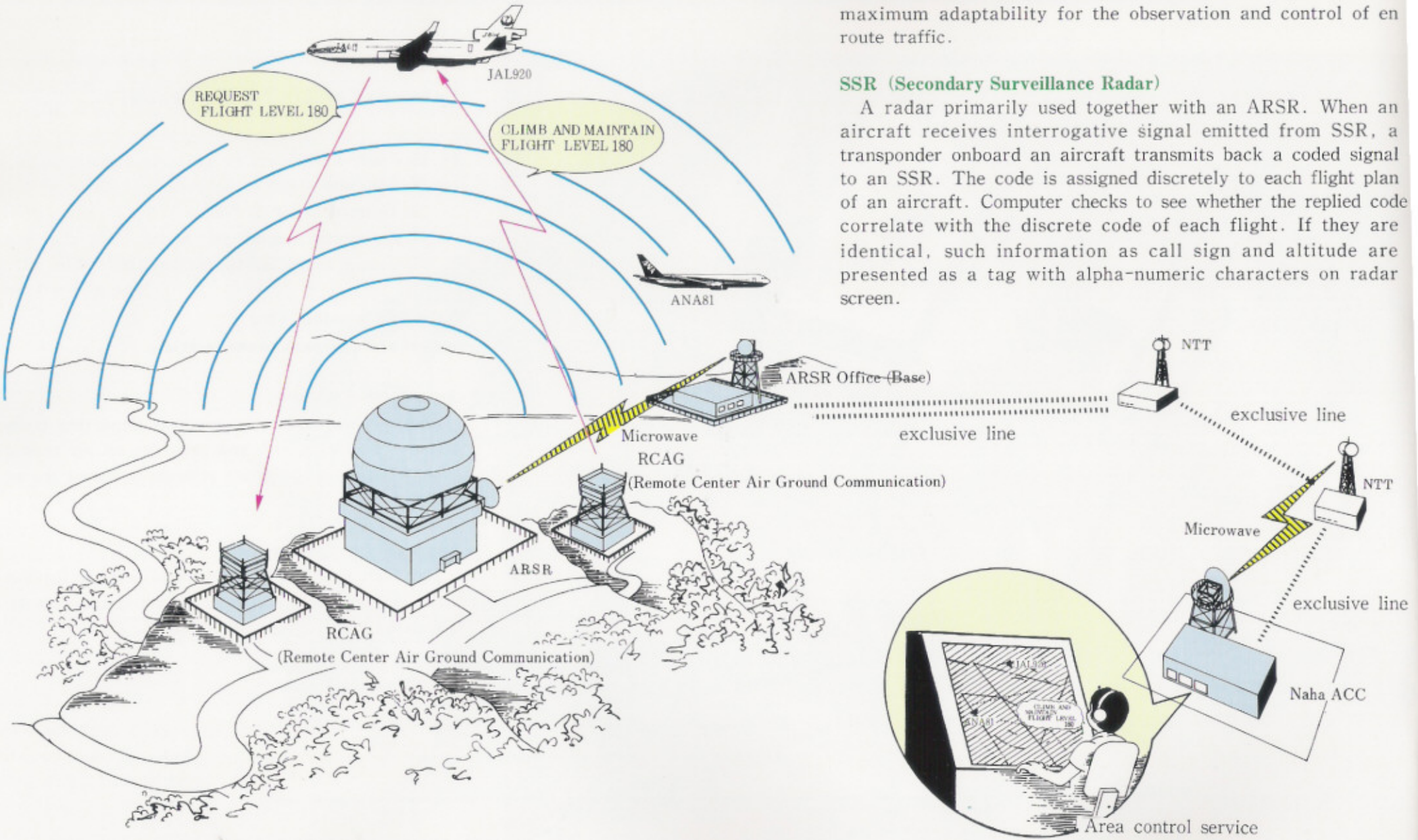
Outline of Radar Control

ARSR (Air Route Surveillance Radar)

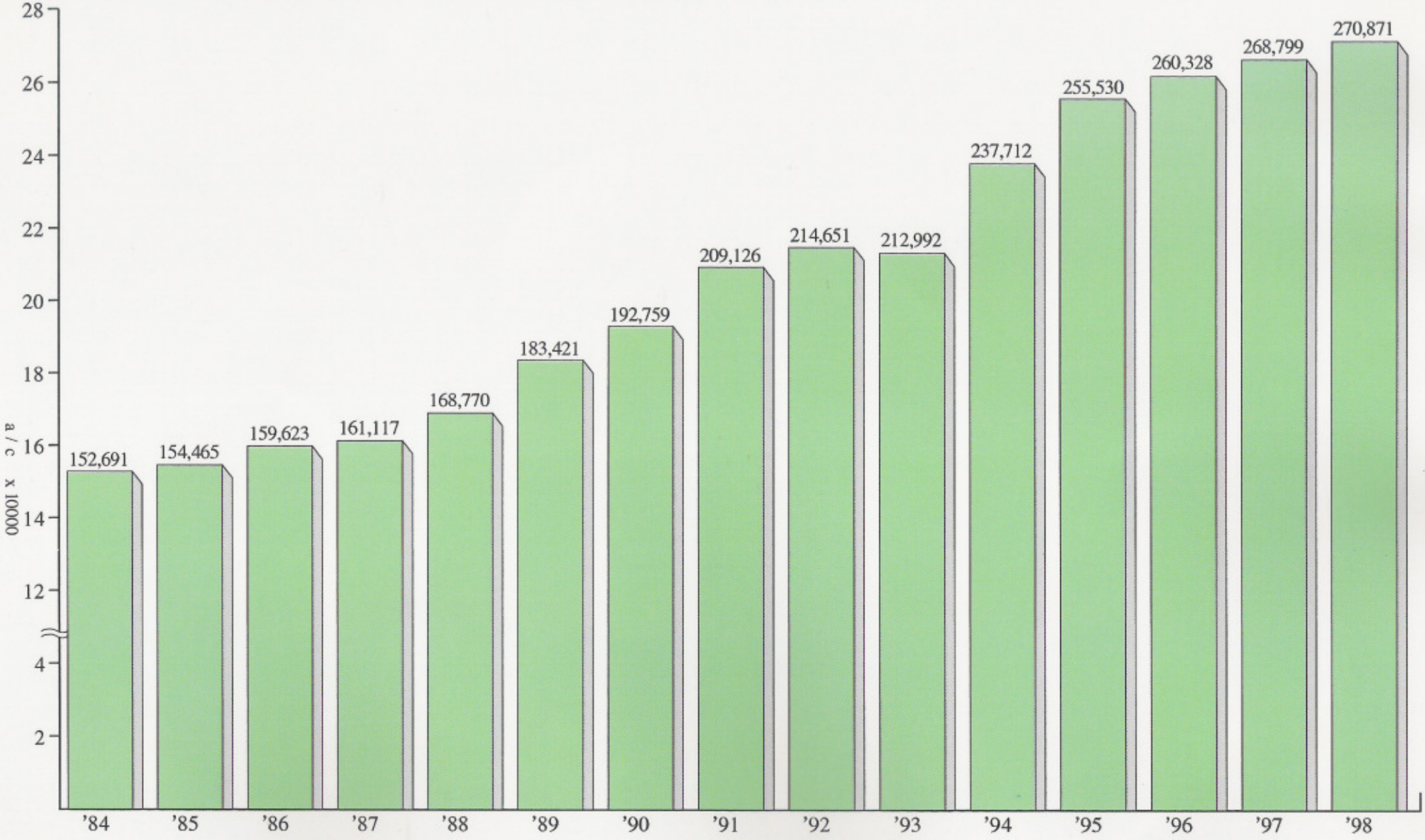
A long range radar. ARSR has capability of detecting aircraft to a distance of 200/250 nautical miles to provide the maximum adaptability for the observation and control of en route traffic.

SSR (Secondary Surveillance Radar)

A radar primarily used together with an ARSR. When an aircraft receives interrogative signal emitted from SSR, a transponder onboard an aircraft transmits back a coded signal to an SSR. The code is assigned discretely to each flight plan of an aircraft. Computer checks to see whether the replied code correlate with the discrete code of each flight. If they are identical, such information as call sign and altitude are presented as a tag with alpha-numeric characters on radar screen.



Traffic Volume Handled by Naha ACC

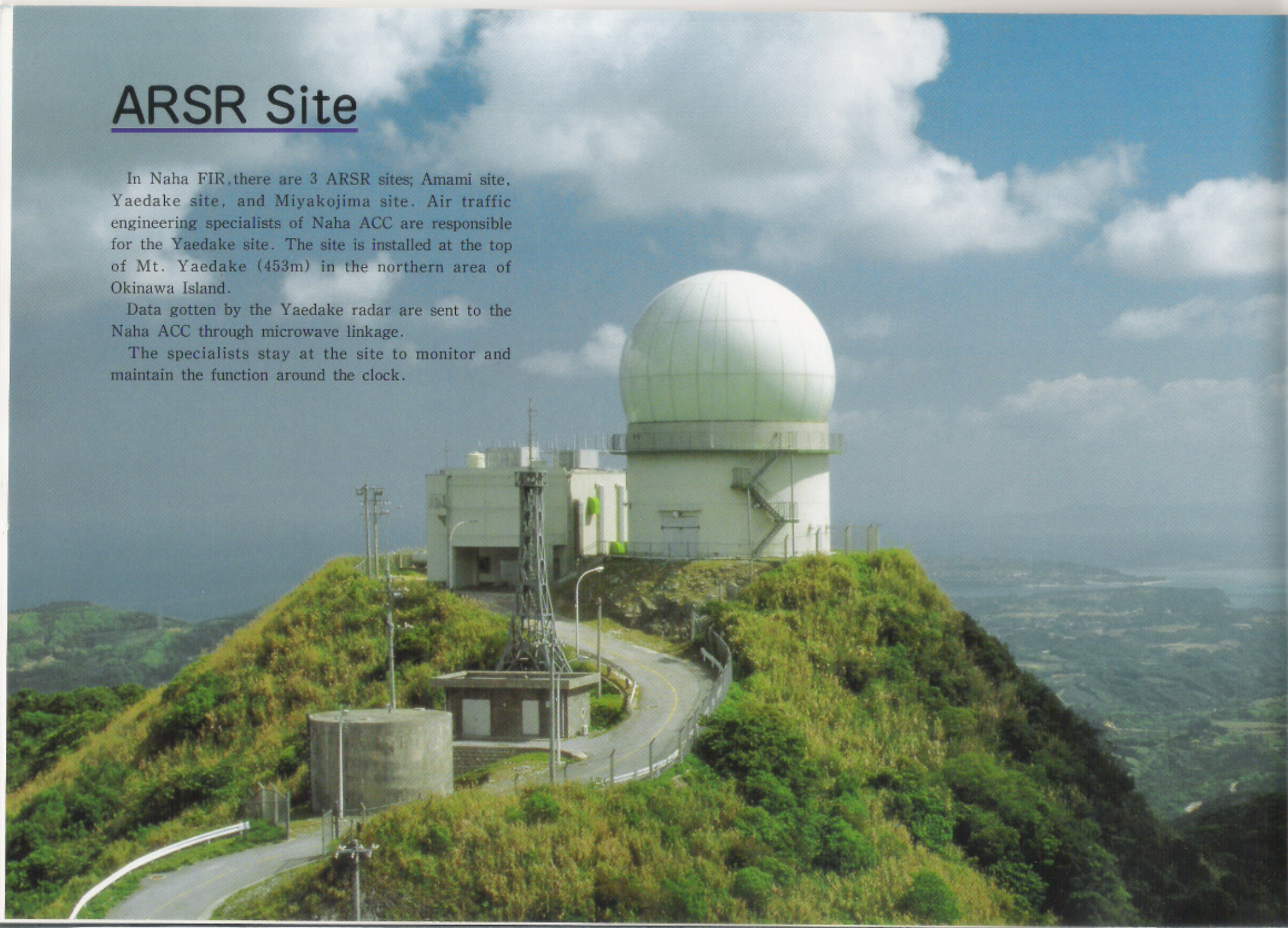


ARSR Site

In Naha FIR, there are 3 ARSR sites; Amami site, Yaedake site, and Miyakojima site. Air traffic engineering specialists of Naha ACC are responsible for the Yaedake site. The site is installed at the top of Mt. Yaedake (453m) in the northern area of Okinawa Island.

Data gotten by the Yaedake radar are sent to the Naha ACC through microwave linkage.

The specialists stay at the site to monitor and maintain the function around the clock.



Remote Center Air Ground Communication Network(RCAG)

VHF & UHF transmitters/receivers are installed at Mt. Yaedake.

Aeronautical En-route Information Service (AEIS)

AEIS provides pilots in flight with the latest weather and operational status of aerodromes and navigational aids for their safety.

There are two categories of Air Traffic Communication :

1. Air broadcasting
2. Air-ground communication.

Air broadcasting

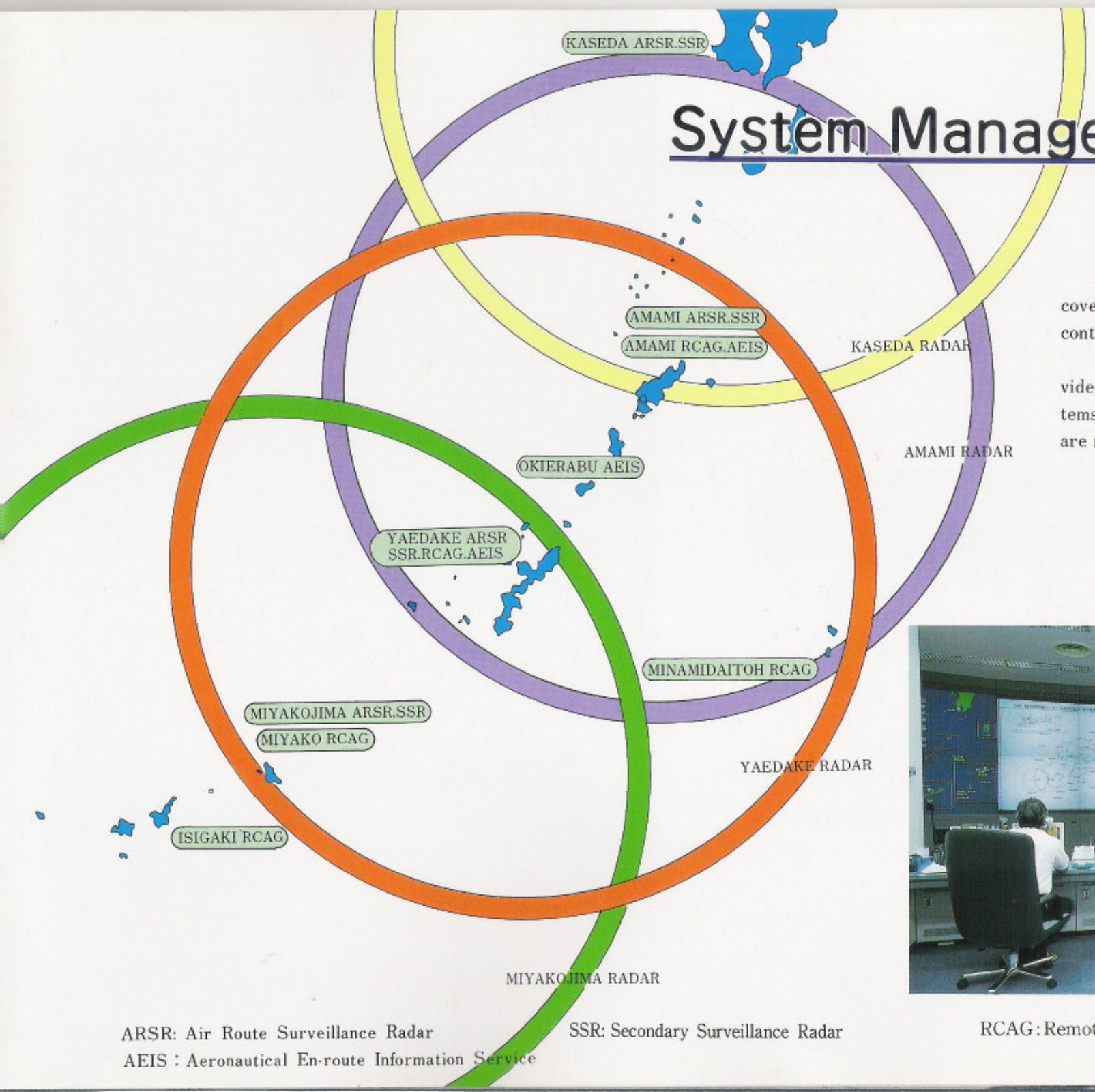
Arranges the latest information on weather, aerodrome and navigational aids etc. and compiles it into semiconductor memory.

That information is broadcasted automatically and continuously.

Air-ground communication

Advises many kinds of arranged information at hand, based on a pilot's request. Additionally, it relays reports of weather conditions from pilots in flight to the Meteorological Agency, or other aircraft. And communicates with airplanes as necessary for the flight safety.

System Management Control



ARSR and RCAG, installed along the islands cover a vast jurisdiction area. They are used at the control room with being remotely operated.

At the ACC, there are systems to process radar videos and flight plans through computer. These systems which are necessary to work simultaneously, are monitored to cope with trouble at once.

ARSR: Air Route Surveillance Radar
SSR: Secondary Surveillance Radar
RCAG: Remote Center Air-Ground Communication
AEIS : Aeronautical En-route Information Service

Flight Data Processing System(FDP)

Fight plan filed in advance by pilot is sent through teletype to Tokyo Area Control Center to be processed by computer. The information is forwarded automatically to a controller as a printed flight progress strips, shown below right. This system assists controllers with computing estimated time over every reporting point, estimated time of arrival at the airport.

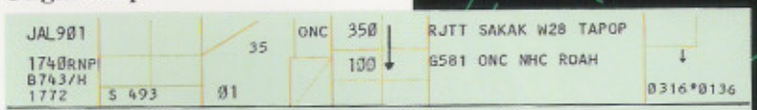
ODP

FDP

Oceanic Air Traffic Control Processing System (ODP)

The ODP receives information on oceanic flights from the FDP. Based on these data, the system calculates the positions of aircraft flying over the oceanic area, and presents them on the Oceanic Display Unit.

Flight strip



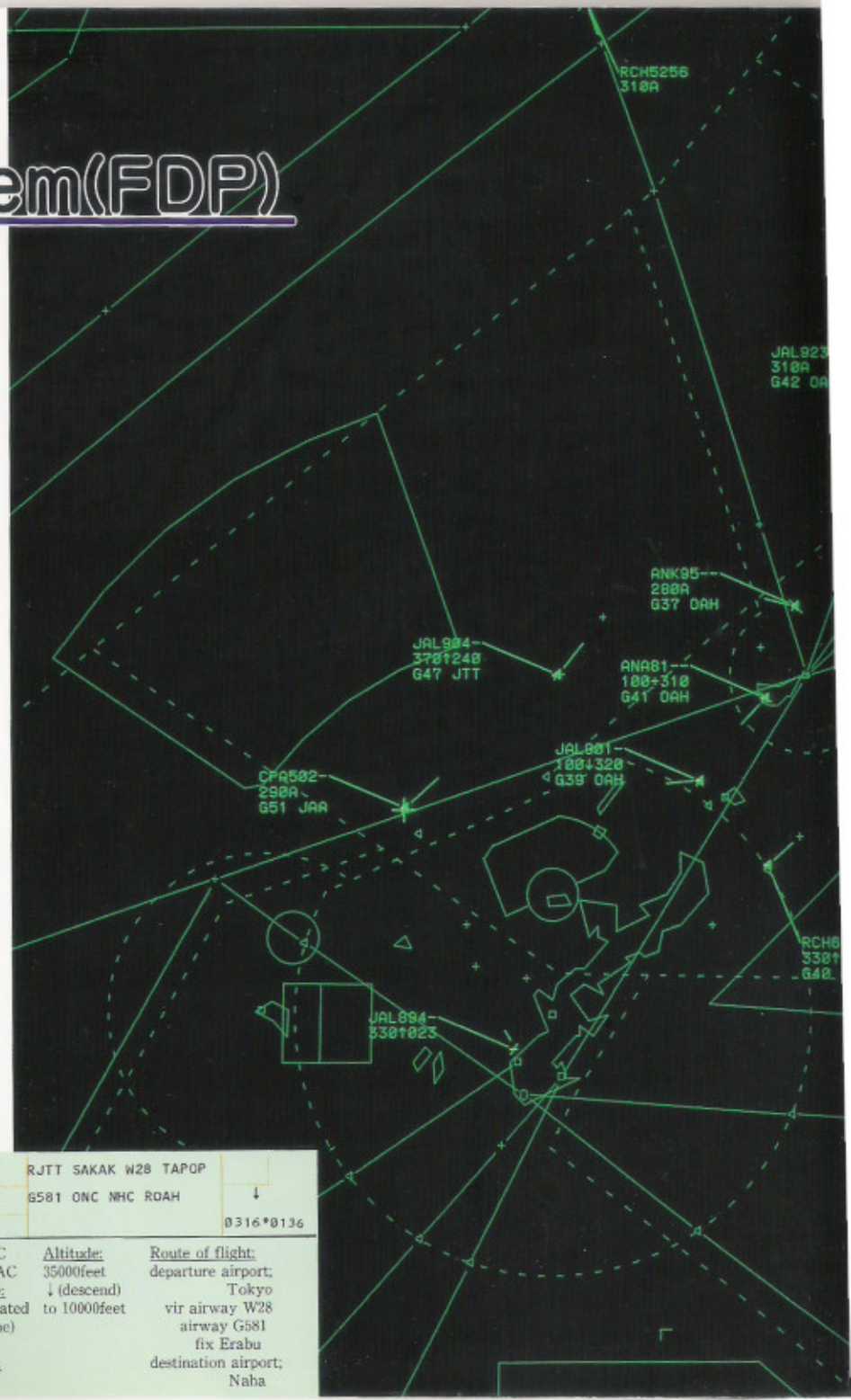
Aircraft identification:
Japan airline flight901
Computer number
(4-digit number)
Aircraft type:
Boeing 747-300/heavy
Seconday radar(beacon)code
(4-digit number)

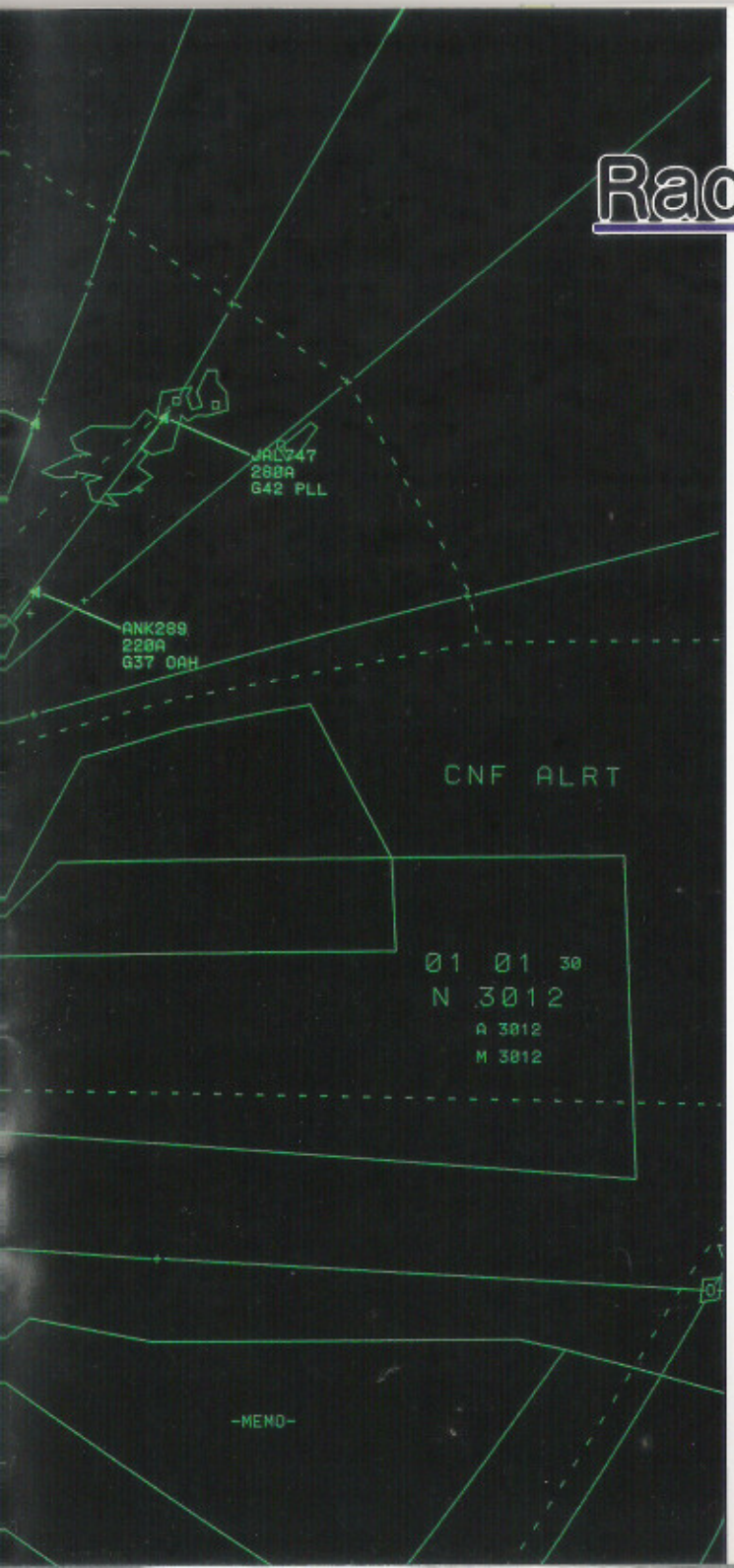
Fix name: ONC
Erabu VORTAC
Estimated time:
01:35(co-ordinated universal time)

Cruising speed:
493knots

Altitude:
35000feet
↓(descend)
to 10000feet

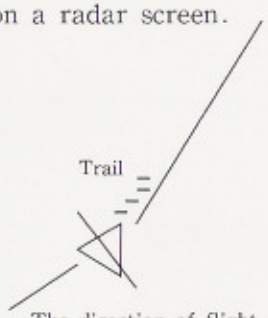
Route of flight:
departure airport;
Tokyo
vir airway W28
airway G581
fix Erabu
destination airport;
Naha



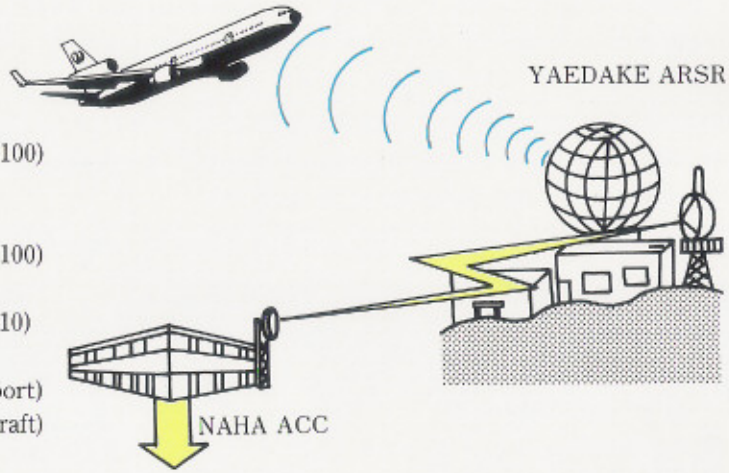


Radar Data Processing System (RDP)

An example of how an aircraft is displayed on a radar screen.



JAL901 : Call sign
100 : Assigned altitude in feet (×100)
↓ : Descending
320 : Present altitude in feet (×100)
G39 : Ground speed in knots (×10)
OAH : Destination (ROAH ; Naha airport)
(◁ : Present position of an aircraft)



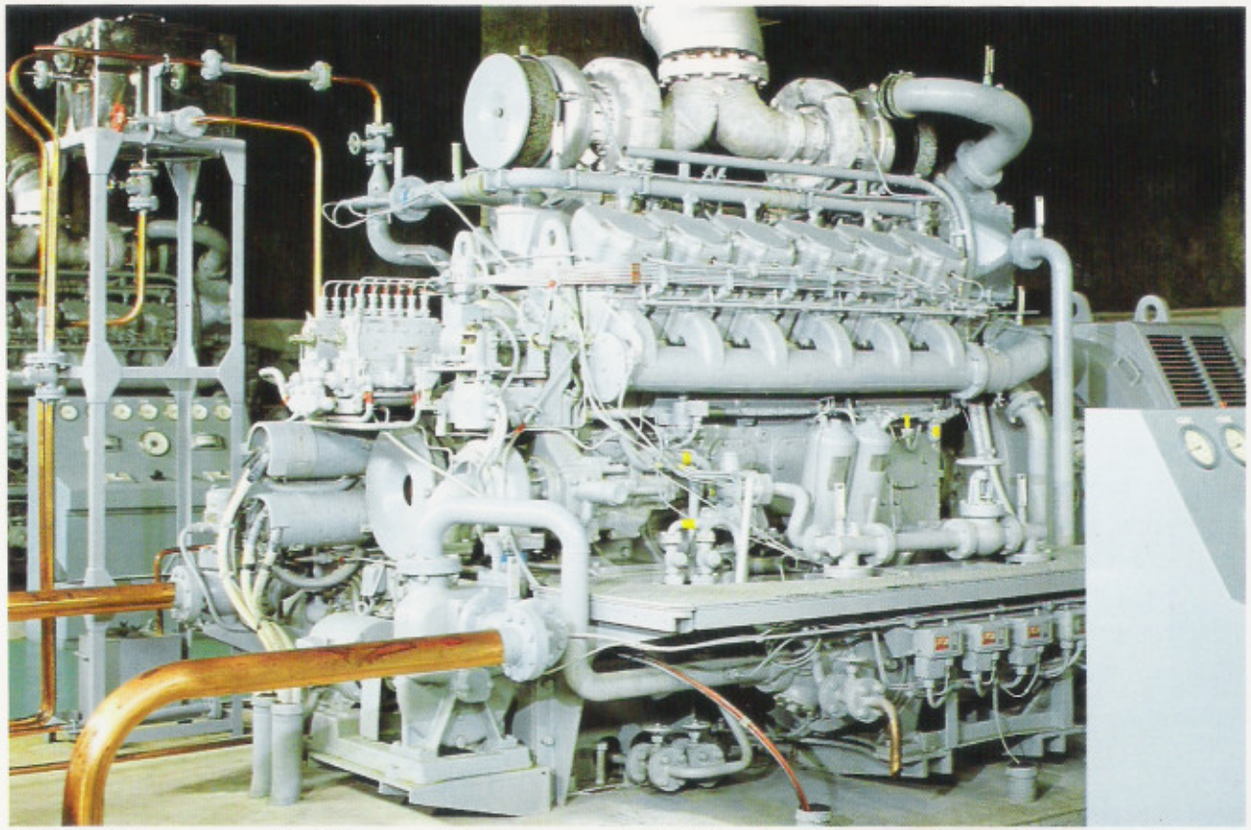
In Naha ACC, the radar data sent from 4 radar sites (Yaedake, Miyakojima, Amami and Kaseda) are processed through computer. Aircraft target, call sign, assigned altitude, destination and other information are displayed on a plan view display (PVD) .

RDP Computer room

Power and Facility Maintenance

Power supply without failure is needed to the maximum extent, to operate many kinds of facilities for air traffic control, aeronautical en-route information services etc. safely. Therefore, there are two ways of power supply. Even when the failure occures in on circuit, power supply is available by switching to the other circuit. Moreover, it will be backed up at once by a self-generating unit.

Stable and high quality power is supplied through CVCF (Constant Voltage and Constant Frequency Unit) to computer and air traffic control units, which do not permit any deviation of voltage and frequency in communicating with pilots, even if there is an instant power failure. Additionally, a large-sized air conditioner is installed to maintain proper temperature and humidity for computers and other units.



960PS ; Horse power for 12 cars of 1500cc.

750KVA ; Electric power for 500 average homes.

↑ **Monitoring room**

Monitoring an operational status of power facility and air conditioner.

← **Generator**

3 of 960PS and 750KVA are installed. Electric power will be supplied automatically in 8 seconds in case of power failure.

「この地図は、建設省国土地理院長の承認を得て、同院発行の2万5千分の1地形図を複製したものである。（承認番号 平11沖復、第５号）」

MINISTRY OF TRANSPORT

NAHA AREA CONTROL CENTER

334 Kagamizu, Naha, Okinawa 901-0142

JAPAN

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