

AI2004-3

# AIRCRAFT INCIDENT INVESTIGATION REPORT

JAPAN AIR COMMUTER FLIGHT 031, NAMC YS-11A, JA8781  
PRIVATELY OWNED, CESSNA A185F, N185GW  
OVER THE SEA APPROX. 4NM SOUTH OF OKINOERABU ISLAND  
KAGOSHIMA, JAPAN  
AUGUST 9, 2003

MAY 28, 2004

Aircraft and Railway Accidents Investigation Commission  
Ministry of Land, Infrastructure and Transport

The investigation for this report was conducted by Aircraft and Railway Accidents Investigation Commission about the aircraft serious incident of Japan Air Commuter flight 031, NAMC YS-11A, JA8781 and privately owned, Cessna A185F, N185GW in accordance with Aircraft and Railway Accident Investigation Commission Establishment Law and Annex 13 to the Convention of International Civil Aviation for the purpose of determining cause of the aircraft serious incident and contributing to the prevention of incidents and not for the purpose of blaming responsibility of the incident.

This English version report has been published and translated by Aircraft and Railway Accident Investigation Commission to make its reading easier for those who are not familiar with Japanese as well as English speaking people. Although efforts are made to translate as accurate as possible, only the Japanese version is authentic. If there is difference in meaning of the texts between the Japanese version and the English version, texts in the Japanese version are correct.

Junzo Sato,  
Chairman,  
Aircraft and Railway Accidents Investigation Commission

# **AIRCRAFT SERIOUS INCIDENT INVESTIGATION REPORT**

**JAPAN AIR COMMUTER FLIGHT 031, NAMC YS-11A, JA8781**

**PRIVATELY OWNED, CESSNA A185F, N185GW**

**OVER THE SEA APPROX. 4NM SOUTH OF OKINOERABU ISLAND**

**KAGOSHIMA, JAPAN**

**AT ABOUT 12:45 JST, AUGUST 9, 2003**

## **1 PROCESS and PROGRESS OF THE SERIOUS INCIDENT INVESTIGATION**

### **1.1 Summary of the Serious Incident**

A serious incident investigation was conducted in response to the submission of a near collision report on 9 August 2003 in accordance with the provisions of Article 76-(2) of the Civil Aeronautics Law, and Article 166-(5) of the Civil Aeronautics Regulation by the pilot-in-command of a NAMC YS11-A, Japan Air Commuter, registration JA8781, to the Minister of Land, Infrastructure and Transport.

On Saturday August 9, 2003, the NAMC YS-11A departed Kagoshima airport for Yoron airport operating as Japan Air Commuter scheduled passenger flight 031 was on an initial descent for Yoron airport. Meanwhile, a privately owned Cessna A185GW, registration N185GW, was in cruise from Naha airport to Fukuoka airport.

At around 12:45, JA8781, which was descending at an altitude of 4,300ft (around 1,310m) MSL, and N185GW, which was in level flight at an altitude of around 4,500ft (around 1,370m) MSL, passed each other within close proximity over the sea approximately 4 nm south of Okinoerabu Island, Kagoshima Prefecture, but neither aircraft took avoidance action.

There were 70 persons on board JA8781 - 65 passengers and 5 crewmembers, and 2 persons on board N185GW - the Pilot-in-command and one crewmember. There were no injuries to any of those on board either aircraft, and neither aircraft sustained damage.

### **1.2 Outline of the Serious Incident Investigation**

#### **1.2.1 The Organization of the Investigation**

On August 9, 2003, the Aircraft Railway Accident Investigation Commission (ARAIC) received a serious incident report from the Minister of Land, Infrastructure and Transport, and assigned an investigator-in-charge and one investigator. On August 12, 2003, ARAIC assigned an additional investigator.

#### **1.2.2 The Implementation of the Investigation**



Avoiding actions: own aircraft: none, other aircraft: none

It is estimated that other aircraft mentioned in the near collision report was a US-registered privately owned Cessna A185F, registration N185GW (Aircraft-B) as described in section 3.1. The PIC of Aircraft-B did not submit a near collision report.

## 2.1.2 Summary of The Flight based on the Recordings of DFDR, ATC Radar and ATC Communications

On August 9, 2003, Aircraft-A took off from Kagoshima Airport at 11:08 operating as JAC scheduled flight 031, and flew bound for Yoron Airport at an altitude of 10,000ft under Instrument Flight Rules (IFR). The flight plan for Aircraft-A submitted to Kagoshima Airport Office was as follows:

Flight Rules:	IFR
Departure Aerodrome:	Kagoshima airport
Estimated Off-Block Time:	11:00
Cruising speed:	210kt
Level:	12,000ft
Route:	Kagoshima NDB–Erabu NDB–Yoron VOR/DME
Destination Aerodrome:	Yoron airport
Total Estimated Elapsed Time:	1 hour 38 minutes
Endurance:	3 hours 13 minutes
Persons on board:	69

At around 12:36, Aircraft-A started to descend from its cruising altitude, passed over Erabu NDB at around 12:42 at approximately 6,500ft, and then flew towards Yoron VOR/DME. At around 12:43, Aircraft-A received approach clearance for Yoron Airport from Naha Area Control Center (“Naha Control”) and continued to descend towards an altitude of 3,000ft.

Aircraft-B took off from Naha Airport at 11:48 and flew bound for Fukuoka airport, and was flying at an altitude of 4,500ft under Visual Flight Rules (VFR). The flight plan for Aircraft-B submitted to Naha Airport office was as follows:

Flight Rules:	VFR
Departure Aerodrome:	Naha airport
Estimated Off-Block Time:	11:00
Cruising speed:	110kt
Level:	4,500ft
Route:	Erabu VORTAC – Kagoshima VORTAC – Fukuoka VORTAC
Destination Aerodrome:	Fukuoka airport
Total Estimated Elapsed Time:	5 hour 30 minutes

Endurance: 15 hours 00 minutes

Persons on board: 2

Thereafter, Aircraft-B established radio contact with the airport remote mobile communication service for Okierabu airport providing at Kagoshima Flight Service Center (Kagoshima FSC) to obtain information on aircraft departing and arriving at Okierabu airport, which lay along its flight route. At around 12:43, Aircraft-B reported its position as over around 15nm southwest of Erabu VORTAC at an altitude of 4,500ft.

At around 12:45, while Aircraft-A was descending at an altitude of 4,300ft around 10nm southwest of Erabu VORTAC, it approached and passed Aircraft-B, which was in level flight at an altitude of 4,500ft in the same vicinity.

Subsequently, Aircraft-A landed at Yoron Airport at 12:53. Aircraft-B reported to Kagoshima FSC passing over Okierabu airport at around 12:50, reported its position as 10 nm north of the airport at 12:56, and finally landed at Fukuoka airport at 16:52.

Aircraft-B had been flying northeast under VFR at an altitude of around 4,500ft. Under VFR, the cruising altitude specified in the Civil Aeronautics Regulations for the case that an aircraft flies northeast at an altitude greater than 3,000ft and less than 29,000ft is an odd number of thousands of feet plus 500ft: for example, 3,500ft, 5,500ft, etc.

(See Figs. 1, 2 and 3, and Photos 1 and 2)

### 2.1.3 Statements of the Crew Members regarding the Flight

#### (1) Statements of The PIC of Aircraft-A

The following is a synopsis of the statement made by the PIC of Aircraft-A regarding the progress of the flight.

“On the day of the incident, I assumed pilot flying (PF: pilot responsible for control of the aircraft) duties from the left seat.

“After crossing Erabu NDB, we were cleared for approach to Yoron airport by Naha Control, and were descending to 3,000ft at 10 nm southwest of Erabu NDB when the Traffic and Collision Alert Device (TCAD) indicated an aircraft in the left forward quadrant at nearly the same altitude. Judging from the TCAD indication, I thought that we would approach into close proximity, I reduced our airspeed from 220–230kt to around 200kt and visually searched the forward left quadrant, but I could not sight the other aircraft. I think the weather conditions at the time were an in-flight visibility greater than 10km, there was a blanket of haze, and I had not yet sighted Yoron Island and couldn’t see the horizon. Our magnetic heading at the time was approximately 219°.

“After that, the TCAD aural warning sounded, indicating that it had detected an

aircraft within 0.7nm laterally and 300ft vertically. While we were descending at an altitude of 4,300ft, the mechanic occupying the jump seat spotted the other aircraft first, and the first officer and I then sighted the other aircraft above our altitude at 11 o'clock at about the same time. Because at that time we had separation around 300m horizontally and around 150ft vertically, and our aircraft was descending, I did not feel that the other aircraft was a hazard and so I did not take avoidance action. The other aircraft was a high winged single-engine aircraft colored red on the top half and white on the bottom half, and was flying on a nearly reciprocal course.

"After that, the approaching aircraft moved rearward out of the top half of the left sliding window. At the time of closest approach, the other aircraft was at 9 o'clock position 200m horizontally and 200ft vertically away from us. The other aircraft was first sighted at around 12:45, and the closest approach was 2 to 3 seconds after that. Also, although there were no clouds in the background, I could not confirm the registration of other aircraft."

(2) Statements of The First Officer of Aircraft-A

The following is a synopsis of the statement made by the first officer of Aircraft-A on the progress of the flight.

"On the day of the incident, I assumed pilot not-flying (PNF: pilot responsible for non-control duties) duties from the right seat. About two minutes after we received approach clearance from Naha Control, the TCAD warning sounded, and since the TCAD indicated another aircraft in the left forward quadrant, I was watching closely forward and forward left. It was hazy at the time, and I could not see Yoron Island or the horizon.

"At around 12:45, I sighted the other aircraft around the middle of the captain side windshield. At this time, because the other aircraft was around 200m away and our aircraft was already below it, I think avoidance action was not necessary.

"After that, the other aircraft passed us on the left side. I could not confirm the registration number of the other aircraft.

"At the time of sighting the other aircraft our magnetic heading was approximately 219°, indicated airspeed was around 200kt and we were descending at a lower than normal rate of descent. Our pitch angle was 0 degrees or minus 2.5 degrees.

"From its shape I think the other aircraft was a Cessna type airplane. I saw it as two-tone colored red on top and white on bottom.

"Also, we had not received traffic information in advance from Naha Control when we established radio contact."

(3) Statements of The PIC of Aircraft-B

The following is a synopsis of the statement made by the PIC of Aircraft-B on the progress of the flight.

“After takeoff from Naha Airport, I established radio contact with Okinawa Approach Control, climbed, then proceeded in level flight toward Erabu VORTAC along the direct route between Naha VORTAC and Erabu VORTAC at an altitude of 4,500ft. I was mostly keeping lookout ahead during the flight, but I did not sight the YS-11A. I did not know that Yoron Airport was near my route. I set the ATC transponder code to 1200, and the altimeter setting to the QNH, 29.62inHg. Our ground speed was around 105kt.

“Approximately 25nm south west of Erabu VORTAC, I changed radio frequency to Kagoshima FSC to get traffic information on Okierabu airport departures and arrivals, and made the appropriate position report. Thereafter, I flew to Fukuoka Airport via Kagoshima VORTAC. I did not establish radio contact with Naha Control during that time. Also, the aircraft was not equipped with a traffic collision warning system.”

The incident occurred over the sea approximately 4 nm south of Okinoerabu Island, Kagoshima Prefecture, at around 12:45 on August 9, 2003.

## 2.2 Injuries to Persons

There were no injuries on board either Aircraft-A or Aircraft-B.

## 2.3 Damage to Aircraft

There was no damage to either Aircraft-A or Aircraft-B.

## 2.4 Meteorological Information

### 2.4.1 The aviation weather observation for Airport and Airfield

The aviation routine weather reports (METAR) around the time of the incident for Okierabu airport, which is located approximately 10 nm (18km) northeast of the point at which the incident occurred, are as follows:

Time of Observation	12:00 JST	13:00 JST
Wind Direction	300°	260°, varying between 210°/320°
Wind Speed	8kt	6kt
Visibility	Greater than 10 km	Greater than 10 km
Cloud	FEW 1500ft	FEW 1500ft
Temperature	30°C	30°C
Dew point	24°C	25°C
QNH	29.59 inHg	29.59 inHg

#### 2.4.2 Statements of the Flight Crews

- (1) According to the PIC of Aircraft-A, the weather at the time of the incident in the area where the incident occurred was as follows:

Visibility: approximately 10 km, Haze

- (2) According to the PIC of Aircraft-B, the weather at the time of the incident in the area where the incident occurred was as follows:

Visual Meteorological Conditions, Haze

#### 2.5 Information related to Aeronautical Navigational Aids

Aeronautical navigation radio aids, the air traffic control (ATC) radar system and air-ground radio communication systems relevant to the operations of Aircraft-A and Aircraft-B were all operating normally at the time of the incident.

#### 2.6 Communications

All air-ground radio communications between Aircraft-A and Naha Control, and between aircraft-B and Kagoshima FSC, were normal.

#### 2.7 Information on the Digital Flight Data Recorder (DFDR) and Cockpit Voice Recorder (CVR)

Aircraft-A was equipped with an Allied Signal model 980-4120-HQXS Digital Flight Data Recorder (DFDR), and data from around the time of the incident were recorded normally on the DFDR.

Aircraft-A was also equipped with a Sundstrand model 980-6005-076 Cockpit Voice Recorder (CVR) which is able to record for 120 minutes. However, because Aircraft-A continued to fly after the incident with Aircraft-B, the voices and sounds at the time of the incident were overwritten and erased.

Aircraft-B was not equipped with a DFDR or a CVR.

#### 2.8 Information on TCAD

Aircraft-A was equipped with a Ryan International model 9900B TCAD. The following is a synopsis of the information on the TCAD in Aircraft-A's airplane operating manual.

The TCAD receives the response signal from ATC transponders, detects the position of the aircraft that transmitted the response signal, and visually displays the vertical separation (in 100ft units), distance (in 0.1nm units) and direction (8 ways) of the other

aircraft from the own ship. In addition to the visual display, the TCAD device issues different voice warnings when it detects another aircraft within 1 nm horizontally with an altitude difference less than 500ft, and when it detects another aircraft within 0.7 nm horizontally with an altitude difference of less than 300ft.

## 2.9 Aircraft Lighting

At the time of the incident the wing inspection lights, anti-collision beacon and navigation lights of Aircraft-A were operating in accordance with the airplane operating manual.

## 2.10 Tests and Research to Find Facts

### 2.10.1 Estimation of Aircraft-A's Track

The position and the altitude of Aircraft-A were recorded at 10 second intervals in the ATC radar recordings. Based on these data, a track profile was plotted and the position and the altitude of Aircraft-A at the time of the incident were estimated at approximately 10-second intervals.

(See Fig. 4)

### 2.10.2 Estimation of Aircraft-B's Track

The position and altitude of Aircraft-B were not recorded in the ATC radar recordings. The track of Aircraft-B was plotted based on its flight plan, recordings of air-ground communications of position reports, and statements from persons concerned, and the position and altitude of Aircraft-B at the time of the incident were estimated at one minute intervals.

(See Fig. 4)

### 2.10.3 Analysis of Avoidance Maneuvers of Aircraft-A based on DFDR Data

Aircraft-A's DFDR recorded a total of six parameters: pressure altitude, airspeed, magnetic heading, VHF transmission keying, vertical acceleration and elapsed time. Altitude data were compensated by the altimeter setting (QNH 29.61 inHg) that was set at the time of the incident. The VHF transmission keying data were correlated with the Nippon Telegraph and Telephone (NTT) time signal on ATC communications recordings and converted to Japan Standard Time.

During the one-minute period up to the time when Aircraft-A and Aircraft-B passed each other, Aircraft-A was descending at a rate of 900–770ft/min and was gradually reducing airspeed from around 226kt to around 218kt, and it is estimated that it was flying at an airspeed of around 218kt immediately before passing Aircraft-B. Also, it is

estimated that its magnetic heading was 222°–234°, and its vertical acceleration was 0.94–1.11G.

#### 2.10.4 The airspace in which the Incident Occurred

The incident occurred over the sea approximately 4 nm south of Okinoerabu Island, Kagoshima Prefecture, within airspace designated as controlled area of airspace located approximately 10 nm southwest of Erabu VORTAC.

#### 2.10.5 The Altimeter Settings on Aircraft-A and Aircraft-B, and their Relative Altitude Difference

Aircraft-A received an altimeter QNH setting of 29.61 inHg when it established radio contact with Naha Control, while Aircraft-B received an altimeter QNH setting of 29.62 inHg from the Naha Airport ATIS on departure. This difference in altimeter settings resulted in an altitude indication difference of around 10ft between the aircraft. This difference was small enough to be neglected in the altitude estimation described in sections 2.10.1 and 2.10.2.

#### 2.11 Provision of Traffic Information by Air Traffic Control Facilities

According to recordings of ATC communications, at the time of the incident Naha Control had established radio contact with Aircraft-A but not with Aircraft-B, while Kagoshima FSC had established radio contact with Aircraft-B but not with Aircraft-A.

Neither Naha Control nor Kagoshima FSC had provided traffic information to Aircraft-A regarding Aircraft-B, or to Aircraft-B regarding Aircraft-A.

Furthermore, the air traffic controller at Naha Control who was in contact with Aircraft-A stated that the ATC radar screen showed no information on Aircraft-B.

#### 2.12 Aircraft-B Shape and Markings

Aircraft-B was a high wing, single-engine fixed wing airplane.

The fuselage of Aircraft-B was painted white with a red stripe running from the nose to the empennage on both sides of the fuselage, and the registration number was written in red on both sides of the empennage. The upper surfaces of the wings were decorated with red and white radial patterns, the wing leading edges were painted red, and the lower surfaces of the wings were painted white. The vertical stabilizer was decorated with patterns in yellow, white, etc. on a red background, and the horizontal stabilizer was painted red.

(See Photo: 2)

### **3. ANALYSIS**

#### **3.1 The Other Aircraft in the Near collision Report submitted by the PIC of Aircraft-A**

As described in 2.1.2, it is estimated that Aircraft-B took off from Naha Airport at 11:48 on August 9 operating under VFR and climbed to its cruise altitude of 4,500 ft. Aircraft-B turned towards Erabu VORTAC at around 14:43 over the sea approximately 15nm southwest of Erabu VORTAC, and passed over Okierabu airport at around 12:50.

It was found that the characteristics (color and shape) of the other aircraft described in the near collision report submitted by the PIC of Aircraft-A closely matched the color feature and the shape of Aircraft-B as described in section 2.12. Further, apart from Aircraft-A and Aircraft-B, no other aircraft submitted a flight plan which corresponded to the time and location of the incident in the near collision report submitted by the PIC of Aircraft-A.

Based on the above, it is estimated that Aircraft-B was the other aircraft in the near collision report submitted by the PIC of Aircraft-A.

#### **3.2 General**

##### **3.2.1 Aircrew Certificates and Medical Certificates**

The PIC and the first officer of Aircraft-A and the PIC of Aircraft-B had valid aircrew proficiency certificates and valid aircrew medical certificates.

##### **3.2.2 Weather Conditions**

It is estimated that the weather was Visual Meteorological Conditions (VMC) in the vicinity where the incident occurred. It is estimated that it was hazy, and that the flight visibility was about 10km.

#### **3.3 Analysis**

##### **3.3.1 The Probability of a Mid-Air Collision**

Based on ATC radar recordings, after crossing Erabu NDB at around 1242:19 Aircraft-A flew with varying heading within approximately 0.5nm left and right of the route centerline until around 1244:37, at which time it was around 9 nm southwest from Erabu NDB. Subsequently, it flew along the centerline of the route and at around 1244:50, it was around 10nm southwest of Erabu NDB at an altitude of around 4,300ft. Based on Aircraft-A's DFDR recordings, it is estimated that during this period Aircraft-A was descending at a rate of between 900–770 ft/min.

As described in sections 2.1.2 and 3.1, at around 12:43 Aircraft-B was flying around 15nm southwest of Erabu VORTAC inbound to Erabu VORTAC. Considering that

Aircraft-B was at an altitude of around 4,500ft at that time and also when it flew over Okierabu airport at around 12:50, it is estimated that at around 12:45 Aircraft-B was around 10nm southwest of Erabu VORTAC, in level flight at an altitude of around 4,500ft inbound to Erabu VORTAC at a ground speed of approximately 106kt.

The following are estimated based on the statement of the PIC of Aircraft-A and ATC radar recordings as described in 2.10.1:

- (1) Aircraft-A's TCAD displayed information on an approaching aircraft approximately 20 seconds before Aircraft-A and Aircraft-B passed each other. At that time Aircraft-A's altitude was around 4,600ft.
- (2) Aircraft-A's TCAD issued an aural alert approximately 8 seconds before the aircraft passed each other. At that time, Aircraft-A' altitude was around 4,400ft.
- (3) At the time Aircraft-A and Aircraft-B passed each other, Aircraft-A's altitude was around 4,300ft.

It is estimated that when the PIC of Aircraft-A made visual contact with Aircraft-B as described in 2.1.3(1), the location of Aircraft-B on the windshield of Aircraft-A was around 13° above his eye point and around 40° left of the aircraft centerline, and that at time of closest proximity it was around 15° above his eye point and around 90° left of the aircraft centerline, with approximately 200ft vertical separation between the aircraft.

Consequently, it is considered that Aircraft-B was in level flight at an altitude of 4,500ft approximately 200m southeast from Aircraft-A's route bound for Erabu VORTAC on a nearly parallel track.

Considering the above, it is estimated that Aircraft-A was descending at an altitude of around 4,300ft, and that Aircraft-B was in level flight at around 4,500ft on a nearly parallel, reciprocal track to Aircraft-A, and that the aircraft approached each other head-on and passed at around 1244:53 around 10nm southwest of Erabu VORTAC (around 4nm south of Okinoerabu island), with separation approximately 200m horizontally and 200ft vertically at the point of closest proximity.

Although Aircraft-A's flight crews are considered to have felt in danger when Aircraft-A's TCAD issued an aural alert due to the approaching Aircraft-B, considering the directions of flight and relative positions of the aircraft at the time of closest proximity - both aircraft were flying on nearly parallel tracks with a horizontal offset of around 200m, and Aircraft-A was around 200ft lower than Aircraft-B and descending - it is estimated that the aircraft had not been on a collision course. It is thought the closest

separation between the aircraft did not constitute a risk of collision, and it is considered that there was no possibility of a collision.

(See Fig. 4)

### 3.3.2 Avoidance Actions

The PIC and first officer of Aircraft-A stated that they did not take action to avoid Aircraft-B. Further, there were no significant deviations in Aircraft-A's DFDR recordings of pressure altitude, airspeed, magnetic heading and vertical acceleration parameters during the one-minute period up to the moment the aircraft passed each other.

The PIC of Aircraft-B stated that he did not see Aircraft-A and did not take avoidance action. Also, the PIC of Aircraft-A stated that after he had made visual contact with Aircraft-A, he did not take avoidance action.

As a result of the above, it is considered that neither aircraft took avoidance action.

### 3.3.3 The Performance of Air Traffic Control Facilities

Although the incident occurred within an area of controlled airspace, it was not an area that required Aircraft-B flying under VFR to establish radio contact with an air traffic control facility. Accordingly, although Aircraft-B established radio contact with Kagoshima FSC at its discretion to obtain traffic information on departures and arrivals at Okierabu airport located along its route, it is estimated that Aircraft-B did not establish radio contact with Naha Control. Moreover, based on ATC radar data as described in section 2.10.1 and on recordings of ATC communications, it is supposed that at the time of the incident the ATC control radar screen at Naha Control was displaying Aircraft-A but showed no information on Aircraft-B. It is therefore considered that Naha Control had not grasped information on Aircraft-B and was unable to provide Aircraft-A with corresponding traffic information.

The reason that information on Aircraft-B was not displayed on the ATC radar screen at Naha Control could not be confirmed. However, it is considered possible that this was due to the spatial relationship between an auxiliary fuel tank installed on the lower fuselage of Aircraft-B and the position of the ATC transponder antenna being such that the auxiliary fuel tank may have blocked the ATC transponder response signal, and so prevented its reception by the Mount Yae air route surveillance radar antenna.

Moreover, while Kagoshima FSC, with which Aircraft-B established radio contact at its discretion, was able to obtain position information on traffic departing from or landing at Okierabu airport, it was unable to obtain position information on other aircraft in the airport's vicinity unless it established radio contact with them. Consequently, at the time

the incident occurred, because Kagoshima FSC had not grasped the position of Aircraft-A, which had not established radio contact in the vicinity of Okierabu airport, it is considered that Kagoshima FSC could not have provided Aircraft-B with traffic information about Aircraft-A.

(See Photo 2.)

#### 3.3.4 Other Information

As described in section 2.1.2, it is supposed that Aircraft-B had not been flying at a cruising altitude appropriate for eastbound VFR flights as stipulated in Civil Aviation Regulations; it had been flying at a cruising altitude appropriate for the westbound direction.

#### 3.4 Classification of the Degree of Risk

Although it is estimated that at the time of closest proximity the distance between Aircraft-A and Aircraft-B were around 200m horizontally and around 200ft vertically, since the aircraft flight paths were not on a collision course as described in sections 3.3.1 and 3.3.2, it is not thought that the aircraft were in such close proximity that there was a risk of collision. Further, avoidance actions were not taken and were not necessary. Therefore, there was aircraft proximity but was not near collision in this case.

Furthermore, as described in section 3.3.1, since it is thought that there was no probability of a collision, there were no issues concerning flight safety. This aircraft proximity incident is therefore classified as “No risk of collision” under the classification of degree of risk stipulated in the ICAO classification.

#### 4. PROBABLE CAUSE

There were no problems concerning flight safety relating to the probable cause of this incident.

Figure 1: Estimated Flight Path

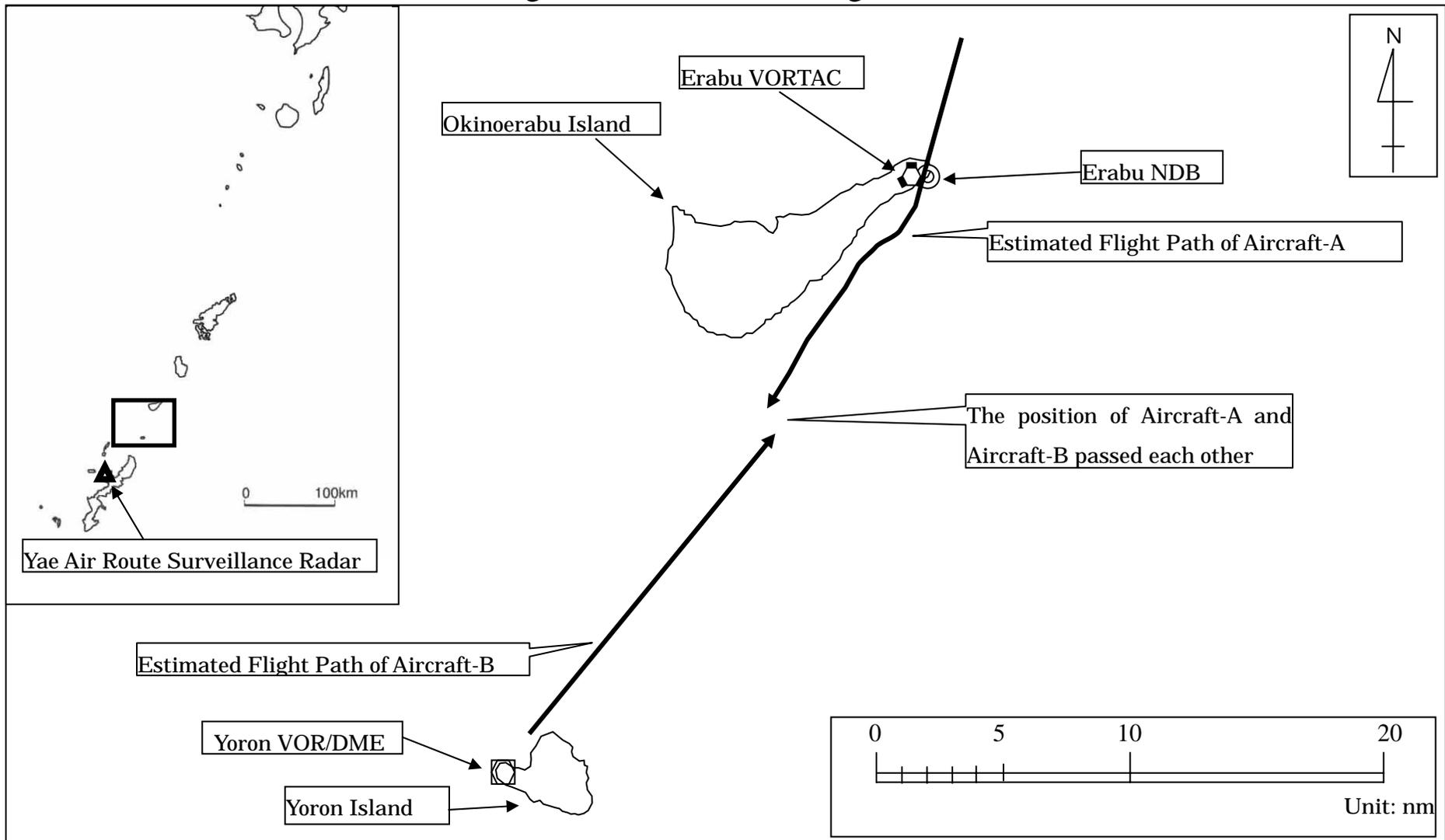


Figure 2: Three-angle view of NAMC YS-11A (Aircraft-A)

Unit: m

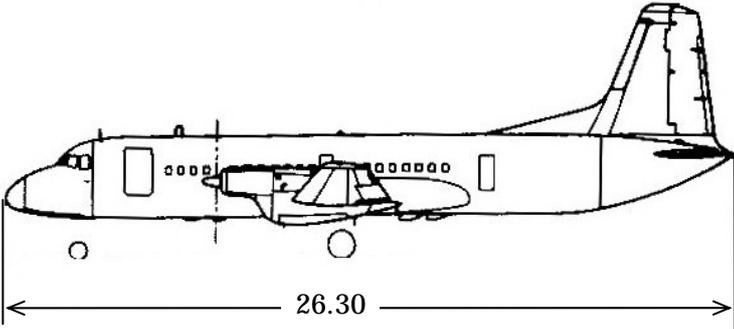
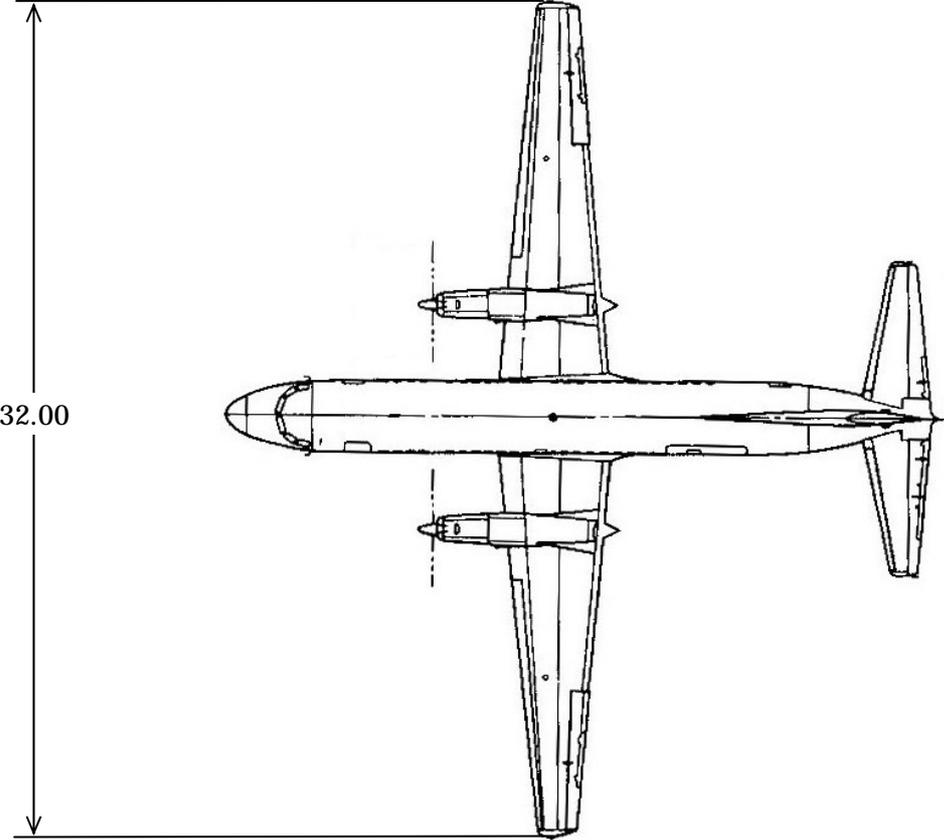
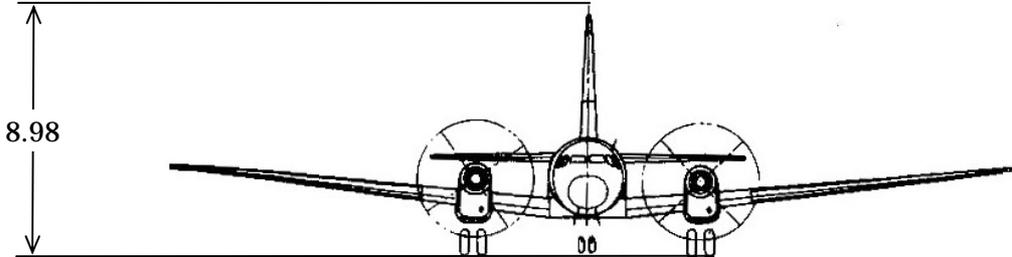
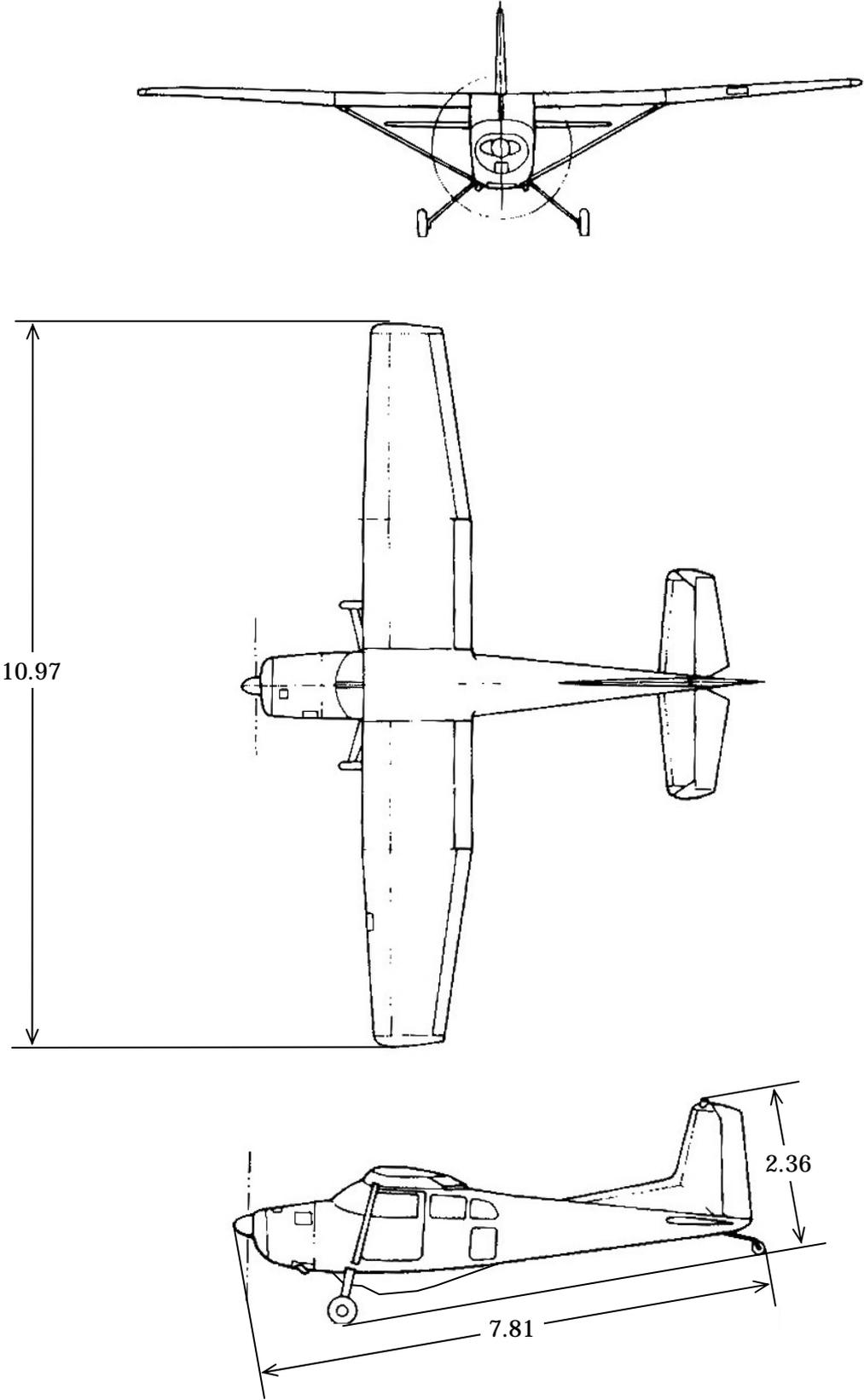
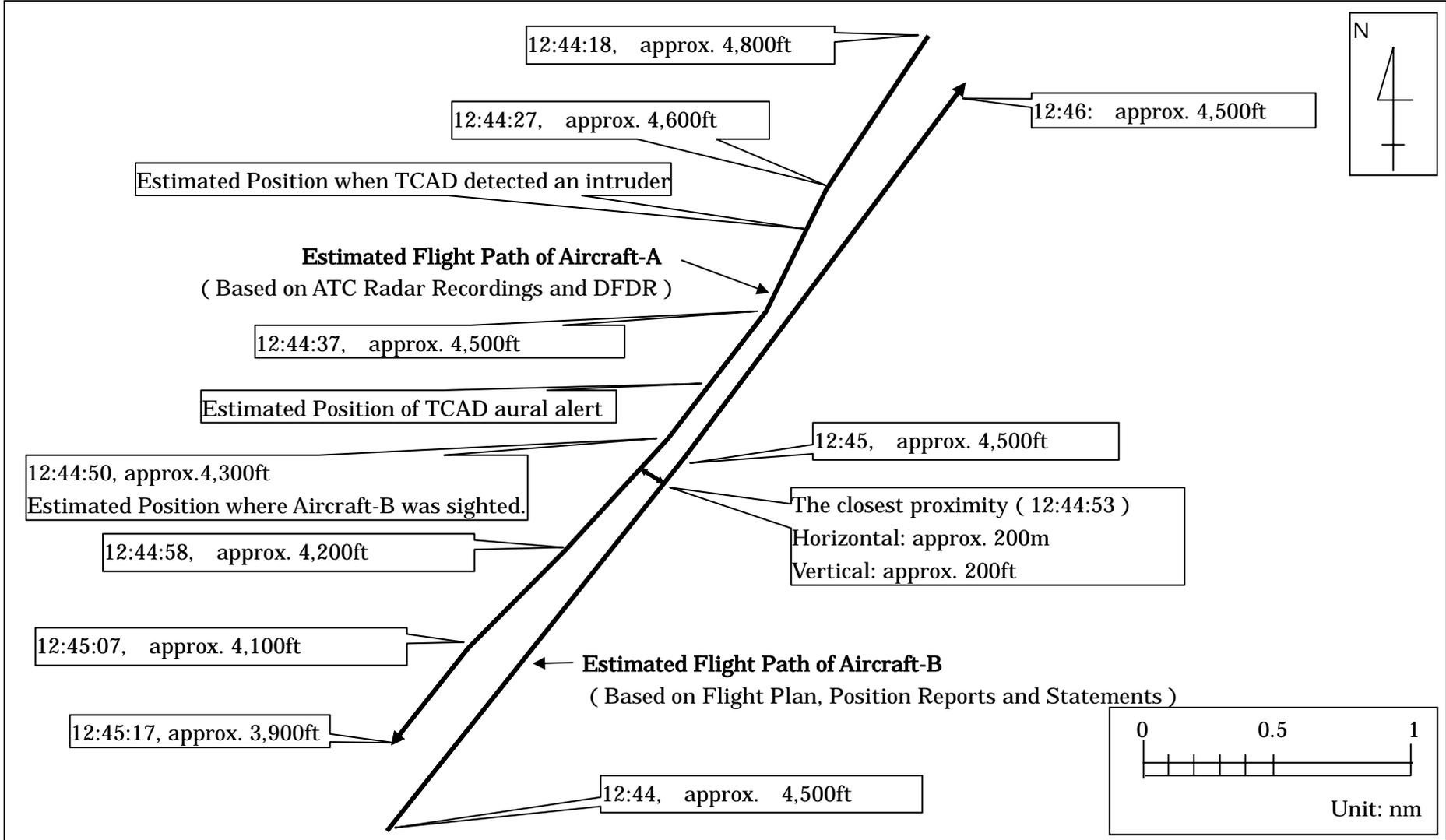


Figure 3: Three-angle view of Cessna A185F (Aircraft-B)

Unit: m



付図 4 Figure 4: Estimated Track Profiles at the Airprox



Photograph-1: Aircraft-A



Photograph-2: Aircraft-B

