AA2010-5

AIRCRAFT ACCIDENT
INVESTIGATION REPORT

ASAHI AIR CO., LTD.
J A 5 3 2 7

June 25, 2010

Japan Transport Safety Board

The investigation for this report was conducted by Japan Transport Safety Board, JTSB, about the aircraft accident of Asahi Air Co., Ltd., Beechcraft-58, registration JA5327 in accordance with the Act for the Establishment of the Japan Transport Safety Board and Annex 13 to the Convention on International Civil Aviation for the purpose of determining causes of the aircraft accident and contributing to the prevention of accidents/incidents and not for the purpose of blaming responsibility of the accident.

This English version of this report has been published and translated by JTSB to make its reading easier for English speaking people who are not familiar with Japanese. Although efforts are made to translate as accurately as possible, only the Japanese version is authentic. If there is any difference in the meaning of the texts between the Japanese and English versions, the text in the Japanese version prevails.

Norihiro Goto
Chairman,
Japan Transport Safety Board

AIRCRAFT ACCIDENT INVESTIGATION REPORT

ASAHI AIR CO., LTD. (JAPAN)
BEECHCRAFT – 58, JA5327
ON THE RUNWAY OF TAKAMATSU AIRPORT
AT ABOUT 12:38 JST, OCTOBER 8, 2008

May 28, 2010

Adopted by the Japan Transport Safety Board (Aircraft Sub-committee)

Chairman	Norihiro Goto
Member	Shinsuke Endoh
Member	Toshiyuki Ishikawa
Member	Noboru Toyooka
Member	Yuki Shuto
Member	Toshiaki Shinagawa

1. PROCESS AND PROGRESS OF AIRCRAFT ACCIDENT INVESTIGATION

1.1 Summary of the Accident

On October 8 (Wednesday), 2008, the Beechcraft-58, registered JA5327, operated by Asahi Air Co., Ltd., performed Touch and Go Landing for the instrument approach training at Takamatsu Airport. At about 12:38 Japan Standard Time (JST: UTC+9hr, unless otherwise stated all times are indicated in JST), the Aircraft's landing gears were retracted during its takeoff rolling after landing, and it slid on its fuselage, then stopping in the grass field by the runway.

There were four people on board, consisting of the instructor as captain and three trainees. They did not sustain any injuries.

The Aircraft sustained substantial damage, but there was no outbreak of fire.

1.2 Outline of the Accident Investigation

1.2.1 Investigation Organization

On October 8, 2008, the Japan Transport Safety Board designated an investigator- in-charge and another investigator for investigation after it was notified by Civil Aviation Bureau that the occurrence was classified as an aircraft serious incident. On the same day, judging from the extent of damage of the airframe, it was classified and notified again as an aircraft accident.

1.2.2 Representatives from Foreign Authorities

An accredited representative of the United States of America, as the State of Design and Manufacture of the aircraft involved in this accident, participated in the investigation.

1.2.3 Implementation of the Investigation

October 8 and 9, 2008	Interviews, on-site investigation and aircraft examination
October 16 and November 1 and 4, 2008	Interviews
May 13, 2009	Interviews

1.2.4 Comments from Parties Relevant to the Cause of the Accident

Comments were invited from parties relevant to the cause of the accident.

1.2.5 Comments from the Participating State

Comments were invited from the participating State.

2. FACTUAL INFORMATION

2.1 History of the Flight

On October 8, 2008, the Beechcraft-58, registered JA5327 (hereinafter referred to as "the Aircraft"), operated by Asahi Air Co., Ltd. (hereinafter referred to as "the Company") was boarded for four people, the instructor as captain and three trainees. The trainees alternately performed the instrument approach training at Takamatsu Airport (hereinafter referred to as "the Airport") in a training to obtain the qualification for instrument flight certificate.

The outline of the flight plan submitted to the Tokyo Airport Office was as follows:

Flight rules: Take off with Instrument Flight Rules (IFR) and then change to Visual Flight Rules (VFR),

Departure aerodrome: Yao Airport, Estimated off-block time: 10:00, Cruising speed: 170kt,

Cruising altitude: 8,000ft, Route: SKE (Shinoda VOR/DME) − V55 (airway) − SANDA (position reporting point) − V28 (airway) − OKC (Okayama VORTAC) − V53 (airway) – change flight rules to VFR at KTE (Kagawa VOR/DME), Cruising speed 150kt,

Cruising altitude VFR, Route: Takamatsu Airport (Traffic pattern)

Destination aerodrome: Takamatsu Airport

Other information: Simulated ILS approach operation and Simulated VOR approach operation to the runway 26

Total estimated elapsed time: 3 h and 26 min, Purpose of flight: Training

Fuel load expressed in endurance: 4 h and 39 min,

Persons on board: 4

The history of the flight up to the time of the accident is summarized below, according to the statements of the captain, trainees and a witness.

(1) Captain (Instructor)

In a training to obtain the qualification for the instrument flight certificate, I, as an instructor, sat in the right pilot seat and three trainees sat in the left pilot seat and the rear seats, respectively. And at about 10:14, the Aircraft was piloted by Trainee A and took off from Yao Airport. We flew to Kagawa VOR/DME in Instrument Flight Rules, and then after changing the flight rules to Visual Flight Rules, while rotating trainees over the Airport, we performed Touch and Go Landing (hereinafter referred to as "TGL") for the simulated instrument approach training.

At about 12:25, I had Trainee C take over the flying from Trainee B.

I blocked his view with the hood*[1] and started the simulated instrument approach training of "ILS Y RWY 26". Trainee C, in accordance with the specified procedure, set the landing gear handle (hereinafter referred to as "the Gear handle") to the down position when he captured the glide slope*[2]. I confirmed the landing gear position lights (hereinafter referred to as "the Gear position lights"), indicating that the landing gears were fixed at the down position, lighted green.

During the final approach, I removed his hood at about 30ft short of the decision altitude (at about 0.6nm from the runway). Since, at that time, the Aircraft deviated slightly to the right and the approach path angle was also incorrect, I assisted him with using the control wheel until the Aircraft touched down to the runway. The Aircraft normally touched down in the center of the runway at a speed of about 80kt.

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*1 A "hood" is a shield plate blocking the view from a pilot's seat to see only an instrument panel and is put on the front window of the left seat on the Aircraft.

*2 A "glide slope" is a path providing vertical guidance created by radio signals from a ground facility of an ILS (Instrument Landing System) in a final approach area to an airport. In addition, a path providing lateral guidance is referred to as a Localizer.

Subsequently, after the Aircraft reduced its speed, Trainee C retracted the flaps and accelerated the Aircraft with advancing the throttle levers to take off again. Devoting myself to maintaining the center line of the runway during the takeoff roll, I watched the speed indicator paying attention to lifting up the nose at rotation speed of 85kt. Then I heard the landing gear warning horn*[3] sounding at a speed of about 80kt. When I felt something unusual and tried to hold the control wheel, the nose began to go down. Soon I heard a metallic sound of the airframe scraping against the runway, therefore, I took his place to control the Aircraft and put on the brake to stop it, but I felt the brake did not work. The Aircraft gradually turned left until it crashed into the runway edge light, went into the grass field by the runway, and after veering its nose to the left, came to a halt.

When the Aircraft stopped, the Gear handle on the left instrument panel was in the up position and the green lights of the Gear position lights were out while the red light was on to indicate the landing gears had been moved to the retracted direction. I did not know when the Gear handle moved to the up position.

Reporting the accident to Takamatsu Tower (Takamatsu Airport Traffic Control Tower) immediately after the Aircraft stopped, I turned off the power of the Aircraft to prevent against fire as I let the trainees out and I stepped away from the Aircraft. No one was injured.

In the procedure to perform TGL in an instrument approach training, the pilot raises the flaps after touchdown and adjusts a trim tab*[4] to the takeoff position. And then, the pilot advances the throttle levers forward to take off again, sets it to the takeoff power, and at a speed of 85kt, the pilot brings the nose up. The pilot confirms its climbing after lifting off and ups the Gear handle to retract the landing gears.

This sequence of procedures is required to be performed by memory, without referring to a check list, by the trainee in the left pilot seat. In addition, since the Aircraft is usually flown solo, a trainee is not required to call out the procedure.

On October 4, 2008, at the last instrument approach training at the Airport for Trainee C, we performed the ILS approach and the missed approach which simulated one engine being inoperative.

(2) Trainee C

Since the departure from Yao Airport was scheduled at 10:00, I prepared for the departure with other trainees from about 8:00 and completed the pre-flight inspection at about 9:45. After the Instructor came, we performed the pre-flight inspection with him again. I, as a third trainee to perform the training, took the rear seats of the Aircraft. The Aircraft, piloted by Trainee A, flew to the Airport and he performed the instrument approach training with receiving radar vector guidance. Subsequently, Trainee B performed the training, after that, I took over piloting from him and started the instrument approach of "ILS Y RWY26."

At first, I performed the approach check and confirmed that the Gear handle was in the up position. After getting into the final approach course, I performed the landing check, when I captured the glide slope, I set the Gear handle to the down position according to the specified procedure and I confirmed the green lights of the Gear position lights indicating that each landing gear was fixed at the down position. I also confirmed that the green lights lit before setting the flap to 30°for landing.

On the landing, I paid attention to the timing of the flare and the touchdown with watching

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*3 A "landing gear warning horn" gives warning that a gear handle is in an up position and in unsafe situation, when an aircraft is on the ground.

*4 A "trim tab" is a small wing attached on the control surface to decrease holding force to maneuver.

outside of the Aircraft, and I touched down in the center of the runway better than usual with the instructor's assist. After that, I raised the flap with maintaining the center of the runway and tried to take off normally. With watching outside of the Aircraft, I sometimes confirmed its acceleration with the speed indicator. Before I could realize what happened, the instructor took the control and the Aircraft was veering to the left from the center of the runway. After this, I entrusted all to him and I put my hands on the control wheel and took my feet off the rudder pedal.

The period between touching down of the Aircraft and the taking control by the instructor, I did not remember if I moved the Gear handle to the up position or performed any special operation and I did not recognize that I mistook the procedure. Though I thought back on the accident later, I did not know what happened at all.

I knew that the throttle levers and the landing gear of the Aircraft had the safety mechanisms and any wrong operation of the Gear handle caused a restriction of the landing gear actuation or triggers a warning.

(3) Trainee A and Trainee B

At the TGL, when the accident occurred, we sat in the rear seats and looked out the window and did not see the instruments or the position of the Gear handle. Though the Aircraft landed normally, the landing gear warning horn began to ring suddenly. After that, the nose began to down, the Aircraft leaned to the left, and it gradually veered to the left from the center of the runway.

(4) Controller as a witness

When the Aircraft came to about 13nm of the final approach course, I issued TGL clearance and instructed the subsequent flight route. I thought that I communicated with a trainee of the Aircraft and I did not have anything particular to worry about. When the Aircraft reached the point about five nm from the Airport, I gave the wind information around the runway 26. Also, I had visual contact with the Aircraft at the position about three nm from the Airport and was watching it. I did not think that the landing gears had any problems.

After the Aircraft touched down on the runway around the taxiway T2, I heard the engine powered and then, suddenly, the Aircraft started to glide with leaning its wing to left. I judged this as unusual situation. At once, at about 12:38, I took the crash phone*[5] and contacted the fire station (Air Safety Foundation Takamatsu No.1 Office) and the Air Traffic Services Flight Information Officer. The Aircraft gradually veered to the left, sliding on its fuselage and stopped in the grass field by the runway. I did not see smoke or fire.

The accident occurred at about 12:38 on the runway of the Airport (Latitude 34°12'48" N, Longitude 134°0'55" E).

(See Figure−1 Estimated Flight Route, Photo−1 Accident Aircraft)

2.2 Injuries to Persons

No one was injured.

2.3 Damage to the Aircraft

2.3.1 Extent of Damage

Substantial

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*5 A "crash phone" is a dedicated phone for emergencies like accidents.

2.3.2. Damage to the Aircraft Components

Wings:	Left wing was damaged.
Fuselage:	The skin and the structure of lower fuselage were damaged.
Propellers:	Bended and damaged.
Landing gears:	Main landing gear retract rod was damaged.

2.4 Other Damage

Runway edge light: One light was destroyed.

2.5 Personnel Information

(1) Captain	Male, Age 57	
Airline transport pilot certificate (Airplane)		February 4, 1999
Type rating for multiple-engine (land)		April 10, 1973
Class 1 aviation medical certificate		
Validity		October 14, 2008
Flight instructor certificate		June 24, 1975
Flight time for flight instruction in the last one year		346 h 38 min
Total flight time		15,834 h 26 min
Flight time in the last 30 days		28 h 56 min
Total flight time on the type of aircraft		364 h 40 min
Flight time in the last 30 days		28 h 56 min
(2)Trainee C	Male, Age 31	
Commercial pilot certificate (Airplane)		December 8, 2006
Type rating for multiple-engine (land)		July 15, 2004
Class 1 aviation medical certificate		
Validity		April 21, 2009
Total flight time		593 h 20 min
Flight time in the last 30 days		4 h 03 min
Total flight time on the type of aircraft		69 h 07 min
Flight time in the last 30 days		4 h 03 min

2.6 Aircraft Information

2.6.1 Aircraft

Type	Beechcraft-58
Serial number	TH-1843
Date of manufacture	February 19, 1998
Certificate of airworthiness	DAI-20-114
Validity	May 24, 2009
Category of airworthiness	Airplane, Normal N
Total flight time	4,048 h 13 min
Flight time since last periodical check (100h Check on October 6, 2008)	6 h 18 min

(See Figure−2 Three Angle View of Beechcraft-58)

2.6.2 Weight and Balance

When the accident occurred, the Aircraft's weight is estimated to have been 5,029lb and the center of

gravity is estimated to have been 80.8in, aft of the reference point, both of which are estimated to have been within the allowable range (maximum takeoff weight of 5,600lb, and 76.7 to 86.0in. of range of the center of gravity corresponding to the weight at the time of the accident).

2.7 Meteorological Information

Aeronautical weather observations observed at the Airport around the time of the accident were as follows:

12:48 Wind direction 060°; Wind velocity 3kt; Wind direction fluctuation 350°-100°;
Visibility 15km
Cloud: Amount 1/8, Type Cumulus, Ceiling 2,500ft,
Temperature 24℃ ; Dew point 15℃
Altimeter setting (QNH) 30.06 inHg

2.8 Accident Site and Wreckage Information

2.8.1 Condition of the Accident Site

The runway of the Airport is 2,500m long and 45m wide and its azimuth is 08/26.

The Aircraft stopped on the border between the edge around the middle of the runway 26 and the grass field. The nose of the Aircraft turned about 140° to the left from the takeoff direction, its flap was at the up position and the landing gears were retracted. The flap lever and the Gear handle in the cockpit were at the up position.

There were hit marks by the propeller and rub marks caused by the fuselage contact on the runway. These marks started about 920m from the threshold of the runway 26 used by the Aircraft, gradually veered to the left and extended to the stopping position of the Aircraft.

In addition, one of the runway edge lights was destroyed.

(See Photo−1 Accident Aircraft , Photo−2 Cockpit Instrument Panel)

2.8.2 Details of Aircraft Damage

(1) Wings

The center of the left wing leading edge had dents caused by the crash against the runway edge light and the lower skin of the wing edge was chipped. The right wing had no big damage.

(2) Fuselage

On the left side of the lower fuselage, from the nose gear storage bay to the wing root, the skin of the fuselage was broken and its inner structure was exposed and scratched away.

(3) Propellers

All three propellers on the left wing were seriously bent backward. And, the three on the right wing were broken and chipped at their tips and bent backward. In addition, the tip of one of the broken propellers penetrated the skin of the nose and was found at the nose.

(4) Landing gears

The electric actuator, located in the fuselage to move the landing gear up and down, stayed at the up position of the gear. The shear pin at the edge of the retract rod of the right main gear attached to the actuator was broken and the retract rod of the left main gear was compressed and became deformed.

(See Photo−3 Damage of the Left Side of the Lower Fuselage , Photo−4 Damage of the Propellers, Photo−5 Damage of the Retract Rod)

2.9 Information on Fire and Fire Fighting

At 12:38, at the time of the accident, Air Safety Foundation Takamatsu No.1 Office located in the Airport received the accident notification from Takamatsu Airport Traffic Control Tower and sent emergency vehicles consisting of three fire engines and one command vehicle. At 12:39, although the emergency vehicles arrived at the accident site and were on standby for spraying fire extinguishing agent, fire did not break out and they did not spray it.

2.10 Mechanism Relating Actuation of Landing Gear

2.10.1 Safety Mechanism of Landing Gear

On the Aircraft, safety switches are installed to prevent from unsafe retraction of its landing gears on the ground.

(1) Safety Switch on Main Gear Struts

The safety switches on main gear struts were installed on the cylinders of both main gears. Movement generated by expanding or contracting the struts was mechanically transmitted with the link assembly and operated the switches. In the situation that its gears received the weight of an aircraft and just any one of both gear struts was compressed, this switch operated to prevent the landing gears from being retracted even though the Gear handle was set to the up position.

(2) Safety Switch on Throttle Lever

The safety switches on throttle levers were installed on throttle lever attachments. In the situation that both throttle levers were pulled back and were at the position of low power in the value of about 15 inHg or less indicated on the MAP *[6] indicator, this switch operated to prevent the landing gears from being retracted even though the Gear handle was set to the up position.

According to the maintenance record of the Aircraft kept in the Company, at the test flight performed on May 22, 2008, the values of the manifold air pressure indicator operating the safety switches on throttle levers were 15.5 inHg on the left side and 16.5 inHg on the right side and were within the set range of the maintenance manual of the Aircraft (14 – 17 inHg).

2.10.2 Gear Handle Detent

The Gear handle of the Aircraft had an up position and a down position. It has a catch to prevent it from moving to an opposite direction against the pilot's intention. Therefore, the Aircraft has a mechanism requiring the Gear handle to be pulled out from the catch against the spring to be moved to the opposite position.

2.10.3 Issues relating Safety Switch on Landing Gear

The Section "Safety Switch" of the Article 9 "Systems and Equipments" of the Flight Manual of the Aircraft describes that when the Gear handle is at the up position on the ground, and an aircraft maneuvers over rough terrain with above approximately 15 inHg the MAP, the main gear struts may extend momentarily and the landing gears may be retracted, therefore, we must not place too much trust during ground maneuvering that the landing gears are kept at the down position by the safety switch.

2.10.4 Gear Position Lights

The Gear position lights are located on the Gear handle and consist of three green lights and a red one.

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*6 "MAP" stands for Manifold Air Pressure of a engine, which measures pressure of air-fuel mixture inlet into the cylinder of the piston engine and is used as a rough indication of an engine output. The unit of measurement is inHg and indicated on the MAP indicator.

When a gear of the landing gears (nose gear, left main gear and right main gear) is fixed at the down position, the corresponding green light is to be lighted up and if any one gear is unfixed with the up and down movement of the landing gears, the red one is to be lighted up.

2.11 The Situation of the Landing Gear System after the Accident Occurred

(1) As mentioned in the details of aircraft damage described in 2.8.2 (4), although the retract rod of the left main gear was deformed and the shear pin at the retract rod of the right main gear was broken, all gear struts and the structure to lock the gears into the down position were not damaged. In addition, there were no abnormalities including damage on the safety switches installed on both main gears struts, the link assemblies to operate the switches and the sensors to detect that the gears were locked at down or up position.

(2) Jacking up the Aircraft and setting the gears to down, all gear struts set at the down position and the nose gear was normally locked with the brace and both main gears were normally locked by the braces and the down lock supports.

(3) No problems were recognized in the system of the Gear handle.

(See Photo−6 Landing Gear Down Operation Condition)

2.12 Outline of the Training to Acquire Instrument Flight Certificate

The Company had conducted the instrument approach training based on "BE58 Training Guide" prepared according to the examination items of the Instrument Flight Certificate, the outline is as follows:

(1) Precision approach*[7] and landing with both engines on

Make an ILS approach using both engines and make landing or TGL.

(2)Precision approach and landing with one engine out

With making one engine zero thrust (simulate one engine out condition), make an ILS approach and then make a missed approach.

(3)Non Precision approach*[8] and landing

Make a VOR approach using both engines and make landing or TGL.

2.13 Missed Approach Procedure of an ILS Approach with One Engine

The missed approach procedure of an ILS approach with one engine (simulation) is implemented based on the Company's Training guide as follows.

(1) At decision altitude, call out "Go Around" and make one engine maximum thrust.

(2) With making an aircraft from descent to climb, retract the landing gears.

(It is allowed to retract the landing gears without waiting a sure climb instruction with a climb indicator.)

(3) After retracting the landing gears, raise flaps.

(4) Climb with maintaining speed of 100kt.

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*7 A "precision Approach" is the approaching rule on the Instrument flight receiving information of horizontal and vertical direction and approach with constant descent angle. This includes an ILS approach as well as a PAR (Precision approach Radar) approach.

*8 A "Non Precision approach" is the approaching rule on the Instrument flight receiving the information of horizontal or a position without information of vertical direction and approach. This includes a VOR approach as well as a VOR/DME approach.

3. ANALYSIS

3.1 Captain and Trainee C held both valid airman competence certificates and valid aviation medical certificates.

3.2 The Aircraft had a valid airworthiness certificate and had been maintained and inspected as prescribed.

3.3 It is considered highly probable that the weather conditions at the time of the accident had not any relation with the outbreak of this accident.

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3.4 Situation of the Aircraft

As described in 2.8.2, damage on the wings, propellers and the fuselage are all external ones and they matched with hit marks and rub marks left on the runway.

And, as described in 2.11, the Aircraft's safety switches of the landing gears and structure to lock the gears into the down position had no damage, and at the confirmation of the gear down operation, the landing gears were also successfully locked at the down position. Therefore, it is considered highly probable that the Aircraft had no defect at the time of the accident.

In addition, it is considered highly probable that, the damage on the retract rod to move the landing gears up and down was caused as follows: Since the Aircraft collapsed before its gears were retracted by the retract rods, the landing gears were forced to retract by the weight of the Aircraft, the shear pin was broken and the retract rod was compressed and became deformed.

3.5 Retracting the Landing Gears during Takeoff Rolling

As described in 2.1 (1), during the Aircraft takeoff rolling after landing, the Captain heard the landing gear warning horn sounding at a speed of about 80kt, and when the Aircraft stopped after the accident occurred, he confirmed that the Gear handle of the Aircraft was in the up position. Therefore, it is considered highly probable that the landing gears were retracted as described below:

(1) Since the throttle levers of the Aircraft was advanced at takeoff rolling after landing for TGL, it exceeded the point of about 15 inHg by the MAP indicator, and the safety switch of the throttle levers was released.

(2) After that, the Aircraft started to gain speed, the landing gear warning horn was activated at a speed of 80kt before takeoff. The warning horn is activated by moving the Gear handle to the up position when the landing gears are locked in the down position and the safety switches of the landing gear struts are in operation (the main gears are compressed by an aircraft weight), provided that the Aircraft is in the ground. Therefore, the Gear handle of the Aircraft was set in the up position then.

(3) In addition, when the landing gear warning horn was activated, the speed of the Aircraft was near the liftoff speed, the main gear struts were extended in some degrees by increased lift force due to takeoff rolling. At a fraction of the time after the landing gear warning horn was activated, with added vibration caused by the takeoff rolling and both of the main gear struts extended, the safety switches of the main gear struts were released, the landing gears were retracted, and then the landing gear warning stopped sounding.

3.6 Gear Handle Operation during Takeoff Rolling

(1) The Gear handle is installed in the lower right hand of the left seat instrument panel where the pilot in the left seat can operate it with his or her right hand. At the time of the accident, a training, in which the trainee in the left seat was instructed to operate the Gear handle according to the operation

procedure for landing and takeoff for TGL, was conducted. If the instructor in the right seat tried to operate the Gear handle, the instructor would be in the way of the trainee in the left seat who would be operating throttle levers, and it would be extremely difficult for the instructor to operate the Gear handle without preventing the trainee from performing the operation. Therefore, it is considered possible that Trainee C, who was in the left seat and was piloting the Aircraft, set the Gear handle to the up position at the takeoff rolling after landing.

(2) As described in 2.12, in instrument approach training, landing or TGL is performed as an ILS approach with both engines and missed approach is performed as an ILS approach with one engine.

In the procedure of TGL, a pilot confirms that the aircraft has lifted off and is safely climbing, and retract the landing gears. However, in the procedure of missed approach performed with one engine, as described in 2.13, after setting the throttle levers of one engine to the maximum power position for missed approach, the pilot immediately retracts the landing gears which has high air drag. In other words, there is a difference between TGL and missed approach in the timing to set the Gear handle to the up position after operating the throttle levers. It is considered possible that in a training that involves various procedures, a trainee, unintentionally and by reflex action, may set the Gear handle to the up position earlier according to the missed approach procedure at takeoff rolling for TGL.

3.7 Measures to Prevent Incorrect Operation during Flight Training

This accident occurred during the training with the instructor on board and he was not able to prevent it. As described in 2.1 (1), it is considered probable that this was caused because the instructor focused his attention on the takeoff rolling with maintaining the center line of the runway and raising the nose at a designated speed during the takeoff rolling after landing and then he was not able to confirm the operation itself performed by the trainee.

Though of course a trainee should operate the procedure with the confirmation that there is no mistake on his or her operation, in the operation such as TGL in which a trainee must operate multiple operations in a short time without using a check list, it is possible for a trainee to make a mistake in operation suddenly and involuntarily. Therefore, the instructor must appropriately grasp a trainee's flight operation by making him or her call out the name of the operation.

4. PROBABLE CAUSE

It is considered highly probable that this accident occurred as follows:

While the Aircraft was performing Touch and Go Landing accompanied with the instrument approach training, its landing gears were retracted during its takeoff rolling after landing. As a result, the Aircraft slid on its fuselage and damaged its body.

With regard to the Aircraft's landing gears being retracted during its takeoff rolling, it is considered possible that the trainee who was operating the Aircraft in the left pilot seat moved the Gear handle to the up position by mistake.