

## Case 2

### Loss of visual contacts with the ground and following failure to maintain minimum safe altitude during a VFR flight led to the aircraft's crash into the tree canopies on the ridge

Summary: On July 28 (Wednesday), 2010, a Cessna TU206G operated by Company A took off from Niigata Airport at 08:49 local time for a ferry flight to Sapporo Airfield, but it did not arrive there even after the estimated arrival time of 12:49 and went missing.

Search and rescue (SAR) activities found the crashed aircraft in the east of Mt. Iwabe-dake in Fukushima-town, Matsumae-gun, Hokkaido Prefecture, and having been destroyed and the pilot in command (PIC) and one passenger having suffered fatal injuries on July 30 (Friday), 2010.

#### Events Leading to the Accident

##### Around 08:49

The aircraft took off from Niigata Airport and flew visual flight rules (VFR) to Sapporo Airfield.

##### Around 09:07

The company's Niigata office provided the aircraft with aeronautical weather data for Sapporo Airfield and Okushiri Airport as of 09:00.

It is highly probable that the aircraft was flying almost in line with its planned flight route from Niigata Airport to an area over Tappizaki at an altitude of about 3,500 ft.

##### 10:37:32

The aircraft continued to fly northward over the Tsugaru Straits at an altitude of about 3,500 ft and started a descent just in front of Hokkaido.

##### 10:39:16

After changing its course to north-northeast the aircraft descended to about 2,300 ft, subsequently climbed to about 2,500 ft in a right turn and headed for east-southeast.

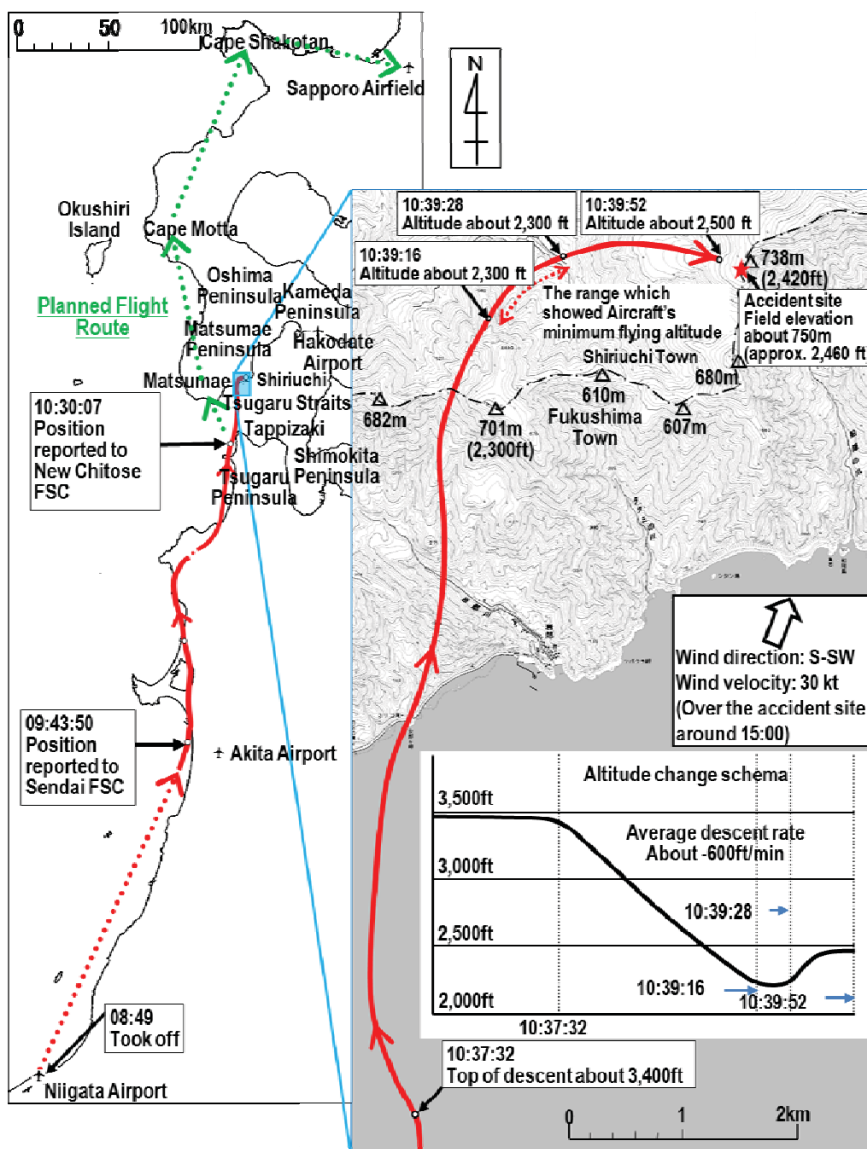
##### 10:39:52

The aircraft disappeared from the ATC radar at an altitude of about 2,500 ft while flying east-southeastward over the mountains which border Shiriuchi-town, Kamiiso-gun and Fukushima-town, Matsumae-gun, Hokkaido Prefecture.

The aircraft



Estimated Flight Route



FSC : Flight Service Center

## Causal Factors of the Accident

### Relations with Meteorological Phenomena

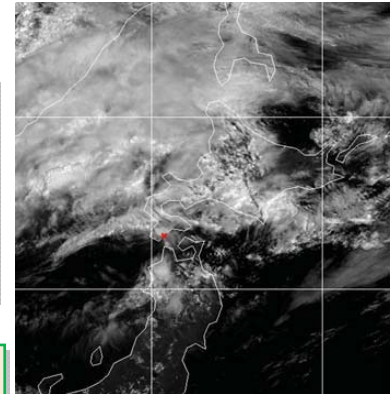
#### Confirmation of weather condition before departure by PIC

It is possible that the PIC probably judged before departure that weather in the Hokkaido region would worsen as time goes by.

It is possible that the company's dispatcher had no consultation with the PIC about meteorological information on the day of the accident.

It is possible that judging from the meteorological conditions on the day of the accident, the PIC should not have decided to have a VFR flight for Sapporo Airfield.

- A pilot needs to confirm meteorological information before the flight in cooperation with an operation dispatcher and they should discuss for common understanding about the weather.



Meteorological Satellite Japan Area  
Visible Imagery (at 10:30 on July 28)

#### Operation Monitoring and Operation Support

The aircraft was probably able to continue its VFR flight up to the Tsugaru Strait, just in front of the Oshima Peninsula, after taking off from Niigata Airport and flying past the Tohoku region.

The PIC's post departure confirmation of the latest aeronautical weather observations for Sapporo Airfield and Okushiri Airport probably made him think that it would be difficult to fly on the planned route as via the western coast of Hokkaido recognizing bad weather at Okushiri Airport whereas the weather at Sapporo Airfield – the destination was good.

It is probable that the Operation Control Department of Company A did not do operation monitoring, collection of en-route meteorological information and forwarding necessary information to the aircraft.

- It is possible that limited radio coverage from the local office of Company A causes certain limitation to operation monitoring and supply of meteorological information by the Operation Control Department, however, the Company should carefully and sufficiently confirm meteorological information obtained from weather forecasts and meteorological observations and provide necessary information to pilots involved.
- Effective use of information possessed by the employees across the country, by the whole company via the HQ Operation Control Department will ensure assured operating against changes of the weather.

### Continued VFR flight under reduced visibility condition

It is probable that the PIC was aware of the option of a flight rule change from VFR to IFR, upon considering the onboard equipment and aircraft performance, in case he expects to encounter an IMC during the VFR flight.

The PIC had a tendency to avoid clouds by lowering the altitude and fly visually confirming the ground under bad weather conditions.

As the company's regulation stipulates that "In principle, no VMC ON TOP flight is authorized," the PIC probably chose descend to avoid clouds and to fly low below the clouds maintaining visual contacts with the ground.

The aircraft was flying over the Tsugaru Strait and then, it was flying at a low altitude for a period of 2 minutes 20 second from its start of descent to the time when its target disappeared from the ATC radar display. It is probable that the PIC, without changing flight rules from VFR to IFR by climbing, continued to fly VFR at low altitude and without requesting for a radar vector by an ATC facility and the aircraft consequently crashed into the tree top near the ridge.

- When a pilot flying VFR expects to encounter a condition where it is difficult to fly maintaining minimum safe altitude, he/she should bear in mind that he/she has an option of changing the flight rule to IFR at an appropriate time upon considering the onboard equipment and airplane performance, and requesting for a radar vector by an ATC facility.

## Maintaining minimum safe altitudes

While flying over the Tsugaru Straits, the PIC decided to advance to mountainous area in Oshima Peninsula where parts of the ridges were visible through patches of clouds and then, in order to avoid in-cloud flight, descended below the clouds.

After advancing to the mountainous area in the Oshima Peninsula, the PIC maintaining visual contact with the ground adjusting the altitude to avoid the clouds, flew in the direction of fewer clouds avoiding ground contact.

The PIC tried to continue north-bound flight over the mountainous area; however, low hanging clouds prohibited his visual recognition of mountain features over the wide area. The PIC judged that his attempt would be difficult and he decided to turn to the right to fly over the sea. His trial was done under low visibility condition with degraded visual recognition of mountain ridges. The belated decision making lead to a flight into a tree top on the mountain ridge.

- When a pilot flies under VFR while maintaining VMC and visual ground contact under reduced visibility condition, the pilot needs to maintain a minimum flyable safe altitude, recognizing the position of aircraft, the geographical features and objects on the ground in the area and confirming mountain elevations on the flight route.
- In order to fly through an area where the weather is bad and low visibility is expected, a pilot who flies under VFR has to check elevations of mountains and other objects in the area where he may fly over before flying.
- When a pilot flying under VFR expects to encounter a condition where it is difficult to fly maintaining minimum safe altitude, the pilot needs to change the flight route while avoiding clouds or change the destination aerodrome without delay.

## In order to Prevent Recurrence

Company A needs to implement a thorough safety education for its pilots again regarding the following matters:

- A PIC should make the final decision that the weather in the airspace he is going to fly is appropriate for a flight in a cautious manner based on the weather forecasts and meteorological observations.
- When a pilot flying under VFR expects to encounter bad weather conditions, the pilot do not try too hard operation and needs to make a decision to turn back without delay.
- When a pilot, who has a valid instrument flight certificate, flies an aircraft authorized for IFR flight and expects to encounter bad weather conditions during its VFR flight, the pilot should bear in mind that he/she has an option of changing the flight rule to IFR at an appropriate time upon considering the onboard equipment and airplane performance, and requesting for radar vector by an ATC facility.

For an aircraft without an anti-icing system and is prohibited from flying in an icing meteorological condition like this aircraft, attention should be paid to avoid airspace where icing conditions are expected.

The investigation report of this case is published on the Board's website (issued on July 27, 2012)  
[http://www.mlit.go.jp/jtsb/eng-air\\_report/JA3902.pdf](http://www.mlit.go.jp/jtsb/eng-air_report/JA3902.pdf)

(This report is a translation of the Japanese original investigation report. The text in Japanese shall prevail in the interpretation of the report.)