ACCIDENT

Aircraft Type and Registration:	Piper PA-28-140 Cherokee, G-BRPL
No & Type of Engines:	1 Lycoming O-320-E3D piston engine
Category:	1.3
Year of Manufacture:	1972
Date & Time (UTC):	5 March 2005 at 1438 hrs
Location:	Blackpool Airport, Lancashire
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - 1
Injuries:	Crew - None Passengers - None
Nature of Damage:	Nosewheel and propeller damaged.
Commander's Licence:	Commercial Pilot's Licence with Instructor Rating
Commander's Age:	40 years
Commander's Flying Experience:	510 hours (of which 411 were on type) Last 90 days - 16 hours Last 28 days - 8 hours
Information Source:	Aircraft Accident Report Form submitted by the commander and subsequent enquiries by the AAIB

History of flight

The instructor arrived at Blackpool Airport at about 0800 hrs where he worked part-time for a flying club. He stated that he checked the weather forecast before undertaking about four or five training flights with various students. The last of these flights landed at about 1350 hrs.

The instructor then departed at 1410 hrs on a further training flight with another student who was on about his sixth training flight. The instructor stated that at the time of departure, the weather information broadcast on ATIS gave a wind of 330°/15 kt. The instructor was the handling pilot and after takeoff, he became aware of a heavy shower in the vicinity, which he avoided until it had passed the airfield. Due to the absence of a suitable visible horizon to conduct the intended exercises, the instructor decided to curtail the lesson and return to the airport.

Blackpool ATC reported the wind for landing was "northerly at 21 kt gusting to 38 kt". The instructor believed that this referred to the wind being generally northerly; he did not appreciate that the wind was from 360°, the information that ATC had intended to convey. He continued the approach but when he flared the aircraft for touchdown, he reported that a gust carried the aircraft across the runway, at which point he initiated a go around. Almost immediately the left wing touched the runway and the aircraft landed heavily on its nosewheel, causing it to collapse. The propeller struck the ground and the aircraft veered to the right coming to rest on the runway.

Neither pilot was injured and both vacated the aircraft normally having first switched off the fuel and electrics.

Weather

Reproduced below (Table 1) are the encoded actual and forecast weather conditions for Blackpool Airport on the day of the accident.

Wind limits

The flying club placed a maximum wind limit for flying operations of 40 kt with a maximum demonstrated cross wind published for the aircraft type of 17 kt.

Analysis

Throughout the day the weather forecast included a surface wind of 18 kt from a direction between 330° and 340°, gusting to between 28 and 30 kt. The actual conditions revealed by the METARs are of a wind speed of between 13 and 21 kt from a direction of between 310° and 360°. Gusts of between 26 to 30 kt were recorded at 1150 hrs, 1350 hrs and 1450 hrs. These are, however, only snapshots of the weather every half hour and do not reveal to what extent, if any, the wind was gusting between these reports.

Having checked the morning's forecast the instructor then relied upon his personal observation of the weather throughout the morning, together with listening to the airport ATIS to remain updated. Because the wind was generally not as gusty as forecast, the instructor was happy to continue with the training flights. Runway 31 was in use which also meant that the forecast wind direction of 330° to 340° would not present an excessive crosswind, even in gusts of up to 30 kt.

However, at the time he landed prior to the accident flight, the METAR gave the wind as 350°/19 kt gusting to 29 kt. It might well be expected that at this point the instructor was aware of the strong wind conditions and that the wind direction had veered towards the north. The turn round time before his next departure was short and not long after his reported take off time the wind had veered even further to the north, presenting a crosswind only 2 kt below the maximum demonstrated capability of the aircraft.

METAR
0750Z 31014KT 9999 FEW030 SCT050 04/M03 Q1013
0820Z 33013KT 9999 FEW030 SCT050 05/M03 Q1013
0850Z 33015KT 9999 FEW030 SCT050 05/M04 Q1013
0920Z 32017KT CAVOK 05/M03 Q1013
0950Z 33017KT CAVOK 05/M04 Q1013
1020Z 32016KT 9999 FEW035 SCT050 06/M03 Q1012
1050Z 32018KT 9999 FEW035 SCT050 06/M03 Q1013
1120Z 32016KT 9999 FEW035 SCT050 06/M04 Q1012
1150Z 32016G26KT 9999 FEW035 SCT050 06/M03 Q1012
1220Z 32015KT 9999 FEW035 SCT050 06/M03 Q1012
1320Z 34020KT 9999 VCSH FEW035 BKN045 07/M03 Q1012
1350Z 35019G29KT 9999 -RA FEW035 BKN045 07/M04 Q1012=
1420Z 36021KT 9999 FEW035 SCT045 07/M03 Q1013=
1450Z 35019G30KT 9999 VCSH FEW035 SCT045 06/M01 Q1013=

TAF
050716 33018G28KT 9999 SCT025 BKN050 PROB30 TEMPO 1316 6000 SHRA=
051019 34018G30KT 9999 SCT030 TEMPO 1518 6000 –SHRASN=
051322 34018G30KT 9999 SCT030 TEMPO 1518 6000 -SHRASN=

Table 1
Encoded actual and forecast weather conditions for Blackpool Airport on the day of the accident

The heavy shower reported by the instructor was not forecast and sensibly he chose to avoid it. On returning to the airfield the instructor misinterpreted the wind information passed to him by ATC, believing the term "northerly" was a general indication rather than a precise direction of 360°. At the time he missed the fact that the crosswind in gusts potentially exceeded the maximum demonstrated figure by some 10 kt. It was unfortunate that the aircraft was subject to just such a gust as it was about to touchdown. The decision to go around, whilst prudent, possibly compounded the problem due to the yawing effect of applying full power acting in the same direction as the wind.

Conclusion

The instructor did not fully appreciate the weather conditions in which he was operating and he did not fully understand, or properly interpret, the surface wind information available to him. He attempted to land in crosswind conditions that were most probably beyond the maximum demonstrated for the aircraft type and in so doing he forfeited full control of the aircraft.