

## REPORT

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SL REP: 43/2004

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This investigation is limited in its extent. For this reason, the AIB-N has chosen to use a simplified report format. The report format indicated in the ICAO annex 13 is only used when the scope of the investigation makes it necessary.

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All times given in this report is local time (UTC + 2), if not otherwise stated.

### Aircraft

-type & reg.:	Avro RJ85, unknown / Boeing 737-505, LN-BRH	
Radio call sign:	DLH 5219 / BRA 349	
Operators:	Lufthansa CityLine / Braathens	
Date and time:	Sunday 6 June 2004 at 1659 hrs.	
Location:	Bergen airport Flesland, Norway (ENBR)	
Type of occurrence:	Air Traffic Incident, Runway Incursion	
Type of flight:	Charter / Scheduled airline operation	
Weather conditions:	Flesland METAR 1650 hrs 26005KT 200V350 9999 SCT018 BKN035 12/08 Q1014	
Light conditions:	Daylight	
Flight conditions:	VMC	
Flight plan:	IFR	
No. of persons onboard :	Unknown	
Injuries:	None	
Aircraft damage:	None	
Other damage:	None	
Commanders	DLH 5219	BRA 349
-sex/age:	Male / 42 years	Male / 45 years
-licence:	ATPL	ATPL-A
-fl. experience:	ca. 8 000 h total, ca. 5 000 h on type	ca. 9 000 h total, ca. 5 000 h on type
Air Traffic Controllers	Flesland GND	Flesland TWR
-sex/age:	Female / 36 years	Male / 39 years
-certificate:	August 1993	March 1990
-authorization:	March 1997	February 1991
-ratings:	ADI TWR RAD, APS RAD	ADI TWR RAD, APS RAD
Information sources:	Report from Flesland TWR, Letter from the Commander of DLH 5219, Occurrence Report from the Commander of BRA349 and investigations by AIB-N.	

## SUMMARY

At 1649 hrs. Lufthansa CityLine flight DLH 5219 was given route clearance by Flesland Ground Movement Control (GND) to Hamburg (EDDH). After start-up and push-back, taxi-clearance was issued by Flesland GND at 1655 hrs. Taxi instructions "TO HOLDING POSITION 17 VIA DELTA AND YANKEE" was read back correctly by DLH 5219.

While DLH 5219 was taxiing, Braathens flight BRA 349 from Stavanger airport Sola (ENZV) was executing a visual approach for runway 17. BRA 349 received landing clearance from Flesland Tower Control (TWR) on base-leg at 1659 hrs.

At 1659 hrs. DLH 5219 was approaching the holding position on taxiway A and transferred from Flesland GND to Flesland TWR frequency (119.100 MHz). DLH 5219 did not check in on TWR frequency. The Air Traffic Controller of Flesland GND observed at 1659 hrs. that DLH 5219 had crossed the holding position line and thereby breached his clearance limit. She warned her colleague in the TWR position and tried to call DLH 5219 on GND frequency (121.900 MHz) without getting any response.

Flesland TWR revoked the landing clearance given to BRA 349 and asked the pilot to extend his approach. BRA 349 asked to make a left hand 360 degrees turn on final which immediately was approved by Flesland TWR. Flesland TWR then called DLH 5219 and commented that the aircraft had passed the holding position markings. The pilot of DLH 5219 confirmed this and offered his apologies. DLH 5219, now standing still, blocked the active runway and Flesland TWR altered the traffic sequence by issuing take-off clearance to DLH 5219 at 1700 hrs. with BRA 349 in a delay turn on final. Subsequently BRA 349 landed 1703.

After the incident Flesland TWR talked to DLH 5219 over radio and asked the pilot to make a report and transmit it by telefax. Likewise the pilot of BRA 349 was asked to give his report. Flesland TWR then gathered all information, transcripts of radio and telephone communication and reports from all personnel involved and forwarded this to the Accident Investigation Board Norway (AIB-N).

The pilot of DLH 5219 has told the Board that the main reason for the overshoot of the holding position line was due to cockpit workload and lack of situational awareness at the time of the incident. The pilots received "cabin clear" from a flight attendant, read check lists and were a bit confused by the taxiway intersection on Y at A. The parallel taxiway Y continues after A to the military apron of Flesland. The runway strip continues north of the intersection with taxiway A and the flight crew thought for a moment they had to follow taxiway Y further to reach the beginning of runway 17. The co-pilot then re-checked the aerodrome chart. When they turned onto taxiway A the pilots questioned among themselves whether a line-up clearance was received or not and halted the aircraft. At that time Tower called DLH 5219 and noted that they had passed the holding position markings.

Aerodrome lay-out is shown in the appendix (AIP Norway AD 2 ENBR 2-1 Aerodrome Chart). The runway incursion took place at the holding position for runway 17 on taxiway A. The aerodrome chart does not show the taxiway going to the military apron from the intersection of A on Y.

## COMMENTS FROM THE ACCIDENT BOARD

The Accident Investigation Board Norway has monitored reports of unwanted incidents at Norwegian airports through the Safety Management System of the airport operator Avinor AS and

seen that the number of runway incursions is increasing. This may be a natural consequence of the establishment of this reporting system that leads to more incidents being reported. AIB-N would nevertheless like to focus attention towards this type of unwanted incidents and has looked into some topics related to runway incursion through the incident involving two aircraft at Bergen airport Flesland.

AIB-N has previously released the reports SL RAP 41/2003, 51/2003 and 56/2003 (Norwegian versions only) about runway incursions with aircraft taxiing onto the active runway in conflict with another aircraft. These reports focused primarily on cockpit workload issues and visual surveillance of the aerodrome from the control tower. This report focuses on the aerodrome lay-out, taxiway markings and signs as well as some cockpit workload issues.

The photographs below show taxiways at both runway ends at Flesland.



**TWY intersection and holding position RWY 17 on TWY A**





### **Holding position RWY 35 on TWY E**

A study of taxiway lay-out and markings at Flesland shows that the holding position of taxiway A has an off-set between painted markings and signs on the edge. The sign on the left side is located some distance toward the runway while on the right side the sign is located before the painted markings. The signs are according to ICAO Annex 14 and have runway guard lights (“wig-wags”) next to them. The runway guard lights were serviceable and operating at the time of the incident. It is local policy for Flesland TWR always to operate runway guard lights when there is ground traffic, regardless of visibility and weather conditions. There are flushed red lights at the holding position, but these are not completely installed and do not operate to form a stop bar. Taxiway A itself intersects the runway at an angle of about 60 degrees after a curve from taxiway Y. This makes the holding position less than optimum with respect to pilot’s view of the final approach to the runway. AIB-N recommends a review of the holding position and signs in this area.

For comparison the holding position for runway 35 at taxiway E has painted markings and signs almost perfectly in-line. This is an advantage during winter operations where painted markings may be covered by snow and/or ice. Taxiway E intersects perpendicular to the runway which gives a better view of the runway and final approach from the cockpit.

The aerodrome chart of Flesland does not show the taxiway intersection of A and Y in full detail as the taxiway going to the military apron is masked away. AIB-N recommends a revision of aerodrome charts to correct this lack of information.

## **SAFETY RECOMMENDATIONS**

AIB-N recommends that the aerodrome operator of Bergen airport Flesland, Avinor AS, reconsiders holding position location of painted markings and signs on taxiway A and the need for additional signs on taxiway Y. (SL Recommendation No. 51/2004)

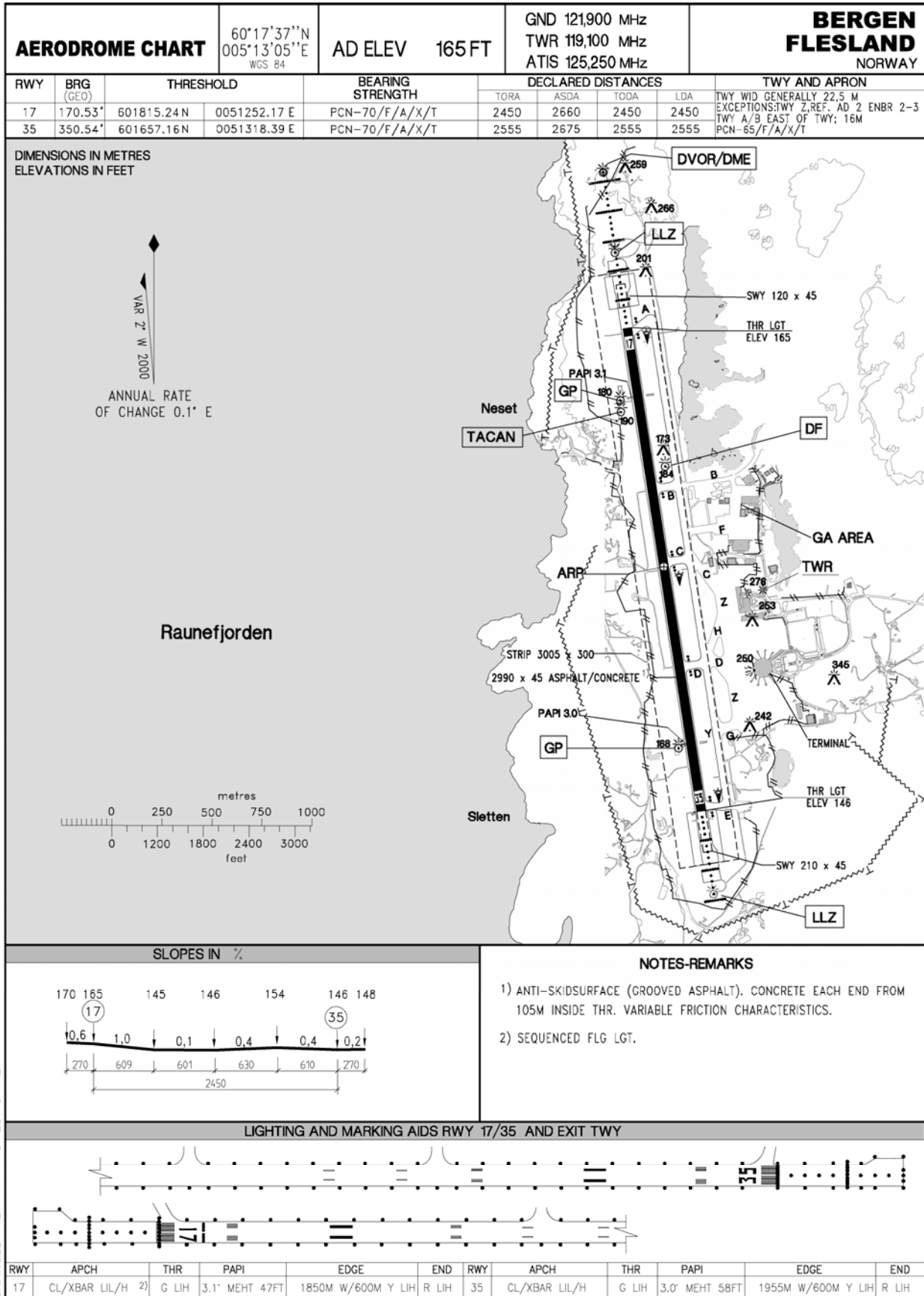
AIB-N recommends that the Aeronautical Information Service of Norway, operated by Avinor AS, revises aerodrome and landing charts of aerodromes with military installations so that taxiways and intersections available to civil aircraft are depicted as clearly as possible. (SL Recommendation No. 52/2004)

## **APPENDIX**

AIP Norway AD 2 ENBR 2-1 Aerodrome Chart

AIP NORGE/NORWAY

AD 2 ENBR 2 - 1



CHANGES: REMARK AND EDITORIAL