Airbus A321-231, G-TTIA

AAIB Bulletin No: 3/2003	**Ref: EW/G2002/11/05**	**Category: 1.1**
INCIDENT		
Aircraft Type and Registration:	Airbus A321-231, G-TTIA	
No & Type of Engines:	2 International Aero V2533-A5 turbofan engines	
Year of Manufacture:	2001	
Date & Time (UTC):	7 November 2002 at 1048 hrs	
Location:	South of the Pyrenees	
Type of Flight:	Public Transport	
Persons on Board:	Crew - 9	Passengers - 167
Injuries:	Crew - None	Passengers 15 (Minor)
Nature of Damage:	Nil	
Commander's Licence:	Airline Transport Pilots Licence	
Commander's Age:	41 years	
Commander's Flying Experience:	8,800 hours (of which 300 were on type)	
	Last 90 days - 150 hours	
	Last 28 days - 70 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

The aircraft was in VMC in the cruise at FL350 crossing the Pyrenees mountain range enroute to Almeria when it encountered turbulence. Initially the turbulence was light and the seat belt sign was switched on as a precaution. Shortly afterwards the turbulence became severe and the autopilot disconnected. The aircraft became extremely unstable, speed control became difficult, the instruments were unreadable and oscillations in pitch and roll developed. The commander flew the aircraft manually holding a constant pitch attitude while the first officer re-engaged the autopilot before a descent to FL310 was initiated. The recommended speed for turbulence of 0.76M had been selected prior to the encounter and autothrust had remained engaged throughout the incident. During the descent, conditions improved and the aircraft continued to its destination where 15 passengers received medical attention.

The position at which severe turbulence was encountered was directly between two north-westerly jetstreams whose maximum wind speeds were in excess of 100 kt. Associated with the easterly of these jetstreams was a forecast area of moderate and occasionally severe Clear Air Turbulence (CAT) at the aircrafts level but there was no forecast of any CAT where the encounter took place. The strong north-westerly flow was present down to relatively low levels and is likely to have caused mountain wave activity to the south of the Pyrenees. Although there were no signs of associated lenticular or rotor cloud formations, this is the most probable cause of the incident.

Most of the injured passengers had not been in their seats with their seat belts fastened when severe turbulence was encountered. Many passengers were queuing for the lavatory when the seat belt sign illuminated and despite requests from the cabin crew, were slow to return to their seats. There was approximately 30 seconds from selection of the seat belt sign to encountering the severe turbulence.