

Survivable Loads on the Pilot and the Crashworthiness of Glider Cockpits
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ABSTRACT

The interface between the sea and land is named the intertidal zone, and is a fascinating area for study. Similarly, the region of contact between the pilot and glider is equally interesting. Some of the information on this paper is based on the work of friends and colleagues-Prof. Wolf Röger of Fachhochschule Aachen, Germany and Dipl. Ing. Martin Sperber of TÜV Rheinland, Cologne, Germany. My experimental research has been carried out at QuinetiQ Farnborough, England, with the assistance of Mr. Leslie Neil, Mr. Graham Reece and Mr. Philip Murtha. This paper covers the following discussions: Types of glider accident and survivable loads on the pilot; cockpit design, seat harness, undercarriage design, spinal injury and other key subjects. A sailplane rescue system enables the disabled glider with the pilot still in the cockpit, to be safely lowered to the ground under a parachute. To prevent injury to the pilot when the parachute/glider combination contacts the ground, a modern crashworthy cockpit is required. Still under investigation is a method of using a parachute to extract the pilot from the cockpit. This is a simplified lightweight method functioning like an ejection seat. The Noah airbag system is of importance. When operated in an emergency situation, the canopy and the seat harness are automatically released. A cushion under the pilot then inflates, raising the pilot nearer to the level of the cockpit cill. This makes successful unassisted escape more likely.

Keywords: Crash worthiness, Glider Cockpits.