

PREFACE

Aircraft Medical Investigation Techniques related to aircraft accidents have been identified as an area of major concern by AGARD. In this Lecture Series, Aircraft Accident Investigation is examined from several interrelated facets of varying interest to the flight surgeon, accident investigator, design engineer, flight safety officers, human factors specialist and aeromedical researcher in general.

The purpose of this Lecture Series is to address a critical aspect of the investigation related to the factors implied in the prevention of potential injuries among the occupants as a consequence of the impact, post-crash fire, heat, and toxic fumes.

These different aspects are dealt with in a series of lectures given by speakers world-renowned in their respective fields.

The first part of this publication concerns the basic accelerative forces most often encountered during crash events. We describe the acceleration vectors involved, how they may have an influence on the aircraft, and how the acceleration forces might be tolerated by the aviator.

The second part is mostly related to the physical and engineering principles which allow an understanding of an impact event and the available techniques for occupant protection. Also, we review the analysis of occupant kinematics by discussing the technical analysis of the material impacted and survivability limitations. Also, we discuss the physical analysis of impact and crash survivability, focusing on what happened during the mishap.

We review how to evaluate the tolerable deceleration forces and volume occupiable space consistent with life, including aircraft ejection situations. Examples and applications are also discussed.

A third block of this LS is devoted to answering questions such as, when did the injury occur, the nature of the forces that produced the injury, and their relationship to mishap forces. Injury types related to thermal, intrusive, impact or decelerative forces are discussed. In addition, we review aspects related to the collection of medical information that should identify the potential causes which can affect what happens to an individual, and the way in which the occupant moves in response to the forces applied, which may have a profound effect upon the nature and severity of the injury.

Finally the fourth part, concerns operational and practical applications.

Emphasis is placed on the application of injury data to improve aircraft and protective equipment design, to control energy dissipation during a crash in order to prevent injury to occupants, plus, the on-scene investigation techniques which provide adequate information related to survivor considerations of escape from the crashed aircraft.

Francisco Rios Tejada, MD PhD
Maj.SPAF, Chief Aeromedical Branch
C.I.M.A.
Lecture Series Direction