SECTION 2. INTRODUCTION

This Radiation Design Handbook is intended to serve as a tool for designers of satellite equipment and scientific instruments to improve chances of survival in the space radiation environment.

The objective of this handbook is to provide an overview of spacecraft design requirements arising from the radiation environments which may be encountered in space. The aim is to discuss and explain the various likely radiation effects, their impact, and the variety of design and operational solutions which are available. Particular emphasis is placed on known areas of concern such as semiconductor technology and optics, and critical subsystems such as automated mechanisms and imagers.

A major administrative aim is to ensure that a better flow of information on radiation effects reaches the design teams working with the European Space Agency. This document is intended to increase the general understanding of technical and management staff, to improve mutual understanding on important radiation related design problems and to achieve uniform radiation tolerance in space systems, with less redundancy of effort than at present. These objectives are not easily attained because the technical problems are intricate and novel.

Consequently, this document contains complex information, sometimes accompanied by detailed discussion and explanatory diagrams. It is intended that technical personnel utilise it to evolve appropriate techniques and to recommend appropriate management policies.