

1.0 Introduction

1.1 Purpose

This Space Application Report is a part of the Scientific Advisory Board's response to the challenge by the Secretary of the Air Force and the Air Force Chief of Staff to "search for the most advanced air and space ideas and project them into the future."

The Space Application Panel's charter was to:

- Define space applications which enhance the intrinsic offensive and defensive capabilities of the Air Force
- Project system concepts and operations that will offer fundamental improvements and reduce costs in military operations
- Identify those areas which will most likely revolutionize the 21st century Air Force
- Consider the use of commercial and international space systems to support military operations and the impact on United States security from proliferating technology
- Recognize the Air Force responsibility to support warfighting as well as national customers and integrate operations with other services and agencies

1.2 Assumptions

Several key assumptions and scope definitions were made at the outset of the study:

- The Air Force will be the designated lead service for DoD space matters
- NASA will continue its role of scientific space exploration and research as well as human space flight
- Assume technology readiness for near term systems in 2005 and use reasonable technology projections beyond
- The New World Vistas Space Technology Panel will provide an assessment of technology readiness and interfaces with other technology panels
- National and DoD policy will evolve to underpin the proposed uses of space.

1.3 Process

The Space Application Panel consisted of members with extensive experience in military space matters who have participated in numerous military, civilian and commercial space programs and future studies. A number of information gathering sessions and visits were held between March 1995 and July 1995 as well as discussions with prominent military and industrial space leaders and CINCs. Inputs were received from the warfighter community and the National Reconnaissance Office. Several sessions were held with the Space Technology Panel to interchange ideas on trends and concepts. Also coordination was accomplished with the Sensor, Information and Attack Panels.

The space medium is special because of the physical characteristics of orbital mechanics; nevertheless, the use of space by the armed forces is embodied in the general principles of war like all other elements. All important is the use of space in support of the terrestrial warfighter as part of a joint force to accomplish the full spectrum of military tasks required by the National Command Authority. While at the present space is an essential element of supporting global awareness, in the future the use of space will lead to the full realization of global presence through power projection from space.

The Space Technology Panel has taken the applications considerations from the Space Application Panel for the near and far term future and elaborated on the necessary technology investments to support the common vision. The Space Application Panel has concentrated on projecting future military space operations as derived from the principles of war and applied to the needs of the warfighters and national authorities. These matters are treated in Chapter 2 on Insight and Future Vision and Chapter 3 on Warfighter Space Mission Needs.

The Panel examined a series of issues that pertain to the current situation and potential future developments. It chose to address future space applications by means of a series of issue papers which form the body of this report. These papers were written by members of the Panel based on their own experience and expertise. It was not attempted to form a consensus among all Panel members as to the statements in each of the issue papers. The Panel as a whole, however, has carefully discussed and formulated the conclusions and recommendations found in the Executive Summary and Chapter 6. They are based on material found in the issue papers printed in Chapters 4 and 5 as well as discussions or inputs received from other sources during the course of the study.

Chapter 4 on Space Missions and Their Applications to Warfighting is not merely a description of the current or projected systems, but an analysis of the needs and constraints imposed by the conflict of military mission needs and the realities of the international commercial market place on dual use systems, as for instance the dilemma that the remarkable success of the Global Positioning System presents. In addition, Chapter 5 contains a treatment of special Space Application Issues such as access to space, commercial space, distributed space architectures, survivability and the role of the human in military space flight.