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NASA Contractor Report 4351

Space Human Factors Publications: 1980-1990

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CONTRACT NASW-4324
MARCH 1991

(NASA-CR-4351) SPACE HUMAN FACTORS
PUBLICATIONS: 1980-1990 (George Washington
Univ.) 14 p CSCL 05I

N91-20620

Unclas

H1/53 0003621

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Prepared for
NASA Office of Space Science and Applications
under Contract NASW-4324

NASA

National Aeronautics and
Space Administration
Office of Management
Scientific and Technical
Information Division

1991

INTRODUCTION

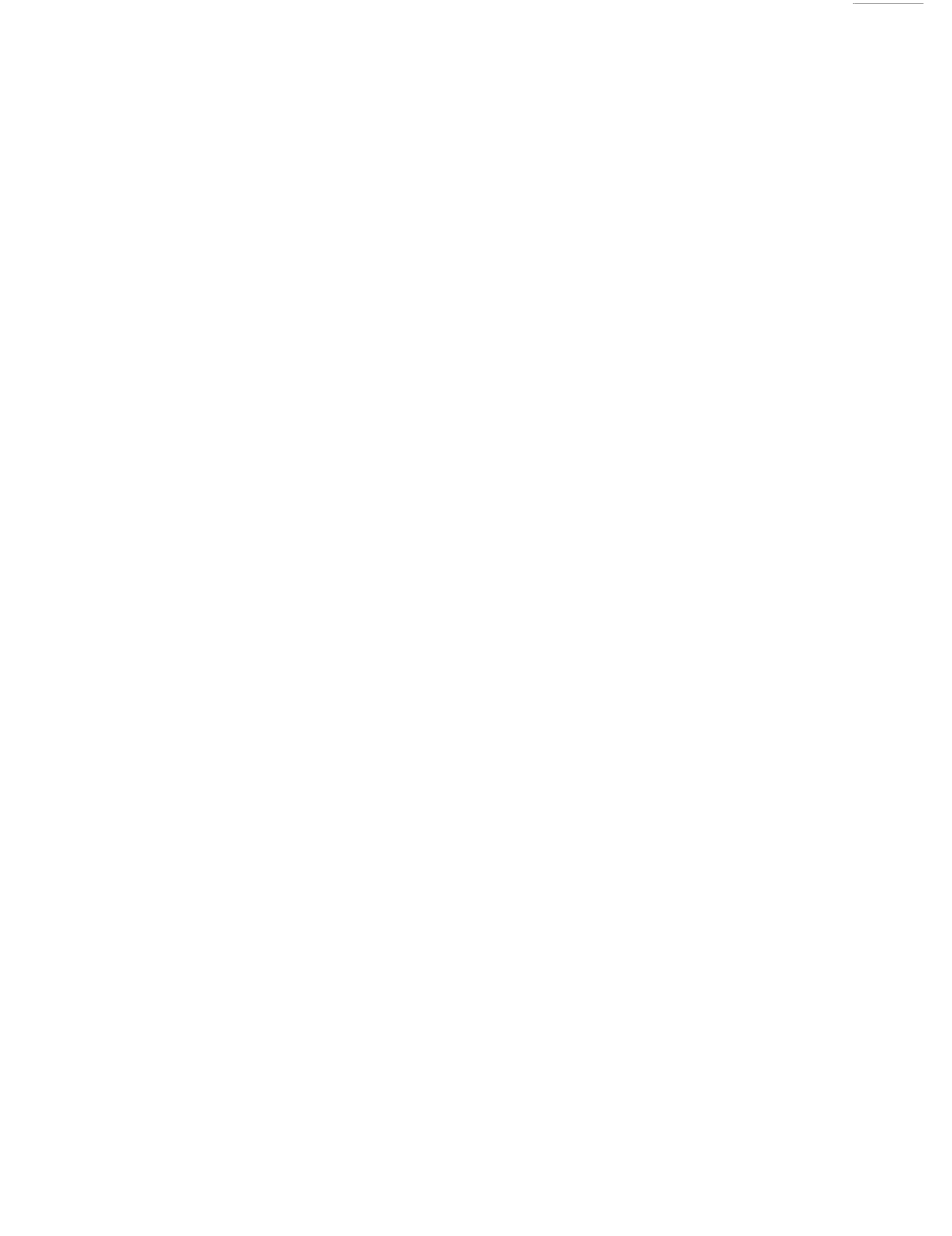
The Space Human Factors Program is part of the Life Sciences Division of NASA's Office of Space Science and Applications. Space life sciences research was initiated in 1960 with the goal of enabling human survival in space. Now, in the late 20th century, the program is evolving to ensure human health and productivity on space missions: on the Space Shuttle in the 1990s, then on Space Station Freedom, and ultimately on the Moon and missions to Mars.

One of the critical elements that must be considered in the strategic planning necessary to ensure success of these goals is human factors. The mission of the Space Human Factors Program is to develop the knowledge base required to understand the basic mechanisms underlying behavioral adaptation to space flight and the capabilities and limitations of the crewmember in the unique environments that will be encountered during future missions. It requires an in-depth understanding of psychological and behavioral adaptation to space and the ways in which adaptive behaviors influence or affect performance. The program also develops and validates system design requirements, protocols, and countermeasures that ensure the psychological well-being, safety, and enhanced productivity of space crewmembers.

This broad effort encompasses basic, applied, and operational research both at NASA Centers and at universities. Research conducted in ground-based laboratories, mock-ups, simulators, analog environments, and on Space Shuttle missions is aimed at the collection of qualitative and quantitative data and the development, testing, and validation of behavioral and performance models to ensure an accurate understanding of the space human performance envelope. Specific issues critical to understanding human performance in space and to developing requirements for extended duration missions in which research has been conducted include the development and evaluation of selection criteria for space crewmembers, group dynamics, crew coordination and communication issues utilizing various analog environments, the interface of human operators and non-human intelligence systems and automation concerns, and studies of workload, mission task analysis, and computer-aided decision-making. Other areas of focus have included the operational impacts of disrupted circadian rhythms and sleep cycles and the collection of anthropometric data using computer modeling and graphics to create three-dimensional representations of bodies in spacecraft, at workstations, and during extravehicular activity and the integration of such data into models that can predict performance in space.

Janis H. Stoklosa, Ph.D.
Manager, Space Human Factors Program

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Report Documentation Page

1. Report No. NASA CR-4351		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle Space Human Factors Publications: 1980-1990				5. Report Date March 1991	
				6. Performing Organization Code	
7. Author(s) Katherine J. Dickson				8. Performing Organization Report No.	
				10. Work Unit No.	
9. Performing Organization Name and Address Science Communication Studies The George Washington University Washington, DC 20006				11. Contract or Grant No. NASW-4324	
				13. Type of Report and Period Covered Contractor Report	
12. Sponsoring Agency Name and Address Life Sciences Division Office of Space Science and Applications NASA Headquarters Washington, DC 20546				14. Sponsoring Agency Code SBM	
				15. Supplementary Notes	
16. Abstract <p>A 10-year cumulative bibliography of publications resulting from research supported by the NASA Space Human Factors Program of the Life Sciences Division is provided. The goal of this program is to understand the basic mechanisms underlying behavioral adaptation to space and to develop and validate system design requirements, protocols, and countermeasures to ensure the psychological well-being, safety, and productivity of crewmembers. Subjects encompassed by this bibliography include selection and training, group dynamics, psychophysiological interactions, habitability issues, human-machine interactions, psychological support measures, and anthropometric data. Principal Investigators whose research tasks resulted in publication are identified by asterisk.</p>					
17. Key Words (Suggested by Author(s)) Human Factors; Behavior; Performance; group dynamics; analog environments			18. Distribution Statement Unclassified - Unlimited Subject Category: 53		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of pages 16	22. Price A03