Human Factors in Training
Human Research Program - Space Human Factors & Habitability
Space Human Factors Engineering Project

Immanuel Barshi1 (PI), Vicky Byrne2, Lucia Arsintescu3
1NASA Ames Research Center (ARC)
2NASA JSC, Lockheed Martin
3NASA ARC, San Jose State University Foundation

TRAINING DIRECTED RESEARCH PROJECT OVERVIEW

Future space missions will be significantly longer than current Shuttle missions and new systems will be more complex than current systems. Increasing communication delays between crews and Earth-based support means that astronauts need to be prepared to handle the unexpected on their own. As crews become more autonomous, their potential span of control and required expertise must grow to match their autonomy. It is not possible to train for

FY07 MEDICAL TRAINING PRODUCTS

Crew Medical Training Review

In FY07, work on medical training focused on identifying the type of training received and issues surrounding medical training for the astronaut crewmembers. The current length of crew training has been identified as a major issue in various crew reports and datasets and it is predicted that Orion medical training will not increase greatly over what is currently available for Crew Medical Officers (CMOs) – about 70 hours of training, typically one year prior to flight. This work provided a framework of relevant issues for the research team necessary to further specify projected tasks for FY08 and the years beyond. To understand clearly the current philosophy, policy, and practice of crew medical training, analysis was conducted by gathering information from a preliminary review of medical training documents, interviews with trainers, as well as observations of some medical training classes. It is interesting to note that much of the training is hands-on for each particular procedure.

Basic Training Principles - Review of Research Literature

Established Training Principles
• Describes a set of training principles that have a sound basis in empirical research and can be recommended more or less intact for training NASA personnel for future long-term space flights.

Partially Established Training Principles
• Describes principles that have some evidence to support them but need further investigation to establish their general validity.

Other Considerations Relevant to Training
• Reviews evidence related to important issues that might or might not eventually yield new training principles.

Medical Training in Related Domains - Overview

Training Approaches in Relevant Domains:
• Emergency Medical Technicians (EMTs)
• Flight Attendants and Pilots
• Disaster Assistance and Rescue Team

Training Approaches in Analog Domains
• Polar Expeditions
• Underwater Habitats

FY08 MEDICAL TRAINING ACTIVITIES & NEXT STEPS

Constellation (Cx) Program Medical Training Needs Analysis
• Long duration space mission personnel interviews
• Combine lessons learned in FY07 to create recommendations for Cx training needs

Just-in-time Training concepts for medical operations
• Gather information and demonstrations of current JIT training techniques
• Compile a demonstration package highlighting relevant features

Beginning January 2008:
Research on Training for Distributed Teamwork
Lead: Judith Orasanu, ARC