Flight Operations Directorate

Flight Integration – Training Branch

JSC Crew Training Overview

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3 Phase Spaceflight Training Concept

Flight Controller & Astronaut Training Curriculum

**Content**
- Vehicle systems
- Displays & Controls
- Operational Concepts
- Basic procedures

**Media**
- Classroom lessons
- Training manuals
- Computer and Web Based Training
- Part-task training

**Content**
- Skills-based Training
- Nominal Operations
- Malfunctions
- System Interaction

**Media**
- Part-task training
- Full fidelity simulation training
- Standalone Simulations
- Mockups

**Content**
- Team Training
- Flight specific training
- Nominal and malfunctions

**Media**
- Full fidelity simulation training
- Standalone Simulations
- Integrated simulations
- Mockups

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Crew Training Approach

- The amount and depth of the Crew training is based on their assigned qualification level
- User
  - Utilize systems to safely live on ISS
- Operator
  - Nominal and maintenance tasks
  - Off-nominal with immediate safing
  - All User tasks
- Specialist
  - Off-nominal tasks with ground help
  - All Operator tasks
Training Facility Selection

- **Systems Engineering Simulator**: Rndz, Prox, Ops, Robo
- **Space Station Training Facility (SSTF)**
- **Mockup Facilities (SVMF)**
- **Virtual Reality Lab**: Robo/EVA
- **NBL**: EVA, Robo
- **Dynamic Skills Trainer**: Robotics
- **Flight Controller Part Task Trainers**
- **Single System Part Task Training**
- **Classroom, CBT**

The diagram illustrates a cost-to-operate analysis for various training facilities, considering objectives, complexity, and training team size. The facilities range from low-fidelity, single-system, part-task trainers to high-fidelity, multi-system, full-mission simulators.
Online Training Library

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Part Task Trainers

- PTT – Part Task Trainer
  - Single System nominal and off nominal instruction
  - Procedure execution and display navigation skills
- FCPTT – Flight Controller Part Task Trainer
  - Multi-system, Integrated scenario training
  - Team coordination and communication in ‘mini-flight control room’
Space Station Training Facility

- Full scale, multi-system integrated scenarios
- Simulated crew and crew station mockups
- Full team coordination and communication in training Flight Control Rooms (FCRs)
Space Vehicle Mockup Facility

• Full scale ISS mockups
• Routine Ops / Day in the Life training
• Emergency response scenarios
• Payload racks and hardware training
Neutral Buoyancy Lab

• Full scale ISS mockups / Truss segments
• Extra-vehicular Activity (EVA) Training
• Commercial Crew / Orion recovery
Medical / Physical Training
Ellington Airfield Operations