Flight Operations Directorate

Flight Integration – Training Branch

JSC Crew Training Overview

CK2/Kathryn Bolt
CB/Reid Wiseman
October 2017

Public Release Statement: This document has been reviewed for proprietary, sensitive but unclassified (SBU), and export control (ITAR/EAR) and has been determined to be non-sensitive. It has been released to the public via the NASA Scientific and Technical Information (STI) process, DAA Tracking Number 48551.
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
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

<table>
<thead>
<tr>
<th>Initial Training</th>
<th>Specialist, Task, and Proficiency Training</th>
<th>B</th>
<th>U</th>
<th>Flight Specific</th>
<th>L</th>
<th>On Board</th>
<th>Post Flight</th>
</tr>
</thead>
</table>
Training Facility Selection

- **Dynamic Skills Trainer**
  - Robotics

- **Systems Engineering Simulator**
  - Rndz, Prox Ops, Robo

- **Space Station Training Facility (SSTF)**

- **Mockup Facilities (SVMF)**

- **Virtual Reality Lab**
  - Robo/EVA

- **NBL**
  - EVA, Robo

- **Flight Controller Part Task Trainers**

- **Single System Part Task Training**

- **Classroom, CBT**

**Cost to Operate**

**Fidelity**

**Objectives/Complexity/Training Team Size**
Online Training Library

Flight Operations Directorate
NASA Johnson Space Center

CK2/Kathryn Bolt
10/2017

Page 5
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)
• 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