



ACOP Training Model

Peter Dennett
ACOP PDR Mar-05



Applicable Documents



Number	Rev	Date	Title
SSP 57066	Initial	28-Oct-03	Standard Payload Integration Agreement for EXPRESS/WORF Rack Payloads
SSP 58026-01	B	Sep-03	Generic Payload Simulator Requirements Document, Volume I
SSP 50323	A	Aug-01	Payload User Development Guide (PUDG) for the Space Station Training Facility/Payload Training Capability (PTC)
SSP 58309	C	Jun-03	Payload Training Implementation Plan
SSP 50503	A	Aug-02	ISS Onboard Computer-Based Training Requirements
SSP 58304	A	Mar-00	Ground Support Personnel Training and Certification Plan

Note: The documents that are grayed out are applicable documents to ACOP training, but not yet considered.



Requirements from SSP57066 (SPIA)



- The PD shall participate in the Training Strategy Team (TST) process for the purpose of defining crew and GSP training and simulator requirements. (*TST process is defined by SSP58309.*)
- To support payload training, the PD shall develop and deliver to JSC a payload simulator that will support crew training on nominal, maintenance, safety-related, and limited malfunction operations. (*The delivery is a Payload Training Unit (PTU) defined by SSP 58026-01.*)
- Training simulators for all but simple or single-increment payloads will provide high fidelity crew interfaces and will be integrated into the Space Station Training Facility (SSTF)/Payload Training Capability (PTC).
- The PD shall support the development of training plans, procedures, courseware, or other materials for all training related to their payload.

Peter Dennett

8-Mar-05 (R1)

+1 (281) 334 3800 pdennett@padsoft.com

Slide: 3



Requirements from SSP58026-01 Pg-1



- The PTU (or PTUs) shall be capable of supporting training in the following nine categories: Payload Science/Operations, Payload Transport, Payload Transfer, Payload Proficiency, Payload Refresher, Payload Complement, Payload-Only Simulation, Integrated Payload-Only Simulations, and Joint Multi-Segment.
- The PD shall deliver a PTU Trainer Development Specification (TDS).
- The PTU shall be provided as a self-contained MDL or ISIS drawer mockup with flight-like front panel (or other) interfaces to the EXPRESS Rack provided. The PTU shall not require external control or support equipment to operate; all such equipment shall be contained within the rack volume.
- The PTU shall provide the necessary flight-like interfaces to the RIC model to support the crew's interfaces via the EXPRESS Laptop and/or the PCS, as well as to support payload command and monitoring by the GSP.

Peter Dennett

8-Mar-05 (R1)

+1 (281) 334 3800 pdennett@padsoft.com

Slide: 4



Requirements from SSP58026-01 Pg-2



- The PTU shall simulate the communications protocols with the RIC model required to support the flight-like interfaces.
- The PTU shall output a simulated health and status data stream through the RIC datalink (RS-422 or Ethernet.)
- The PTU shall be built to operate with the power available from the EXPRESS Rack Simulator.
- The PTU shall respond to the switched 28-Vdc supply for power on/off status, even if the PTU does not otherwise use this power to operate.

Peter Dennett

8-Mar-05 (R1)

+1 (281) 334 3800 pdennett@padsoft.com

Slide: 5



ACOP Model Philosophy



ACOP

LFM

EM

TM

QM

FSM

FM

Spare
Parts

- EM Engineering Model
- TM Training Model
- QM Qualification Model
- FM Flight Model
- Flight Spare Model
- LFM Low Fidelity Model
- Spare Parts and ORU

Peter Dennett

8-Mar-05 (R1)

+1 (281) 334 3800 pdennett@padsoft.com

Slide: 6



ACOP Training Model



- Refurbished Engineering Model.
- Mechanical fidelity to support EXPRESS rack mounting without launch or landing loads.
- Electrical and thermal fidelity to operate within the EXPRESS rack environment, including 28v power.
- System fidelity to operate using ACOP software and provide full function.
- Good fidelity front panel and HD exchange.

Peter Dennett

8-Mar-05 (R1)

+1 (281) 334 3800 pdennett@padsoft.com

Slide: 7



Issues



- Flight like cables are required. These are dependent on mounting location in training racks.
- Do not plan to provide HRDL fiber assemblies.



Major Forward Work



- Start Training Strategy Team (TST) process.
- Develop a PTU Trainer Development Specification (TDS).
- Build Training Model.