

CHANGE NOTICE

Date Prepared: 5/1/03

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|--|---|--|--|------------------------------|--------------------------------|---------------------------|---|
| 1. The Boeing Company Post Office Box 58747 Houston, TX 77258 | | 2. <input type="checkbox"/> Proposed <input checked="" type="checkbox"/> Approved | | 3. Code Ident. 2B945 | | 4. Doc. No. SSP 30243G | |
| | | | | 5. Code Ident. 2B945 | | 6. CDCN No. 013 | |
| 7. System Designation ISS | | 8. Related ECP No./Title SSCN 007120 | | | 9. Contract No. NAS15-10000 | | 10. Contractual Activity SSCN 007120 |
| 11. Document Title Space Station Requirements for Electromagnetic Compatibility | | | | 12. Effectivity All Units | | | |
| <p>THIS NOTICE INFORMS RECIPIENTS THAT THE DOCUMENT IDENTIFIED BY THE NUMBER (AND REVISION LETTER) SHOWN IN BLOCK 4 HAS BEEN CHANGED. THE PAGES CHANGED BY THIS CDCN BEING THOSE FURNISHED HEREWITH AND CARRYING THE SAME DATE AS THIS CDCN. THE PAGES OF THE PAGE NUMBERS AND DATES LISTED BELOW IN THE SUMMARY OF CHANGED PAGES COMBINED WITH NON-LISTED PAGES OF THE ORIGINAL ISSUE OF THE REVISION SHOWN IN BLOCK 4 CONSTITUTE THE CURRENT VERSION OF THIS DOCUMENT.</p> | | | | | | | |
| 13. CDCN No. | 14. Pages Changed (Indicate Deletions) | | | | S* | A* | 15. Date |
| 013 | Revision and History page Page 3-4 Page F-12. | | | | X X X | | 5/1/03 |
| 013 | Pages F-13 and F-14. | | | | | X | |
| | Order of Incorporation: DCN 013 | | | | | | |
| 16. Technical Concurrence (Contracting Agency) | | | | | | Date | |

* "S" indicates supersedes earlier page. "A" indicates added page.

REVISION AND HISTORY PAGE

| REV. | DESCRIPTION | PUB. DATE |
|------|---|--------------|
| – | Baseline Issue (Reference SSCBD BB000830 Eff. 03–22–91) | 03–30–91 |
| A | Revision A (Reference SSCBD BM003057 Eff. 12–04–92) | 01–93 |
| B | Revision B (Reference SSCBDs BB003438 Eff. 05–17–83, BBO03499 Eff. 05–17–93, and BB003681 Eff. 05–28–93) | 06–93 |
| C | Revision C (Reference SSCBD 000002, Eff 2–7–94) | 04–17–94 |
| C1 | Revision C1 (Comments Incorporated from PGs, IPs) | 07–01–94 |
| D | Revision D (SSCD 000263, EFF. 09–04–96) Revised to Transmittal from Freedom Program to ISS Changes Include Extensive Simplification of Requirements and Scope | 01–29–97 |
| | DCN 001 incorporates ECP 263 (Supplemental Release) | 06–06–97 |
| | DCN 002 incorporates SSCN 000777 | 07–21–98 |
| E | Revision E incorporates SSCN 001102 | 07–29–98 |
| | DCN 003 incorporates SSCN 001481 | 06–14–99 |
| | DCN 004 incorporates SSCN 001662 | 08–25–99 |
| | DCN 005 incorporates SSCN 002485 | 04–06–00 |
| | DCN 006 incorporates SSCD 003213 Eff. 06–28–00 | 04–13–01 |
| | DCN 008 incorporates SSCD 003746 Eff. 11–15–00 | 04–13–01 |
| | DCN 010 incorporates SSCN 005263 | 10–23–01 |
| | DCN 011 incorporates SSCN 005529 | 10–23–01 |
| | The following DCNs have been cancelled. The content of these DCNs has been incorporated into Revision F. | |
| | DCN 009 incorporates SSCN 000256 Administrative Cancel | |
| F | Revision F incorporates SSCN 004785 | 04–29–02 |
| | The following DCNs have been cancelled. The content of these DCNs has been incorporated into Revision G. | |
| | DCN 007 incorporates SSCN 003282 Administrative Cancel | |
| | DCN 012 incorporates SSCN 006568 Administrative Cancel | |
| G | Revision G incorporates SSCN 003282, 006568, and 005820 | 12–06–02 |
| | DCN 013 incorporates SSCN 007120 | 05–29–03 |

3.2.8.3 TRANSITION PHASE

The ISS launch element during transition to orbit shall not exceed or be susceptible to electromagnetic environments defined in NSTS–21000–IDD–ISS.

3.2.9 STATIC ELECTRICITY

Unpowered electronic equipment and components shall not be damaged by Electrostatic Discharges (ESD) equal to or less than 4000 volts to the case or to any pin on external connectors. Equipment that may be damaged by ESD between 4000 and 15000 volts must have a label affixed to the case in a location clearly visible in the installed position. Handling of equipment susceptible to ESD up to 15000 volts shall be in accordance with MIL–STD–1686. These voltages are the results of charges that may be accumulated and discharged from ground personnel or crew members during equipment installation or removal. When testing or analysis for ESD susceptibility is performed, the ESD hazard from personnel shall be simulated by charging a 100 picofarad capacitance and discharging it through a 1500 ohm resistor. See appendix F for the exceptions (EMECB TIA–0042, EMEP TIA–0230, EMEP TIA–0248, EMEP TIA–0274, EMEP TIA–0289, EMEP TIA–0290, EMEP TIA–0302, EMEP TIA–0367, EMEP TIA–0369, EMEP TIA–379, EMEP TIA–0422, and EMEP TIA–0458) to this paragraph.

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3.2.10 ELECTROEXPLOSIVE DEVICES

The system design shall conform to the requirements of MIL–STD–1576 as modified by appendix E and shall include provisions to protect Electroexplosive Devices (EED) from inadvertent ignition or dudding caused by any form of electromagnetic or electrostatic energy. All wiring, cabling, and hardware associated with the EEDs shall be designed to prevent stray pickup and eliminate undesired energy. Safety margin requirements for EEDs are defined in 3.2.3. Grounding and bonding requirements for EEDs shall meet the requirements of SSP 30240 and SSP 30245. Wiring requirements for EEDs are defined in SSP 30242.

3.2.11 EXTERNAL ENVIRONMENT EFFECTS

System, subsystem, equipment, and component designs shall analyze and document potential failures caused by external electromagnetic environments. The external electromagnetic environments are defined in SSP 30237 or D684–10263–01.

3.2.12 MATERIALS AND PROCESSES

Materials and processes shall conform to the electrical and electronic requirements of SSP 30233 and as supplemented in SSP 30245.

EMEP TIA-0422**F.3.2.9 STATIC ELECTRICITY**

Exception: The FOOT Experiment Unique Equipment (EUE) (ADAS1 Unit (PN SEG46117915-301), Marker Cable (PN SEG46118425-301), Flash Kit 440 (PN SJG46117707-301), JES Unit (Quantity 2) (PN SEG46117981-301), Ankle Sensor (PN SEG46118316-301), Knee Sensor (PN SEG46118315-301), Hip Sensor (PN SEG46118314-301), TF-FGI Box (PN SEG46118240-301), TF-FGI Insole (PN SEG46118241-317), TF-FGI Insole (PN SEG46118241-318), LEMS Data Cable (PN SEG46118164-301), LEMS Pant (PN SEG46118153-303), LEMS Armband (PN SEG46118161-303), and FCU Unit (PN SEG33110402-301)) is exempted from meeting the 3.2.9 requirements. These requirements are in SSP 57000, paragraph 3.2.4.5.

For the TF-FGI Insole (PN SEG46118241-317), TF-FGI Insole (PN SEG46118241-318), LEMS Pant (PN SEG46118153-303), and LEMS Armband (PN SEG46118161-303), the dash numbers will differ for each item since it is custom sized hardware.

Rationale: The FOOT EUE contains electronics which may be damaged by the application of 4000 volts to pins. The FOOT EUE is criticality 3 hardware. Any failure due to electrostatic discharge will not cause a safety hazard or interfere with other equipment. The FOOT EUE uses standard commercial or military specification connectors. Pins in these connectors are recessed to reduce the hardware from experiencing electrostatic discharge. The Human Resource Facility (HRF) will assume responsibility for determining if the risk of damage due to ESD requires the inclusion of ESD handling techniques in HRF procedures. The HRF Program and Principal Investigators accept the risk of science loss due to ESD.

EMEP TIA-0458**DCN 013****F.3.2.9 STATIC ELECTRICITY****DCN 013**

Exception: The following items are not required to meet 3.2.9:

DCN 013

a. HRF Rack 1A equipment launched on 5A.1.

DCN 013

HRF Rack 1 (SEG46117303-303)

Cooling Stowage Drawer (SEG46117144-301)

Unit Assembly (SEG46114550-302)

 Ultrasound Keyboard Module Assembly – Controller (SEG46115845-302)

 Transducer Probe Assembly – Altered Item Drawing (SDG46114536-801)

 Ultrasound Microphone Assembly – Altered Item Drawing (SDG46117020-801)

 Ultrasound Headphone Assembly – Altered Item Drawing (SDG46117021-801)

HRF Common Battery Packs (DC2030-00XX)

HRF Flat Screen Display (FP1610HB/R-06)

WS PCMCIA card reader/writer assembly (SEG46114886-30X)

Light Weight Headset Assembly (SEG46115679-701)

SCSI harddrive assembly VEG/HRF (SEG46115663-30X)

Keyboard Workstation (SEG46114997-801)

Audio Equalizer System Assembly – Altered Item Drawing (SDD46116385-302)

PCMCIA Hard Drive VEG/HRF (SDG46114191-70X)

DCN 013

b. HRF Rack 1A equipment launched on ULF-1. **DCN 013**

SLAMMD (SEG46117800-301)

Top Assy, R2WS Computer Drawer (SEG46118400-301)

SLAMMD Magnet Latch (SEG46118299-301)

SCSI Hard Drive and Slide Assy (SEG46117767-30X)

IDE Hard Drive and Slide Assy (SEG46118264-30X)

Cable Assy, VGA/Keyboard/Mouse cable (SEG46118266-301)

A/D Cable Assy, HRF WS2 (SEG46118267-301)

HRF WS2 Headset Assy, Alt. Item (SEG46118269-801)

PCMCIA Hard Drive (520 mb) (SDG46115541-00X)

PCMCIA Hard Drive VEG/HRF (SDG46114191-70X)

Removable Hard Disk (760XD) (SEZ39129266-30X)

Dual Port RS232 card/cable (SEG46117035-301)

DCN 013

c. HRF Rack 2A equipment launched prior to ULF-1. **DCN 013**

GASMAP Analyzer Module (SEG46117920-301)

SCSI harddrive assembly VEG/HRF (SEG46115663-30X)

DCN 013

d. HRF Rack 2A equipment launched on ULF-1 **DCN 013**

DCN 013

HRF Rack 2 (SEG46118352-301)

Refrigerated Centrifuge (SEG46117400-301)

Top Assy, R2WS Computer Drawer (SEG46118400-301)

HRF WS2 Headset Assy, Alt. Item (SEG46118269-801)

Cable Assy, VGA/Keyboard/Mouse cable (SEG46118266-301)

A/D Cable Assy, HRF WS2 (SEG46118267-301)

SCSI Hard Drive and Slide Assy (SEG46117767-30X)

IDE Hard Drive and Slide Assy (SEG46118264-30X)

WS PCMCIA Card Reader/Writer Assy (SDG46114886-30X)

PFM/PAM (2100-0000-IN)

RVU (2105-0100-IN)

Go-Switch (2104-0500-IN)

Turbine Flow Meter (2106-0200-IN)

Differential Pressure Flow Meter (2106-0300-IN)

ACMS Sensor (2104-0300-IN)

Subject Display (2104-0400-IN)

RVU Cable (2109-0100-E14-IN)

RFM Electronics Box (2106-0400-IN)

Cooling Stowage Drawer (SEG46117144-301)

GASMAP Analyzer Module (SEG46117920-301)

HRF Flat Screen Display (FP1610HB/R-06)

Keyboard Workstation (SEG46114997-801)

PCMCIA Hard Drive (520 mb) (SDG46115541-00X)

PCMCIA Hard Drive VEG/HRF (SDG46114191-70X)

Removable Hard Disk (760XD) (SEZ39129266-30X)

Dual Port RS232 card/cable (SEG46117035-301)

Common Ethernet card/cable (SEG46116862-301)

DCN 013

e. Equipment coming down on ULF-1 in an EXPRESS Transfer Rack (ETR): **DCN 013**

Calibration Module, HRF GASMAP Altered Item Drawing (SDG46116916-802)
Computer Drawer, Top Assy (SEG46114189-302) **DCN 013**

Rationale: HRF Rack hardware contains electronics, which may be damaged by the application of 4000 volts to pins. HRF Rack hardware is criticality 3 hardware. Any failure due to electrostatic discharge will not cause a safety hazard or interfere with other equipment. HRF Rack hardware uses standard commercial or military specification connectors. Pins in these connectors are recessed reducing the likelihood of the hardware experiencing electrostatic discharge. In addition, the HRF rack mounted hardware remains grounded while mounted in the rack also reducing the chance of damage due to ESD. HRF will assume responsibility for determining if the risk of damage due to ESD requires the inclusion of ESD handling techniques in HRF procedures. The HRF Program and Principal Investigators accept the risk of science loss due to ESD. **DCN 013**