

CHANGE NOTICE

Date Prepared: 02/05/02

1. The Boeing Company Johnson Space Center Houston TX 77058		2. <input type="checkbox"/> Proposed <input checked="" type="checkbox"/> Approved	3. Code Ident.	4. Change Notice No. DCN 001	
			5. Contract No. NAS15-10000	6. Directive No.	
7. Document No./Rev. SSP 30312 Revision H		8. Document Title Electrical, Electronic, And Electromechanical (EEE) And Mechanical Parts Management And Implementation Plan For Space Station		9. SSCN No. SSCN 004415	
10. Related Change No.		11. Change Title Exceptions To SSP 30312 Revision H			
THIS NOTICE INFORMS RECIPIENTS THAT THE DOCUMENT IDENTIFIED BY THE NUMBER (AND REVISION LETTER) SHOWN IN BLOCK 7 HAS BEEN CHANGED. THE PAGES CHANGED BY THE CN BEING THOSE FURNISHED HERE WITH AND CARRYING THE SAME DATE AS THIS CN. 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 7 CONSTITUTE THE CURRENT VERSION OF THIS SPECIFICATION.					
12. CN No.	13. Pages Changed (Indicate Deletions)			S*	A*
DCN 001	Revision and History Page			S	
DCN 001	Pages D-62, D-63, D-64 and D-65				A
14. Technical Concurrence					
/s/ <u>Kinn Roopwah</u>		<u>02-05-02</u> Date			

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

REVISION AND HISTORY PAGE

REV.	DESCRIPTION	PUB. DATE
	BASELINE ISSUE (REFERENCE SSCBD BB000228, EFF. 01-15-87)	01-15-87
A	REVISION A (REFERENCE THE ELECTRONIC BASELINE VERSION)	07-30-88
B	REVISION B (REFERENCE SSCBD BB000420A, EFF. 05-30-89)	07-30-89
	CHANGE B1 (REFERENCE SSCBD BK000420C, EFF. 12-30-90)	02-15-91
C	REVISION C (REFERENCE SSCBDs BB000762 EFF. 05-15-91 AND BB000727 EFF. 09-28-90)	07-91
	CHANGE C1 (REFERENCE SSCBD BB000987AR1 EFF. 09-06-91)	09-91
	CHANGE C2 (REFERENCE SSCBD BB10247 EFF. 06-04-92)	06-92
	CHANGE C3 (REFERENCE SSCBDs BB003141 EFF. 06-23-92 AND BK050042 EFF. 06-23-92)	07-92
D	REVISION D (REFERENCE SSCBDs BB003141 EFF. 06-23-92 AND BK050042 EFF. 06-23-92)	07-92
	CHANGE D1 (REFERENCE SSCBDs BB000893B EFF. 06-23-92 AND BB000893BR1 EFF. 07-30-92)	09-92
	CHANGE D2 (REFERENCE SSCBDs BB000893C EFF. 11-20-92 AND BB000893D EFF. 11-20-92)	12-92
	CHANGE D3 (REFERENCE SSCBD BB000093 DR1 EFF. 05-06-93)	05-93
E	REVISION E (Reference SSCBD: 000002 Eff. 02-07-94)	03-23-94
F	REVISION F INCORPORATES ECP 145 (REFERENCE SSCBD 000145 EFF. 10-31-95)	11-27-95
G	REVISION G INCORPORATES SSCN 001685	06-16-00
H	REVISION H INCORPORATES SSCN 002439	03-26-02
	DCN 001 IS AUTHORIZED BY SSCN 004415 AND INCORPORATES EXCEPTIONS 093, 094 AND 095	03-29-02

ERU: /s/Beth Mason 3-29-02

EXCEPTION 093

SUBMITTAL DATE	EXCEPTION NO.	REV.	FLIGHT #(s)	PAGE 1 of 1	
3/22/01	0093	-	ISS		
SYSTEM	ORIGINATOR and PHONE NO.		ORGANIZATION / CONTRACTOR		
ARIS Rack	Gary R. De La O 256.961.1494		Boeing, Huntsville		
END ITEM/CONFIG. ID NO.	WIRE HARNESS/PART NUMBER(s)	DESCRIPTION	NEXT ASSEMBLY(s)		
683 L55A	683-61922-001	ARIS Photodetector	683-61628-001 (Position Sensor) 683-61592 (Actuator Assembly)		
SPECIFICATION NUMBER	SPEC. PARAGRAPH NO.	MANUFACTURER	LOCATION		
SSP30312 REV G	3.2 and 3.3	Hamamatsu	Habitable: <input checked="" type="checkbox"/> Non-Habitable: <input type="checkbox"/>		
ISSUE DESCRIPTION: (use continuation pages if required)					
<p>The ARIS Photo-detector is manufactured by Hamamatsu, manufacturer part no. 4S2191-01. The Boeing Part no. is 683-61922-001.</p> <ol style="list-style-type: none"> The ARIS Photo-detector did not meet the requirements of SSP 30312, Rev. G paragraph, 3.2 and 3.3 which requires the use of approved EEE parts. 42/216 parts failed 100% screens and QCI as required by SCD 683-61922. These parts are documented on NSPAR SS1-BOE-108B, which was originally presented to the PCB on 6/2/00. Due to all the part failures documented during 100% screening and QCI, the PCB disapproved the NSPAR and recommended submission of a Program waiver. CR 4415 was developed to be the requested Program waiver, while CR 4930 was developed to implement the procurement of a part that meets all Program requirements. Both CR's were disapproved by NASA, with direction to use the current parts as-is. <p>The information contained in this Exception was presented to the Vehicle System Integration Panel (VSIP) on 3/22/01. Bill Arceneaux, NASA chairman of the VSIP, approved the recommendation to use the current photodetectors as-is and document that approval via this Exception and implementing Change Request 4415.</p>					
RATIONALE: (use continuation pages if required)					
<ol style="list-style-type: none"> There is a degree of confidence of using the EEE parts since the photo-detectors undergo Acceptance Tests, Environmental Qualification Tests, and Functional Testing on the Detector, Position Sensor PWAs and on the Actuator Assembly ORU levels. The units subjected to functional and qualification tests operated for 200 hours, minimum, while the production units operated for 154 hours, minimum. See ARIS PHOTO-DETECTOR Exceptions presentation dated March 23, 2001 in the EEE Parts Web Page at http://issa-www.jsc.nasa.gov/ss/issapt/vehipt/vehreff/EEE.html. There is one photodetector located within each of 8 Actuator Assemblies (683-61592-00X) in each rack. Failure of a photodetector will cause loss of function of the associated Actuator Assembly, but the rack will continue to function if one of the lower 6 Actuator Assemblies fails (failure of one of the upper two Actuator Assemblies will fail the associated rack). No known failures of the Hamamatsu 4S2191-01 photodetector have occurred in ARIS hardware. 					
DISPOSITION					
BOEING PCB CHAIR	NASA PCB CHAIR	DATE	APPROVE	DEFER	REJECT
Original Signed By Curt Tallman	Original Signed By David Beverly	03/23/01	X		
COMMENTS: (use continuation pages if required)					

EXCEPTION 094

SUBMITTAL DATE	EXCEPTION NO.	REV.	FLIGHT #(s)	PAGE 1 of 1	
3/21/01	094	-	ISS		
SYSTEM	ORIGINATOR and PHONE NO.		ORGANIZATION / CONTRACTOR		
ARIS Rack	Gary R. De La O 256.961.1494		Boeing, Huntsville		
END ITEM/CONFIG. ID NO.	WIRE HARNESS/PART NUMBER(s)	DESCRIPTION	NEXT ASSEMBLY(s)		
683 L55A	683-61700-001	ARIS Power Supply	683-61565-001 (ARIS Controller)		
SPECIFICATION NUMBER	SPEC. PARAGRAPH NO.	MANUFACTURER	LOCATION		
SSP30312 REV G	3.15.1, 3.8, B.3.2.7	Modular Devices Inc.	Habitable: <input checked="" type="checkbox"/> Non-Habitable: <input type="checkbox"/>		
ISSUE DESCRIPTION: (use continuation pages if required)					
<p>The ARIS Power Supply is manufactured by Modular Devices Inc. (MDI) and has a Manufacturer Part No. 3349. The Boeing Part no. is 683-61700-001.</p> <p>4. The ARIS Power Supply did not meet the EEE parts list requirements of SSP 30312, Rev. G paragraph 3.15.1 which requires a EEE Parts List to be developed, submitted, approved and maintained in accordance with Paragraph 4.8 of SSP30312. See Attachments 1, 2, and 3 for the Supplier Parts List, EEE Parts List, and Parts List Comments.</p> <p>5. The ARIS Power Supply design did not meet the stress requirements of SSP 30312, Rev G paragraph 3.8 and Appendix B paragraph B.3.2.7. B.3.2.7 requires components internal to the hybrid to be derated. See Attachments 4 and 5 for the Supplier Derating Analysis and Derating Comments.</p>					
See Continuation Sheet					
RATIONALE: (use continuation pages if required)					
<p>1. The Parts List has been provided by Supplier, but with incomplete information and description of parts used. Actual part numbers can be obtained from build records if necessary. In any case, the parts list does not affect functional performance.</p> <p>2. The EEE parts derating analysis has been provided by Supplier, but does not include the derating analysis of the components internal to the six (6) hybrids, HY1 through HY6. The derating analysis was performed using the manufacturer's ratings for the hybrid. The parameters derated were Junction Temperature, Power dissipation, input voltage, and output current. Worst case Junction Temperature (Case Temperature) is 89.03°C, Manufacturer's rating is 85°C. Worst Case Power Dissipation is 21.33W, Manufacturer's rating is 29.17W. Worst Case Input Voltage is 156V, Manufacturer's Rating is 158V. Worst Case Output Current Stress is 1.00.</p>					
See Continuation Sheet					
DISPOSITION					
BOEING PCB CHAIR	NASA PCB CHAIR	DATE	APPROVE	DEFER	REJECT
/s/ Curtis G. Tallman	/s/ W. David Beverly	03/23/01	X		

EXCEPTION 095

SUBMITTAL DATE	EXCEPTION NO.	REV.	FLIGHT #(s)	PAGE 1 of 3
3/29/01	095	-	ISS	
SYSTEM	ORIGINATOR and PHONE NO.		ORGANIZATION / CONTRACTOR	
ARIS Rack	Gary R. De La O 256.961.1494		Boeing, Huntsville	
END ITEM/CONFIG. ID NO.	WIRE HARNESS/PART NUMBER(s)	DESCRIPTION	NEXT ASSEMBLY(s)	
683 L55A	683-62215-002	A-TO-D Converter	683-61622-001 683-61715-001 683-61696-001	
SPECIFICATION NUMBER	SPEC. PARAGRAPH NO.	MANUFACTURER	LOCATION	
SSP30312 REV G	3.18.2	Burr Brown	Habitable: <input checked="" type="checkbox"/> Non-Habitable: <input type="checkbox"/>	

ISSUE DESCRIPTION: (use continuation pages if required)

The ARIS Analog-to-Digital Converter is manufactured by Burr Brown, manufacturer part no. ADC700BH. The Boeing Part no. is 683-62215-002.

1. The ARIS A-to-D converter did not meet the requirements of SSP 30312, Rev. G paragraph, 3.18.2 which states, "Use of noncompliant parts requires approval in accordance with contract quality assurance requirements.
2. These parts are documented on NSPAR SS1-BOE-0146C, which was originally presented to the PCB on 11/13/98 and on 5/5/00. With the additional information provided and reviewed, the PCB approved NSPAR SS1-BOE-0146C and use of the parts on 5/5/00. However, under the QA system a tag (NC006262) was generated and is classified as a major non-conformance. Under the contract Quality Assurance requirements, a major non-conformance must be approved by a waiver. The waiver then becomes part of the tag record and the Acceptance Data Package for each delivered hardware item containing the non-conforming part(s).
3. CR 4415 was developed to the requested Program waiver, while CR4938 was developed to implement the use of existing hardware. Both CR's were disapproved by NASA, with direction to use the current parts as-is.
4. See Continuation Sheet.

RATIONALE: (use continuation pages if required)

1. There is a degree of confidence of using the EEE parts since the A/D converter undergoes Acceptance Tests on each ARIS Rack at various assembly levels, and Environmental Qualification Tests on one ARIS Rack. Acceptance Testing is performed on the Accelerometer Board, Position Sensor Board and the DAC PWAs as well as the Controller and REU Assembly ORU levels. The ORU were subjected to functional and qualification tests operated for 200 hours, minimum while the production units operated for 154 hours, minimum. See ARIS A-TO-D CONVERTER Exceptions presentation dated March 30, 2001 in the EEE Parts Web Page at <http://issa.www.jsc.nasa.gov/ss/issapt/veheff/EEE.html>.

No known failures of the Burr Brown ADC700BH A-to-D converters have occurred in ARIS hardware.

DISPOSITION

BOEING PCB CHAIR	NASA PCB CHAIR	DATE	APPROVE	DEFER	REJECT
/s/ Curtis G. Tallman	/s/ W. David Beverly	3/30/01	X		

COMMENTS: (use continuation pages if required)

EXCEPTION 095 (continued)**ISSUE DESCRIPTION:**

4. Summary of defects is as follows:

244 devices with date/code 9703

1 device found to be DC 9524 and was RTS on NCR 07858

19 Prescreen DPA samples (1 failed internal visual – scratch on etch.)

3 RGA passed

16 Additional DPA samples (Sample up) passed

3 control samples

17 PIND Failures 1st run

1 PIND Failure 2nd run

Remaining 2 parts believed to be sent to Rick Whitley, location unknown

182 Sent to Boeing Seattle

3 control samples (Boeing Seattle)

179 went into 100% screening

8 Failed Fine Leak

1 Failed Gross Leak

1 Failed Post Burn-In electricals (160 hr, 85°C, S/N 095)

169 Passed

29 QCI samples

4 passed Subgroup 1

15 passed Subgroup 2

10 of these went into Life Test (1,000 hr. @125°C) Subgroup 3

9 Passed

1 Failed due to scratch (S/N 0049, Failure Analysis FA5878)

4 Post screen DPA samples (Hi Rel Report number 58015) (Source Unknown)

1 went to RGA passed

1 Passed DPA

2 Failed DPA

1 Failed Internal Visual due to scratch on Burr Brown die (S/N109)

2 Failed Step Coverage on AMI die (S/N 109, 126)

20 Samples for Additional Life Test requested by PG3 (1,000 hr. at 125°C)

19 Passed

1 Failed due to threshold voltage levels post life test (S/N 091, e-mail)

All 20 sent to Hi Rel for DPA on Report number 49025.

1 RGA Failed 6900 PPM

2 Failed metallization scratches (multiple scratches sn 084, 089)

2 metallization voids (sn 100, 103)

1 Diffusion fault across junction (sn 101)

9 Thinning metallization (sn 088, 089, 096, 097, 098, 100, 101, 102, and 103)

9 Samples sent to Hi Rel for DPA 49257 (some serial numbers had multiple defects)

1 RGA passed

7 Voids in lid seal

1 Bond on foreign material

1 Salt crystal in metallization

5 Thinning metallization