



Alpha Magnetic
Spectrometer NASA / DOE

Open Paper Management Tool Open Items Report



National Aeronautics and
Space Administration

Tuesday, July 05, 2005

Open Paper Management Tool (OPMT) Statistics

<i>Total Action Items:</i>	<i>486</i>		
<i>Action Items Withdrawn:</i>	<i>4</i>		
<i>Total Action Items Closed:</i>	<i>374</i>	<i>Action Items Closed Early:</i>	<i>44</i>
		<i>Action Items Closed Ontime:</i>	<i>263</i>
		<i>Action Items Closed Past Due:</i>	<i>67</i>
<i>Total Action Items Open:</i>	<i>108</i>	<i>Action Items In Work:</i>	<i>72</i>
		<i>Action Items Past Due:</i>	<i>36</i>

Open Paper Management Tool (OPMT) Statistics

List of Action Items Past Due:

<i>Action Item Number:</i>	<i>Date Due:</i>	<i>Action Item Number:</i>	<i>Date Due:</i>	<i>Action Item Number:</i>	<i>Date Due:</i>
<i>Action Item 04-069</i>	<i>01/30/2005</i>	<i>AMS_02-PDS_CDR-13</i>	<i>05/16/2005</i>	<i>AMS_02-Thermal_CDR-03</i>	<i>06/15/2005</i>
<i>Action Item 04-120</i>	<i>03/31/2005</i>	<i>AMS_02-PDS_CDR-14</i>	<i>05/16/2005</i>	<i>AMS_02-Thermal_CDR-06</i>	<i>06/15/2005</i>
<i>AMS_02-ACOP_PDR-05-2</i>	<i>06/01/2005</i>	<i>AMS_02-PDS_CDR-15</i>	<i>05/16/2005</i>	<i>AMS_02-Thermal_CDR-09-2</i>	<i>06/15/2005</i>
<i>AMS_02-CDR-12</i>	<i>03/31/2005</i>	<i>AMS_02-PDS_CDR-16</i>	<i>05/16/2005</i>	<i>AMS_02-Thermal_CDR-14</i>	<i>06/15/2005</i>
<i>AMS_02-CDR-13</i>	<i>03/31/2005</i>	<i>AMS_02-PDS_CDR-17</i>	<i>05/16/2005</i>	<i>AMS_02-Thermal_CDR-15</i>	<i>06/15/2005</i>
<i>AMS_02-CDR-14</i>	<i>10/30/2004</i>	<i>AMS_02-PDS_CDR-19</i>	<i>05/16/2005</i>	<i>AMS_02-Thermal_CDR-17</i>	<i>06/15/2005</i>
<i>AMS_02-PDS_CDR-07</i>	<i>05/16/2005</i>	<i>AMS_02-PDS_CDR-20-2</i>	<i>05/16/2005</i>	<i>AMS_02-Thermal_CDR-18</i>	<i>06/15/2005</i>
<i>AMS_02-PDS_CDR-08</i>	<i>05/16/2005</i>	<i>AMS_02-PDS_CDR-21</i>	<i>05/16/2005</i>	<i>AMS_02-Thermal_CDR-29</i>	<i>05/15/2005</i>
<i>AMS_02-PDS_CDR-09-1</i>	<i>05/16/2005</i>	<i>AMS_02-PDS_CDR-22</i>	<i>05/16/2005</i>	<i>AMS_02-Thermal_CDR-57</i>	<i>06/01/2005</i>
<i>AMS_02-PDS_CDR-09-2</i>	<i>05/16/2005</i>	<i>AMS_02-PDS_CDR-23-2</i>	<i>05/16/2005</i>	<i>AMS_02-Thermal_CDR-68</i>	<i>06/15/2005</i>
<i>AMS_02-PDS_CDR-12-1</i>	<i>05/16/2005</i>	<i>AMS_02-PDS_CDR-24</i>	<i>05/16/2005</i>	<i>AMS_02-Thermal_CDR-69</i>	<i>06/15/2005</i>
<i>AMS_02-PDS_CDR-12-2</i>	<i>05/16/2005</i>	<i>AMS_02-PDS_CDR-25</i>	<i>05/16/2005</i>	<i>AMS_02-TTCS_PDR-26-1</i>	<i>06/15/2005</i>

Open Action Items Report

Open Item Number 04-046

RID Open Date: 8/1/2004

RID Closure Date:

Title:

Affected Document:

Initiator(s):

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): Bill Hungerford/AMS
Trent Martin/EA

Phone Number(s):

281-483-3296

Action Due Date: 7/31/2005

Action Completion Date:

Action: Build an integrated logic flow, assembly, and test (LFAT Schedule?) schedule and for the payload at CERN. Include a clear plan for Quality Control and MRB Authority for the payload integration and assembly at CERN. Ensure that an iterative electrical / functional test scheme is included to ensure adequate operation of hardware / software before access to that "installed" crate or detector is no longer possible.

Action Status: 02/09/05 - We will build an integrated plan at JSC to go through with the AMS Collaboration. The plan will have to be approved by the AMS Collaboration. The plan is to have: (1) NASA representative at CERN for the integration process and (2) NASA provide a quality representative to be at CERN at all time for quality control during integration process

01/19/05 - Briefed by G. Laurenti/AMS at KSC TIM; facility at Geneva looking for alternative; STA magnet test here at JSC or IABG, Munich (proposed by K. Lubelsmeyer/AMS), or ETH Zurich; Looking into options as backup to CERN (Aguilar/AMS working the issue); T. Martin/EA wants G. Laurenti's schedule to be in scheduling format.

08/01/04 - Plan due by 09/18/04; Questionnaire sent to detector groups to initiate process. Meeting scheduled at CERN Sept 13 and 14, chaired by Giuliano Laurenti, to consolidate and refine inputs from various detector and sub-system groups. Should result in development of preliminary LFAT Schedule for review at October TIM

Open Action Items Report

Open Item Number 04-051

RID Open Date: 8/1/2004

RID Closure Date:

Title:

Affected Document:

Initiator(s):

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): OZ/Bob Miley

Phone Number(s):

Action Due Date: 8/30/2005

Action Completion Date:

Action: Complete and sign AMS PIA.

Action Status: 05/25/2005 - Meeting scheduled with Dan Hartman on 7/13 to resolve all final issues, PIA scheduled to be signed on 8/30. Specific TBDs being transferred into new OPMT items 05-010, 05-011, and 05-012.

04/27/05 - TBDs/TBRs in the AMS PIA to be resolved.

TBD 5-1, Section 5.5.2 - Current agreement was for two (2) input fibers for only the first 6-months of operation of ACOP. Continue use of two fibers must be re-evaluated and should be TBD for now.

TBR 5-1, Section 5.5.1 - Additional power needs to be looked at from a power channel perspective. Analysis is not yet complete to make this commitment.

TBR 5-2, Section 5.5.2 - The requirement is to downlink AMS-02 critical health data via the ISS S-Band system whenever coverage allows. However, the ISS S-Band is over presently subscribed. This requirement is TBR until the vehicle and MOD can commit to freeing up some S-Band bandwidth for payload use.

03/02/05 - It will be three weeks before it is known the amount of power to be provided. It will not be 3Kw. Win Reid/OZ to set up meeting with Chris Tutt/ESCG, Trent Martin/EA2, Craig Clark/ESCG, John Cornwell/EC, and Henry. Due date for this action item was changed to June 30, 2005.

02/09/05 - ISS ICD – turning in PIA baselined first. Still other actions to be handled (3 Kw of power the station guaranteed and duration of time for fiber optic). Plan to remove the TBRs. Win Reid to check on the actions on the ISS side. Action item to be discussed at next week's tag-up meeting on February 16, 2005.

12/10/04 - ISS ICD to be released 02/05; question how to get into official documentation; New status to be provided in January

Open Action Items Report

Open Item Number 04-056

RID Open Date: 8/1/2004

RID Closure Date:

Title:

Affected Document:

Initiator(s):

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): Chris Tutt/ESCG
Bill Hungerford/AMS
Paul Nemeth/ESCG

Phone Number(s): 281-461-5703

281-461-5715

Action Due Date: 8/15/2005

Action Completion Date:

Action: Provide the plan for Surveillance of Safety Critical assembly and test steps of Collaboration Hardware.

Action Status: 02/09/05 - Mike Fohey/ESCG and David Kaplan/NT to discuss the MVP schedule. The MVP is a deliverable on the ESCG contract and is to be delivered no later than 8 months from February 1, 2005.

Open Action Items Report

Open Item Number 04-069

RID Open Date: 8/4/2004

RID Closure Date:

Title:

Affected Document:

Initiator(s):

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): Leland Hill/ESCG
Chris Tutt/ESCG

Phone Number(s): 281-461-5701
281-461-5703

Action Due Date: 5/1/2005

Action Completion Date:

Action: Coordinate closeout photo tasks; Need to verify we get closeout photos before hardware is closed up; Need update the pre-flight imagery plan

Action Status: 06/29/2005 - Photo requirements developed and in internal review at JS.
05/25/2005 - Initial list of photos required for safety verification will be developed and provided to the detector groups.
10/05/2004- final documentation must be done after Surveillance Plan for Safety Critical Structure
09/29/2004 - Draft documentation is complete

Open Action Items Report

Open Item Number 04-120

RID Open Date: 12/6/2004

RID Closure Date:

Title:

Affected Document:

Initiator(s):

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): Leland Hill/ESCG

Phone Number(s): 281-461-5701

Action Due Date: 3/31/2005

Action Completion Date:

Action: Work with all AMS experimenters to close out all open issues associated with the Phase II Flight Safety Review Safety Data Package.

Action Status: 06/29/2005 - Letter has been distributed to the collaboration.
05/25/2005 - Letter describing all open actions has been prepared and forwarded to Prof. Ting.
04/27/2005 - New set of actions in work. Some actions have been answered. Addressing specific organizations/individuals that have not responded. Safety package should be ready by the end of June to distribute to the collaboration approximately two weeks before the July TIM. Responses from the collaboration will be due prior to or during the TIM. The safety package will be updated and redistributed to the collaboration after the TIM. Trent Martin/EA2 requested to see a status of action items at each CCB/Tag-up meeting. Per Trent Martin/EA2, hold firm to the May 31st due date for new list of action items.

01/19/05 - Some data has been received since the October TIM and January TIM; Some data not due until March 2005; Due date was changed from 01/31/05 to 03/31/05; Final Safety Data Package due 03/08/05.

Open Action Items Report

Open Item Number 05-010

RID Open Date: 5/25/2005

RID Closure Date:

Title: Input Fiber Channels

Affected Document:

Initiator(s):

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): OZ/Bob Miley

Phone Number(s):

Action Due Date: 9/30/2005

Action Completion Date:

Action: AMS PIA requests use of two input fibers by ACOP on a permanent basis. This configuration needs to be approved by OZ and documented in the ICD. Negotiate agreement between ISS and AMS for use of two input fibers and document agreement in ICD.

Action Status:

Open Action Items Report

Open Item Number 05-011

RID Open Date: 5/25/2005

RID Closure Date:

Title: Total Power Usage by AMS-02

Affected Document:

Initiator(s):

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): Bob Miley/OZ

Phone Number(s):

Action Due Date: 9/30/2005

Action Completion Date:

Action: AMS PIA requests 2800 W power in worst case conditions. Allowed maximum power consumption by AMS needs to be agreed with ISS program and documented in the ICD.

Action Status:

Open Action Items Report

Open Item Number 05-012

RID Open Date: 5/25/2005

RID Closure Date:

Title: S-Band Usage

Affected Document:

Initiator(s):

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): Bob Miley/OZ

Phone Number(s):

Action Due Date: 9/30/2005

Action Completion Date:

Action: AMS PIA requests an average of 10 bytes/sec of Critical Health Data be transferred through the S-band antenna. Negotiate agreement between ISS and AMS On S-band usage and document in ICD.

Action Status:

Open Action Items Report

Open Item Number 05-013

RID Open Date: 5/25/2005

RID Closure Date:

Title: HRDL Connectors

Affected Document:

Initiator(s):

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): Win Reid/OZ

Phone Number(s): 281-226-4809

Action Due Date: 8/1/2005

Action Completion Date:

Action: Provide HRDL connectors to ACOP as GFE.

Action Status:

Open Action Items Report

Open Item Number 05-014

RID Open Date:

RID Closure Date:

Title: Bolt Torque Levels

Affected Document:

Initiator(s):

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): Paul Romine/ESCG

Phone Number(s): 281-483-2992

Action Due Date: 7/20/2005

Action Completion Date:

Action: Provide written concurrence from ES for AMS-02 proposed bolt torque levels.

Action Status:

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-01

RID Open Date: 3/9/2005

RID Closure Date:

Title: Transfer Rate Ambiguities

Affected Document: ACP-RP-CGS-002

Intiator(s): Mike Capell/AMS

Intiator(s) Phone Number: +41 22 767 4706

Description: *Description of Problem:*

There is a lack of consistency and lack of clarity in the data rate requirements for AMS and ACOP. ACOP documents are mostly correct in showing 4Mbit/s as a requirement but this has been interpreted to mean that the AMS-02 data rate has been increased.

Recommendation:

- 1. Implement a clear explanation of the data rates for ACOP and AMS-02, including expected average data rates and supported peak data rates.*
- 2. Provide a simple diagram showing the AMS data source, internal buffer s (JBU) , ACOP and downlink with these data rates.*

Suggested text:

The AMS-02 experiment has been designed to meet its physics goals when producing data at an average rate of 2MBit/s. Data is produced continuously. However, the physics that will be measured is unknown, and so are the peak and average data rates -- 2Mbit/s average is the best estimate. Within AMS-02 a four-fold redundant 1GByte buffer (JBU) is provide to smooth the data flow and to allow for short term (less than an hour) interruptions in the data output from AMS, for example when the hard disk drives are being swapped within ACOP. After any such interruption, the data rate capability in ACOP must be able to make up for the lost time while not falling behind on the fresh data. Therefore ACOP should be able to process data at a rate of at least twice the average data rate from AMS, namely 4Mbit/s.

Impact if recommendation not implemented:

ACOP may meet its stated data rate cababilities but fail to properly support AMS.

Proposed Resolution:

Clarify documentation

RID Disposition: Approved with Modification

RID Status: Closure Pending Documentation

Action Item Information

Action Assigned?: Yes

Actionee(s): CGS

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Clarify documentation

Action Status: To be completed with the ACOP CDR Data Pack Submittal.

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-02

RID Open Date: 3/9/2005

RID Closure Date:

Title: Incorrect Base Document for Payload Integration Agreement

Affected Document: ACP-IC-CGS-001

Initiator(s): Mike Capell/AMS

Initiator(s) Phone Number: +41 22 767 4706

Description: Description of Problem:

This document was based from SSP-52000-EIA-ERP Issue A. The ISS program now requires this document be based on SSP57066.

Recommendation:

1. Recreate this document from the correct base.
2. Provide the broadest range of transportation options (STS Middeck, MPLM, ATV, Progress, Skyhook).
3. Show relationship to JSC-57113 (AMS-02 PIA) which levies ACOP requirements as well.

Impact if recommendation not implemented:

ACOP may not meet its internal requirements but not be allowed to fly.

Proposed Resolution:

Update documentation to match with current NASA requirements.

RID Disposition: Approved

RID Status: Closure Pending Documentation

Action Item Information

Action Assigned?: Yes

Actionee(s): CGS

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Update documentation

Action Status: To be completed with the ACOP CDR Data Pack Submittal

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-04

RID Open Date: 3/9/2005

RID Closure Date:

Title: Front Panel LCD Display

Affected Document: ACP-SY-CGS-001

Intiator(s): Mike Capell/AMS

Intiator(s) Phone Number: +41 22 767 4706

Description: *Description of Problem:*

AMS-02 has a mission success motivated requirement that the crew be able to rapidly respond to AMS-02 off-nominal issues. The design detailed in this specification does not fulfil this requirement. In particular the design does not have the self-sufficient means to display ad-hoc information.

Recommendation:

1. The AMS-02 top level functional requirements (see "ACOP Design Report" ACP-RP-CGS-003 Issue 1 Section 4.1 Page 16) should be mentioned in Section 4.2, page 17 of this document.
2. Any discrepancies from the AMS-02 top level functional requirements should be formally noted in ACP-SY-CGS-001.
3. ACP-SY-CGS-001 should specify an LCD. The LCD should be not less the 320x240 dots with 8 bits of color. The LCD should be not less then 4 inches diagonal.

Impact if recommendation not implemented:

Failure to meet top level requirements and inability to track this failure.

Proposed Resolution:

Incorporate LCD into specification and implement

RID Disposition: Approved

RID Status: Open

Action Item Information

Action Assigned?: Yes

Actionee(s): CGS

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Implement LCD

Action Status: To be completed with the ACOP CDR Data Pack Submittal

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-05-2

RID Open Date: 3/9/2005

RID Closure Date:

Title: Clarify Software Responsibilities Between CGS, ASI, and AMS-02

Affected Document: ACP-SY-CGS-001

Intiator(s): Mike Capell/AMS

Initiator(s) Phone Number: +41 22 767 4706

Description: Description of Problem:

There needs to be clarification on software responsibilities based on the delivery of application software from ASI to CGS and low level software from CGS (see ACP-PL-CGS-003 Section 2.2, Page 5).

Recommendation:

1. The ultimate source of application software should be identified as the AMS-02 Collaboration (also in ACP-PL-CGS-003).
2. ACP-SQ-CGS-001 should have requirements segregated between application (AMS-02 developed /"ASI" delivered) and low level (CGS developed).
3. The cooperation in software development should be directly addressed in the ACP-PL-CGS-003 Section 7.2 Interfaces Management, Page 14. It would be difficult for ASI to directly participate in this loop.

Impact if recommendation not implemented:

Failure to provide and verify software that meets requirements.

RID Disposition: Approved with Modification

RID Status: Open

Action Item Information

Action Assigned?: Yes

Actionee(s): Roberto Battiston, Mike Capell

Phone Number(s):

Action Due Date: 6/1/2005

Action Completion Date:

Action: CGS will specify the proposal for requiriements to be applied to the contract related to the development of the Application SW. This will include at least the document ACP-SQ-CGS-001, delivered in the PDR data package.

Action Status:

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-06

RID Open Date: 3/9/2005

RID Closure Date:

Title: List of Spare Parts No Longer Matches the ACOP Design

Affected Document: ACP-SY-CGS-001

Intiator(s): Mike Capell/AMS

Intiator(s) Phone Number: +41 22 767 4706

Description: Description of Problem:
The list of spare parts no longer matches the ACOP design.

Recommendation:

The spare parts list should be modified as follows:

- (2) Hard Disks
- (1) ACOP-SBC
- (1) ACOP-T101
- (1) ACOP-T102
- (1) ACOP-T103
- (1) ACOP-PS
- (1) ACOP Power cable
- (1) ACOP Data cable
- (1) Fan with mounting kit
- (1) Exchangable Filter, if filters are implemented.

In general it should be noted that the exact spares to be provided will need to be adjusted if the design evolves.

Impact if recommendation not implemented:

Failure to provide useful spares.

RID Disposition: Approved

RID Status: Closure Pending Documentation

Action Item Information

Action Assigned?: Yes

Actionee(s): CGS

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Update spare parts list.

Action Status: To be completed with the ACOP CDR Data Pack Submittal

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-07-1

RID Open Date: 3/9/2005

RID Closure Date:

Title: ACOP Hard Drive Sparing

Affected Document: ACP-RP-CGS-003/Section 4.2

Intiator(s): Winston Reid/United Space Alliance

Initiator(s) Phone Number: 281-226-4809

Description: *Description of Problem:*

The required hard drive sparing is incorrect. Paragraph 4.2 states that a set of 4 hard drives will provide 20 days of recording capability and that 20 spare drives will provide 150 days of recording capability. Dividing the 150 day goal by 20 days tells you that ACOP needs 7.5 sets of hard drives to satisfy the 150 day requirement. Since there are 4 hard drives in each set, a total of 30 spare hard drives (4x7.5) are needed to be meet the 150 day sparing goal. But since ACOP drives are swapped 4 at a time, the number of spare or stowed hard drives must be increased to 32.

Recommendation:

Properly document the number of hard drives required as logistics spares.

Impact if recommendation not implemented:

- 1) AMS-02 risks running out of hard drives to record data.
- 2) Logistics sparing directly translates into upmass/downmass and on-orbit stowage requirements that require significant lead time for planning purposes. Due to competing requirements on these constrained resources, late changes are not always accommodated.

Proposed Resolution:

Update documentation to 120 day minimum goal & add traffic model

RID Disposition: Approved

RID Status: Closure Pending Documentation

Action Item Information

Action Assigned?: Yes

Actionee(s): Peter Dennett

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Develop traffic model.

Action Status: To be completed with the ACOP CDR Data Pack Submittal

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-07-2

RID Open Date: 3/9/2005

RID Closure Date:

Title: ACOP Hard Drive Sparing

Affected Document: ACP-RP-CGS-003/Section 4.2

Intiator(s): Winston Reid/United Space Alliance

Initiator(s) Phone Number: 281-226-4809

Description: *Description of Problem:*

The required hard drive sparing is incorrect. Paragraph 4.2 states that a set of 4 hard drives will provide 20 days of recording capability and that 20 spare drives will provide 150 days of recording capability. Dividing the 150 day goal by 20 days tells you that ACOP needs 7.5 sets of hard drives to satisfy the 150 day requirement. Since there are 4 hard drives in each set, a total of 30 spare hard drives (4x7.5) are needed to be meet the 150 day sparing goal. But since ACOP drives are swapped 4 at a time, the number of spare or stowed hard drives must be increased to 32.

Recommendation:

Properly document the number of hard drives required as logistics spares.

Impact if recommendation not implemented:

- 1) AMS-02 risks running out of hard drives to record data.
- 2) Logistics sparing directly translates into upmass/downmass and on-orbit stowage requirements that require significant lead time for planning purposes. Due to competing requirements on these constrained resources, late changes are not always accommodated.

Proposed Resolution:

Update documentation to 120 day minimum goal & add traffic model

RID Disposition: Approved

RID Status: Closure Pending Documentation

Action Item Information

Action Assigned?: Yes

Actionee(s): Peter Dennett

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Update documentation.

Action Status: To be completed with the ACOP CDR Data Pack Submittal

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-11-2

RID Open Date: 3/9/2005

RID Closure Date:

Title: ACOP Transport Vehicle Prematurely Identified

Affected Document: ACP-RP-CGS-003/Section 6.1.1

Initiator(s): Winston Reid/United Space Alliance

Initiator(s) Phone Number: 281-226-4809

Description: Description of Problem:

The second sentence implies that ACOP would only be transported to orbit via Shuttle.

Recommendation:

Change "ACOP will be transported inside the Shuttle in power off condition" to "ACOP will be transported to orbit in a power off condition."

Impact if recommendation not implemented:

The statement would remain incorrect. ACOP will be transported to orbit in an unpowered condition, however, the transport vehicle may be non-Shuttle.

Proposed Resolution:

Update document to include all possible vehicles.

RID Disposition: Approved

RID Status: Open

Action Item Information

Action Assigned?: Yes

Actionee(s): CGS

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Update documentation.

Action Status: To be completed with the ACOP CDR Data Pack Submittal

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-14

RID Open Date: 3/9/2005

RID Closure Date:

Title: ACOP Hard Drive Replacement Clarification

Affected Document: ACP-RP-CGS-003/Section 10.1.2

Intiator(s): Winston Reid/United Space Alliance

Initiator(s) Phone Number: 281-226-4809

Description: *Description of Problem:
Sentence did not translate properly from Italian to English.*

Recommendation:

Change sentence from: "The crew should plug out and in the 4 Hard Drives every about 20 days" to "The crew should remove 4 full hard drives and replace them with 4 empty hard drives from the logistics spares approximately every 20 days."

Impact if recommendation not implemented:

Requirement would remain unclear in this document.

Proposed Resolution:

Document will be updated

RID Disposition: Approved

RID Status: Closure Pending Documentation

Action Item Information

Action Assigned?: Yes **Actionee(s):** CGS

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Update documentation.

Action Status: To be completed with the ACOP CDR Data Pack Submittal

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-16

RID Open Date: 3/9/2005

RID Closure Date:

Title: EXPRESS IDD Page Reference

Affected Document: ACP-RP-CGS-003/Section 10

Intiator(s): Winston Reid/United Space Alliance

Initiator(s) Phone Number: 281-226-4809

Description: *Description of Problem:*

Many paragraphs within Section 10 contain a reference to a specific requirements page within the EXPRESS IDD. This is not a good idea because the information being referenced may move between document revisions.

Recommendation:

Instead of referencing a page, make the reference to the specific IDD paragraph number and book revision level. For example, USE: ``SSP52000-IDD-ERP, Rev E, Figure 3-8A`` instead of: ``SSP52000-IDD-ERP P3-18``.

Impact if recommendation not implemented:

Payload risks referencing wrong requirements paragraphs.

Proposed Resolution:

Document will be updated

RID Disposition: Approved

RID Status: Closure Pending Documentation

Action Item Information

Action Assigned?: Yes

Actionee(s): CGS

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Update documentation.

Action Status: To be completed with the ACOP CDR Data Pack Submittal

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-17

RID Open Date: 3/9/2005

RID Closure Date: 03/10/2005

Title: ACOP Transmit/Receive Data Rates

Affected Document: ACP-RP-CGS-003 / Section 5.1

Intiator(s): Winston Reid/United Space Alliance

Initiator(s) Phone Number: 281-226-4809

Description: *Description of Problem:*

Figure 5.1 provides an excellent diagram of AMS/ACOP data interfaces and connectivity. However, it does not provide the specific data rates that are driving the design of the payload and its interfaces to ISS.

Recommendation:

Update Figure 5.1 to explicitly identify the payload data rates (typical and max) required on each ISS connection between AMS and ACOP.

Impact if recommendation not implemented:

Additional insight to payload design requirements would be missing.

Proposed Resolution:

We understand the request, but it may not be easy to implement.

RID Disposition: Withdrawn

RID Status: Closed

Action Item Information

Action Assigned?: Yes

Actionee(s): CGS

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Update Figure 5.1

Action Status:

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-18

RID Open Date: 3/9/2005

RID Closure Date: 03/10/2005

Title: ACOP Door Access

Affected Document: ACP-RP-CGS-005 / Section 5 - Har

Initiator(s): Tracy R. Gill/NASA-KSC

Initiator(s) Phone Number: 321-867-5824

Description: *Description of Problem:*

On Express Racks, locker 4 and 8 positions will not allow the locker doors to open fully (opens just past 90 degrees) because they come into contact with the bottom shelf. The ACOP front panel door appears to not need to go much beyond 90 degrees of opening to allow for drive and board installation. It may not be a problem at all. Attached is a photo showing a single stowage locker door opening. There was a problem found at KSC with a payload installing hardware that needed the door to open fully, but due to position 8, shelf and the structure ribs on the door did not allow for payload installation of hardware.

Recommendation:

Simply be aware of the issue in case ACOP is placed in position 4 or position 8 of an EXPRESS Rack. This may limit access to the Compact PCI cards on the bottom of the ACOP chassis. Place cards with least chances of requiring removal at the bottom of the stack.

Impact if recommendation not implemented:

Potentially could require removal of locker from rack for access to lower Compact PCI cards if required to remove and replace those cards.

Proposed Resolution:

ACOP team will take into account and may make design modification.

RID Disposition: Approved

RID Status: Closed

Action Item Information

Action Assigned?: Yes

Actionee(s): CGS

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Investigate potential issue and, if problem discovered, propose solution.

Action Status:

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-19-2

RID Open Date: 3/9/2005

RID Closure Date:

Title: ACOP Bolt Analysis Requirements

Affected Document: ACP-RP-CGS-005

Initiator(s): Bruce Sommer/ESCG

Initiator(s) Phone Number: 281-461-5700

Description: *Description of Problem:*

Bolt analysis in report does not follow NASA's guidelines for bolt analysis as specified in NSTS 08307 "Space Shuttle Criteria for Preloaded Bolts".

Recommendation:

Revise ACOP bolt analysis to meet the requirements specified in NSTS 08307.

RID Disposition: Approved

RID Status: Open

Action Item Information

Action Assigned?: Yes

Actionee(s): CGS

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Update bolt analysis

Action Status: To be completed with the ACOP CDR Data Pack Submittal.

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-23

RID Open Date: 3/9/2005

RID Closure Date:

Title: Command APIDs

Affected Document: ACP-SP-CGS-001/Section 6.3.2

Initiator(s): Richard Weaver/Teledyne Brown Engineering

Initiator(s) Phone Number: 256-961-2004

Description: *Description of Problem:*

- ACP-SQ-CGS-001 Paragraph 1.1 and 1.2 describe an EXPRESS Payload Application running on the EXPRESS Laptop Computer (ELC). There is no mention of a ACOP Payload application for a Portable Computer System (PCS) (i.e. computer deployed on the PL MDM 1553 bus or the C&C 1553 bus).
- Section 6.3.2 in the ACOP Interface Specification ICD list APIDs for PCS to LAP@ & LAP4 ISPRs. These APIDs are not needed.
- Section 6.3.2 in the ACOP Interface Specification ICD list APIDs for MCC-H to LAP@ & LAP4 ISPRs. These APIDs are not needed because commands to US Payload ISPRs utilize POIC APIDs.
- In general, ACOP has not been assigned to a ISPR location, therefore APID definition is premature at this stage

Recommendation:

Delete APID table until manifested ISPR location can be determined. PEI will assign.

Impact if recommendation not implemented:

Incorrect command APID information resulting in loss of ground command capability.

RID Disposition: Approved

RID Status: Closure Pending Documentation

Action Item Information

Action Assigned?: Yes

Actionee(s): CGS
Peter Dennett

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Update documents.

Action Status: To be completed with the ACOP CDR Data Pack Submittal

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-24

RID Open Date: 3/9/2005

RID Closure Date:

Title: Acoustic Verification Requirement and Testing Clarification

Affected Document: ACP-PL-CGS-004/Section 4.3 and 6

Intiator(s): Eric Phillips/Boeing PEI

Intiator(s) Phone Number: 281-226-6367

Description: Description of Problem:

“Acoustic noise measurement will be performed on the FM only if QM results are marginal”. SSP 57000 requirements (Paragraph 4.3.12.3.3.1) states that acoustic measurements shall be made using actual flight equipment even though prototype or qualification units have been tested previously. This is due to the fact that hardware, such as cooling fans, can have varying noise signatures even though part numbers are identical.

Recommendation:

Perform acoustic testing on Flight Model per requirement SSP 57000 paragraph 4.3.12.3.3.1 unless a repeatable test on qualification unit shows consistency that payload is an insignificant noise source.

Impact if recommendation not implemented:

If qualification model is close to or at the requirement level and the flight model is not tested, there is a risk that the Flight Model will exceed the individual payload requirement due to variations in noise of the sub componets (i.e. fans).

Team Member's Proposed Resolution:

SSP-52000-IDD-ERP Table 4-IX is the sub-rack level specification. Testing will be done on the QM. Testing should be done on all flight models unless the noise source is an insignificant noise. SSP-57000 describes an insignificant noise source as 37 dBA at 2 feet away in all directions.

RID Disposition: Approved with Modification

RID Status: Closure Pending Documentation

Action Item Information

Action Assigned?: Yes

Actionee(s): CGS

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Update documentation to match this approach.

Action Status: To be completed with the ACOP CDR Data Pack Submittal

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-26

RID Open Date: 3/9/2005

RID Closure Date:

Title: Incorrect Version of SSP 50184

Affected Document: ACP-SP-CGS-001 (2.1) / ACP-PL-C

Initiator(s): Vergel Romero/Boeing PEI

Initiator(s) Phone Number: 281-226-4498

Description: Description of Problem:
Applicable Documents Item 9 is referereng to Feb 1996 version of SSP 50184.

Recommendation:
Change to SSP 50184 Revision B Dated May 25, 2001

Impact if recommendation not implemented:
ACOP will be using an outdated version of the document which was changed considerably.

Proposed Resolution:
Will update document.

RID Disposition: Approved

RID Status: Closure Pending Documentation

Action Item Information

Action Assigned?: Yes

Actionee(s): CGS

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Update documentation.

Action Status: To be completed with the ACOP CDR Data Pack Submittal

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-28

RID Open Date: 3/9/2005

RID Closure Date:

Title: Unknown J7 UIP Location

Affected Document: Multiple Documents

Initiator(s): Vergel Romero/Boeing PEI

Initiator(s) Phone Number: 281-226-4498

Description: Documents and Sections Affected:
ACP-SP-CGS-001 (6.1.3 fourth bullet) / ACP-RP-CGS-003 (5.4.2 fourth bullet) / ACP-RP-CGS-004 (5.4.2 fourth bullet)

Description of Problem:

These sections contain the following statement: "TX and RX under TESS (complete mission) and TX under MELFI (as initiation location, may have to move)." The actual locations of J7 connectors that will be provided to ACOP for use are still unknown.

Recommendation:

Indicate in the statement that since topology is not finalized, actual locations of J7 connectors are unknown and the length of fiber optic cable may vary.

Impact if recommendation not implemented:

If the fiber optic cable is designed before J7 Locations are known, cable may be too short.

Proposed Resolution:

The TESS location was provided to us by the ISS during the initial assessment several years ago. The second site was not finalized. We will remove references to specific J7 connections. However, the documentation will state that we need 2 J7 connectors.

RID Disposition: Approved

RID Status: Closure Pending Documentation

Action Item Information

Action Assigned?: Yes

Actionee(s): CGS
Peter Dennett

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Update documentation.

Action Status: To be completed with the ACOP CDR Data Pack Submittal

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-29

RID Open Date: 3/9/2005

RID Closure Date:

Title: ACOP Compatibility with EXPRESS Rack Interface

Affected Document: ACP-SP-CGS-001/Section 2.1 and 5

Initiator(s): Henry Hoang/Boeing PEI

Initiator(s) Phone Number: 281-226-6054

Description: *Description of Problem:*

SSP 30238 and 30237 need to be included in the "Applicable Documents".

Consequences: ACOP will not compatible with EXPRESS Rack interface and Space Station.

Electromagnetic Interference (EMI) and Electrostatic Discharge (ESD) are not addressed in section 5.3.1 "Electrical Interfaces" of this document.

Suggestion: Add section 7.0 of SSP 52000-IDD-ERP to paragraph 5.3.1.1 of this document.

Consequences: ACOP will not compatible with EXPRESS Rack interface.

Provide 28Vdc Interface Block Diagram between the ACOP and EXPRESS including the cable and connector part numbers.

Proposed Resolution:

SSP 30238 and 30237 are called out by SSP 52000-IDD-ERP, so they do not have to be specifically called out by the ACOP team Section 5.3.1.1 will be updated as recommended.

RID Disposition: Approved with Modification

RID Status: Closure Pending Documentation

Action Item Information

Action Assigned?: Yes

Actionee(s): CGS

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Update documents as recommended.

Action Status: To be completed with the ACOP CDR Data Pack Submittal

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-36

RID Open Date: 3/9/2005

RID Closure Date:

Title: SSP 52050 Reference

Affected Document: ACP-RP_CGS-003/Section 2.1

Intiator(s): Joseph Breit/IPIC PSI

Initiator(s) Phone Number: 281-226-4435

Description: *Description of Problem:*
Applicable documents lists an outdated version of SSP 52050.

Recommendation:
Replace reference to SSP 52050 Rev D with SSP 52050 Rev E (November 12, 2002). (Also needs to be updated in ACP-SP-CGS-001 & ACP-SQ-CGS-001.)

Impact if recommendation not implemented:
ACOP will be designed to out of date requirements.

Proposed Resolution:
Update references

RID Disposition: Approved

RID Status: Closure Pending Documentation

Action Item Information

Action Assigned?: Yes

Actionee(s): CGS
ASI

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Update documents.

Action Status: To be completed with the ACOP CDR Data Pack Submittal

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-37

RID Open Date: 3/9/2005

RID Closure Date:

Title: HRDL Minimum Packet Size

Affected Document: ACP-RP-CGS-003/Section 5.3.2

Intiator(s): Joseph Breit/IPIC PSI

Intiator(s) Phone Number: 281-226-4435

Description: *Description of Problem:*

The document states that "Transmitter capable to transmit frame from 1 to 4096 bytes length." While this may be true, the HRDL CCSDS packet size requirement (SSP 52050 {3.4.2.4.1.2-A}) is that packets will be from 100 and 4096 bytes length (inclusive). This requirement should be noted to prevent any confusion regarding actual HRDL packet size requirement. (This statement also appears in ACP-SQ-CGS-001, paragraph 2.6.4.

Recommendation:

Note the actual HRDL packet size requirement.

Impact if recommendation not implemented:

Possible confusion regarding HRDL packet size requirement.

Proposed Resolution:

Add comment to document that states HRDL packet size limit

RID Disposition: Approved

RID Status: Closure Pending Documentation

Action Item Information

Action Assigned?: Yes

Actionee(s): Peter Dennett

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Update document.

Action Status: To be completed with the ACOP CDR Data Pack Submittal

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-38

RID Open Date: 3/9/2005

RID Closure Date:

Title: Minimum Ku-band Packet Length

Affected Document: ACP-SP-CGS-001/Table 6.3

Intiator(s): Joseph Breit/IPIC PSI

Initiator(s) Phone Number: 281-226-4435

Description: Description of Problem:

The table defines the minimum packet length (PacketLen) for frames transmitted by AMS as 0 bytes. For Ku-band packets the minimum packet length is 93 bytes. (See SSP 41158 Table 4.1.1.1-1).

Recommendation:

Change the minimum packet length to 93 bytes.

Impact if recommendation not implemented:

Incorrectly sized Ku-band packets.

Proposed Resolution:

Implement recommendation

RID Disposition: Approved

RID Status: Closure Pending Documentation

Action Item Information

Action Assigned?: Yes

Actionee(s): Peter Dennett

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Update document.

Action Status: To be completed with the ACOP CDR Data Pack Submittal

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-39

RID Open Date: 3/9/2005

RID Closure Date:

Title: Secondary CCSDS Header Requirements for Telemetry

Affected Document: ACP-SP-CGS-001/Table 6-4

Initiator(s): Joseph Breit/IPIC PSI

Initiator(s) Phone Number: 281-226-4435

Description: Description of Problem:

The table, in the PacketID2 row, contains a note that “Per SSP57002C this is Data Cycle Counter”. Since AMS telemetry will not be processed by the HOSC, there is no requirement for AMS to implement a Data Cycle Counter in the Secondary Header. (See SSP 52050 Appendix D, paragraph E.)

Recommendation:

Remove the note.

Impact if recommendation not implemented:

Possible confusion over CCSDS Header requirements.

RID Disposition: Disapproved

RID Status: Open

Action Item Information

Action Assigned?: Yes

Actionee(s): Peter Dennett

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Will remove note from document.

Action Status: To be completed with the ACOP CDR Data Pack Submittal

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-40-1

RID Open Date: 3/9/2005

RID Closure Date:

Title: ER3 APIDs

Affected Document: ACP-SP-CGS-001/Section 6.3.2

Initiator(s): Joseph Breit/IPIC PSI

Initiator(s) Phone Number: 281-226-4435

Description: *Description of Problem:*

The APIDs listed for ACOP in ER3 are incorrect (except for the MCC-H to ACOP in ER3 APID, which is correct). This is actually my fault, as an email I sent to Peter Dennett with assigned APID numbers contained cut and paste errors for the ER3 (LAB1P4) locations.

Recommendation:

The correct APIDs are:

- 121 - POIC to ACOP in ER3 (LAB1P4)
- 221 - PCS/P1 to ACOP in ER3 (LAB1P4)
- 321 - PCS/P2 to ACOP in ER3 (LAB1P4)
- 421 - PCS/P3 to ACOP in ER3 (LAB1P4)
- 521 - PCS/P4 to ACOP in ER3 (LAB1P4)
- 621 - PCS/P5 to ACOP in ER3 (LAB1P4)

Impact if recommendation not implemented:

Improperly routed commands.

Proposed Resolution:

Update your list.

RID Disposition: Approved

RID Status: Closure Pending Documentation

Action Item Information

Action Assigned?: Yes

Actionee(s): Peter Dennett

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Obtain Boeing document of APIDs.

Action Status: To be completed with the ACOP CDR Data Pack Submittal

04/27/05 - Action item due date changed to June 1, 2005 as this is a CDR related item and document will be released for CDR.

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-41

RID Open Date: 3/9/2005

RID Closure Date:

Title: ISS Program Assigned APIDs

Affected Document: ACP-SP-CGS-001/Section 6.3.2

Intiator(s): Joseph Breit/IPIC PSI

Initiator(s) Phone Number: 281-226-4435

Description: *Description of Problem:*

The document states "The ISS program has assigned the following values to AMS-02: APIDs: 974-983." These values were originally assigned to AMS by PSI, but conflict with the desired AMS usage as documented in Table 6-6. PSI will update ISS program documentation (D684-11372-01) to agree with Table 6-6.

Recommendation:

Remove the statement in quotes above.

Impact if recommendation not implemented:

Confusion over which Ku-band APIDs have been assigned to AMS & ACOP.

RID Disposition: Approved

RID Status: Open

Action Item Information

Action Assigned?: Yes

Actionee(s): Peter Dennett

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Will confirm with initiator if it is okay to roll this RID in with AMS_02-ACOP_PDR-40.

Action Status: To be completed with the ACOP CDR Data Pack Submittal

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-42

RID Open Date: 3/9/2005

RID Closure Date:

Title: Incorrect Requirement Trace for SRD-3.1.13-060

Affected Document: ACP-SQ-CGS-001/Section 3.1.1.3

Intiator(s): Joseph Breit/IPIC PSI

Initiator(s) Phone Number: 281-226-4435

Description: Description of Problem:

The requirements trace for SRD-3.1.13-060 incorrectly references ACP-SP-CGS-001 section 6.3.3.3.9.1. The correct reference should be to section 6.3.3.9.1.

Recommendation:

Correct the reference.

Impact if recommendation not implemented:

Broken requirements traceability.

Proposed Resolution:

Will update

RID Disposition: Approved

RID Status: Closure Pending Documentation

Action Item Information

Action Assigned?: Yes

Actionee(s): CGS

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Update document.

Action Status: To be completed with the ACOP CDR Data Pack Submittal

Open Action Items Report

Open Item Number *AMS_02-ACOP_PDR-43*

RID Open Date: *3/9/2005*

RID Closure Date:

Title: *No Traceability to ISS Requirements*

Affected Document: *ACP-SQ-CGS-001/Paragraphs 3 &*

Initiator(s): *Joseph Breit/IPIC PSI*

Initiator(s) Phone Number: *281-226-4435*

Description: *Description of Problem:
The SW Requirement Document provides no traceability to ISS requirements.*

Recommendation:
Update sections 3 & 4 to provide traceability from AMS/ACOP project requirements to ISS requirements.

Impact if recommendation not implemented:
Impossible to assess AMS/ACOP understanding of ISS interface requirements.

Proposed Resolution:
Update as recommended and develop a Software Verification Plan based on SSP-52000-PVP and SSP-52050 (for HRDL only).

RID Disposition: *Approved with Modification*

RID Status: *Open*

Action Item Information

Action Assigned?: *Yes*

Actionee(s): *CGS*

Phone Number(s):

Action Due Date: *8/15/2005*

Action Completion Date:

Action: *Update as recommended and develop a Software Verification Plan based on SSP-52000-PVP and SSP-52050 (for HRDL only).*

Action Status: *To be completed with the ACOP CDR Data Pack Submittal*

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-48-2

RID Open Date: 3/9/2005

RID Closure Date:

Title: Face Plate Connector Protection

Affected Document: N/A

Initiator(s): John Stanford/NT

Initiator(s) Phone Number: 281-483-1347

Description: Description of Problem:

Determine what loads (bump, kick, incidental) unprotected connectors will sustain (power, data and fiber optics).

Recommendation:

Determine current loads for standard ISS connectors. Perform analysis for fiber optics.

Proposed Resolution:

PE&I should provide the requirement for the generic power and data connectors for kick loads. ACOP team will determine the best way to apply these loads to the fiber connector.

RID Disposition: Approved

RID Status: Open

Action Item Information

Action Assigned?: Yes

Actionee(s): CGS

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Determine best way to apply kick loads for fiber connector and complete analysis.

Action Status: To be completed with the ACOP CDR Data Pack Submittal

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-50-1

RID Open Date: 3/9/2005

RID Closure Date:

Title: Protection for Fiber Optic Cable

Affected Document: N/A

Initiator(s): John Stanford/NT

Initiator(s) Phone Number: 281-483-1347

Description: Description of Problem:

1. Define the length (or approximate length) of the fiber optic cable.
2. Determine what protection should be provided for the fiber optic cable, including special provisions, and procedures.
3. Determine special safety precautions.
4. Determine additional weight requirements (weight of protection material) based on protection strategies.

Proposed Resolution:

We agree that there is a potential issue. OZ will help us to define the length. Protection issue must be taken to safety panel.

RID Disposition: Approved

RID Status: Open

Action Item Information

Action Assigned?: Yes **Actionee(s):** Vergel Romero/Boeing PEI

Phone Number(s): 281-226-4498

Action Due Date: 8/15/2005

Action Completion Date:

Action: Determine location and routing of cables.

Action Status: 05/11/05 - Win Reid/OZ was directed to work the action item in more detail. Response expected 6/30.

04/27/05 - In work. Vergel Romero/Boeing PEI gave a presentation to Mike Horkachuck/OZ3 in mid-March. Peter Dennett/AMS requested to be part of ACOP discussions. This issue will be discussed at the ACOP Flight Safety Review May 2 and 3. Paul Nemeth/ESCG requested that Mike Horkachuck/OZ3 be asked to attend the ACOP FSR.

Open Action Items Report

Open Item Number AMS_02-ACOP_PDR-54-2

RID Open Date: 3/9/2005

RID Closure Date:

Title: Correction of Applicable Documents

Affected Document: Various

Initiator(s): Leland Hill/ESCG

Initiator(s) Phone Number: 281-461-5710

Description: *Description of Problem:*

ACOP PDR documentation refernces an out of date document for the control of stress corrosion cracking. MSFC-SPEC-522B is used, this document has been replaced by MSFC-STD-3029, "Guidelines or the Selection of Metallic Materials for Stress Corrosion Cracking Resistance in Sodium Chloride Environments".

Recommendation:

Change all refernces of MSFC-SPEC-522B to MSFC-STD-3029.

Impact if recommendation not implemented:

Possible non-compliance with updated standards.

Proposed Resolution:

Update the document.

RID Disposition: Approved

RID Status: Open

Action Item Information

Action Assigned?: Yes

Actionee(s): CGS

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Update documents.

Action Status: To be completed with the ACOP CDR Data Pack Submittal

Open Action Items Report

Open Item Number AMS_02-CDR-06

RID Open Date: 5/1/2003

RID Closure Date:

Title: AMS-CDR-1-17: Meteoroid/Orbital Debris Shielding

Affected Document: AMS-02 CDR Version 2

Intiator(s): E. Christiansen/NASA

Intiator(s) Phone Number: 281-483-5311

Description: Shielding from meteoroid/debris impact is inadequate to meet protection requirements. Shielding of pressurized vessels on AMS-02 such as the vacuum case and TRD (as well as any other pressure vessel) is required to prevent catastrophic rupture of these tanks in the event of meteoroid/debris impact which would release high-velocity fragments creating a potentially serious safety issue for on-board crew. The assessed probability of no penetration (PNP) using specified environment models is 0.97 which is far below the specified 0.997 PNP requirement. Updating ballistic limit equations and models as described in the forward work plan does not appear adequate to show compliance with requirements. Additional or significantly enhanced shielding will likely be necessary to meet safety requirements.

RID Disposition: Approved

RID Status: Open - Deferred to next cycle review

Action Item Information

Action Assigned?: Yes

Actionee(s): Dana Lear/ESCG

Phone Number(s): 281-483-2998

Action Due Date: 7/1/2006

Action Completion Date:

Action: Complete analysis and coordinate design of debris shields. To be completed by Phase III Safety.

Action Status: 05/03/05 - Email from Dana Lear/ESCG to Phil Mott/ESCG, Ross Harold/ESCG, and Trent Martin/EA2. The AMS-02 modeling for the MMOD assessment was completed last week. Additionally, the BUMPER geometry runs have been completed. Since the input scripts have not been run in years, I'm going through and verifying/updating all inputs for both the shield ballistic response definitions (BLEs) and the mission parameters. In reviewing the inputs for the assessment, I need to verify a few items:

1. Need to verify the current material configuration (layup and spacing) of the vacuum case between the outer casing and the super fluid helium tank. During the January meeting, it was mentioned that the 200 layers of MLI in the VC was reduced to 120. Is this still the case?
2. In areas around the outer VC casing where a thermal blanket is located, what is the construction of this blanket (material/layup/thickness/areal density).
3. There is a box that encloses the warm helium tank and is attached to the starboard aft USS support. Does this box completely encase the warm helium tank? What is this box made of (material, thickness)?

02/09/05 - Chris Tutt/ESCG sent an email to Dana Lear/ESCG requesting a letter from Eric Christiansen/KX with the requirements and his signature.

01/19/05 - L. Hill/LMSO to get in touch with D. Lear/LMSO to discuss what L. Hill/LMSO needs for Phase II. C. Tutt/LMSO, P. Mott/LMSO, & R. Harold/LMSO need to be involved. T. Martin/EA stated that anything pressure safety critical needs to be covered.

Open Action Items Report

Open Item Number: AMS_02-CDR-08

RID Open Date: 5/1/2003

RID Closure Date:

Title: AMS-CDR-2-07: Bolt in Sloppy Holes Assured to Take Shear

Affected Document: N/A

Initiator(s): B. Ritter/GSFC

Initiator(s) Phone Number: 301-286-9022

Description: Bolts attaching the support ring to the conical flange were assumed to transfer shear, even though they are in sloppy holes this is non-conservative.

RID Disposition: Approved

RID Status: Open

Action Item Information

Action Assigned?: Yes

Actionee(s): Chris Tutt/ESCG

Phone Number(s): 281-461-5703

Action Due Date: 7/31/2005

Action Completion Date:

Action: Work with SWG to resolve concerns with compliance with NASA-STD-08307, including bolts in sloppy holes being assumed to take shear.

Action Status: 05/11/05 - Resolution plan under development. Proposal complete but needs to be written up and approved by Structures Working Group (SWG).

02/09/05 - Action item due date was changed to May 31, 2005. Bolt analysis was done to Lockheed Martin standards. Structures Working Group (SWG) has new standards. Currently looking to see how many interfaces have issues and what needs to be done. Action item was changed from 'Work bolt concerns with the SWG.' to 'Work with SWG to resolve concerns with compliance with NASA-STD-08307, including bolts in sloppy holes being assumed to take shear.'

Open Action Items Report

Open Item Number AMS_02-CDR-09

RID Open Date: 5/1/2003

RID Closure Date:

Title: AMS-CDR-2-15: Missing Documents - Structural Analysis

Affected Document: N/A

Initiator(s): Murthy Pinnamaneni Structures/Boeing

Initiator(s) Phone Number: 281-226-5665

Description: The following items were not available in the Data Package: design load factors, dynamic analysis procedure and results. From 2.2.1, AMS Report Outline.doc, Magnetic Strap Analysis and the Coupled Loads Analysis, which are identified to be in "separate sections." Reports/documents that include: Dynamic Loads Analysis Description; Payload/Shuttle Interface Loads; Trunion Deflection; Trunion Misalignment Loads; and Uncertainty Factors Used in the Analysis.

RID Disposition: Approved

RID Status: Closure Pending Documentation

Action Item Information

Action Assigned?: Yes

Actionee(s): Chris Tutt/ESCG

Phone Number(s): 281-461-5703

Action Due Date: 7/1/2006

Action Completion Date:

Action: Update stress report and dynamics analyses reports. To be completed by Phase III Safety Data Pack.

Action Status:

Open Action Items Report

Open Item Number AMS_02-CDR-12

RID Open Date: 5/1/2003

RID Closure Date:

Title: AMS-CDR-4-18: Presentation Issues

Affected Document: Avionics & ACOP Presentations

Initiator(s): H. Hoang/PEI
J. Fu/PEO

Initiator(s) Phone Number: 281-226-6054

Description: The presentation for avionics is not adequate for documentation purpose to show compliance with SSP 57003 requirements.

RID Disposition: Approved

RID Status: Open

Action Item Information

Action Assigned?: Yes **Actionee(s):** Tim Urban/ESCG

Phone Number(s): 281-461-5702

Action Due Date: 3/31/2005

Action Completion Date:

Action: Supply document listing EMI/electrical specs.

Action Status: 06/29/2005 - Tim Urban/ESCG to update PIH ICD based on Henry Hoang's inputs. Update due 8/22.
02/09/2005 - Try to get initiator's approval to merge this CDR action item with AMS-CDR-4-20 (OPMT action item AMS_02-CDR-13 by next CCB.
Action item due date was changed to March 31, 2005.
01/05/2005 - Paul Nemeth/LMSO to ask initiator if this RID can be rolled into RID AMS-CDR-4-18 and Open Action Item AMS_02-CDR-13.

Open Action Items Report

Open Item Number AMS_02-CDR-13

RID Open Date: 5/1/2003

RID Closure Date:

Title: AMS-CDR-4-20: Power Compatibility and EMC Testing

Affected Document: Avionics Overview

Initiator(s): H. Hoang/PEI
J. Fu/PEO

Initiator(s) Phone Number: 281-226-6054

Description: The EME Control Plan (or equivalent) used to establish the plan for how AMS will be compatible with the ISS EMI requirements is lacking in the CDR package.

RID Disposition: Approved

RID Status: Open

Action Item Information

Action Assigned?: Yes **Actionee(s):** Tim Urban/ESCG

Phone Number(s): 281-461-5702

Action Due Date: 3/31/2005

Action Completion Date:

Action: Supply EME control plan.

Action Status: 06/29/2005 - Tim Urban/ESCG to update PIH ICD based on Henry Hoang's inputs. Update due 8/22.
02/09/2005 - Try to get initiator's approval to merge this CDR action item with AMS-CDR-1-18 (OPMT action item AMS_02-CDR-12 by next CCB. Action item due date was changed to March 31, 2005.
01/05/2005 - Tim Urban/LMSO to provide status March 2005.

Open Action Items Report

Open Item Number AMS_02-CDR-14

RID Open Date: 5/1/2003

RID Closure Date:

Title: AMS-CDR-4-24: No Cable List and Derating Analysis of Cables

Affected Document: N/A

Intiator(s): D. Beverly/EEE

Initiator(s) Phone Number: 281-483-0250

Description: There is no evidence of wiring or external cable list. The derating of the wire and cables has not been performed.

RID Disposition: Approved

RID Status: Open

Action Item Information

Action Assigned?: Yes

Actionee(s): Dewey Nguyen/ESCG
Tim Urban/ESCG

Phone Number(s): 281-461-5681
281-461-5702

Action Due Date: 10/30/2004

Action Completion Date:

Action: Supply wire list and derating details.

Action Status: 6/8/2005 - Dave Beverly satisfied with overall wiring size and derating, but concerned about missed Vent Valve Control Electronics. Dewey to update table with derating for SSP 5A circuit breaker, update ICD, and levy requirement on SCL/ETH.

05/11/05 - Parts spreadsheet was supplied to D. Beverly/EEE.

04/27/05 - Missing some parts. Tim Urban/ESCG will get with D. Beverly/EEE as soon as the list is complete. Next status date is May 11, 2005 or next CCB/Tag-up meeting

02/09/05 - Dewey Nguyen/ESCG has parts list but it is more complex than needed. Distilling and derating list in work. Next status date is March 31, 2005.

01/05/05 - Changes have been submitted and is under review by Shuttle Avionics Integration.

Open Action Items Report

Open Item Number AMS_02-PDS_CDR-06

RID Open Date: 4/18/2005

RID Closure Date:

Title:

Affected Document:

Initiator(s): Tim Urban

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): M. Cova

Phone Number(s):

Action Due Date: 10/15/2005

Action Completion Date:

Action: Re-evaluate thermal optical properties on the top of the PDS as there are no longer heaters located there (breakdown of MLI vs. white paint). QM & FM different ?

Action Status:

Open Action Items Report

Open Item Number AMS_02-PDS_CDR-07

RID Open Date: 4/18/2005

RID Closure Date:

Title:

Affected Document: Design Description:3

Initiator(s): Tim Urban

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): S. Alia

Phone Number(s):

Action Due Date: 5/16/2005

Action Completion Date:

Action: Add "as referenced in RD1 and RD2" {or however the ref. doc. Is referenced} to PDS-GEN-5 on page 13.

Action Status:

Open Action Items Report

Open Item Number AMS_02-PDS_CDR-08

RID Open Date: 4/18/2005

RID Closure Date:

Title:

Affected Document: Document Description:4

Initiator(s): Tim Urban

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): S. Alia

Phone Number(s):

Action Due Date: 5/16/2005

Action Completion Date:

Action: Add 0.03 μ F per 3.2.2.2.A of SSP 57003, and add verification by design inspection or test.

Action Status:

Open Action Items Report

Open Item Number AMS_02-PDS_CDR-09-1

RID Open Date: 4/18/2005

RID Closure Date:

Title:

Affected Document: Document Description:6

Initiator(s): Tim Urban

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): S. Alia

Phone Number(s):

Action Due Date: 5/16/2005

Action Completion Date:

Action: TRP = Temperature Reference Point, and will be added to Acronym List.

Action Status:

Open Action Items Report

Open Item Number AMS_02-PDS_CDR-09-2

RID Open Date: 4/18/2005

RID Closure Date:

Title:

Affected Document: Document Description:6

Initiator(s): Tim Urban

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): S. Alia

Phone Number(s):

Action Due Date: 5/16/2005

Action Completion Date:

Action: Update document for maximum operating temperature of 51°C.

Action Status:

Open Action Items Report

Open Item Number AMS_02-PDS_CDR-12-1

RID Open Date: 4/18/2005

RID Closure Date:

Title:

Affected Document: Design Description:9

Initiator(s): Tim Urban

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): S. Alia

Phone Number(s):

Action Due Date: 5/16/2005

Action Completion Date:

Action: Will delete Figure 4-1 (Red Diagram).

Action Status:

Open Action Items Report

Open Item Number AMS_02-PDS_CDR-12-2

RID Open Date: 4/18/2005

RID Closure Date:

Title:

Affected Document: Design Description:9

Initiator(s): Tim Urban

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): S. Alia

Phone Number(s):

Action Due Date: 5/16/2005

Action Completion Date:

Action: Will verify all pin tables in the ICD are labelled in accordance with the Red Diagram.

Action Status:

Open Action Items Report

Open Item Number AMS_02-PDS_CDR-13

RID Open Date: 4/18/2005

RID Closure Date:

Title:

Affected Document: Design Description:10

Initiator(s): Tim Urban

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): S. Alia

Phone Number(s):

Action Due Date: 5/16/2005

Action Completion Date:

Action: Document will be updated for EBCS Bus B connected to J200.

Action Status:

Open Action Items Report

Open Item Number AMS_02-PDS_CDR-14

RID Open Date: 4/18/2005

RID Closure Date:

Title:

Affected Document: Design Description:11

Initiator(s): Tim Urban

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): S. Alia

Phone Number(s):

Action Due Date: 5/16/2005

Action Completion Date:

Action: Will move the lower 8AWG label in Figure 4-2 so that it is not close to EBCS wires.

Action Status:

Open Action Items Report

Open Item Number AMS_02-PDS_CDR-15

RID Open Date: 4/18/2005

RID Closure Date:

Title:

Affected Document: Design Description:14

Initiator(s): Tim Urban

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): S. Alia

Phone Number(s):

Action Due Date: 5/16/2005

Action Completion Date:

Action: Will add schematic for start-up circuit, section 4.3.2.1.

Action Status:

Open Action Items Report

Open Item Number AMS_02-PDS_CDR-16

RID Open Date: 4/18/2005

RID Closure Date:

Title:

Affected Document: Design Description:19

Initiator(s): Tim Urban

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): S. Alia

Phone Number(s):

Action Due Date: 5/16/2005

Action Completion Date:

Action: To add words "input impedance and phase" to section 9.3.1.

Action Status:

Open Action Items Report

Open Item Number AMS_02-PDS_CDR-17

RID Open Date: 4/18/2005

RID Closure Date:

Title:

Affected Document: Design Description:20

Initiator(s): Tim Urban

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): S. Alia

Phone Number(s):

Action Due Date: 5/16/2005

Action Completion Date:

Action: Will verify value of capacitance in section 10.1.1.

Action Status:

Open Action Items Report

Open Item Number AMS_02-PDS_CDR-19

RID Open Date: 4/18/2005

RID Closure Date:

Title:

Affected Document: Design Description:21

Initiator(s): Tim Urban

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): S. Alia

Phone Number(s):

Action Due Date: 5/16/2005

Action Completion Date:

Action: Delete existing Figure 4.8.1 and add reference to Grounding and Bonding Diagram in ICD.

Action Status:

Open Action Items Report

Open Item Number AMS_02-PDS_CDR-20-2

RID Open Date: 4/18/2005

RID Closure Date:

Title:

Affected Document: ICD:3

Initiator(s): Tim Urban

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): S. Alia
G. Viertel

Phone Number(s):

Action Due Date: 5/16/2005

Action Completion Date:

Action: Will update Pin Table 5-25 / or "Big Diagram" accordingly.

Action Status:

Open Action Items Report

Open Item Number AMS_02-PDS_CDR-21

RID Open Date: 4/18/2005

RID Closure Date:

Title:

Affected Document: ICD:6

Initiator(s): Tim Urban

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): S. Alia

Phone Number(s):

Action Due Date: 5/16/2005

Action Completion Date:

Action: Will add Bond Stub label to Fig. 5-4 & 5-4.

Action Status:

Open Action Items Report

Open Item Number AMS_02-PDS_CDR-22

RID Open Date: 4/18/2005

RID Closure Date:

Title:

Affected Document: ICD:8

Initiator(s): Tim Urban

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): S. Alia

Phone Number(s):

Action Due Date: 5/16/2005

Action Completion Date:

Action: Will change Pin I to Pin J in Table 5-4.

Action Status:

Open Action Items Report

Open Item Number AMS_02-PDS_CDR-23-2

RID Open Date: 4/18/2005

RID Closure Date:

Title:

Affected Document: Design Description

Initiator(s): Tim Urban

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): S. Alia

Phone Number(s):

Action Due Date: 5/16/2005

Action Completion Date:

Action: Update design description document with T0 power characteristics.

Action Status:

Open Action Items Report

Open Item Number AMS_02-PDS_CDR-24

RID Open Date: 4/18/2005

RID Closure Date:

Title:

Affected Document: ICD:11

Initiator(s): Tim Urban

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): S. Alia

Phone Number(s):

Action Due Date: 5/16/2005

Action Completion Date:

Action: To add mechanical interface details of grounding stud to ICD Figure 5-11.

Action Status:

Open Action Items Report

Open Item Number AMS_02-PDS_CDR-25

RID Open Date: 4/18/2005

RID Closure Date:

Title:

Affected Document: ICD:14

Initiator(s): Tim Urban

Initiator(s) Phone Number:

Description:

RID Disposition:

RID Status:

Action Item Information

Action Assigned?: Yes

Actionee(s): S. Alia

Phone Number(s):

Action Due Date: 5/16/2005

Action Completion Date:

Action: Will update ICD to include timing information and labels to Fig. 5-27.

Action Status:

Open Action Items Report

Open Item Number AMS_02-Thermal_CDR-03

RID Open Date: 4/4/2005

RID Closure Date:

Title: Design Pressures Based on Operational Temperature

Affected Document: General Loop Heat Pipe/Heat Pipe

Intiator(s): Chris Tutt/ESCG

Intiator(s) Phone Number: 281-461-5703

Description: DISCREPANCY

In each specification, the requirement states "The LHP shall be designed for an internal Maximum Operating Pressure which is equal to the vapour pressure of the working fluid at Maximum Operating Temperature." The LHP should instead be designed to survive the Maximum Design Pressure, which will be the larger of either the pressure of the working fluid at the maximum survival temperature or, for those LHPs using ammonia as the working fluid, the maximum pressure that could occur in a trapped volume if the ammonia were to freeze and undergo local thawing.

SUGGESTED SOLUTION

Replace Maximum Operating Pressure with Maximum Design Pressure and change description of required calculations to match.

SCREENING PANEL CHAIRPERSON SIGNATURE

H. LO (JSC)

SUPPLIER'S RESPONSE

ESA dimensioning rule has been used, explained and concurred with LMSO structural and Safety responsables.

ADDITIONAL COMMENTS

Different definitions in Europe, as discussed with Bala. Issue will be discussed with him.

RID Disposition: Accepted

RID Status: Open

Action Item Information

Action Assigned?: Yes

Actionee(s): R. Schlitt/OHB

Phone Number(s):

Action Due Date: 6/15/2005

Action Completion Date:

Action: Replace Maximum Operating Pressure with Maximum Design Pressure and change description of required calculations to match.

Action Status: 05/25/2005 - Leland Hill working this issue with Reinhard Schlitt. MDP calculation under review.

Open Action Items Report

Open Item Number AMS_02-Thermal_CDR-06

RID Open Date: 4/4/2005

RID Closure Date:

Title: CAB MLI Discrepancy

Affected Document: AMS-02 MLI Description and CAB

Initiator(s): Chris Tutt/ESCG

Initiator(s) Phone Number: 2/81-461-5703

Description: DISCREPANCY

Section 3.3 of the CAB LHP Freezing Assessment states that MLI is needed over the cylindrical spring section of the LHP and the section running across the top of the CAB. These areas do not appear to be covered by MLI based on the description in the CAB section of the MLI document.

SUGGESTED SOLUTION

Add drawing to MLI description showing where CAB MLI is located relative to the CAB LHP. Add MLI to cover required sections of CAB LHP if not currently present.

SUPPLIER'S RESPONSE

We' ll do that as the CAB TCS design is completed.

RID Disposition: Accepted

RID Status: Open

Action Item Information

Action Assigned?: Yes

Actionee(s): Marco Molina/CGS

Phone Number(s):

Action Due Date: 6/15/2005

Action Completion Date:

Action: Add drawing to MLI description showing where CAB MLI is located relative to the CAB LHP. Add MLI to cover required sections of CAB LHP if not currently present.

Action Status: 05/25/2005 - On agenda in Madrid.

Open Action Items Report

Open Item Number AMS_02-Thermal_CDR-09-2

RID Open Date: 4/4/2005

RID Closure Date:

Title: Touch Temperature and Ammonia Freezing Analysis

Affected Document: AMS-02 LTA Report/AMS02-RP-CG

Initiator(s): Chris Tutt/ESCG

Initiator(s) Phone Number: 281-461-5711

Description: DISCREPANCY

Report does not address analysis of TCS hardware for safety requirements during LTA phases.

SUGGESTED SOLUTION

Provide data on worst case hot temperature of all TCS hardware not shaded from EVA contact and provide data on worst case cold temperatures for all heat pipes and loop heat pipes containing ammonia as working fluid.

SUPPLIER'S RESPONSE

List of AMS locations to be checked for unlimited contact is: handrails, EVA connector panel, capture bar. Nodes ID to be provided.

CGS will provide maximum temperatures for locations mentioned above and for all external location (to be checked against incidental contact requirements).

All axial grooved heat pipes are designed to freeze, no verification needed.

For CAB LHP freezing, look document 'CAB LHP freezing assessment' AMS02-CGS-TN-010 issue 1 that shows LHP ammonia will not freeze.

RID Disposition: Accepted

RID Status: Open

Action Item Information

Action Assigned?: Yes

Actionee(s): Marco Molina/CGS

Phone Number(s):

Action Due Date: 6/15/2005

Action Completion Date:

Action: Provide data on worst case hot temperature of all TCS hardware not shaded from EVA contact and provide data on worst case cold temperatures for all heat pipes and loop heat pipes containing ammonia as working fluid.

Action Status:

Open Action Items Report

Open Item Number: AMS_02-Thermal_CDR-14

RID Open Date: 4/4/2005

RID Closure Date:

Title: E-Crate bolt analysis

Affected Document: E-Crate Structural Analysis Report/

Initiator(s): Bruce Sommer/ESCG

Initiator(s) Phone Number: 581-461-5700

Description: Only the analysis for the bolts joining the E-Crate to the USS-02 and the E-Crate Walls to the Bottom Plate are documented in the report.

RID Disposition: Accepted

RID Status: Open

Action Item Information

Action Assigned?: Yes

Actionee(s): R. Zambra/CGS

Phone Number(s):

Action Due Date: 6/15/2005

Action Completion Date:

Action: Update the report to show analysis for all structural bolted joints in E-Crate.

Action Status:

Open Action Items Report

Open Item Number AMS_02-Thermal_CDR-15

RID Open Date: 4/4/2005

RID Closure Date:

Title: Inconsistent NAS1351 Bolt Yield Strengths

Affected Document: Main and Tracker Radiator Structur

Initiator(s): Bruce Sommer/ESCG

Initiator(s) Phone Number: 281-461-5700

Description: DISCREPANCY

Yield strength for NAS1351 bolts in OHB report is not the same as the yield strength for the same fastener type in the CGS report. This is consistent for all OHB v.s. CGS reports.

Bolt NAS1351

OHB Yield Allowable 950 MPa (138 ksi)

CGS Yield Allowable 827 MPa (120 ksi)

RID Disposition: Accepted

RID Status: Open

Action Item Information

Action Assigned?: Yes

Actionee(s): R. Schlitt/OHB

Phone Number(s):

Action Due Date: 6/15/2005

Action Completion Date:

Action: Find the documentation that verifies the yield strength of the fastener and update all reports to include the same allowable for the same bolt type.

Action Status: 05/06/05 - Updated document received and is under review.

04/25/05 - Procurement specifications FFS86E for NAS1351 fasteners was sent to CGS and OHB on 04/25/05. Page 7 of the document shows a minimum yield strength for these bolts is 120 ksi.

Open Action Items Report

Open Item Number AMS_02-Thermal_CDR-17

RID Open Date: 4/7/2005

RID Closure Date:

Title: Insert test and its applicability to different size of insert

Affected Document: Main and Trackor Structural Analys

Intiator(s): H. C. Lo/NASA-JSC

Intiator(s) Phone Number:

Description: DISCREPANCY

Three inserts, with size 3 fastener and face sheet of material 2024, were tested. The requirement to test 12 more insert has been planned. The upcoming test will use 6061 material face sheet. Also, there are two types of inserts, namely size 3 and size 4. The test result based on size 3 and 2024 will be deemed applicable to size 4 and 6061. Rationale has to be provided to make this jump of application.

RID Disposition: Accepted

RID Status: Open

Action Item Information

Action Assigned?: Yes

Actionee(s): R. Schlitt/OHB

Phone Number(s):

Action Due Date: 6/15/2005

Action Completion Date:

Action: Test result has to be presented and rationale given for the test applicability to cover size 4 insert and different face sheet material 6061. Test proposal end of April. Perform test ASAP

Action Status:

Open Action Items Report

Open Item Number AMS_02-Thermal_CDR-18

RID Open Date: 4/4/2005

RID Closure Date:

Title: Bimetallic Transition

Affected Document: TCS Hardware Design Report/AMS-

Initiator(s): H. C. Lo/NASA-JSC

Initiator(s) Phone Number:

Description: DISCREPANCY

Material corrosion can be a concern for bimetallic transition for long duration operation.

SUGGESTED SOLUTION

Clarification required

SCREENING PANEL CHAIRPERSON SIGNATURE

H LO (JSC)

BOARD DISPOSITION

Provide information on the connection materials

ADDITIONAL COMMENTS

Materials are in the materials list of the CDR package

RID Disposition: Accepted

RID Status: Open

Action Item Information

Action Assigned?: Yes

Actionee(s): R. Schlitt/OHB

Phone Number(s):

Action Due Date: 6/15/2005

Action Completion Date:

Action: Clarification required. Provide information on the connection materials.

Action Status: 05/10/05 - Per email from Marco Molina/CGS, he requested initiator (Dr. Lo) to agree on the answer. Reply has not been received yet, so action is still open.

Open Action Items Report

Open Item Number AMS_02-Thermal_CDR-29

RID Open Date: 4/4/2005

RID Closure Date:

Title: Integration of crates onto main radiator panel

Affected Document: Main & Tracker Radiator Structural

Initiator(s): H. C. Lo/NASA-JSC

Initiator(s) Phone Number:

Description: DISCREPANCY
Tolerance analysis is not presented.

SUGGESTED SOLUTION

Present the tolerance analysis or installation procedure for successful installation.

SCREENING PANEL CHAIRPERSON SIGNATURE

H LO (JSC)

BOARD DISPOSITION

Perform the tolerance analysis

RID Disposition: Accepted

RID Status: Open

Action Item Information

Action Assigned?: Yes

Actionee(s): R. Zambra/CGS

Phone Number(s):

Action Due Date: 5/15/2005

Action Completion Date:

Action: Perform the tolerance analysis and present the tolerance analysis or installation procedure for successful installation.

Action Status:

Open Action Items Report

Open Item Number *AMS_02-Thermal_CDR-42*

RID Open Date: *4/4/2005*

RID Closure Date:

Title: *Typo's*

Affected Document: *AMS-02 LTA Thermal Analysis Repo*

Initiator(s): *Craig Clark/ESCG*

Initiator(s) Phone Number: *281-461-5378*

Description: *DISCREPANCY*

Typos: remarks suggest "worst hot case", but should read "worst cold case" in tables 8-21, 8-23, 8-25, 8-27, 8-28, 8-29, 8-38, 8-42, 8-43

SUGGESTED SOLUTION

Correct typos in next release.

SUPPLIER'S RESPONSE

Next issue of the report will contain right labelling

RID Disposition: *Accepted*

RID Status: *Open*

Action Item Information

Action Assigned?: *Yes*

Actionee(s): *Marco Molina/CGS*

Phone Number(s):

Action Due Date: *7/31/2005*

Action Completion Date:

Action: *Correct typos in next release.*

Action Status:

Open Action Items Report

Open Item Number AMS_02-Thermal_CDR-56

RID Open Date: 4/4/2005

RID Closure Date:

Title: CAB Heaters

Affected Document: AMS-02 120VDC & 28VDC heater

Initiator(s): Craig Clark/ESCG

Initiator(s) Phone Number: 281-461-5378

Description: DISCREPANCY
CAB heaters are not defined.

SUGGESTED SOLUTION
Provide design details for CAB heaters

SUPPLIER'S RESPONSE
CAB design to be completed yet.
Details to be provided after design completion.

RID Disposition: Accepted

RID Status: Open

Action Item Information

Action Assigned?: Yes **Actionee(s):** Guillermo Munoz/CRISA

Phone Number(s):

Action Due Date: 8/1/2005

Action Completion Date:

Action: Provide design details for CAB heaters.

Action Status: 6/5/2005 - Date changed to 8/1/2005 to allow for CAB model improvements.

5/19/05 Heaters cannot be sized until CAB design is complete. On agenda for Madrid.

Open Action Items Report

Open Item Number AMS_02-Thermal_CDR-57

RID Open Date: 4/4/2005

RID Closure Date:

Title: TRDGB heaters

Affected Document: AMS-02 120VDC & 28VDC heater

Initiator(s): Craig Clark/ESCG

Initiator(s) Phone Number: 281-461-5378

Description: DISCREPANCY
Analysis of TRDGB heaters not provided.

SUGGESTED SOLUTION
Provide analysis for TRDGB heaters

SUPPLIER'S RESPONSE
Failure on analysis will be done by TRDGB thermal responsible.

RID Disposition: Accepted

RID Status: Open

Action Item Information

Action Assigned?: Yes **Actionee(s):** Craig Clark/ESCG

Phone Number(s): 281-461-5378

Action Due Date: 6/1/2005

Action Completion Date:

Action: Provide analysis for TRDGB heaters.

Action Status: 5/19/05 - Analysis is on hold pending signed contract between JS and ETH/MIT.

Open Action Items Report

Open Item Number AMS_02-Thermal_CDR-60

RID Open Date: 4/4/2005

RID Closure Date:

Title: Crate radiator heaters

Affected Document: TCS Heater Definition/AMS02-OHB

Intiator(s): Craig Clark/ESCG

Intiator(s) Phone Number: 281-461-5378

Description: DISCREPANCY:
Crate radiator heaters are not defined.

SUGGESTED SOLUTION
Provide details for crate radiator heaters.

RID Disposition: Accepted

RID Status: Open

Action Item Information

Action Assigned?: Yes **Actionee(s):** Christian Vettore/CGS

Phone Number(s):

Action Due Date: 8/15/2005

Action Completion Date:

Action: Provide PDS heater design allowing boxo to warmed to switch-on temperature with only one power feed at arm voltage levels.

Action Status: 5/27/2005 - Heater details provided, but warming the PDS was found to require both A&B power feeds. Only one feed will be available while on the arm. CGS to work issue.

Open Action Items Report

Open Item Number AMS_02-Thermal_CDR-61

RID Open Date: 4/4/2005

RID Closure Date:

Title: MLI mass budget

Affected Document: AMS-02 TCS Mass Budget, Feb 05

Initiator(s): Craig Clark/ESCG

Initiator(s) Phone Number: 281-461-5378

Description: No indication that mass is budgeted for MLI of CAB LHP or MLI of Cryo LHP.

RID Disposition: Accepted

RID Status: Open

Action Item Information

Action Assigned?: Yes

Actionee(s): Marco Molina/CGS

Phone Number(s):

Action Due Date: 8/1/2005

Action Completion Date:

Action: Make sure all MLI is accurately accounted for in TCS Mass budget.

Action Status: 6/8/2005 - Date changed to 8/1, on agenda at next TWG meeting.

05/19/05 - On agenda at CAB thermal meeting in Madrid, 5/30-6/1.

05/06/05 - Need CAB design to complete MLI estimate.

04/27/05 - TCS mass budget presented at the April TIM, but it was rejected. Mike Capell/AMS requested that a new due date be assigned to CGS. Craig Craig/ESCG to coordinate with CGS.

Open Action Items Report

Open Item Number AMS_02-Thermal_CDR-62

RID Open Date: 4/4/2005

RID Closure Date:

Title: MLI configuration and mass

Affected Document: AMS-02 MLI Description/AMS02-T

Initiator(s): Craig Clark/ESCG

Initiator(s) Phone Number: 281-461-5378

Description: MLI blankets are shown with beta-cloth only on the outside and VDA/Mylar/VDA on the inside. Mylar is prone to tearing and the VDA could cause electrical shorts. For durability beta-cloth may be required on both sides for some blankets. This would increase mass. No attachment (grommets, standoffs, etc.) are indicated in the mass estimates. For some blankets this could be a significant percentage of total mass. Overall mass estimates seem low.

RID Disposition: Accepted

RID Status: Open

Action Item Information

Action Assigned?: Yes

Actionee(s): Marco Molina/CGS

Phone Number(s):

Action Due Date: 8/1/2005

Action Completion Date:

Action: Verify all MLI configurations are adequate for durability and electrical considerations.
Make sure attachments are considered in mass estimates.
Recheck all MLI mass estimates.

Action Status: 6/5/2005 - Date changed to 8/1, on agenda at next TWG Meeting.

5/19/2005 - On agenda for Thermal Meeting in Madrid, 5/30-6/1.

Open Action Items Report

Open Item Number AMS_02-Thermal_CDR-68

RID Open Date: 4/4/2005

RID Closure Date:

Title: TRD Attitudes

Affected Document: AMS-02 TRD and UToF Thermal An

Intiator(s): Craig Clark/ESCG

Intiator(s) Phone Number: 281-461-5378

Description: TRD was only analyzed in 2 ISS attitudes, both at beta=+75. This is not enough to determine if all requirements are met.

RID Disposition: Accepted

RID Status: Open

Action Item Information

Action Assigned?: Yes

Actionee(s): R. Schlitt/OHB, C. Clark/ESCG

Phone Number(s):

Action Due Date: 6/15/2005

Action Completion Date:

Action: Analyze TRD for the entire range of ISS attitudes and beta angles. Also all STS free flying, docked on ISS, and handoff cases.

Action Status: 6/5/1005 - TRD thermal model to be increased to 15 nodes. Still to be verified whether 15 nodes will be sufficient.

5/19/2005 - OHB will perform analyses considering all attitudes and transients. This will be done after a TVT test and subsequent TRD model update.

Open Action Items Report

Open Item Number AMS_02-Thermal_CDR-69

RID Open Date: 4/4/2005

RID Closure Date:

Title: UPS requirements

Affected Document: Preliminary Thermal requirements f

Initiator(s): Craig Clark/ESCG

Initiator(s) Phone Number: 281-461-5378

Description: DISCREPANCY

There is no non-op limit specified for the UPS. The non-op limit should be -40 to +50C.

The UPS must be able to operate whenever the magnet is charged, but need only stay within non-op limits when the magnet is not charged (like when AMS-02 is in the Payload Bay).

CUPS should read UPS.

RID Disposition: Accepted

RID Status: Open

Action Item Information

Action Assigned?: Yes

Actionee(s): Marco Molina/CGS

Phone Number(s):

Action Due Date: 6/15/2005

Action Completion Date:

Action: Update Thermal ICD Table 8.2 to read:

UPS Operational Range (magnet charged) -25 to +50C.

UPS Non-operation Range (magnet uncharged) -40 to +50C.

Change all references from CUPS to UPS.

Action Status:

Open Action Items Report

Open Item Number AMS_02-Thermal_CDR-77

RID Open Date: 4/4/2005

RID Closure Date:

Title: (PRELIMINARY?) Thermal ICD

Affected Document: AMS02-TN-CGS-004_issue5

Intiator(s): Mike Capell/AMS

Intiator(s) Phone Number: +41 (22) 767 4706

Description: DISCREPANCY

Why is this (still) called

PRELIMINARY THERMAL REQUIREMENTS FOR AMS02 INTERNAL INTERFACES

~~~~~

**SUGGESTED SOLUTION**

Need comments

**SUPPLIER'S RESPONSE**

Will be eliminated in next issue

**ADDITIONAL COMMENTS**

Change name on working draft now.

---

**RID Disposition:** Accepted

**RID Status:** Open

---

## Action Item Information

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**Action Assigned?:** Yes

**Actionee(s):** Marco Molina/CGS

**Phone Number(s):**

**Action Due Date:** 7/31/2005

**Action Completion Date:**

**Action:** Will be eliminated in next issue

**Action Status:**

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## *Open Action Items Report*

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**Open Item Number** *AMS\_02-Thermal\_CDR-78*

**RID Open Date:** *4/4/2005*

**RID Closure Date:**

**Title:** *UPS temps LTA*

**Affected Document:** *AMS02-RP-CGS-006\_Iss2*

**Initiator(s):** *Mike Capell/AMS*

**Initiator(s) Phone Number:** *+41 (22) 767 4706*

**Description:** *DISCREPANCY*

*So far (and I've only gotten to STS docked but AMS still in bay) some of the temperatures look pretty cold (less than -30C).*

*Of course the magnet is not charged, but the thermal ICD lists the min temp as -25C.*

*SUGGESTED SOLUTION*

*Need comments*

*SUPPLIER'S RESPONSE*

*UPS requirements updated in next issue of ICD.*

*ADDITIONAL COMMENTS*

*1. UPS requirements updated in next issue of ICD*

*2. Results*

*Link to*

---

**RID Disposition:** *Accepted*

**RID Status:** *Open*

---

### *Action Item Information*

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**Action Assigned?:** *Yes*

**Actionee(s):** *Marco Molina/CGS*

**Phone Number(s):**

**Action Due Date:** *7/31/2005*

**Action Completion Date:**

**Action:** *UPS requirements updated in next issue of ICD.*

**Action Status:**

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## *Open Action Items Report*

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**Open Item Number** AMS\_02-Thermal\_CDR-82

**RID Open Date:** 4/4/2005

**RID Closure Date:**

**Title:** CAB Heater Schematic

**Affected Document:** AMS02-TN-CGS-007

**Intiator(s):** Mike Capell/AMS

**Intiator(s) Phone Number:** +41 (22) 767 4706

**Description:** DISCREPANCY

Looking at Fig 4-2, pg 20, I see that the thermostats for the CAB are both placed on the return line from the heaters. Is there a reason for this ? Usually we have been placing the first one on the return line and the second one on the input line because we understood this was the "normal practice". I don't think it makes much difference - but we should stick to one way or the other, no ?

**SUGGESTED SOLUTION**

Need comments

**SUPPLIER'S RESPONSE**

Will be fixed

---

**RID Disposition:** Accepted

**RID Status:** Open

---

### *Action Item Information*

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**Action Assigned?:** Yes

**Actionee(s):** Marco Molina/CGS

**Phone Number(s):**

**Action Due Date:** 8/1/2005

**Action Completion Date:**

**Action:** Figure needs to be fixed.

**Action Status:** 6/8/2005 - Datea changed to 8/1 to allow for CAB model update.

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## *Open Action Items Report*

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**Open Item Number** AMS\_02-TTCS\_PDR-01

**RID Open Date:** 4/4/2005

**RID Closure Date:**

**Title:** Detail Finite element model for the thermal bar and other related structures not available for review

**Affected Document:** Structural Analyses of the AMS-TTC

**Initiator(s):** H. C. Lo/NASA-JSC

**Initiator(s) Phone Number:**

**Description:** DISCREPANCY:

Detail finite element model for the thermal bar and other related structures is not presented in detail in the subject document for review. In addition, how the finite element model is constrained is not presented.

**SUGGESTED SOLUTION:**

Provide detail finite element model for review. If CAD model is available for the evaporator assembly, S&M (structures & Mechanism) would also like to review it.

**RID Disposition:**

**RID Status:**

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### *Action Item Information*

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**Action Assigned?:** Yes

**Actionee(s):** Johannes Van Es/NLR

**Phone Number(s):**

**Action Due Date:** 7/15/2005

**Action Completion Date:**

**Action:** Provide detailed finite element model for review.

**Action Status:**

---

## *Open Action Items Report*

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**Open Item Number** AMS\_02-TTCS\_PDR-02

**RID Open Date:** 4/4/2005

**RID Closure Date:**

**Title:** Thermal bars frequency analysis

**Affected Document:** Structural Analyses of the AMS-TTC

**Initiator(s):** H. C. Lo/NASA-JSC

**Initiator(s) Phone Number:**

**Description:** DISCREPANCY:

1. There is no figure 11, as mentioned.
2. When TPG material is neglected, the first mode shown is to be 80 hz which is close to a test result of 84 hz. However, when the TPG material is not neglected, the comparable analytical mode (second mode at 152 hz) is much higher than the test result.

**SUGGESTED SOLUTION:**

Explanation of the discrepancy.

---

**RID Disposition:**

**RID Status:**

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### *Action Item Information*

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**Action Assigned?:** Yes

**Actionee(s):** Johannes Van Es/NLR

**Phone Number(s):**

**Action Due Date:** 7/15/2005

**Action Completion Date:**

**Action:** NLR to provide explanation of the discrepancy and/or update document.

**Action Status:**

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## *Open Action Items Report*

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**Open Item Number** AMS\_02-TTCS\_PDR-03

**RID Open Date:** 4/4/2005

**RID Closure Date:**

**Title:** Evaporator tail need a redesign

**Affected Document:** Structural Analyses of the AMS-TTC

**Initiator(s):** H. C. Lo/NASA-JSC

**Initiator(s) Phone Number:**

**Description:** DISCREPANCY:

1. At the time of this delta CDR, section 6 still indicates a need for evaporator tail redesign due to large deformation. The large deformation is caused by evacuated vacuum case before launch.

**SUGGESTED SOLUTION:**

Need to present the evaporator tail redesign as soon as possible.

**RID Disposition:**

**RID Status:**

---

### *Action Item Information*

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**Action Assigned?:** Yes

**Actionee(s):** Johannes Van Es/NLR

**Phone Number(s):**

**Action Due Date:** 7/15/2005

**Action Completion Date:**

**Action:** NLR to provide evaporator redesign details.

**Action Status:**

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## *Open Action Items Report*

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**Open Item Number** AMS\_02-TTCS\_PDR-04

**RID Open Date:** 4/4/2005

**RID Closure Date:**

**Title:** frequency analysis for thermal bar, evaporator loop and clamp

**Affected Document:** Structural Analyses of the AMS-TTC

**Initiator(s):** H. C. Lo/NASA-JSC

**Initiator(s) Phone Number:**

**Description:** DISCREPANCY:

frequency analysis was done for each components. This approach is fine as long as each component is isolated to each other. However, there is no clear justification for this.

SUGGESTED SOLUTION:

Present rationale for doing frequency analysis for each component.  
Or perform analysis for the complete evaporator assembly.

**RID Disposition:**

**RID Status:**

---

### *Action Item Information*

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**Action Assigned?:** Yes

**Actionee(s):** Johannes Van Es/NLR

**Phone Number(s):**

**Action Due Date:** 7/15/2005

**Action Completion Date:**

**Action:** NLR to present rationale for doing frequency analysis for each component or perform analysis of complete assembly.

**Action Status:**

---

## *Open Action Items Report*

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**Open Item Number** AMS\_02-TTCS\_PDR-05

**RID Open Date:** 4/4/2005

**RID Closure Date:**

**Title:** Installation deformation figure 15

**Affected Document:** Structural Analyses of the AMS-TTC

**Initiator(s):** H. C. Lo/NASA-JSC

**Initiator(s) Phone Number:**

**Description:** DISCREPANCY:

Figure 15 is mention in section 6. But there is no figure 15.

**SUGGESTED SOLUTION:**

Correct the typo.

**RID Disposition:**

**RID Status:**

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### *Action Item Information*

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**Action Assigned?:** Yes

**Actionee(s):** Johannes Van Es/NLR

**Phone Number(s):**

**Action Due Date:** 7/15/2005

**Action Completion Date:**

**Action:** NLR to correct typos in next release of document.

**Action Status:**

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## *Open Action Items Report*

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**Open Item Number** AMS\_02-TTCS\_PDR-06

**RID Open Date:** 4/4/2005

**RID Closure Date:**

**Title:** Installation deformation release

**Affected Document:** Structural Analyses of the AMS-TTC

**Initiator(s):** H. C. Lo/NASA-JSC

**Initiator(s) Phone Number:**

**Description:** DISCREPANCY:

1. It is not clear how the assembly induced deformation is released after assembly. In one instance, it indicates that the 2mm deformation will be released. And in the other instance, it indicates that the 10 mm deformation is not acceptable and requires a evaporator tail redesign.
2. It is not clear how to measure the induced installation deformation. Or is there such a procedure to measure the installation deformation.

**SUGGESTED SOLUTION:**

1. Clarification required.
2. Implement a procedure to measure the installation deformation and set a range of acceptable installation deformation.

---

**RID Disposition:**

**RID Status:**

---

### *Action Item Information*

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**Action Assigned?:** Yes

**Actionee(s):** Johannes Van Es/NLR

**Phone Number(s):**

**Action Due Date:** 7/15/2005

**Action Completion Date:**

**Action:** NLR to clarify requirement and provide detail on how deformation will be measured.

**Action Status:**

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## *Open Action Items Report*

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**Open Item Number** AMS\_02-TTCS\_PDR-07

**RID Open Date:** 4/4/2005

**RID Closure Date:**

**Title:** Visual inspection of the weld and fracture analysis

**Affected Document:** Requirements for the manufacturing

**Initiator(s):** H. C. Lo/NASA-JSC

**Initiator(s) Phone Number:**

**Description:** DISCREPANCY:

1. Since visual inspection will be the inspection method for post-test verification, when perform fracture analysis, the minimum crack size has to be conforming to the inspection method.
2. Is there a structural analysis performed on the welds, including fracture analysis, as required?
3. Welding is performed at room temperature. During operation, the weld will be at a much lower temperature. How do we guarantee that the weld will be performing at a much lower temperature, possibly due to residual stress?

**SUGGESTED SOLUTION:**

Present strength and fracture analysis.

---

**RID Disposition:**

**RID Status:**

### *Action Item Information*

**Action Assigned?:** Yes

**Actionee(s):** Johannes Van Es/NLR

**Phone Number(s):**

**Action Due Date:** 7/15/2005

**Action Completion Date:**

**Action:** NLR to provide strength and fracture analysis

**Action Status:**

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## *Open Action Items Report*

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**Open Item Number** AMS\_02-TTCS\_PDR-08

**RID Open Date:** 4/4/2005

**RID Closure Date:**

**Title:** Leak integrity test still TBD

**Affected Document:** Requirements for the manufacturing

**Initiator(s):** H. C. Lo/NASA-JSC

**Initiator(s) Phone Number:**

**Description:** DISCREPANCY:  
Leak Integrity test still is listed as TBD.

**SUGGESTED SOLUTION:**  
Establish leak integrity test procedure as soon as possible.

**RID Disposition:**

**RID Status:**

---

### *Action Item Information*

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**Action Assigned?:** Yes      **Actionee(s):** Johannes Van Es/NLR

**Phone Number(s):**

**Action Due Date:** 7/15/2005

**Action Completion Date:**

**Action:** NLR to provide leak integrity test procedure

**Action Status:**

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## *Open Action Items Report*

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**Open Item Number** *AMS\_02-TTCS\_PDR-09*

**RID Open Date:** *4/4/2005*

**RID Closure Date:**

**Title:** *TTCS tube routing*

**Affected Document:** *TTCS System Design Description Su*

**Initiator(s):** *H. C. Lo/NASA-JSC*

**Initiator(s) Phone Number:**

**Description:** *DISCREPANCY:*

*TTCS tube routing goes along the strut into Ram and Wake radiator. Since RAM and WAKE radiator is a much flexible structure, thus it is subjected to a large deformation and deflection. How the TTCS tube routing is attached to the strut is not clear. How the TTCS tube is attached to the strut and how it is routed into the radiator can affect the stress in the tube.*

**SUGGESTED SOLUTION:**

*Present detail information about the TTCS tube routing into RAM and WAKE radiator for review.*

**RID Disposition:**

**RID Status:**

---

### *Action Item Information*

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**Action Assigned?:** *Yes*

**Actionee(s):** *Johannes Van Es/NLR*

**Phone Number(s):**

**Action Due Date:** *7/15/2005*

**Action Completion Date:**

**Action:** *NLR to provide details of TTCS tube routing*

**Action Status:**

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## *Open Action Items Report*

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**Open Item Number** AMS\_02-TTCS\_PDR-10

**RID Open Date:** 4/4/2005

**RID Closure Date:**

**Title:** Negative safety margin

**Affected Document:** TTCS box baseplate mechanical stru

**Initiator(s):** H. C. Lo/NASA-JSC

**Initiator(s) Phone Number:**

**Description:** DISCREPANCY:

Negative safety margins are shown in the analysis. Though the analysis is stated as rough analysis since detail information on components at this time is still not available, suggested remedy was not presented. Or different analysis approach is not attempted.

**SUGGESTED SOLUTION:**

Since this is a delta CDR, remedy for negative safety margin should be provided. The remedy can be re-design of the base plate/fasteners. Or the analysis can be re-done with different approach to show a positive safety margin. Leaving negative safety margin as presented is not desirable.

**RID Disposition:**

**RID Status:**

---

### *Action Item Information*

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**Action Assigned?:** Yes

**Actionee(s):** Johannes Van Es/NLR

**Phone Number(s):**

**Action Due Date:** 7/15/2005

**Action Completion Date:**

**Action:** NLR to provide remedy for any negative margins of safety presented at PDR.

**Action Status:**

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## *Open Action Items Report*

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**Open Item Number** *AMS\_02-TTCS\_PDR-11*

**RID Open Date:** *4/4/2005*

**RID Closure Date:**

**Title:** *Bolt and insert analysis*

**Affected Document:** *TTCS box baseplate mechanical stru*

**Initiator(s):** *H. C. Lo/NASA-JSC*

**Initiator(s) Phone Number:**

**Description:** *DISCREPANCY:*

- 1. how the bolt analysis is done is not presented in the subject document.*
- 2. bolt and insert technical information is not presented in the document.*
- 3. it is not clear that pre-load is considered in the bolt in the analysis.*

*SUGGESTED SOLUTION:*

*Provide information and specification on bolts and inserts used.*

*Provide bolt and insert detail analysis, including applicable document for bolt analysis and demonstrate that bolt analysis is compliant with the applicable document.*

---

**RID Disposition:**

**RID Status:**

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### *Action Item Information*

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**Action Assigned?:** *Yes*

**Actionee(s):** *Johannes Van Es/NLR*

**Phone Number(s):**

**Action Due Date:** *7/15/2005*

**Action Completion Date:**

**Action:** *NLR to provide bolt details and analysis for TTCS box.*

**Action Status:**

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## *Open Action Items Report*

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**Open Item Number** AMS\_02-TTCS\_PDR-12

**RID Open Date:** 4/4/2005

**RID Closure Date:**

**Title:** Finite element analysis approach and fastener analysis

**Affected Document:** TTCS box baseplate mechanical stru

**Initiator(s):** H. C. Lo/NASA-JSC

**Initiator(s) Phone Number:**

**Description:** DISCREPANCY:

1. "All box masses (including inside components) are modelled as uniformly distributed over the baseplate top face..." The box itself is not connected to the base plate. And the box has its own fastening point with USS. This assumption can be in error.
2. components/baseplate interface are connected with fasteners. It appears that there is no information on these. As such, no analysis on these fasteners.
3. No analysis provided on components within TTCB.

**SUGGESTED SOLUTION:**

Provide information when available.

Re-do analysis as appropriate.

The components inside TTCB has to be defined as soon as possible.

---

**RID Disposition:**

**RID Status:**

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### *Action Item Information*

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**Action Assigned?:** Yes

**Actionee(s):** Johannes Van Es/NLR

**Phone Number(s):**

**Action Due Date:** 7/15/2005

**Action Completion Date:**

**Action:** NLR to provide design detail and finite element analysis of TTCB components.

**Action Status:**

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## *Open Action Items Report*

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*Open Item Number* AMS\_02-TTCS\_PDR-14

*RID Open Date:* 4/4/2005

*RID Closure Date:*

*Title:* TTCS fluid

*Affected Document:*

*Initiator(s):* Klaus Luebelsmeyer

*Initiator(s) Phone Number:*

*Description:* DISCREPANCY:  
Using CO2 puts severe issues about freezing

*SUGGESTED SOLUTION:*  
Investigate impact of using alternative fluids with lower melting point, like propylene.

*RID Disposition:*

*RID Status:*

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### *Action Item Information*

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*Action Assigned?:* Yes      *Actionee(s):* Johannes Van Es/NLR

*Phone Number(s):*

*Action Due Date:* 7/15/2005

*Action Completion Date:*

*Action:* NLR to investigate alternatives to CO2 to avoid freezing.

*Action Status:*

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## *Open Action Items Report*

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**Open Item Number** AMS\_02-TTCS\_PDR-15

**RID Open Date:** 4/4/2005

**RID Closure Date:**

**Title:** OUT-OF-DATE informations

**Affected Document:** Pump spec. (AMSTR-TN-010-Pump-

**Intiator(s):** Mike Capell/AMS

**Intiator(s) Phone Number:** +41 (22) 767 4706

**Description:** DISCREPANCY:

The electronics description in the Pump requirements document (24 Jan 2005) is extravagantly out-of-date.

**RID Disposition:**

**RID Status:**

---

### *Action Item Information*

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**Action Assigned?:** Yes

**Actionee(s):** Johannes Van Es/NLR

**Phone Number(s):**

**Action Due Date:** 7/15/2005

**Action Completion Date:**

**Action:** NLR to update Pump requirements Document

**Action Status:**

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## *Open Action Items Report*

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**Open Item Number** AMS\_02-TTCS\_PDR-16

**RID Open Date:** 4/4/2005

**RID Closure Date:**

**Title:** DTS missing

**Affected Document:** TTCS System Design Description Su

**Initiator(s):** Mike Capell/AMS

**Initiator(s) Phone Number:** +41 (22) 767 4706

**Description:** DISCREPANCY:

Just looking at your figure 3-1 (Primary loop schematic), I was wondering that you don't measure the temperature on the return line from the tracker. Then I realized these are not needed as they are measured by the DTS within the tracker volume. Maybe this should be indicated somehow.....

**RID Disposition:**

**RID Status:**

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### *Action Item Information*

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**Action Assigned?:** Yes

**Actionee(s):** Johannes Van Es/NLR

**Phone Number(s):**

**Action Due Date:** 7/15/2005

**Action Completion Date:**

**Action:** NLR to provide description TTCS temperature measurement.

**Action Status:**

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## *Open Action Items Report*

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**Open Item Number** AMS\_02-TTCS\_PDR-17

**RID Open Date:** 4/4/2005

**RID Closure Date:**

**Title:** Welding on Magnet

**Affected Document:** TTCS System Design Description Su

**Intiator(s):** Mike Capell/AMS

**Intiator(s) Phone Number:** +41 (22) 767 4706

**Description:** DISCREPANCY:

Ref your remark 2, pg 9, welding on the magnet is "impossible". I would say this is not the case. I would say it is to be avoided if possible.

**RID Disposition:**

**RID Status:**

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### *Action Item Information*

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**Action Assigned?:** Yes

**Actionee(s):** Johannes Van Es/NLR

**Phone Number(s):**

**Action Due Date:** 7/15/2005

**Action Completion Date:**

**Action:** NLR to update document as suggested in next release.

**Action Status:**

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## *Open Action Items Report*

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**Open Item Number** AMS\_02-TTCS\_PDR-18

**RID Open Date:** 4/4/2005

**RID Closure Date:**

**Title:** Heaters Wiring

**Affected Document:** TTCS System Design Description Su

**Initiator(s):** Mike Capell/AMS

**Initiator(s) Phone Number:** +41 (22) 767 4706

**Description:** DISCREPANCY:

Ref Table 3-2, pg 14, it mentions the survival heaters tracker radiators are connected to the TTPD A-side and B-side. Of course they are connected to the PDS A-Side and B-side.

**RID Disposition:**

**RID Status:**

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### *Action Item Information*

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**Action Assigned?:** Yes

**Actionee(s):** Johannes Van Es/NLR

**Phone Number(s):**

**Action Due Date:** 7/15/2005

**Action Completion Date:**

**Action:** NLR to update document as suggested in next release

**Action Status:**

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## *Open Action Items Report*

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**Open Item Number** AMS\_02-TTCS\_PDR-19

**RID Open Date:** 4/4/2005

**RID Closure Date:**

**Title:** TTCrate location

**Affected Document:** TTCS System Design Description Su

**Intiator(s):** Mike Capell/AMS

**Intiator(s) Phone Number:** +41 (22) 767 4706

**Description:** DISCREPANCY:

Ref Fig 3-8, pg 16, TTCE location is shown incorrectly. It is on the bottom crate row. See attached CGS dwg. Of course I call it the TT-Crate. Of course the TTPD is still in the location indicated,

**RID Disposition:**

**RID Status:**

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### *Action Item Information*

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**Action Assigned?:** Yes

**Actionee(s):** Johannes Van Es/NLR

**Phone Number(s):**

**Action Due Date:** 7/15/2005

**Action Completion Date:**

**Action:** NLR to update document as suggested in next release

**Action Status:**

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## *Open Action Items Report*

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**Open Item Number** AMS\_02-TTCS\_PDR-20

**RID Open Date:** 4/4/2005

**RID Closure Date:**

**Title:** Modes Missing

**Affected Document:** TTCS System Design Description Su

**Initiator(s):** Mike Capell/AMS

**Initiator(s) Phone Number:** +41 (22) 767 4706

**Description:** DISCREPANCY:

Usually a document like this contains a table summarizing the first N modes (their frequency and effective mass).

It is not noted that this is being/has been performed, just a few pictures (Fig 17,18,19) are included without reference.

**RID Disposition:**

**RID Status:**

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### *Action Item Information*

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**Action Assigned?:** Yes

**Actionee(s):** Johannes Van Es/NLR

**Phone Number(s):**

**Action Due Date:** 7/15/2005

**Action Completion Date:**

**Action:** NLR to provide more details in the structural analysis report.

**Action Status:**

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## *Open Action Items Report*

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**Open Item Number** AMS\_02-TTCS\_PDR-21

**RID Open Date:** 4/4/2005

**RID Closure Date:**

**Title:** TTCB Missing Cover

**Affected Document:**

**Initiator(s):** Mike Capell/AMS

**Initiator(s) Phone Number:** +41 (22) 767 4706

**Description:** DISCREPANCY:  
TTCB doesn't have a cover

SUGGESTED SOLUTION:  
TTCB must be a closed box to enclose equipments located on the main structural plate

**RID Disposition:**

**RID Status:**

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### *Action Item Information*

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**Action Assigned?:** Yes      **Actionee(s):** Johannes Van Es/NLR

**Phone Number(s):**

**Action Due Date:** 7/15/2005

**Action Completion Date:**

**Action:** NLR to provide details on how the TTCB will be covered.

**Action Status:**

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## *Open Action Items Report*

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**Open Item Number** AMS\_02-TTCS\_PDR-23

**RID Open Date:** 4/4/2005

**RID Closure Date:**

**Title:** Missing Analysis

**Affected Document:** TTCS Box Temperature requirement

**Initiator(s):** Craig Clark/ESCG

**Initiator(s) Phone Number:** 281-461-5378

**Description:** DISCREPANCY:

No analysis results were provided for Tracker or TTCS

**SUGGESTED SOLUTION:**

Provide analysis results

**RID Disposition:**

**RID Status:**

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### *Action Item Information*

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**Action Assigned?:** Yes

**Actionee(s):** Johannes Van Es/NLR

**Phone Number(s):**

**Action Due Date:** 7/31/2005

**Action Completion Date:**

**Action:** NLR to provide temperature results for Tracker internals and TTCS system.

**Action Status:**

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## *Open Action Items Report*

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**Open Item Number** AMS\_02-TTCS\_PDR-25

**RID Open Date:** 4/4/2005

**RID Closure Date:**

**Title:** TTCS Heater Controls

**Affected Document:**

**Initiator(s):** Craig Clark/ESCG

**Initiator(s) Phone Number:** 281-461-5378

**Description:** DISCREPANCY:

TTCS heater controls and interlocks are not well defined. Heaters that are not two-fault tolerant need to be shown by analysis not to cause a safety problem.

Start-up heaters on tubing currently have no thermostats.

**SUGGESTED SOLUTION:**

Provide details for TTCS heater control (computer control, thermostats, etc). Show that all heaters are two-fault tolerant or show by analysis that a failed on heater will not cause a safety problem.

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**RID Disposition:**

**RID Status:**

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### *Action Item Information*

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**Action Assigned?:** Yes

**Actionee(s):** Johannes Van Es/NLR

**Phone Number(s):**

**Action Due Date:** 6/30/2005

**Action Completion Date:**

**Action:** NLR to provide details of Line heaters, including interlocks and failure analysis.

**Action Status:**

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## *Open Action Items Report*

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**Open Item Number** AMS\_02-TTCS\_PDR-26-1

**RID Open Date:** 4/4/2005

**RID Closure Date:**

**Title:** TTCS Manifold Attachment

**Affected Document:**

**Initiator(s):** Craig Clark/ESCG

**Initiator(s) Phone Number:** 281-461-5378

**Description:** DISCREPANCY:

The Upper Vacuum Case Joints may not be suitable for mounting the TTCS manifolds due to undesirable temperature extremes. This is critical to avoid CO2 freezing in the manifolds.

SUGGESTED SOLUTION:

Results of integrated thermal analysis need to be reviewed and a suitable mounting location identified.

**RID Disposition:**

**RID Status:**

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### *Action Item Information*

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**Action Assigned?:** Yes

**Actionee(s):** Johannes Van Es/NLR  
Marco Molina/CGS

**Phone Number(s):**

**Action Due Date:** 6/15/2005

**Action Completion Date:**

**Action:** NLR to work with CGS and NASA/ESCG to identify possible locations for mounting TTCS manifolds.

**Action Status:**

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## *Open Action Items Report*

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**Open Item Number** AMS\_02-TTCS\_PDR-26-2

**RID Open Date:** 4/4/2005

**RID Closure Date:**

**Title:** TTCS Manifold Attachment

**Affected Document:**

**Initiator(s):** Craig Clark/ESCG

**Initiator(s) Phone Number:** 281-461-5378

**Description:** DISCREPANCY:

The Upper Vacuum Case Joints may not be suitable for mounting the TTCS manifolds due to undesirable temperature extremes. This is critical to avoid CO2 freezing in the manifolds.

**SUGGESTED SOLUTION:**

Results of integrated thermal analysis need to be reviewed and a suitable mounting location identified.

**RID Disposition:**

**RID Status:**

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### *Action Item Information*

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**Action Assigned?:** Yes

**Actionee(s):** Marco Molina/CGS

**Phone Number(s):**

**Action Due Date:** 7/15/2005

**Action Completion Date:**

**Action:** CGS to provide interface temperatures at proposed locations defined in OPMT item AMS\_02-TTCS\_PDR-26-1.

**Action Status:**

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# Open Action Items Report

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**Open Item Number** AMS\_02-TTCS\_PDR-27

**RID Open Date:** 4/4/2005

**RID Closure Date:**

**Title:** TTCS Thawing

**Affected Document:**

**Initiator(s):** Craig Clark/ESCG

**Initiator(s) Phone Number:** 281-461-5378

**Description:** DISCREPANCY:

After an extended loss of power the CO2 in the radiator may freeze and the freezing will propagate along the tube, stopping before it get to the manifolds. Heaters will be used to first thaw the lines from the manifold end. After tubes are thawed, radiator heaters will be turned on. A safety problem may exist if radiator heaters are turned on before manifold lines are thawed. Heaters are controlled from ground command via the TTCE. There are currently no interlocks to prevent the radiator heaters turning on before the lines are thawed.

**SUGGESTED SOLUTION:**

Determine if there is any possibility to make this thawing process two-fault tolerant. If not provide a description of the thawing process and operational constraints to assure no inadvertent thawing of the radiator. This will need to be accepted by the safety panel.

**RID Disposition:**

**RID Status:**

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## Action Item Information

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**Action Assigned?:** Yes

**Actionee(s):** Johannes Van Es/NLR

**Phone Number(s):**

**Action Due Date:** 6/30/2005

**Action Completion Date:**

**Action:**

**Action Status:** 6/29/2005 - First test successful with no ruptures. NASA still waiting for test plans, test data, or any description of test results longer than two or three sentences.