Meeting Minutes, AMS-02 Configuration Control Board (CCB)
November 28, 2005

Attendees:

Trent Martin (NASA/JSC), Paul Nemeth (ESCG), Leland Hill (ESCG), John Stanford (NASA/JSC), John Heilig (ESCG), Mike Fohey (ESCG), Tim Urban (ESCG), Bruce Sommer (ESCG), Craig Clark (ESCG), Win Reid (OZ/Boeing), Bob Miley (OZ/USA), Robert Kinsey (SAIC), Via Telecon: Mike Capell (AMS Collaboration/MIT), Marco Molina (CGS), Johannes Van Es (NLR)

Agenda Item 1: CR AMS-02/D-014, Multi-layer Insulation for the Alpha Magnetic Spectrometer - Requirements Document (E. Orndorf/J. Cornwell)

M. Fohey presented a summary of comments that have been received to date from CCB members and mandatory evaluators on the MLI Requirements Document. A significant number of comments from J. Stanford were related to the correct style and format for a requirements document. A discussion ensued relative to what was needed by the designers, fabricators and users of the AMS MLI blankets to get the blankets done and installed on the payload. Was another requirements document really needed? The Board decided to update the technical content of the document with comments received and change the intent of the document from "requirements" to "guidelines". With this decision, the document was not baselined by the CCB. The Guidelines Document would be brought back to the CCB at a later date for baselining. Action assigned to Fohey to incorporate the approved comments and send the document out for another review.

A copy of the Comment Summary for CR D-14 is included as attachment 1.

Agenda Item 2: CR AMS-02/D-016, Alpha Magnetic Spectrometer - 02 (AMS-02) Assembly and Testing Integration Plan (T. Martin)

M. Fohey presented a summary of comments that have been received to date from CCB members and mandatory evaluators on the Assembly and Testing Integration Plan. T. Martin, author of the plan, agreed with the intent of all comments and took the action to incorporate them into the final version and then submit the document for approval signatures.

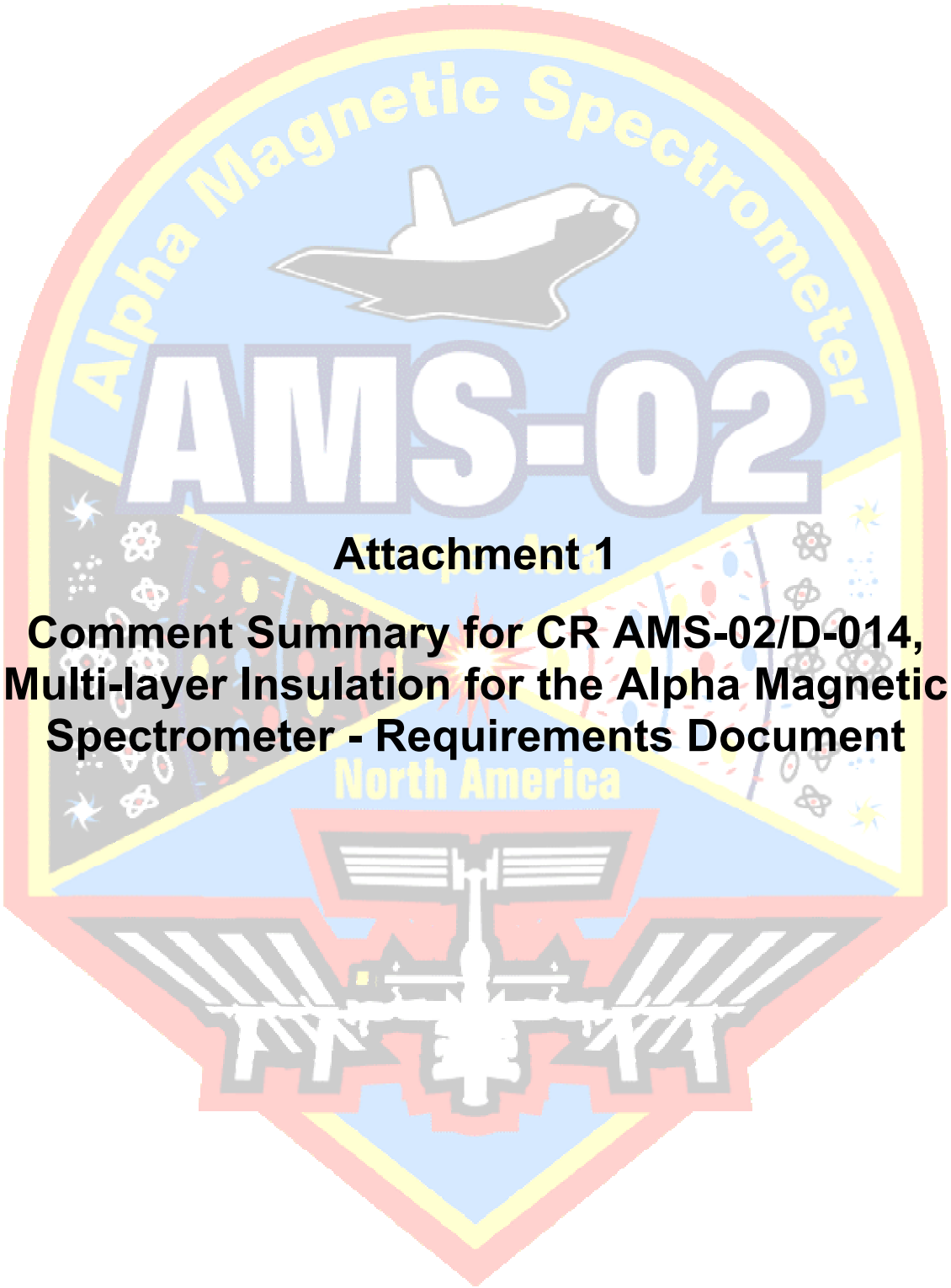
A copy of the Comment Summary for CR D-016 is included as attachment 2.

Agenda Item 3: CR AMS-02/D-015, Phase II Flight Safety Data Package for the Alpha Magnetic Spectrometer - 02 (AMS-02) (Hill)

Prior to reviewing the Comments Summary for the Phase II Flight Safety Data Package (SDP), the Board discussed the current status of the document and decided to defer this CR to a later date. It was agreed by all that there were still too many "TBDs" in the "Cryomagnet" and "Thermal Control System" sections of the document to baseline it at this time. The CR will be resubmitted after the number of TBDs is reduced significantly.

The Comments Summary for CR D-015 was not reviewed or discussed at this meeting. It is being included as attachment 3 for reference only.

Meeting was adjourned at 9:55.



Attachment 1

Comment Summary for CR AMS-02/D-014, Multi-layer Insulation for the Alpha Magnetic Spectrometer - Requirements Document

Comments for AMS-02/D-016

Phase II Flight Safety Data Package for the Alpha Magnetic Spectrometer – 02 (AMS-02)

Comments for AMS-02/D-015

CCB Member Responses

Steve Porter, Chair	No Comment/Recommendation
Trent Martin (EA)	No Comment/Recommendation
Paul Nemeth (ESCG)	No Comment/Recommendation
Mark Schmalz (EA2)	No Comment/Recommendation
Ann Vaughan (DA)	Approved – As Written
J. J. Conwell (MA)	No Comment/Recommendation
John Stanford (NT)	Approved with Comments
Win Reid (OZ)	Approved with Comments
Jack Keifenheim (KSC)	Approved with Comments
Bill Hungerford (AMS)	No Comment/Recommendation

Comments for AMS-02/D-015

Mandatory Evaluator Responses

Mike Capell	Approved with Comments
Marco Molina	Approved with Comments
Klaus Lübelsmeyer	Approved with Comments
Roberto Battiston	Approved with Comments
Giuliano Laurenti	
Franco Cervelli	
Jean-Pierre Vialle	Approved with Comments
Joe Burger	
Stephen Harrison	
Wolfgang Wallraff	Approved with Comments
Paolo Trampus	
Martina Green	
Y. T. Ting	
Guillermo Muñoz	
Agnieszka Jacholkowska	
Johannes Van Es	

Comments for AMS-02/D-015

Comment from Win Reid/Laurie Morrow

Evaluation:

All Hazard Reports that require thermal analysis show status as OPEN with no reference to thermal analysis. For Phase II SRP, the Hazard report should contain finalized verification. If final verification is not available, a status of each of the Controls should be provided. AMS-02-F15 Page A-336 contains highlighted comments with no explanation.

Evaluation of Non-incorporation:

Hazard Reports can not be evaluated.

Comments for AMS-02/D-015

Comment from Win Reid/Laurie Morrow

Evaluation:

Appendix B TCS Heater Properties is not fully completed. What is meant by "double-sided" in the Mounting column for some heaters? Why does PDS have (106.1?) for min voltage? Will a setpoint of -9.7C sufficiently keep the Cryocooler above the -10C desired temperature (could there be cold spots?).

Evaluation of Non-incorporation:

Assessment of provided material cannot be completed until all inputs are understood.

Comments for AMS-02/D-015

Comment from Win Reid/Laurie Morrow

Evaluation:

Appendix B TCS Heater Properties contains comments for the TRDGB Tank heaters that failed "ON" heaters could cause exceedance of max design temperatures. Should this be addressed in a Hazard Report?

Evaluation of Non-incorporation:

Full understanding and evaluation of the potential hazard may not be addressed.

Comments for AMS-02/D-016

Comments from Marco Molina

- Updated figures are provided in the annex file "TCS SDP Open Items_MM_withfigures.doc". All the new figures are highlighted with yellow captions.
- Updated pressure table is provided in he annex file "PRESSURE_SYSTEMS_TABLE_rev_MM_2.doc".
- Following changes are proposed to the text:
- Para 5.11.1.1 should read: A silicone based thermal interface filler, Cho-therm 1671, is used to minimize the thermal resistance across this interface.
- Page 243: USS-02 instead os USS-01;

Comments for AMS-02/D-015

A number of corrections/edits/rewrites/figure updates have been received:

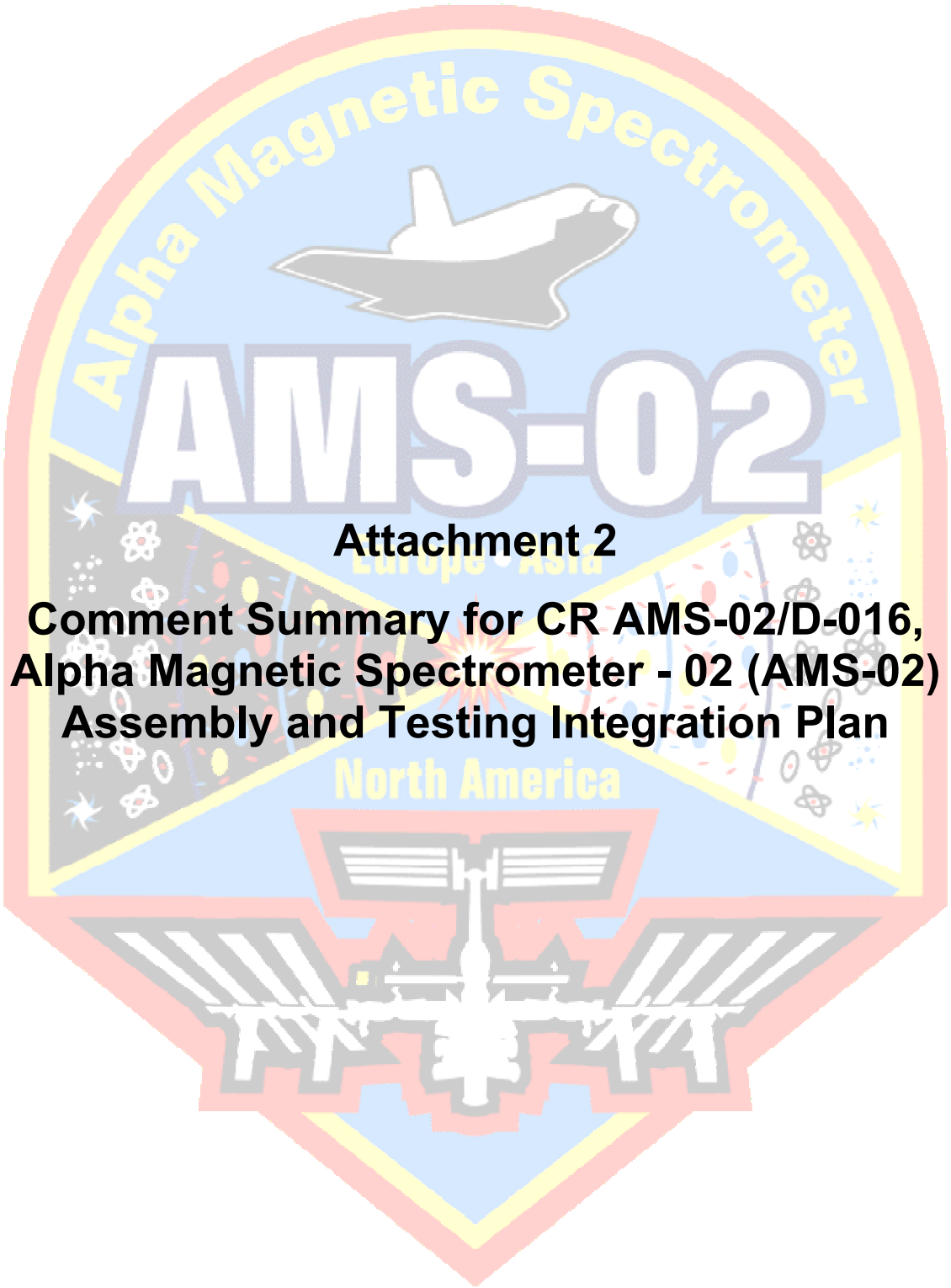
TRD (including TRD Gas Supply) – Thorsten Siedenburg

Tracker – Maurice Bourquin

TCS – Marco Molina

ECAL – Jean-Pierre Vialle

Electronics – Tim Urban & Mike Capell



Attachment 2

Comment Summary for CR AMS-02/D-016, Alpha Magnetic Spectrometer - 02 (AMS-02) Assembly and Testing Integration Plan

Comments for AMS-02/D-016

Magnetic Spectrometer – 02 (AMS-02) Assembly and Testing Integration Plan

Comments for AMS-02/D-016

CCB Member Responses

Steve Porter, Chair	*No Comment/Recommendation*
Trent Martin (EA)	Initiator
Paul Nemeth (ESCG)	No Comment/Recommendation
Mark Schmalz (EA2)	*No Comment/Recommendation*
Ann Vaughan (DA)	No Comment/Recommendation
J. J. Conwell (MA)	Approved – As Written
John Stanford (NT)	Approved with Comments
Win Reid (OZ)	*No Comment/Recommendation*
Jack Keifenheim (KSC)	Approved with Comments
Bill Hungerford (AMS)	Approved – As Written

Comments for AMS-02/D-016

Mandatory Evaluator Responses

Mike Capell	Approved with Comments
Marco Molina	Approved with Comments
Wolfgang Wallraff	Approved with Comments

Comments for AMS-02/D-016

Comment from John Stanford

Paragraph: 8.2.5, Quality Inspections

Problem: The PIT Manager and the EIT Manager are responsible for developing "detailed" plans for quality inspection during assembly and testing.

Question 1: Who approves inspection plans? The PIT and EIT should after assigning the development task to technical and quality personnel.

Recommend: NASA-JSC Quality (1) review quality inspection plans and concur on them or (2) be a part of developing inspection plans or (3) both when inspections high fidelity hardware or involves safety critical attributes. For activities at KSC, NASA-KSC Quality and other designated personnel will complete this action.

Comments for AMS-02/D-016

Comment from John Stanford

Paragraph: 8.2.4, Testing Process

Problem: "A Test Plan will be developed for each test and reviewed by the testing team at a Test Readiness Review at least 30 days prior to the test."

Question 1: Who is responsible for developing the test plan?

Question 2: Who will chair the Test Readiness Review? It should not be the person who develops the plan.

Recommend: NASA-JSC Quality (1) reviews the test plans and concurs on them or (2) be a part of developing the test team or (3) both when test is high fidelity or involves testing safety critical attributes. For activities at KSC, KSC Quality and other designated personnel will complete this action.

Comments for AMS-02/D-016

Comment from John Stanford

Paragraph: 9.1, Assembly Schedule

Problem: The master assembly schedule will be developed and maintained by the PIT Manager and coordinated with the EIT Manager."

Question 1: Should this master assembly schedule be baselined by the CCB?

Question 2: Should major changes be reviewed by the CCB?.

Recommend: The CCB process would aid the PIT and EIT Managers in coordinating the assembly schedule and major changes to the schedule.

Comments for AMS-02/D-016

Comment from John Stanford

Paragraph:	10.0, Transportation and Delivery
Problem:	This section does not address post-delivery at KSC. Paragraph 6.1 states "NASA-KSC will provide specialized test facilities, support equipment, and personnel to integrate the payload into the Shuttle Orbiter payload bay at KSC."
Question 1:	What Collaboration personnel, equipment or tools will be required at KSC?
Question 2:	Who will manage this activity, PIT Manager or NASA-KSC?
Question 3:	Who is responsible for test plans and Quality Inspections, PIT Manager or NASA-KSC? I don't know all of the functional checkout tests that are required as part of KSC processing, but these must not be overlooked.

Comments for AMS-02/D-016

Comments from Jack Keifenheim

Section: 8.2.4

Comment: I am not sure how applicable this document is to KSC on-line processing.

KSC conducts Test Readiness Reviews (TRR) no earlier than one week prior to the start of testing. Typically, first a constraints review is held anywhere from 10 days to 5 days prior to the test. A subsequent "delta" constraints review may be held following this. The Test Readiness review follows and it is anywhere from 1 week to 2 or 3 days prior to the test. Finally, a Pre-Test Briefing is held just prior to the start of the test. It seems like a TRR 30 days prior to the start of a test is too early, but maybe your TRRs have a different scope than ours. Just a comment!

CCB Response: This document is not applicable to KSC. AMS will follow all KSC policies and procedures during all KSC processing.

Comments for AMS-02/D-016

Comment from Bill Hungerford

Looks like a real good start to me: recommend base-lining as is and then tweaking later as necessary

Comments for AMS-02/D-016

Comment from Mike Capell

Section 5.2 - Payload Configuration:

Detector elements unclearly labeled:

Is: 1) Transition Radiation Detector,

2) Time of Flights,

4) Ring Imaging Cherenkov Counter,

6) Anti-Coincidence Counter,

(Note: This problem exists in previous documents.)

Change to:

1) Transition Radiation Detector and associated Gas System,

2) Time of Flight Counters,

4) Ring Imaging Cerenkov Counter,

6) Anti-Coincidence Counters,

(Note: These changes should be applied to all future documents.)

Comments for AMS-02/D-016

Comment from Mike Capell

Section 6.2: CERN Role

CERN is providing only a small fraction of the noted items. Most are being provided by the collaboration (sec 6.7) for use at CERN.

Section 7.4 (Likewise) I think "AMS" will need to provide such a facility manager for work at CERN.

Section 8.2.5 Likewise in last paragraph of section.

Charge Section 6.2 to:

CERN, together with the "Other Collaborators" (see sec 6.7), will provide the specialized facilities, support equipment, and personnel to support final payload assembly and integration testing. This will include local facility safety, security, configuration management, quality control and assurance, and test planning and conducting.

Make similar modifications to Sections 7.4 and 8.2.5

Comments for AMS-02/D-016

Comment from Mike Capell

Section 8.2.5 - Tools & Equip

1. It is not realistic to imagine that all tooling will be "non-magnetic" - for example soldering irons. On the other hand it is realistic to imagine that only non-magnetic tools are used or stored near to the P/L when the magnet is charged.
2. Also, the T&E listed will not be provided by CERN/MIT, but by "Other Collaborators".
3. It is pretty dumb to have a list of tools in a configuration controlled document.

Charge Section 8.2.5 to:

"Other Collaborators" will provide all standard tools required for assembly. All tools to be stored or used in proximity to the magnet when charged must be non-magnetic. Both English & metric sizes, etc, must be supplied where required. A list of standard tools is shown below as an example only.

Comments for AMS-02/D-016

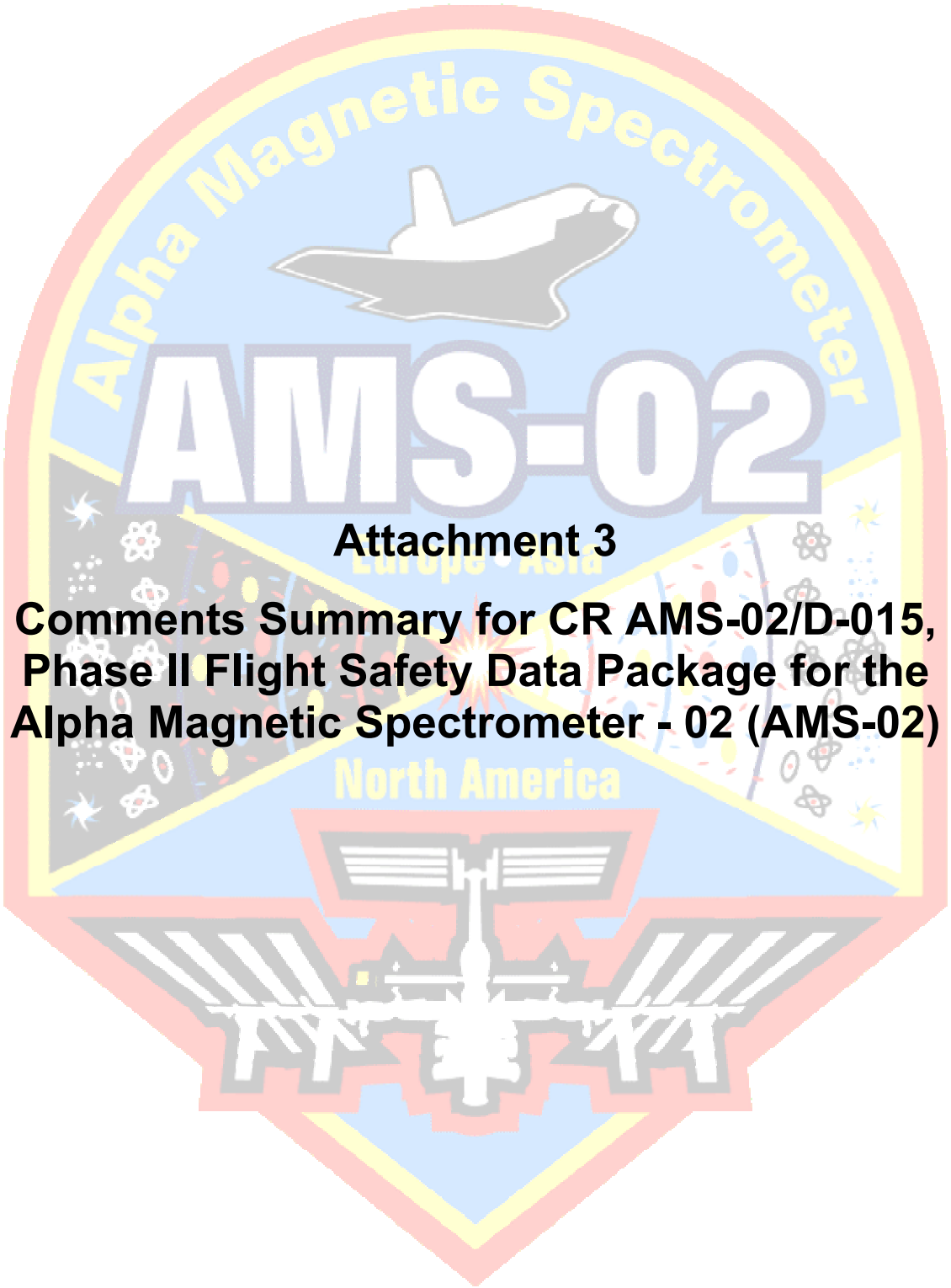
Comments from Marco Molina

1. Definition of Collaborator in para 4. is broader than the list provided in 6.7. Being the Collaboration a dynamic entity I recommend not to quote the 'other collaborators' . Otherwise, also entities like CGS or Isatec should be mentioned (being in charge of the design of some parts).
2. Para 7.2 a more precise definition of "Experiment Component Organizations" is needed.
3. In Table at para 9.1 the CAB TCS must be added (after wake radiator)

Comments for AMS-02/D-016

Comments from Wolfgang Wallraff

For completeness it might be advisable that you have a specific entry in your assembly table in section 9.1, that covers the work for installing the TAS (tracker alignment system) with its associated electronics (housed in the M-crate and on the TRD mech. structure) and its optical fibres. The M-crate supports also the star tracker and GPS electronics.



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