



AMS Logistics Minutes and Actions November 9 – 11 2009



Alpha Magnetic Spectrometer (AMS) Logistics and Transportation Meeting Minutes

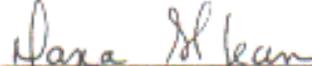
Prepared by:


Terry Traylor, Boeing-KSC

Concurrence:


John E. McFarland, Boeing-KSC

Concurrence:


Dana St Jean, NASA KSC

Reviewed by:


Ken Bollweg, NASA-JSC AMS
Deputy Project Manager &
Integration Manager


Professor S.C.C. Ting, MIT,
AMS PI

Joseph T Delai, KSC Mission
Manager

Trent Martin, JSC NASA AMS
Project Manager



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The United States Department of Energy (DOE), in its role of payload sponsor and under an inter-agency implementing arrangement between the DOE and National Aeronautics and Space Administration (NASA) is conducting a state-of-the-art high-energy physics cryogenic superconductive magnet experiment that is designed to search for anti-matter and dark matter.

The AMS is pioneering a new frontier in particle physics research for the 21st century. This unique scientific mission of exploration seeks to understand fundamental issues shared by physics, astrophysics and cosmology on the origin and structure of the Universe. Although the AMS is specifically looking for antimatter and dark matter, as the first magnetic spectrometer in space, AMS has and will collect information from cosmic sources emanating from stars and galaxies millions of light years beyond the Milky Way.

Meeting Objective:

This meeting is the first face to face meeting between KSC Logistics and the AMS personnel. We are planning, documenting and recording the requirements to ensure the safe arrival and KSC Logistics Support required supporting the transportation, processing, and testing of the AMS, Loose Flight hardware and GSE while at KSC.

Monday, November 9, 2009

<i>Discussion</i>	<i>Identification</i>
KSC Logistics provided a Transportation overview presentation that discussed the KSC/AMS Roles, KSC SLF and SSPF capabilities, staging areas, contingency planning, and schedule build.	I
AMS payload – Details on how the AMS will be loaded and unloaded from the C5 need to be determined. The C5 cargo loading system needs to be verified and capabilities determined for the payload. KSC will obtain information on the C5 for the AMS team.	D-AI
KSC recommends that the AMS remain on the trailer in the SSPF airlock. The trailer can be moved into the SSPF Highbay by a tug. From there, the AMS can be craned into footprint 7. This will eliminate additional handling of the AMS.	D - A
Import/Export control – the AMS payload is under the Department of Energy Duty Free Certifications, but the GSE is not. GSE is covered under the NASA Duty Free certifications and is a NASA responsibility	I
The AMS team will uncrate their shipments for the most part but will need assistance with lifting and handling of the larger items.	D-A



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<i>Discussion</i>	<i>Identification</i>
<p>Items of concern outside of the AMS payload:</p> <ul style="list-style-type: none">▪ Cryo Transfer Lines – Steel container that will weigh 1150Kg with dimensions of 5.9m long x 1.9m wide x 1.1m high. This item will require standard web straps. Crane operations will be required for off-load and removing the lid.▪ H_e Dewars – The Transfer Dewar and Fill Transfer Line will be shipped from CERN to KSC prior to the AMS payload arrival. The Master Dewar will ship with the AMS. KSC recommends that the dewars be crated to protect the item from damage.	D
<p>The AMS team and KSC agreed that one Transportation Plan will be created to cover both the shipping and the receiving operations of the AMS. The basic plan and details will be discussed during the meetings on 10 Nov.</p> <ul style="list-style-type: none">▪ The RLF, VAB, or CRF can be used as a safe haven contingency for bad weather. NASA will confirm.▪ KSC needs a list of GSE that will be shipped with when and how the items will be shipped. List could be available (draft mid-December)	I -AI
<p>KSC will store the specialty containers for AMS. Simple wooden crates will be recycled and KSC will build the necessary crates for return shipments</p>	I



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Tuesday, November 10, 2009

<i>Discussion</i>	<i>Identification</i>
<p>KSC went over the transportation draft plan with AMS</p> <ul style="list-style-type: none"> • We went line by line thru the roles and responsibilities section to determine the Lead vs. Support requirements • We also concentrated on the K-loader drawing / pictures and information provided by KSC. <ul style="list-style-type: none"> - It appears a K-loader will be required for the C-5 or the 747. • It was noted that several items will require vapor barrier, desiccant, flat pallet crates and foam protection • It was noted that when the mission is completed, some items will be scrapped, some will return to EU, some will be shipped to JSC / MIT • There will be three (3) or more shipments. <ol style="list-style-type: none"> 1. Transfer Dewar and Fill Transfer Line – might be other hardware from Geneva/CERN to KSC – Mid-January, 2010. The Transfer Dewar will be shipped warm & dry. 2. Other GSE from Geneva/CERN to KSC – end of January, 2010 3. AMS / PSS / Other flight and GSE from ESTEC to KSC – April, 2010. The Master Dewar will be shipped warm & dry. The AMS Flight Cryostat will be shipped as full as possible (~2400 liters) with superfluid helium (~1.8 K). The AMS Payload in the PSS will contain pressurized composite overwrapped Pressure Vessels (COPVs) containing Xenon, Carbon Dioxide, and Helium. The AMS active thermal control systems contain small quantities of ammonia (in factory-sealed heat pipes), propylene (in factory-sealed loop heat pipes), and carbon dioxide in welded tubing. 4. Other shipping as required. 	I
<p>The Dewar support stand (elevator) (KSC item) needs to be in place prior to arrival</p>	A

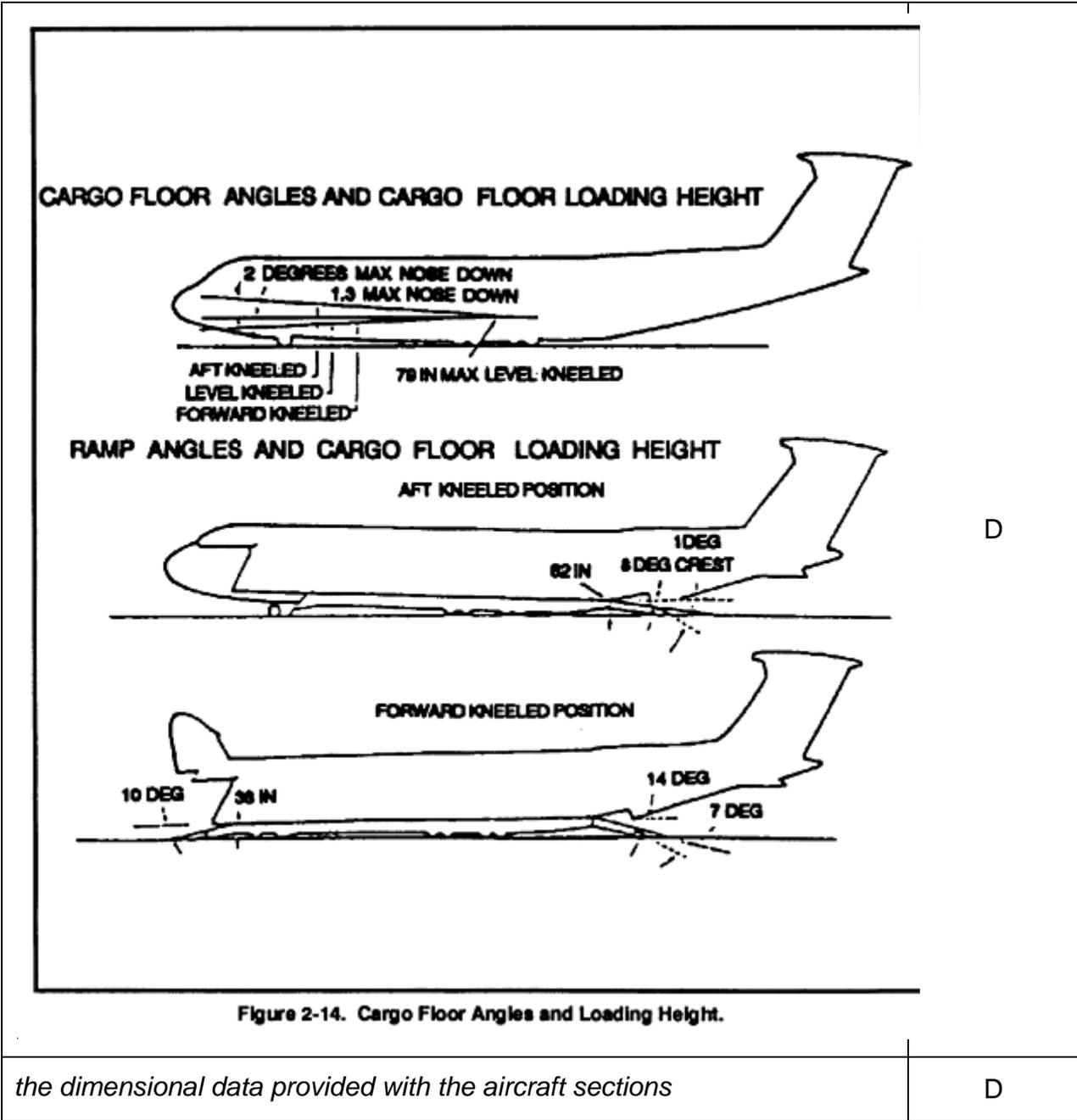


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Wednesday, November 11, 2009

<i>Discussion</i>	<i>Identification</i>
KSC to produce a white paper on what AMS requirements should be made part of the contract with the shipper / packing crew	I/AI
KSC to provide recommendations for how to protect / pack the hardware	I/AI
Tour the hardware (twice) to determine additional requirements / concerns	D
A 120VAC generator will be required at KSC and at ESTEC to Schipol (AMS) Airport – standard US pigtail (plug).	I/D
C-5 Passenger Considerations. The troop compartment is in the upper deck area on the C-5 aircraft. It is a self-contained compartment with a galley, two lavatories, and can have 73 available passenger seats.	D
<p>For general cargo and vehicular tie-down provisions, the cargo floor of the C-5 has 304 flush, permanently installed rings. Each ring can sustain a design limit load of 25,000 pounds. The tie-down rings are designed to receive either one hook from a 25,000-pound restraint device or two hooks from 10,000-pound restraint devices.</p> <p>Another feature that facilitates and expedites loading and unloading operations is the kneeling capability. Kneeling the landing gear permits the cargo compartment floor to be lowered approximately 10 feet to about 3 feet above the ground. This kneeling feature was incorporated for two reasons: to facilitate loading operations by lowering the cargo ramps for truck-bed and ground loading and to reduce the ramp angles for loading and unloading vehicles</p>	D





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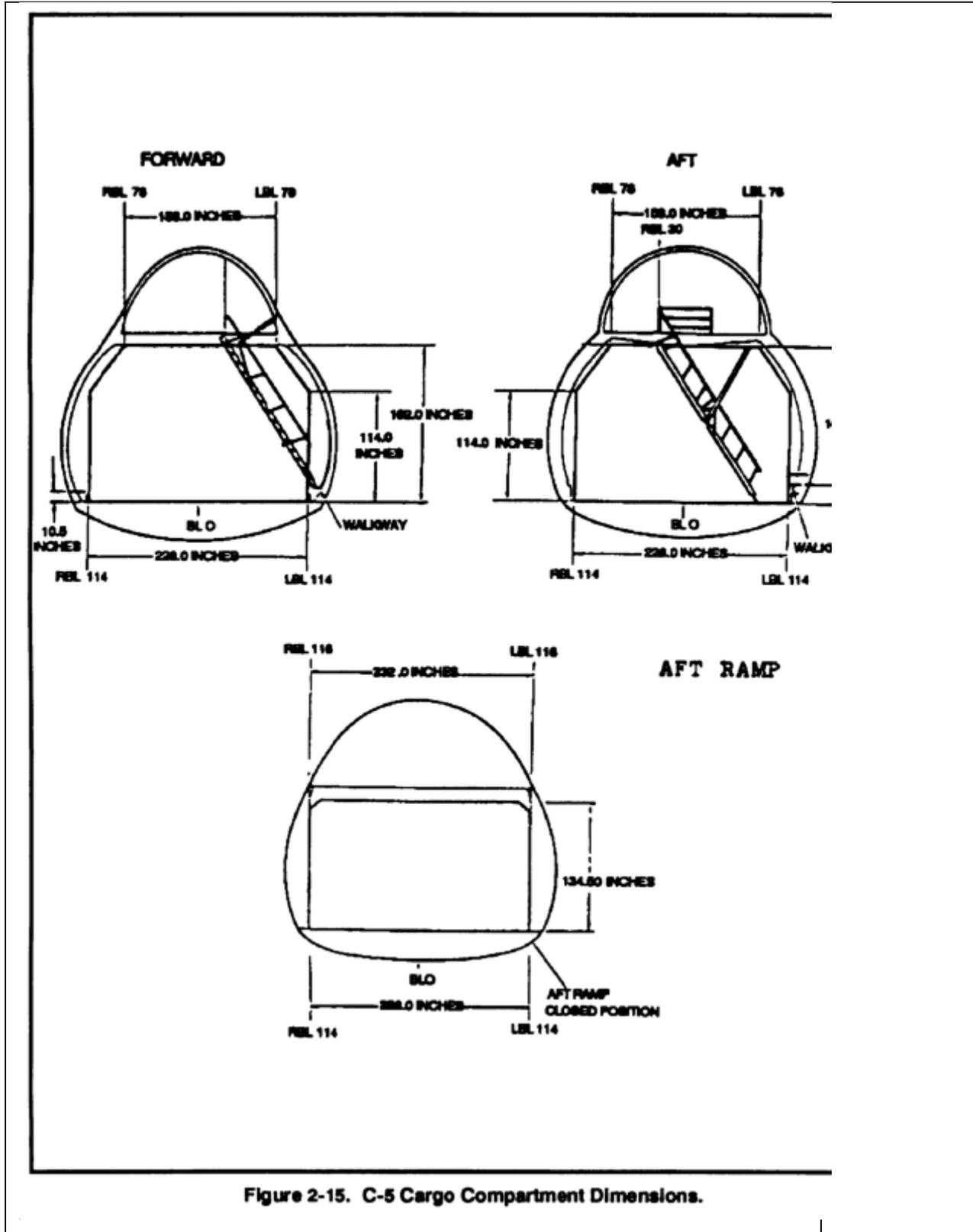


Figure 2-15. C-5 Cargo Compartment Dimensions.



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Next telecom is schedule for TBD	I
Meet with Dr. Susan Ting on Transportation and Duty free Certificate. The last Duty Free Certification from Department of Energy (DOE) was issues on June 7, 2000 and expired in 2005. Dr. S. Ting has requested that KSC produce a letter that she can send to DOE for an extension of the Certification or request a new one.	I-A
<p>The NASA AMS office as requested that KSC logistic team support the movement from Geneva to Noordwijk, and from Noordwijk to KSC. Our role in the support from Geneva is to:</p> <ol style="list-style-type: none"> 1. Assist in the preparation of the shipping lists 2. Provide recommendation on the packing to help protect the hardware 3. Review the technical requirements for the selection of the packing company. <ol style="list-style-type: none"> a. Note: Because AMS will be using a C-5, the packing / shipping company will be required to load the aircraft. b. This is not normal because a C-5 is normally loaded at an Air Force base, by the Air Force. The C-5 will only bring 2 load masters and the shipping company will have to provide worker support. c. The packing company will be required to build skids and crates that can be reusable for the shipment to KSC. 	I-A
Professor Ting named the AMS logistics and Transportation POC as William J. Hungerford.	I

Discussion Items:
D: Discussion
I: Important Points
A: Agreement
AI: Action Items



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A/I	Action	Assigned To	Due	Remarks
1	Determine the C5 loading capabilities to include roller system, on/off load dimensions envelope, power capabilities (110 ac/dc) and ramp weight load capabilities	John McFarland / Terry Traylor, KSC	15 December	We are to get with a C-5 load master at PAFB
2	Provide a copy of the C5 presentation	Ken Bollweg	Closed	
3	Provide to AMS team a guide on packing of hardware for import to the US	John McFarland, KSC	15 December	
4	Provide a 1 st draft listing of what is shipping	Ken Bollweg	Closed	Provided at 1 st meeting
5	Determine if KSC support is needed before shipment to Noordwijk.	Ken Bollweg	1 December	
6	Identify specialty containers that will need to be stored.	AMS Shipping POC	Before each shipment	
7	Determine cost of using a K-loader at SLF	Dana St. Jean	15 December	
8	Determine where the Transfer Dewar and Fill Transfer Line will be stored before the demo	Terry Traylor	15 December	We plan to store the Transfer Dewar and Fill Transfer Line in the SSPF footprint #7 after the demo.
9	Determine in flight requirements (monitoring / power / etc.) for the payload	AMS Shipping POC		120 VAC is required and 120VDC may be required.
10	Determine the requirements (monitoring / power / etc.) for the Cryo Coolers from the SLF to SSPF	AMS Shipping POC		120 VAC is required and 120VDC may be required.
11	Determine generator requirements from the SLF to the SSPF for the trailer. Contingent on AI number 10.	John McFarland		120 VAC is required and 120VDC may be required.



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A/I	Action	Assigned To	Due	Remarks
12	Does the Dewar support stand (elevator) need to be in place prior to arrival?	Ken Bollweg	Closed	Yes, it does.
13	Discuss the requirement for providing techs to support lifting and handling while un-crating	Dana St. Jean	15 December	With the MPT
14	Produce small white paper on Shipping requirements and what the AMS packer / shipper needs to do – i.e. if they use a C-5 a 747 K-loader would be required. Include use of 436l pallets	John McFarland	15 December	
15	Find out temp. humidity requirements / specifications inside C-5 cargo	John McFarland		
16	Identify AMS Transportation POC for shipments from CERN and ESTEC to KSC.	Prof. Ting	1 December	
17	Set up share point on JSC AMS website for Transportation Plan updates	Trent Martin	1 December	
18	Determine which version of the C-5 will be used.	Prof. Ting	1 December	
19	Confirm RLF, VAB, or CRF can be used as a safe haven contingency for bad weather.	John McFarland	15 December	
20	KSC to produce a draft letter for Dr. Susan Ting to use to obtain a DOE duty free certification.	John McFarland	1 December	



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Attendance Listing

Name	Title	Phone Number
Dr. Susan Ting	MIT	+1-617-253-8332
Ken Bollweg	NASA	+1832.623.8268 (mobile)
Bill Hungerford	MIT-Houston	+1713.876.1215
Joseph Burger	MIT	+41227675914
Dana St. Jean	NASA-KSC Logistics	+1321.867.6476
Jack Keifenheim	NASA-AMS KSC Rep	+1321.867.6028
John McFarland	Boeing-KSC Logistics	+13212891374
Terry Traylor	Boeing-KSC Logistics	+1321.867.5691



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Pictures of Hardware from AMS to KSC



Note – Electronic Equipment

