

International Space Station Program

**Space Station Assembly Flight (ISS-134)
Utilization and Logistics Flight 6
Alpha Magnetic Spectrometer
AMS-02**

Launch Site Support Plan

Mission Integration Plan (NSTS 21507)
Annex 8

APPROVAL PAGE

Launch Site Support Plan

For

Launch Package/ISS-ULF6

Annex 8, MIP NSTS 21507

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ABBREVIATIONS AND ACRONYMS

The following abbreviations and acronyms are used in this document:

ACASS	Active Common Attach System Simulator
ADD	Addendum
AMS-02	Alpha Magnetic Spectrometer-02
ATXS	ATM Transmission System
CE	Cargo Element
CEWS	Cargo Element Work Stand
CHD	Critical Health Data
CRF	Canister Rotation Facility
DDRS-02	Digital Data Recorder System, [version] 02
DPA	Digital Pre-Assembly
EAFB	Edwards Air Force Base
EBCS	External Berthing Camera System
EEOM	Early end of mission
ELC3	Express Logistics Carrier [unit] 3
EOM	End of Mission
EVA	Extravehicular Activity
FRGF	Flight Releasable Grapple Fixture
FSE	Flight Support Equipment
GACU	Ground Air Conditioning Unit
GF	Grapple Fixture
GSE	Ground Support Equipment
GSRD	Ground Support Requirements Document
GSRP	Ground Safety Review Panel
HOSC	Huntsville Operations Support Center
HRDL	High-Rate Data Link
HRS	High Rate System
ICD	Interface Control Document
IPA	Isopropyl Alcohol
ISS	International Space Station

ABBREVIATIONS AND ACRONYMS

The following abbreviations and acronyms are used in this document:

ISSP	International Space Station Program
IVT	Interface Verification Test
JSC	Johnson Space Center
KHB	Kennedy Handbook
KPRD	Kennedy Program Requirements Document
KSC	John F. Kennedy Space Center
L&L	Launch and Landing
LC-39	Launch Complex 39
LCC	Launch Control Center
LCC	Launch Commit Criteria
LCD	Launch Countdown
LON	Launch-on-Need
LP	Launch Package
LPAC	Localized Payload Air Conditioner
LRDL	Low-Rate Data Link
LSSE	Launch Site Support Engineer
LSSP	Launch Site Support Plan
MIP	Mission Integration Plan
MISSE	Materials International Space Station Experiment
MLP	Mobile Launch Platform
MMSE	Multi-Mission Support Equipment
MPT	Mission Processing Team
NASA	National Aeronautics and Space Administration
NSTS	National Space Transportation System
OMRSD	Operations and Maintenance Requirements and Specifications Document
OMI	Operations and Maintenance Instruction
OMRS	Operations and Maintenance Requirements Specifications
OMRSD	Operations and Maintenance Requirements Specifications Document
OPF	Orbiter Processing Facility
ORU	Orbital Replacement Unit

ABBREVIATIONS AND ACRONYMS

The following abbreviations and acronyms are used in this document:

PAS	Payload Attach System
PCBM	Passive Common Berthing Mechanism
PCR	Payload Changeout Room
PDGF	Power and Data Grapple Fixture
PEC	Passive Experiment Container
PGHM	Payload Ground Handling Mechanism
P/L	payload
PLB	payload bay
PLBD	payload bay doors
POCC	Payload Operations Control Center
POPIT	Pad Ops Preliminary Interface Test
POSTFL	Post-Flight (Post-Landing/Shuttle De-integration)
PRD	Program Requirements Document
PRCU	Payload Rack Checkout Unit
PRE-SI	Pre-Shuttle Integration
PSP	Program Support Plan
PVGF	Power and Video Grapple Fixture
RAM	Requirements Allocation Matrix
RC	Return Complement
ROEU	Remotely Operated Electrical Umbilical
RSS	Rotating Service Structure
SCA	Shuttle Carrier Aircraft
SFOC	Space Flight Operations Contractor
SI	Shuttle Integration
SLF	Shuttle Landing Facility
SRMS	Shuttle Remote Manipulator System
SSP	Space Shuttle Program
SSPF	Space Station Processing Facility
SSRMS	Space Station Remote Manipulator System
TAXI	Transparent Asynchronous Transmitter-Receiver Interface
TBD	To Be Determined
TBC	To Be Confirmed
TBR	To Be Resolved
TC	Transportation Container

ABBREVIATIONS AND ACRONYMS

The following abbreviations and acronyms are used in this document:

TGHR	Time-critical Ground Handling Requirements
ULF-06	Unpressurized Logistics Flight -06
UMA	Umbilical Mechanism Assembly
USA-SFOC	United Space Alliance Space Flight Operations Contractor
USS-02	Unique Support Structure (02 unit)
WILCO	Will Commit

SECTION I INTRODUCTION

1.1 GENERAL

This Launch Site Support Plan (LSSP) documents requirements for the John F. Kennedy Space Center (KSC) ground processing services for the International Space Station (ISS) Program (ISSP) AMS-02 Launch Package (LP) as submitted by the customer and details KSC's commitment to support ground processing. Express Logistics Carrier, Middeck Payload and Sidewall Carrier processing information is included in this document for reference. For the purpose of this LSSP, the customer is the National Aeronautics and Space Administration (NASA) Headquarters SOMD, represented by the JSC Engineering Support (EA) Directorate.

This LSSP addresses the LP coordination/planning prior to hardware arrival, transportation on site, pre-shuttle integration activities at KSC beginning at hardware arrival, shuttle integration, and post-landing activities for both KSC and non-KSC landings.

The LSSP documents the planning and commitments for KSC to fulfill the ground processing requirements for the particular LP. Agreements between KSC and the customer, and any open items requiring resolution upon the signing of this document, are listed in Section 3.

General KSC policy and standard processing operations are described in KPL-UG-50001, *Requirements/Guide for ISS/Shuttle Payload Processing at KSC*. This guide delineates requirements imposed on users of KSC services and facilities. By reference, this document becomes part of this LSSP. By signing this LSSP, the customer accepts and agrees to those requirements that KSC NASA determines are applicable to their processing. The specific responsibilities of KSC and the customer for the various operations/activities are detailed in the *Guide*.

1.2 AUTHORITY

The LSSP is the primary agreement between KSC and the ISS customer for ground processing for this LP. It documents the requirements for pre-shuttle integration, shuttle integration, and de-integration. In case of inconsistency between this LSSP and the Mission Integration Plan (MIP) the MIP NSTS 21507 has precedence.

1.2.1 REFERENCE DOCUMENTS FOR GROUND PROCESSING

The documents in this section are referenced in the body of this plan or provide additional information concerning general KSC policies and standard processing options. The current issue of each document is applicable. A comprehensive list of reference documents for ground processing is provided in KPL-UG-50001, *Guide for ISS/Shuttle Payload Processing at KSC*, and are not listed in their entirety in this LSSP. To ensure that you have the latest version of reference documents, contact the Launch Site Support Engineer (LSSE) listed in paragraph 1.4.

A. Administrative

1. KNPR 8040.4, *ISS/Payload Processing Configuration Management Procedural Requirements*

B. Contingency Plans

1. JHB-2000, Rev. B-1, *Consolidated Comprehensive Emergency Management Plan*
2. JDP-KSC-P-3006, *Hurricane Preparation and Recovery, Rev. E*
3. BP4090, *Payload Services Emergency Preparedness Plan and Procedures*
4. BP4095, *Spacecraft Services Hurricane Preparedness Plan and Procedures*
5. USA004376, *KSC Off-Site Operations Plan*

C. Drawings

1. 82K00760, *Space Station Processing Facility Standard Interface Document*
2. 79K18218, *Launch Complex 39A Standard Interface Document*
3. 79K20001, *Canister Installation Payload Fitting and Support Rail*
4. 79K12170, *Payload Canister Standard Interface Document*

D. Payload Processing

1. KPL-UG-50001, *Requirements/Guide for ISS/Shuttle Payload Processing at KSC*
2. NSTS 07700, *Space Shuttle System Payload Accommodations Volume XIV, Ground Operations Appendix 5*
3. KPL-HB-50009, *Space Station Processing Facility Processing and Support Capabilities*
4. MDP0808, *Control Plans for Non-Flight Materials and Equipment Approved for Use in Active Payload Processing Facilities*
5. KMI 1150.24, *Boards, Committees, Working Groups, and Panels*

E. Requirements

1. NSTS 21507, *International Space Station AMS-02 MIP*
2. PRD/PSP 30,000, Volume III, *International Space Station Vol. III KPRD/KPSP*
3. PRD/PSP 30,000, Volume III, *Launch and Landing Vol. III – International Space Station PRD/PSP*
4. PRD/PSP 30,000, *Launch Package (LP) Annex SBY – STS-134 Mission Unique*
5. OR/OD Volume III, *Launch & Landing Operations Requirements/Operations Document, Annex STS-134*
6. OMRSD File II, Volume 2, *Operations and Maintenance Requirements and Specifications Document*
OMRSD File X, Volume 2, *Operations and Maintenance Requirements and Specifications Document*
7. NSTS 21458, *Standard Integration Agreement for All Space Shuttle Program and International Space Station Program Missions*
8. SSP 50004, *Support Equipment Design Requirements*

F. Safety

1. FSOP 6100, *Florida Safety Operations Plan*
2. KHB 1700.7C, *Space Shuttle Payload Ground Safety Handbook*
3. KNPR 8715.3, *KSC Safety Practices Procedural Requirements*
4. NASA-STD 8719.11, *Safety Standard for Fire Protection*
5. NASA-STD 8719.9, *Standard for Lifting Devices and Equipment*

1.3 REVISION AND CONTROL

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Upon signature approval of the baseline issue, this document will be under KSC configuration control per KNPR 8040.4, ISS/Payload Processing Configuration Management Procedural Requirements. To ensure that you have the latest version of this LSSP, contact the LSSE listed above.

SECTION II LAUNCH PACKAGE PROCESSING

2.1 GENERAL

The KSC processing flow consists of pre-shuttle integration, shuttle integration, and post-landing/de-integration. The customer has responsibility for fit, form, and function of customer-provided hardware, including post-shipment processing, assembly, test, and servicing during pre-shuttle integration activities. The KSC Mission Processing Team (MPT) has responsibility for launch package assembly, test, and servicing while processing through KSC. Payload and orbiter integrated activities (which may include scheduling, assembly, testing, and servicing) and KSC-provided standard/ nonstandard and unique services identified herein will be the responsibility of KSC. Normal KSC support operations are provided for one shift per day, 5 days per week, with additional shifts as required in order to meet launch schedules.

The Space Station Processing Facility (SSPF) will be used for AMS-02 element processing.

2.2 LAUNCH PACKAGE DESCRIPTION

The ISS-ULF6 Launch Package consists of the ELC3, the AMS-02, the MISSE 8 on a sidewall, two sidewall carriers for return of MISSE 7a and 7b, and ISSP equipment, supplies, and ISS Utilization on Middeck Payloads in the orbiter crew compartment.

The AMS-02 element is a state-of-the-art particle physics detector containing a large permanent magnet designed to search for antimatter and the origin and structure of dark matter. The AMS-02 carrier for transport to the ISS is a direct interface in the Orbiter payload bay (PLB) utilizing AMS-02 Unique Support Structure-02 (USS-02). Electrical attachments within the Shuttle PLB are made through a Remotely Operated Electrical Umbilical (ROEU). AMS-02 is located in Bays 11 and 12.

The Unique Support Structure (USS-02) supports the AMS-02 magnet and detectors and provides the interface for the entire AMS-02 with the Orbiter and the ISS. AMS-02 systems components are mounted to the USS-02.

Installation of the AMS-02 on the ISS requires that the Shuttle Remote Manipulator System (SRMS) unberth and hand off the payload to the Space Station Remote Manipulator System (SSRMS) for berthing at the S3 Upper Inboard CAS site. The AMS-02 payload design incorporates two Grapple Fixtures (GFs): a Flight Releasable Grapple Fixture (FRGF) and a Power Video Grapple Fixture (PVGF) for completing these dual arm operations, and the required External Berthing Camera System (EBCS) avionics package to monitor attachment of AMS-02 to the zenith inboard Common Attach System (CAS) site on the S3 Integrated Truss Segment (ITS) using the AMS-02 Passive Payload Attach System (PAS). Figure A-1 provides an isometric orientation of the two AMS-02 GF locations. Figure A-2 shows the launch and on-orbit configuration of the AMS-02.

Within the crew cabin, a shuttle Payload General Support Computer (PGSC) will be configured to record AMS-02 health and status data until the AMS-02 payload is removed from the PLB.

2.3 PAYLOAD ARRIVAL AT KSC

Transportation of the LP elements to KSC is the responsibility of the customer. Upon arrival at KSC, all customer provided hardware and ground support equipment (GSE) is delivered to the appropriate facility to begin processing.

Upon completion of off-loading activities, transportation convoy operations proceed from the Shuttle Landing Facility (SLF) to the KSC Industrial Area. The AMS-02 and its GSE are taken to the Canister Rotation Facility (CRF) for cleaning (if required) then to the SSPF airlock. All other containers are taken directly to the SSPF shipping/receiving area for container off-loading, receiving inspection, and cleaning.

Refer to AMS-02 Transportation Documentation, for complete shipment list, as well as detailed off-loading and transportation activities at KSC.

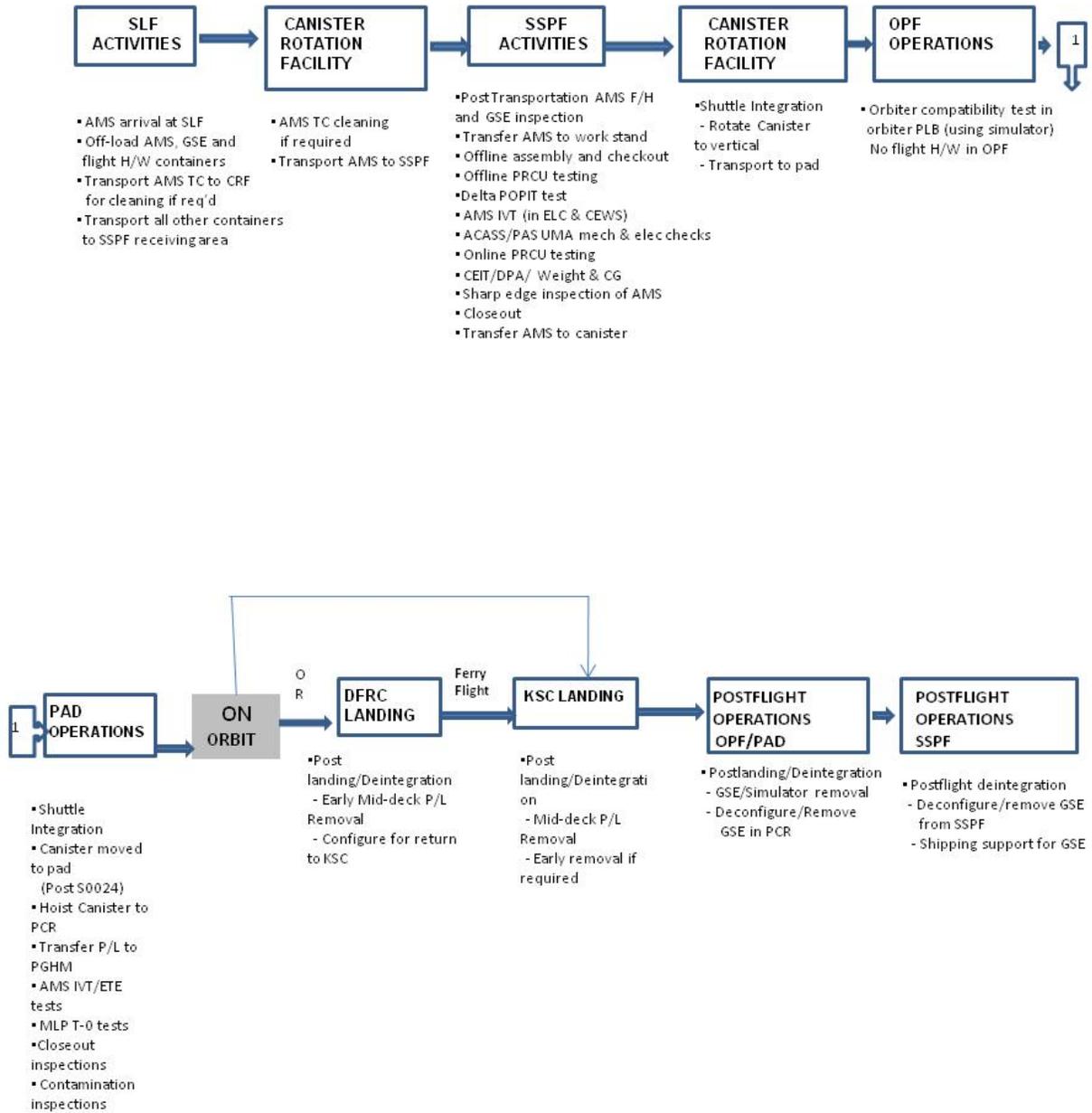


Figure 2-1. AMS Ground Processing Flow

2.4 PRE-SHUTTLE INTEGRATION

2.4.1 General

Pre-shuttle integration includes tasks required to prepare a payload for successful assembly with the ISS and operation. Lifting, handling, assembly, test and verification, and integration of flight hardware into/onto an element or carrier are some of the pre-shuttle integration processing activities required to be performed. The overall management of activities in the processing facility is responsibility of KSC NASA and the KSC Checkout, Assembly and Payload Processing Services (CAPPS) contractor, with the customers participating in test procedure development and implementation. Shuttle integration activities and KSC-provided services identified herein for the AMS-02 cargo element will be the responsibility of KSC. The customer is responsible for any negotiated (off-line) element-unique testing and for coordinating test activities with the KSC MPT. KSC will provide support to the pre-shuttle integration activities as agreed upon in Table 4-2. KSC is responsible for providing and scheduling the agreed-upon support services. Normal KSC support operations are provided for one shift per day, 5 days per week, with additional shifts, as required for testing efficiency, and to meet the launch schedules.

The AMS-02 ground processing flow is shown in Figure 2-1.

2.4.1.1 Space Station Processing Facility (SSPF) Operations

The AMS-02 element is shipped to KSC in one major segment container, along with smaller crates and transported to the Space Station Processing Facility (SSPF). SSPF processing includes ISS Interface Testing prior to Canister Installation. Requirements for ISS testing will be documented in the Operations and Maintenance Requirements and Specifications Document (OMRSD), File X, Volume 2.

SSPF AMS-02 Pre-Shuttle Integration includes, but is not limited to, the following activities:

1. Post transportation AMS-02 TC inspection and cleaning
2. Flight hardware and GSE receiving inspection
3. Remove element from TC and transfer to footprint
4. Flight hardware and GSE post delivery inspection
5. Payload Rack Checkout Unit (PRCU) and High Rate Systems (HRS) offline/online testing

6. ACASS/PAS mechanical and electrical checkout in rotation stand
7. Final assembly and checkout

8. ISS IVT using PRCU in the Cargo Element Work Stand (CEWS) (with High Rate Systems (HRS) and MSFC HOSC)
9. Configure for launch

2.5 SHUTTLE INTEGRATION

Shuttle integration activities and KSC-provided services identified herein for the AMS-02 element will be the responsibility of KSC.

The shuttle integration phase includes the AMS-02 element activities required to support installation into the orbiter, orbiter interface testing, and launch. Requirements for interface testing will be documented in the Operations and Maintenance Requirements and Specifications Document (OMRSD), File II, Volume 2.

Planned activities include the following:

1. Interface Control Document (ICD) walkdown
2. Delta Mobile Launch Pad (MLP) POPIT test to characterize RS422 & 1553 T-0 lines and verify AMS-02 GSE (MLP room 10A) and SSPF POCC interfaces
3. Transfer to CEWS
4. Sharp edge inspection
5. ROEU PDA/Interface panel voltage & polarity check for the following services:
 - a. TCMS GSE 120VDC
6. OPF testing with simulator (JCrate Flight Equivalent Unit)
7. Final weight and center of gravity measurement of the integrated AMS-02 element
8. Sharp edge and contamination inspections of the integrated AMS-02 element.
9. Canister installation

2.5.1 SIMULATED ORBITER INTERFACE TEST

No longer available at KSC.

2.5.2 CANISTER OPERATIONS

Upon completion of all processing activities in the SSPF, the AMS-02 element is transferred into the canister for transportation to the Canister Rotation Facility (CRF). Once in the CRF, the canister is rotated to the vertical position and then transported to the launch pad. Environmental control as well as monitoring and recording of accelerometers data, humidity and temperature during canister operations is provided throughout transport.

2.5.3 OPF/VAB OPERATIONS

AMS-02 will perform a compatibility test in the PLB while the orbiter is in the OPF. An AMS-02 simulator will be used to represent the payload during testing of the shuttle data systems that support AMS-02 operations. Data from the test will be shipped to the Payload Operations Control Center (POCC) located in the Space Station Processing Facility (SSPF). At the VAB, the MLP T-0 test interface verification test (POPIT) will be performed verifying the 1553 and RS-422 data lines and will verify T-0 data to the LCC C-1 console and data back to the SSPF POCC. The T-0 test will be repeated at the pad as well *Note: this is a functional test of the interface only.*

2.5.4 PAD OPERATIONS

As a baseline, all ISS flight elements will be installed in the Orbiter at the Pad. A two-shift per day, five-day per week operation is planned for the Payload Changeout Room (PCR) prior to the orbiter arrival. After orbiter arrival, a three-shift per day, seven-day per week operation is planned. This will continue until the payload bay doors are closed for flight. AMS-02 will arrive at the Pad following the S0024 Prelaunch Propellant Load.

The United Space Alliance (USA) Shuttle Payload Operations Contractor (SFOC) has overall responsibility for the ULF-6 LP installation into the orbiter with the MPTs coordinating the LP requirements. The AMS-02 MPT has prime responsibility for scheduling AMS-02 element activities and testing with USA after payload installation into the Orbiter.

When the payload canister arrives at the launch pad it is hoisted into position at the PCR. The LP is then extracted from the canister by the Payload Ground Handling Mechanism (PGHM) in the PCR. With the Payload Ground Handling Mechanism (PGHM) in the rollback position, the LP may be available for activities before Orbiter installation.

Health monitoring and experiment sensor calibrations require KSC-provided TCSM on-board 120 V dc power and 1553 and RS-422 data connectivity through the T-0. Health monitoring is performed by AMS-02-provided GSE computers located in MLP, Room 10A. This data is collected and transferred to the KSC AMS-02 POCC and the KSC

Launch Control Center (LCC) via an internet interface. After the pad IVT, and ETE are complete, AMS will remain powered up through T-0, possibly around the clock, to calibrate flight sensors, monitor science avionics, and perform software updates.. AMS does not have any LCCs.

AMS-02 will perform an MLP T-0 verification test (delta POPIT) which will test the 1553 and RS-422 T-0 data lines using and AMS-02 simulator. This test will also verify the capability and configuration for transmitting data to the KSC firing room and the KSC AMS-02 POCC prior to payload arrival to the pad. It should be noted that during S5009, all systems will be powered down.

During the time AMS-02 is in the Orbiter, the Orbiter-to-Cargo Element (CE) interfaces are verified, including DC power, 1553, RS-422, T-0 interfaces, and operations of the AFD-located Digital Data Recorder System, version 2 (DDRS-02). An End-to-End test is also planned to verify command and telemetry interfaces with the JSC POCC.

Access to AMS-02 will be required to remove protective covers and to perform final flight closeouts and preparations. This includes removal of a GSE gas bottle that provides a low-pressure gas charge to protect against reverse differential pressure in the AMS-02 Transition Radiation Detector (TRD) straw tubes.

Prior to final door closure for flight, the STP-H3 payload which resides on the keel side of ELC3, requires the removal of a purge cover.

Agreed-upon services to be performed at the pad for the AMS-02 element:

1. IVT and ETE I/F test
2. GSE deconfiguration
3. Closeouts
4. Contamination inspections
5. Access removal prior to final door closure
6. Powered-up AMS calibration refinement post IVT/ETE

At this time, AMS-02 will be in final lift-off configuration for PLBD closure and will be capable of sustaining this configuration without physical access in the event of weather/equipment holds and launch scrubs.

2.5.5 LATE PAD OPERATIONS

No Pad Launch-On-Need (LON) requirements have been identified for AMS-02.

2.5.6 LAUNCH DELAY CONTINGENCIES

KSC will support the implementation of requirements in case of contingencies such as launch delay, scrub turnaround, or launch termination.

The customer shall have a written plan and provide the procedures for input to contingency operations for launch delay, scrub turnaround, and launch termination. For launch delays that require removal of AMS-02 from the orbiter, the sequence of flow will be essentially the reverse of the installation sequence without interface testing.

Any mid-deck payloads with launch delay requirements within 15 days of initial turnover will be defined in the mission-unique Time-critical Ground Handling Requirements (TGHR) table.

2.6 POST-LANDING - RETURN COMPLEMENT DESCRIPTION

The Return Complement (RC) in the cargo bay consists of the MISSE 7a and 7b PECs mounted on sidewall carriers attached to the PLB using an ICAPC.

The AMS-02, the PDGF, MISSE 8, and the ELC3 payloads will be deployed on the ISS and not returned. Also, there will be a transfer of the AMS ISS DDRS to the ISS. The ELC3 Keel Assembly and sidewalls for MISSE 8 and PDGF will be returned in the PLB. ELC3 will be deployed prior to AMS-02 since Orbiter is not ballasted for worst-case forward contingency undock scenario. The DDRS will be removed from the mid-deck, and returned to the AMS customer.

Cargo/payload items will also be returned in the Orbiter crew compartment, including ISS Utilization Payloads, Extra-Vehicular-Activity (EVA) tools and equipment, and other ISS mission-unique support hardware.

Powered and unpowered ISS Middeck Utilization Payloads will be transferred from the ISS. One GLACIER is launched in the middeck, but two GLACIERs are returned in the middeck.

2.6.1 OPERATIONS AT KSC

KSC personnel will be in place to accomplish previously agreed-upon tasks in support of the Orbiter and its payloads. A conditioned air purge will be connected to the payload bay. Early end of mission (EEOM) landings will be supported on a best-effort basis. Middeck payloads are removed from the Orbiter on the runway per the mission-unique TGHR table.

2.6.2 OPERATIONS AT ALL OTHER SITES

In the event of an EEOM and/or a landing at a site other than KSC, (the first alternate landing site is designated as Edwards Air Force Base (EAFB) for all flights), the post-landing activities will be subject to orbiter contingency operations/planning based on the reason for landing at the site. Redeployment of support from the primary to the first alternate landing site for a planned EOM requires SSP decision 48-hours before landing. A conditioned air purge will be connected to only the payload bay, at EAFB, normally within 48 hours (72 hours at White Sands Space Harbor) after landing. Any additional accelerated support will require Optional Services funding. In all other cases, support will be on a best-effort basis. For ferry flights, purges are discontinued just prior to mating with the shuttle carrier aircraft (SCA). The Orbiter, with the RC aboard, is mated to the SCA for return to KSC.

An update to USA004376, *KSC Off-Site Operations Plan*, will be prepared for each flight to include the cargo/element transportation requirements. Transport of personnel and equipment to the landing site will be scheduled on data supplied by the customer.

Additional cargo element requirements for these landing site operations are noted in paragraph 2.7

2.6.3 RETURN COMPLEMENT - UNIQUE POST-LANDING OPERATIONS

No payload bay (PLB) activities are planned until after the orbiter is safed in the OPF at KSC. Activities in the PLB begin when the PLBD are opened about 5 days after arrival at the OPF. Any Flight Support Equipment (FSE) will then be removed from the orbiter, installed into the canister or other transportation container, and transported to the SSPF.

Normally, customers may expect to receive their returning hardware seven days after orbiter arrival at the OPF. Subsequently, the return complement/FSE will be deintegrated, packaged in customer-provided containers, and dispositioned according to agreed upon instructions.

For the case of landing on extension day 2, any post-landing power duration in excess of 3.5 hours will require the use of a power cart.

2.7 UNIQUE TRANSPORTATION REQUIREMENTS

The AMS-02 element has the following unique transportation requirements for either pre-launch or post-flight activities:

- Increased KSC support.

- The AMS team and KSC agreed that one KSC managed Transportation Plan will be created to cover the movement of the AMS, loose flight hardware and the GSE from:
 - Geneva Switzerland
 - Loading on a C-5 for transport from Europe to KSC
 - Flight requirements to Kennedy Space Center (landing at the SLF)
 - Then over road to the Space Station Processing Facility (SSPF)
 - Un-packing and movement in the footprint
- This plan would include all packing and shipping requirements.

2.8 HURRICANE CONTINGENCY OPERATIONS

A Mission Unique Hurricane Planning Addendum will be prepared by the MPT for AMS-02. AMS will provide inputs to this plan and provide any unique requirements for AMS-02. The Hurricane planning addendum will supplement the general contingency planning documents listed in section 1.3 part B (Reference Documents and Ground Processing) of this document. These references include Emergency Preparedness, and Hurricane Planning.

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SECTION III MISSION-UNIQUE AGREEMENTS/ASSUMPTIONS AND OPEN ITEMS

3.1 GENERAL

- 3.1.1 This section consolidates and documents major agreements established between KSC and the customer which are applicable to LP operations during launch and landing processing.
- 3.1.2 Functional testing, checkout, and servicing of AMS-02 element are an ISSP-funded service and are budgeted as agreed upon by the ISSP. All other services are provided for the mission as standard services.

3.2 KSC/CUSTOMER AGREEMENTS/ASSUMPTIONS

The following launch and landing site agreements have been established for the AMS-02 payload:

1. Transportation of all equipment to and from KSC will be funded by AMS
2. Repeatable Maintenance Recall System (RMRS), calibration, proofload, and precision cleaning will be completed prior to hardware on-dock at KSC
3. Delta POPIT test is currently planned before O/D KSC in 2010
4. Work shifts, to include host services and facility support are estimated as 1x8x5 with exceptions for powered testing and pad operations
5. Required test equipment to be provided by NASA as agreed to in table 4-2
6. Common bench stock items to be available to the AMS team
7. AMS-02 will perform off-line processing in their own provided workstand
8. A CEWS stand will be provided by CAPPS following PVGF installation
9. Contingency servicing/launch support for one scrub turnaround is included
10. Commodity sampling will not exceed Host Role support
11. Footprint #7 will be used for processing of AMS in the SSPF.
12. TCMS reconfiguration is required for AMS
13. Assume the AMS magnetic field will not affect other footprints (EME assessment provided to GSRP by AMS)
14. AMS-02 to use a rotation stand for PVGF installation at the SSPF and for ACASS/PAS mechanical/electrical checks

15. AMS-02 will use a Cargo Element Workstand (CEWS) for on-line processing
16. CAPPs will perform all crane lifts for AMS in the SSPF
17. AMS monitoring in the canister is not required .
18. PRCU is a shared resource with ELC and Utilization Payloads
19. SSPF space utilization will be assigned through the PRD by the MSAT process
20. CAPPs will provide cables to be used in the SSPF and OPF for ROEU I/F
21. CAPPs will be the integrator for offline PRCU integrated test operations
22. For hurricane ride-out AMS-02 will (if in the orbiter P/L bay) remain in the P/L bay during rollback to the VAB
23. For launch delay, AMS-02 will reside in the orbiter PLB at the Pad
24. NASA handling equipment to be used for AMS-02 element lifting operations except for lifting of the element in the PSS
25. NASA to be responsible for all flight hardware transfer from SSPF to Pad
26. Pad contingency procedure/plan to be developed by KSC MPT and reviewed by AMS team

3.3 OPEN ITEMS

At the baseline issue, requirements with “No” or “TBD” in the commitment column of the tables of section IV will be listed in this paragraph. KSC non-commitment to requirements may be the result of lack of requirement detail, continuing review by responsible organizations, or issue with the necessity of the requirement.

No open items are identified at this time

SECTION IV LAUNCH AND LANDING SUPPORT REQUIREMENTS/KSC COMMITMENTS

4.1 GENERAL

This section lists customer requirements and cross-references KSC responses and commitments. All services and support to be furnished by KSC to the customer will be provided by KSC on a best-effort basis.

4.2 REQUIREMENTS CATEGORIES

Requirements have been categorized as either an integration and test requirement, or a support requirement.

4.2.1 INTEGRATION REQUIREMENTS

Integration requirements include physical integration, interface and verification testing, maintenance, servicing, calibration, alignment, operational limitations and constraints (including safety related identification), and final close-outs.

The orbiter-to-payload interface requirements must be in OMRSD File II, Volume 2, and the payload-unique requirements in OMRSD File X. Requirements Change Notices will be generated by KSC or the customer when changes are desired after the operations and maintenance requirements specification is baselined; concurrence is via the OMRSD system. The implementation of these requirements will be tracked via the Requirements Allocation Matrix (RAM) by KSC.

Table 4-1 is a summary of major integration requirements with a KSC response/commitment.

4.2.2 SUPPORT REQUIREMENTS

Unique AMS-02 Mission processing requirements are documented in PRD/PSP Annex SBY and summarized in Table 4.2 of this document.

Support requirements include services and facility-related support such as power, environmentally controlled integration areas, office space and furniture, security, handling equipment, communication equipment, photography, and X-ray. Minor quantities of consumables, such as nuts, bolts, and tape, will be provided from existing stock; customers should identify their requirements in advance and specify the Federal Stock Numbers. Table 4-2 lists support requirements and the KSC response/commitment; customer-requested changes to these support requirements will be documented by updates to the table.

4.2.3 REQUIREMENTS TABLES

Supply information for the requirements categories in Tables 4-1 and 4-2 as described below.

1. Requirement Number – A unique tracking number that is either an extension of a customer number, or a KSC generated number.
2. Requirement Description – A short, narrative description of the requirement.
3. Phase of Integration – Codes are used to indicate “phase of integration.”
 - PRE-SI Pre-shuttle integration
 - SI-SSPF Shuttle Integration (Space Station Processing Facility)
 - SI-OPF Shuttle integration (Orbiter Processing Facility)
 - SI-PAD Shuttle integration (pad)
 - POSTFL Post-landing/shuttle de-integration
 - POSTMI Post Mission (SOLAR/EuTEF- approx. 1 ½ yrs)
 - ALL All phases of integration
4. KSC Commit – An indication of the status of KSC’s ability to provide the requested support.
 - An entry of YES signifies that KSC has fully committed to meet the designated requirements.
 - An entry of NO signifies that KSC cannot provide the requested service based upon existing capabilities, or does not agree with the technical necessity of the requirement.
 - An entry of “TBD” signifies that one or more of the following situations apply:
 - a. The requirement may have a “TBD” parameter within its text, indicating additional information is needed before commitment.
 - b. The requirement is new or has a recent revision that has not been fully coordinated at KSC.
 - c. KSC has provided a tentative commitment in principle, but not a final commitment.
5. Commit Source – In Table 4-1, the “Commit Source” indicates where the corresponding KSC supplier commit response resides. An entry of “OMI” refers to the implementing KSC procedure. In Table 4-2, an entry of “L&L” refers to responses in the PRD/PSP 30,000 Launch and Landing Volume III – Payloads L&L. An entry of “KPRD” refers to responses in the KPRD/KPSP 30,000 Launch and Landing Volume II/III – International Space Station KPRD. If the payload-unique annex applies, that annex will be referenced. The unique annex for this mission is SBY.

Table 4-1. Integration and Test Requirements Cross-Reference Matrix
 (AMS-02 pre-launch processing includes, but is not limited to, the tasks listed below)

REQ. NO.	REQUIREMENT DESCRIPTION	PHASE OF INTEG	COMMIT SOURCE
1.0	Post Delivery Receiving Inspection	PRE-SI SSPF	Customer Procedure
2.0	Hazard/Trunnion Inspection	PRE-SI SSPF	Customer Procedure
3.0	Final assembly and checkout	PRE-SI SSPF	Customer Procedure
4.0	ICD walkdown	SI-SSPF	OMI R6602
5.0	Delta MLP POPIT test??	PRE-SI SSPF	Customer Procedure
6.0	IVT using a Rotation Stand, ACASS-SSPF	PRE-SI SSPF	OMI R17134V1
7.0	AMS PRCU IVT-SSPF	PRE-SI SSPF	OMI R17134V2
8.0	ELC PRCU Elec. Verif.- Pre-FSE installation-SSPF	PRE-SI SSPF	OMI R17134V3
9.0	ELC PRCU IVT – Post FSE installation - SSPF	PRE-SI SSPF	OMI R17134V4
10.0	ELC/Orbiter IVT - PAD	SI-PAD	OMI R04134V2
11.0	Digital Pre-Assembly (DPA)	PRE-SI SSPF	D684-10291-01-32E
12.0	Imagery	PRE-SI SSPF	Customer Procedure
13.0	AMS-02 Sharp Edge Inspection–SSPF	PRE-SI SSPF	OMI R6600

REQ. NO.	REQUIREMENT DESCRIPTION	PHASE OF INTEG	COMMIT SOURCE
14.0	Weight & Center of Gravity Check	SI-SSPF	OMI L5166
15.0	Install LP/elements into canister	SI-SSPF	OMI L5166
16.0	Rotate canister to vertical	CRF	OMI E3001
17.0	Transfer to pad	Canister	OMI E5506
18.0	Install AMS-02 element into the Payload Ground Handling Mechanism and the Orbiter	SI-PAD	OMI N50134
19.0	OPF compatibility test using simulator	SI-OPF	OMI R02134V1
20.0	MLP T-0 verification test	SI-PAD	Customer Procedure
21.0	AMS to orbiter IVT-pad	SI-PAD	OMI R02134V1
21.1	AMS to orbiter E-T-E test-pad	SI-PAD	OMI R02134V2
22.0	Orbiter/AMS-02 Interface Test	SI-PAD	OMI R04134V1
23.0	AMS-02 Closeouts	SI-PAD	OMI R59134
24.0	AMS-02 final sharp edge inspection	SI-PAD	OMI R6600

**Table 4-2 Support Requirements Cross-Reference Matrix
 AMS-02 Element Requirements**

Req. No.	Requirement Description	Integration Phase	Commit Status	Commit Source
AMS-05	Provide guest wireless services to support five (5) to ten (10) AMS-02 users in the SSPF Highbay during online and offline activities from the L-120 through L-20 time frame.	ALL	YES	AMS PRD 2755 K1K
AMS-10	Provide guest wireless services to support five (5) to ten (10) AMS-02 users in User Room (POCC) areas during online and offline activities from the L-120 through L+3 timeframe.	ALL	YES	AMS PRD 2755 K2K
AMS-15	Provide guest wireless services to support ten (10) to twenty (20) AMS-02 users their assigned office area during online and offline activities from the L-120 through L+3 timeframe.	ALL	YES	AMS PRD 2755 K3K
AMS-20	Provide hardware drops to support guest services for three (3) connections (circuits) in the User Room (POCC) area during online and offline activities from the L-120 through L+3 timeframe.	ALL	YES	AMS PRD 2755 K4K
AMS-25	Provide hardware drops to support guest services for five (5) connections (circuits) in the AMS-02 assigned office area during online and offline activities from the L-120 through L+3 timeframe.	ALL	YES	AMS PRD 2755 K5K
AMS-30	Provide one (1) external gateway interface circuit to MSFC, JSC and CERN at 10 megabytes/sec peak rates TBC during AMS-02 online and offline activities from the L-120 through L+3 timeframe.	ALL	YES	AMS PRD 2755 K6K

Req. No.	Requirement Description	Integration Phase	Commit Status	Commit Source
AMS-35	Provide one (1) circuit for KSC-Cloud-LAN service from the MLP Room 10A at the PAD to the LCC Firing Room during AMS-02 online and offline activities from the L-120 through L+3 timeframe.	ALL	YES	AMS PRD 2755 K7K
AMS-40	<p>Provide inter-center VPN connections (1 circuit) as required to support testing at the following locations:</p> <ul style="list-style-type: none"> o SSPF Highbay to POCC o OPF to POCC o VAB MLP to POCC o LCC to POCC o PCR to POCC o MLP <p>The connections are 10 Megabytes/sec peak TBC. These may have to be split. The activities will either be online or offline during the L-120 through L+3 time frame.</p>	ALL	YES	AMS PRD 2755 K8K
AMS-45	Provide Wireless Access Point (WAP) (1 circuit) in the SSPF Highbay and user room attached to the AMS-02 customer LAN during online and offline activities from the L-120 through L+3 time frame. Customer to work with KSC IT to assure no interference with the existing KSC wireless service.	ALL	YES	AMS PRD 2755 K9K
AMS-45.1	Provide an ATXS 10MB through-put Ethernet network for AMS-02 data from the SSPF C/R 3 to the SSPF H/B F/P #7 and SSPF Room 3002.	ALL	YES	PRD SBY 2755 K10K
AMS-45.2	Provide an ATXS 10MB through-put Ethernet network for AMS-02 data from the SSPF C/R 3 to OPF Bay 2.	ALL	YES	PRD SBY 2755 K11K

Req. No.	Requirement Description	Integration Phase	Commit Status	Commit Source
AMS-45.3	Provide an ATXS 10MB through-put Ethernet network for AMS-02 data from the SSPF C/R 3 to VAB H/B 1/3 MLP 2/3 Room 10A.	ALL	YES	PRD SBY 2755 K12K
AMS-45.4	Provide an ATXS 10MB through-put Ethernet network for AMS-02 data from the SSPF C/R 3 to Pad A PCR Side 4 Level 2.	ALL	YES	PRD SBY 2755 K13K
AMS-45.5	Provide an ATXS 10MB through-put Ethernet network for AMS-02 data from the SSPF C/R 3 to Pad MLP 2/3 Room 10A.	ALL	YES	PRD SBY 2755 K14K
AMS-45.6	Provide an ATXS 10MB through-put Ethernet network for AMS-02 data from the LCC F/R 4 Console C1 to the VAB H/B 1/2 MLP 2/3 Room 10A.	ALL	YES	PRD SBY 2755 K15K
AMS-45.7	Provide an ATXS 10MB through-put Ethernet network for AMS-02 data from the LCC F/R 4 Console C1 to the Pad A PCR Side 4 Level 2.	ALL	YES	PRD SBY 2755 K16K
AMS-45.8	Provide an ATXS 10MB through-put Ethernet network for AMS-02 data from the LCC F/R 4 Console C1 to the Pad A MLP 2/3 Room 10A.	ALL	YES	PRD SBY 2755 K17K
AMS-45.9	Install/Activate HRDL from IMCS SSPF Comm Room 1045 to the SSPF H/B F/P #7. Needs to interface to KSC/NISN CDSC circuit to MSFC/HOSC.	ALL	YES	PRD SBY 2755 K18K
AMS-45.10	Provide an ATXS 10MB through-put Ethernet network for TCMS DSP 1/2 Pad A data from the LCC F/R 4 Console C1 to the SSPF Room 1234 RK 27933A7.	ALL	YES	PRD SBY 2755 K19K

Req. No.	Requirement Description	Integration Phase	Commit Status	Commit Source
AMS-50	Provide P/L Canister to transport AMS to the PAD. Standard services apply Canister to provide 71 +/- 6 Deg F, <60% Humidity Time Frame: L-24 through L-20.	Shuttle Integration	YES	AMS PRD 5200 K1K
AMS-51	Provide engineering/technician support for the offline power quality testing (Tri-Electron Power supply and DDCU/RPCM Simulator) in the CEWS in the SSPF H/B F/P 7.	PRE-SI	YES	PRD SBY 5300 K1K
AMS-75	Provide use of TCMS DC power supply on un-interruptible power supply in MLP Room 10A starting at L-20 through L-9M.	Shuttle Integration	YES	AMS PRD 5320 K3K
AMS-75.1	Provide UPS power in the MLP Room 10A to seven 110Vac outlets for use by the AMS-02 personnel to run power to their computers in the room.	Shuttle Integration	YES	AMS PRD 5320 K4K
AMS-80	Provide ~ 1,000 sq. ft. of storage space for AMS-02 Payload Shipping Fixtures, GSE Crates and Payload Support Stand for ~ four months. Required area needs to be A/C and Humidity controlled.	All	YES	AMS PRD 5321 K1K
AMS-85	Provide two (2) containers for the disposal of cleaning wipes soaked in IPA and Acetone in the SSPF Highbay Footprint 7 during online and off-line activities.	PRE-SI	YES	AMS PRD 5321 K2K
AMS-105	Provide the following items, as needed, for cleaning AMS-02 hardware at the SSPF or PCR from the L-120 through L-3 time frame. <ul style="list-style-type: none"> • Acetone, 2 gallons • Isopropyl Alcohol, 10 gallons 	All	YES	AMS PRD 5340 K5K

Req. No.	Requirement Description	Integration Phase	Commit Status	Commit Source
AMS-125	Provide shop air, TBD number of circuits/ outlets, max pressure 120 Psig, regulated during online and offline activities at the SSPF from L-120 through L-20 time frame.	PRE-SI	YES	AMS PRD 5340 K9K
AMS-130	Provide shop air, TBD number of circuits/ outlets, max pressure 120 Psig, regulated during online activities at the PCR from L-20 through L-0 time frame.	PRE-SI	YES	AMS PRD 5340 K10K
AMS-135	Provide four (4) K-Bottles of oil free compressed air back-up to shop air, TBD number of circuits outlets, max pressure 120 Psig, regulated during online and offline activities at the SSPF from L-120 through L-60 time frame.(CAPPS to provide)	ALL	YES	AMS PRD 5340 K11K
AMS-136	Provide 4 K-Bottles of oil free compressed air back-up to shop air, TBD number of circuits / outlets, max pressure 120 Psig, regulated during online activities at the PCR.	ALL	YES	AMS PRD 5340 K12K
AMS-140	Provide one (1) ODA Simulator Cable for use during AMS-02 offline processing activities at the SSPF from L-120 through L-100 time frame and during on- line activities at the PCR from the L-20 through L-3 time frame.	PRE-SI	YES	AMS PRD 5351 K1K

Req. No.	Requirement Description	Integration Phase	Commit Status	Commit Source
AMS-145	Provide Critical Rigger and Lift Support for the AMS-02 Payload in the SSPF Highbay as needed during online and offline activities from the L-120 through L-24 time frame.	PRE-SI	YES	AMS PRD 5351 K2K
AMS-150	Provide Critical Rigger and Lift Support for the AMS-02 Payload as needed during Canister move. Provide the same support at the PAD PCR. Time Frame: L-20 through L-15.	PRE-SI	YES	AMS PRD 5351 K3K
AMS-155	Provide one (1) DPA for support during AMS-02 Payload integration at the SSPF during offline activities. Time Frame: L-120 through L-60.	PRE-SI	YES	AMS PRD 5351 K4K
AMS-160	Provide a Rotation Stand during EBCS Alignment activities in the SSPF Highbay from L-60 through L-50 time frame.	PRE-SI	YES	AMS PRD 5351 K5K
AMS-165	Provide the CEWS to hold the AMS-02 Payload during final payload component integration, and monitoring during offline activities in the SSPF Highbay Footprint 4 during the L-50 through L-20 time frame.	PRE-SI	YES	AMS PRD 5351 K6K
AMS-170	Provide the CEWS to hold the AMS-02 Payload during PRCU ISS IVT online activities in the SSPF Highbay F/P 7 during the L-45 through L-25 time frame.	PRE-SI	YES	AMS PRD 5351 K7K

Req. No.	Requirement Description	Integration Phase	Commit Status	Commit Source
AMS-175	Provide a Rotation Stand in the SSPF Highbay Footprint 5 for AMS-02 Payload PVGF installation during offline activities from L-60 through L-58 timeframe.	PRE-SI	YES	AMS PRD 5351 K8K
AMS-180	Provide a Rotation Stand in the SSPF Highbay Footprint 5 for ISS IVT (PAS and UMA mechanical fit checks, UMA electrical checkout and EBCS Camera Alignment) during online activities from L-58 through L-50 timeframe.	PRE-SI	YES	AMS PRD 5351 K9K
AMS-195	Provide office space for thirty (30) AMS-02 team personnel in the SSPF	ALL	YES	AMS PRD 5600 K1K
AMS-200	Provide fifteen (15) console seats in the AMS SSPF assigned User Room during POCC testing activities. (L-120 to L+1 timeframe)	PRE-SI	YES	AMS PRD 5600 K2K
AMS-205	Provide two (4) console seats in the LCC assigned firing room from L-30 to L+1 timeframe.	Shuttle Integration	YES	AMS PRD 5600 K3K

Req. No.	Requirement Description	Integration Phase	Commit Status	Commit Source
AMS-210	Provide the following capability for early ISS interface testing: (L-120 through L-90 timeframe) Health and Status data Critical Health Data (CHD) PLMDM file transfer (offline activity)	PRE-SI	YES	AMS PRD 5600 K4K
AMS-215	Provide the following capability for UMA electrical functional test: (L-58 to L-50 timeframe) 1553 LRDL and Fiber Optic HRDL, Bi-directional Health and Status data Critical Health Data (CHD) PLMDM file transfer (online activity)	PRE-SI	YES	AMS PRD 5600 K5K
AMS-220	Provide the following capability for the PRCU area during ISS IVT: (L-45 through L-40 timeframe) 1553 LRDL and Fiber Optic HRDL, Bi-directional Health and Status data Critical Health Data (CHD) PLMDM file transfer (online activity)	PRE-SI	YES	AMS PRD 5600 K6K
AMS-225	Provide 3,000 sq. ft. area in the SSPF highbay for AMS integration and checkout, and payload monitoring . (L-120 through launch timeframe)	PRE-SI	YES	AMS PRD 5600 K8K

Req. No.	Requirement Description	Integration Phase	Commit Status	Commit Source
AMS-230	Provide two work areas of 3.000 sq. ft. in the SSPF highbay for online checkout in the rotation stand (FP5) and in the CEWS (FP7). (L-60 through L-50 timeframe)	PRE-SI	YES	AMS PRD 5600 K9K
AMS-236	Provide a small F/P on the OPF Bay 2 C&T Lab large enough for 3 AMS-02 personnel. Also provide 1 table and 3 Chairs to conduct S/Ku Band data flow demo test. Also, RPS support will be needed for the test.	ALL	YES	PRD SBY 5600 K11K
AMS-240	Use of general tools and electrical test equipment for use by AMS personnel during AMS processing in the SSPF and LC-30 area(All tools will come from CAPPS tool crib)	ALL	YES	AMS PRD 6000 K1K
AMS-245	Provide Active Common Attach System Simulator (ACASS) for ISS IVT, Passive Attach System (PAS) and Umbilical Mechanism Assembly (UMA) mechanical fit checks and UMA electrical checkout in the SSPF during AMS online activities during the L-58 through L-50 timeframe.	PRE-SI	YES	AMS PRD 6000 K2K
AMS-250	Provide the UMA "Medusa" adaptor cable for early ISS interface testing during AMS offline activities during L-120 through L-90 timeframe and for ISS IVT with a 1553 LRDL and Fiber Optic HRDL, Bi-directional during the L-45 through L-40 timeframe. Also, provide for the following capabilities: Health and Status data Critical Health data PLMDM file transfer	PRE-SI	YES	AMS PRD 6000 K3K

Req. No.	Requirement Description	Integration Phase	Commit Status	Commit Source
AMS-255	Provide the following items as needed during AMS-02 processing at KSC: <ol style="list-style-type: none"> 1. Lint-free wipes 2. Clean-room garments (small to X-large) 3. Nitrile gloves (small to X-large) 4. Kapton tape: 12 rolls ea. Of 1" and 2" rolls 	ALL	YES	AMS PRD 6000 K4K
AMS-260	Provide the following items from the Instrument Library as needed during AMS-02 processing activities at the SSPF: <ol style="list-style-type: none"> 1. Oscilloscope (Tektronic 784A, 784C or 754C) 2. Current Probe (Tektronic 6302 or 6303) 3. Current Amplifier (Tektronic AM503) 4. Resistance Decade box 5. Venable Frequency Analyzer (5060A) 6. Waveform Generator (HP33120A) 	ALL	YES	AMS PRD 6000 K5K
AMS-265	Provide Tri-Electron power supply and DDCU/RPCM simulator	ALL	YES	AMS PRD 6000 K6K
AMS-270	Provide air-conditioning (LPAC) at the Pad to support AMS-02 testing during times the Payload Bay Doors are open. Request minimum temperature possible at LPAC outlet.	ALL	YES	AMS PRD 5322 K3K
AMS-275	Provide three (3) Ground Air-Conditioning Units (GACU) during AMS-02 processing activities at the SSPF. The cooling capacity of the GACUs should meet or exceed 2200 W / 8000 BTU.	ALL	YES	AMS PRD 5322 K2K

SECTION V UNIQUE SERVICES

5.1 GENERAL

Services provided by KSC are categorized as “standard” if provided to the customer as part of the “host role” processing as defined in KPL-UG-50001, *Requirements/Guide for ISS/Shuttle Payload processing at KSC*, Section 3.1.3. Services required in addition to those supporting a typical host role processing flow are categorized as “expanded host” services and are defined in Section 3.1.4 of the “*Guide*”.

NO UNIQUE SERVICES HAVE BEEN IDENTIFIED FOR THIS MISSION

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SECTION VI KSC REQUIREMENTS OVERVIEW

6.1 GENERAL

This section identifies requirements levied on the customer by KSC. By signing this document, the customer agrees to abide by the KSC requirements which NASA KSC determines are applicable to their processing. The detailed definitions of these requirements are provided in KPL-UG-50001, *Requirements/Guide for ISS/Shuttle Payload Processing at KSC*. Additional requirements for payload operations after installation into the orbiter are contained in NSTS 07700, Volume XIV, Appendix 5, *Ground Operations*. Customers should design their payload and plan their payload operations to meet the ground rules, operations, and requirements described therein.

The *Guide* is made a part of each LSSP by reference and is provided as a working tool to guide the customer through KSC requirements. The *Guide* also describes support KSC provides the customer to help meet these requirements. Although these topics will be discussed at early planning meetings conducted at KSC and additional information provided, subsection 6.5 provides an applicability matrix to table A-1 of the *Guide* and other source documents that levy the specific requirements.

6.2 CUSTOMER PROCEDURE SUBMITTAL GUIDELINES

The customer agrees to abide by the customer procedure submittal dates detailed in KPL-UG-50001, *Requirements/Guide for ISS/Shuttle Payload Processing at KSC*, unless differences are documented herein.

- Procedures containing significant hazardous operations are due 40 working days prior to the operation.
- Procedures containing moderate hazardous operations are due 30 working days prior to the operation.
- Procedures containing minimal/non-hazardous operations are due 20 working days prior to the operation.

The customer retains the responsibility to notify KSC of any changes to the agreed upon plan.

6.3 CONTAMINATION CONTROL

Implementation of processes to control contamination and document references which explain contamination control in KSC facilities are provided in KPL-UG-50001, 3.2.1.2.

Adhesive tapes and plastic films used in KSC flight hardware processing facilities shall only be used for operations where they meet the acceptance criteria for their specified use. Currently approved adhesive tape and plastic film listings are available either from computers having the ability to connect to the internal KSC Intranet, or from hard copies available from the NASA/KSC Materials Science Division. The Intranet address can be found using an Internet browser beginning at: <http://www-msd.ksc.nasa.gov/msd/projects/esd/>. With the exception of electrostatic results, all results are applicable only for the particular material thickness that is shown on the lists. Electrostatic results are applicable only to the color identified on these lists when more than one color is available from the manufacturer. Clean room requirements were not taken into consideration. Organizations wishing to obtain complete data, or submit requests for the testing of new materials, must contact the NASA/KSC Materials Science Division. For further information, refer to MDP0808, *Control Plans for Non-flight Materials and Equipment Approved for Use In active Payload Processing Facilities*.

6.4 CUSTOMER DELIVERABLES

The standard deliverable items listed in table 6-1 have a delivery date after the publication of the baseline LSSP. By signing the baselined LSSP, the customer agrees to the due date for all of the applicable items listed in this table:

Table 6-1. Deliverable Items

<u>Applicable</u>	<u>Item</u>	<u>Requirement</u>	<u>POC</u>	<u>Form/Doc. #</u>	<u>Submittal Time</u>
N/A	Phase 0/1 Safety Package Submittal (see note 1)	KHB 1700.7	K	NSF	1.5 yr. Prior to arrival
A	Personnel Badging-Foreign Nationals (PRP input)	KPL-UG-50001	K	KSC 20-181	1 yr. Prior to arrival
A	KSC Support Requirements Customer submits (note 2)	KPL-UG-50001	K	LSSP/GSRD	9 months prior to arrival
A	Pad Contingency Procedure/Plan	KPL-UG-50001	K/C	NSF	90 days prior to first use
A	Phase I/II/III combined Ground Safety Package (see note 1)	KHB1700.7	K	NSF	75 days prior to arrival
A	Material Safety Data Sheets	KNPD 1800.2	K/C	NSF	60 days prior to arrival
A	Process Waste Questionnaires	KNPD 1800.2	K/C	KSC 26-551	60 days prior to arrival
A	Program Assignment of Single POC for Waste Management	KPL-UG-50001	K/C	NSF	60 days prior to arrival
A	Tool Control Plan	KNPR 8720.1	K	NSF	60 days prior to arrival
A	Customer Standalone Procedures	KNPR 8715.3	K	NSF	per paragraph 6.2
A	Request for Shipping Document	KPL-UG-50001	K	KSC 7-248	45 days prior to need date
A	KSC/Dryden Badging Request (Submit to resident office of sponsoring Center)	KPL-UG-50001	K/C	NSF	45 days prior to arrival

<u>Applicable</u>	<u>Item</u>	<u>Requirement</u>	<u>POC</u>	<u>Form/Doc. #</u>	<u>Submittal Time</u>
A	Final Arrival/transportation plans and schedules for SE and Flight hardware	KPL-UG-50001	K/C	Preship telecon	45 days prior to arrival
A	Hurricane Plan Annex	JDP-KSC-P3006	K	NSF	45 days prior to arrival
A	Work Time Policy Letter & Work Time Plans	KNPR 8715.3	K	NSF	45 days prior to arrival
A	Health Examination Request/Report (physical certs for runway ops, cranes, doors)	KPL-UG-50001	K	KSC 13-116	30 days prior to arrival
A	Personnel Training Data (for unescorted access)	KPL-UG-50001	K	NSF	30 days prior to need date
A	KSC Microbiology Laboratory Support Request Form	KPL-UG-50001	K/C	KSC Micro. Lab Req. Form	30 days prior to need date
A	Requisition and Invoice/Shipping Document (DD-1149 or equivalent)	KPL-UG-50001	K	DD-1149	On dock & turnover
A	Provide Certification of GSE Proofloads and Calibrations	KPL-UG-50001	K	NSF	arrival

Note 1: The number of submittals, frequency, and submittal dates are tailored for each program via the NASA Safety Organization.

Note 2: LSSP publication and release dates are unique and tailored for each mission and payload.

POC: K = KSC Launch Site Support Manager or Launch Site Support Engineer (LSSE).

C = AMS-02 Customer

NSF: No Standard Form

APPENDIX A
LAUNCH PACKAGE ILLUSTRATIONS

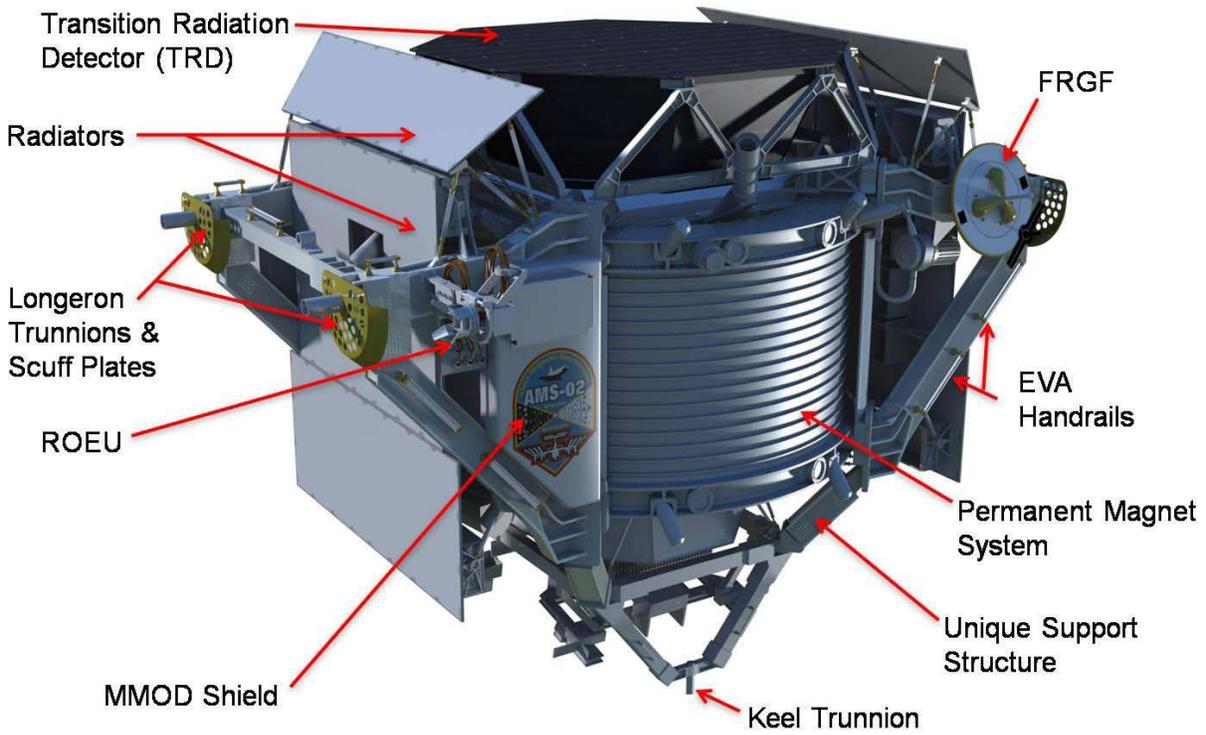


Figure A-1- AMS-02

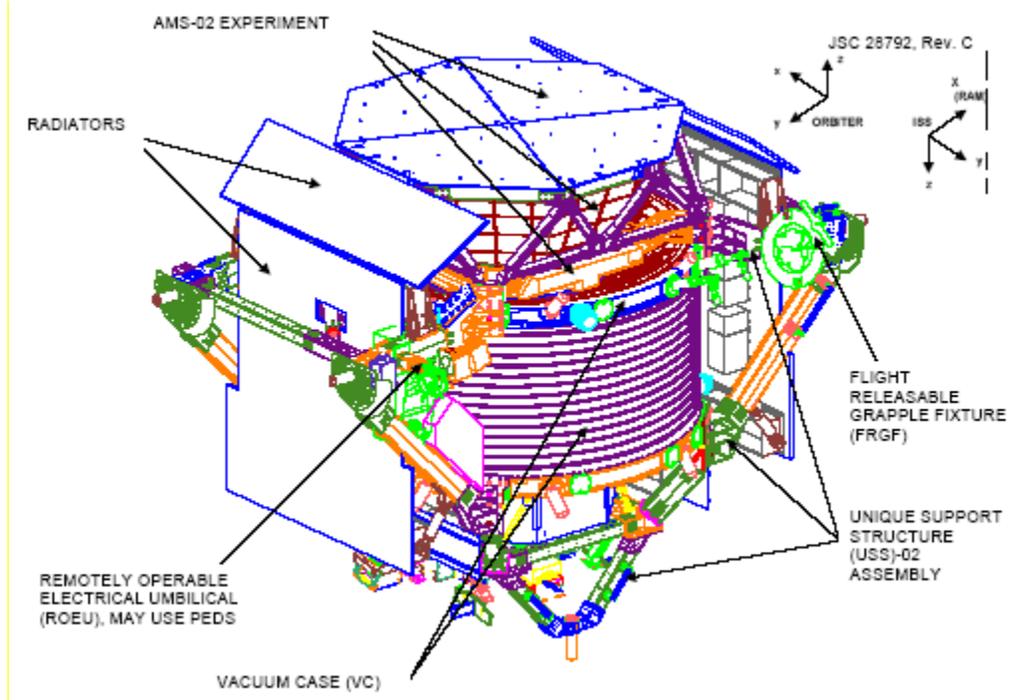


Figure A-2- AMS-02 configuration for launch and on-orbit

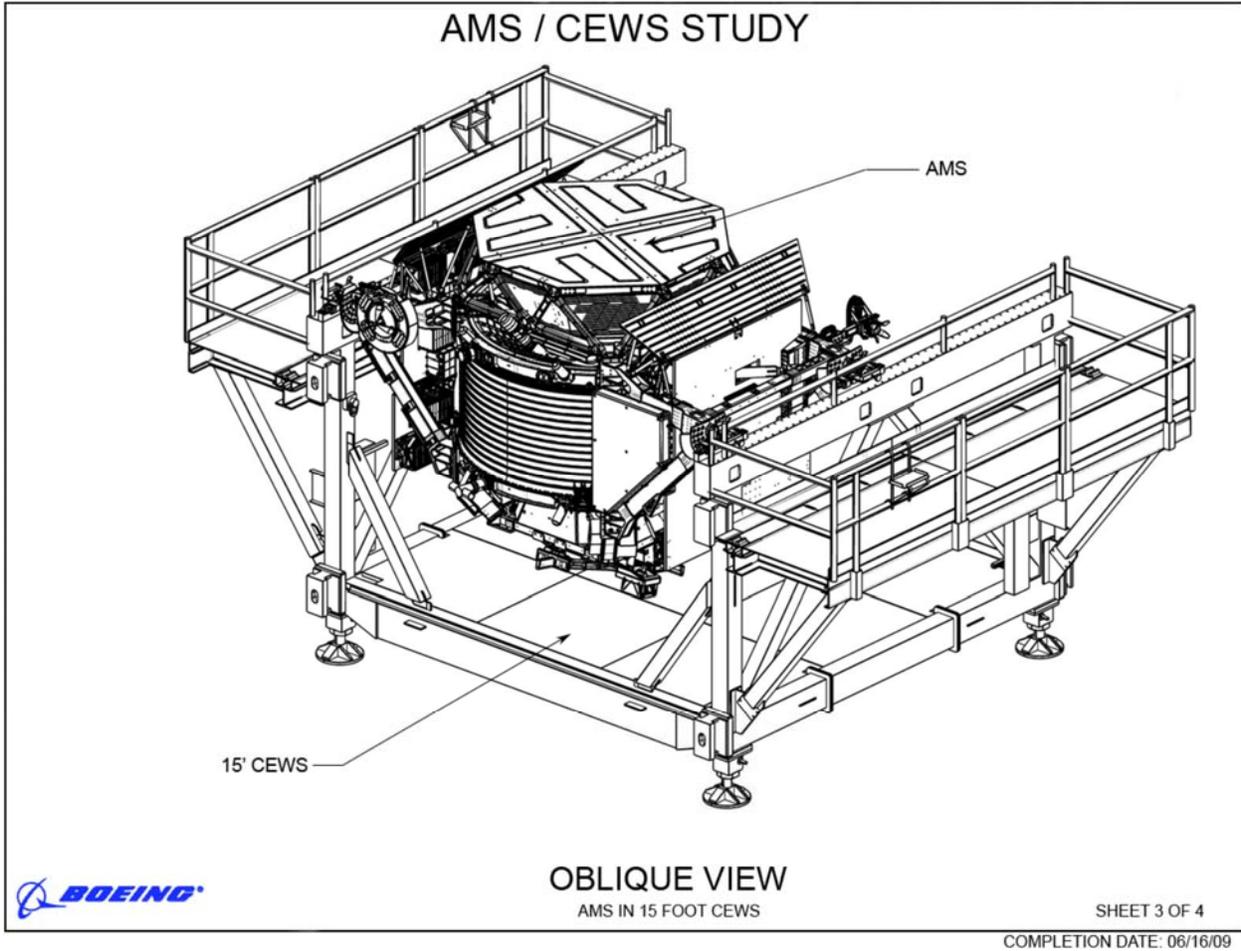


Figure A-3 - ISS-134- AMS in CEWS Configuration

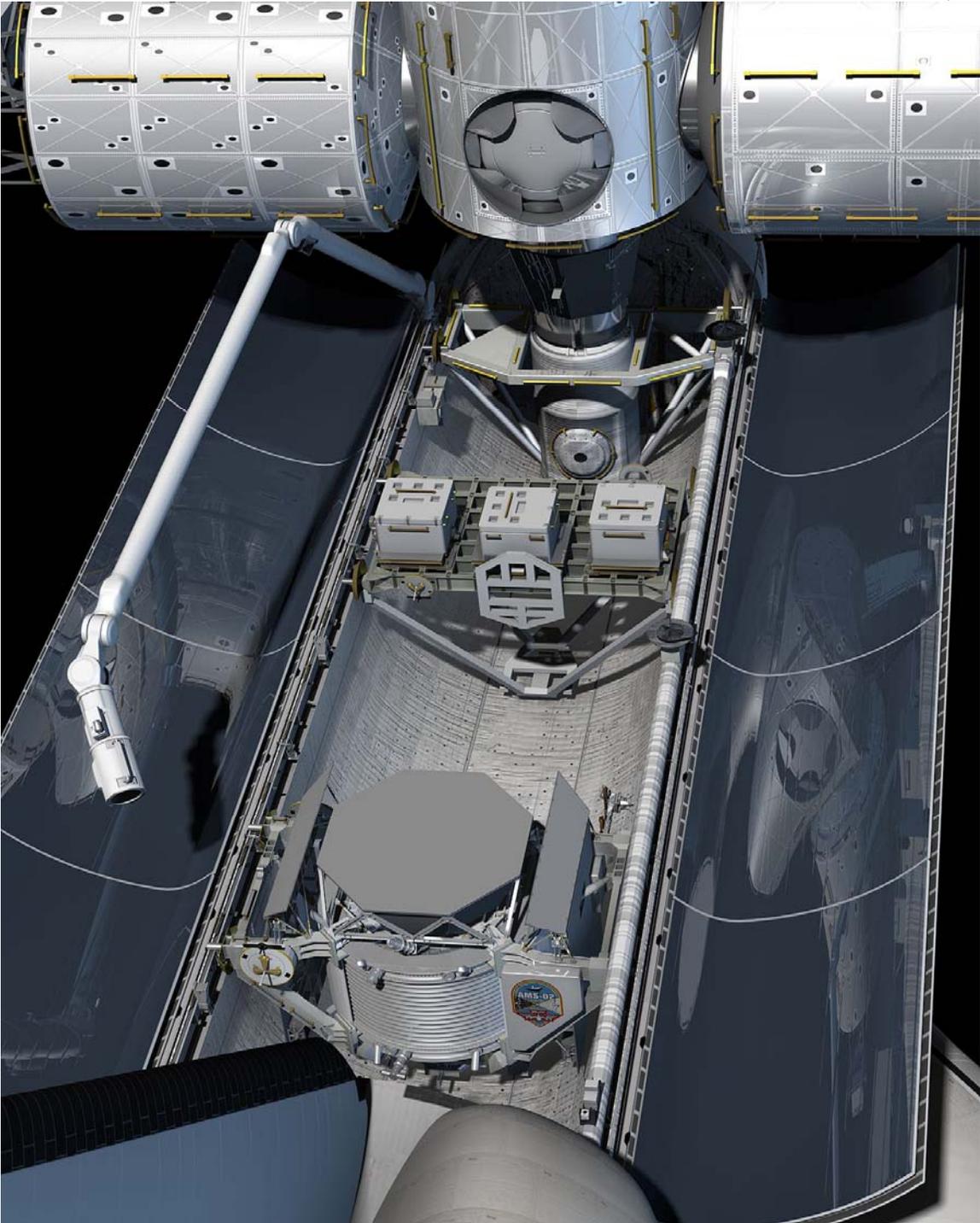


Figure A-4 - ISS-134 Cargo Bay Layout – Launch Package

KPL-LSSP-21507 AMS MISSION LSSP (ELECTRONIC LIST)

NASA

UB	Dowdell, William
UB-D	St.Jean, Dana
UB-I	Sherry Lozada
UB-I	Patel, Shirish
UB-I	Onate, Brian
UB-R	Delai, Joseph
UB-R3	Keifenheim, Jack
UB-G	Franco, Robert
UB-G	Higginbotham, Bridgit
UB-R	Czech, Matthew
UB-R	Fritche, Ralph
UB-R	Graves, John
UB-R3	Hahn, Debbie
NE-A1-1	Sitko, Sue
NE-A1-1	Johnson, Joanna
NE-A3	Macon, David
NE-A3	Parris, Matthew
NE-E3	Olsen, David
NE-E4	Nguyen, Duyen
NE-F3	Simpson, Morgan
NE-L4	Hill, Chris
NE-M3	Kverek, Doug
NE-M3	Gates, Reeve
NE-M3	Setzer, Luke
NE-M3	Dieu, Joseph
NE-O-C	Gardner, Michael
SA-C1	Minnear, James
SA-C1	Moore, Dennis

BOEING

721S-S235	Hart, Bob
721S-S280	Cormack, Dave
721M-5105	Everhart, Chip
721M-5105	Petcovic, Louis
721M-5115	Thomas, David
721S-S235	Balzer, John
721S-S235	Baker, Shelly
721S-S235	Fardelmann, Paul
721S-S320	McFarland, John
721S-S270	Pearson, Kent

721S-S235	Olson, Rod
721S-S235	Poppin, Jamie
721C-R210	Kelly, Steve
721C-R210	Boyd, Elizabeth
721C-R210	McGehee, Roger
721C-R210	Testa, Dennis
721S-S215	Dahm, Michael
721S-S240	Hall, Marty
721S-S235	Alexander, Ryan
721S-S240	Mounts, Joe
721S-S240	Petro, Andy
721S-S243	Semder, Dieter
721S-S280	McAfee, Bret
721S-S230	VanScyoc, Neal
721S-S105	Griffine, Dwain
721S-S105	Satterly, Bruce
721S-S215	Phil Lintereur

USA

USK-246	Koller, Shirley
USK-246	Conner, Jeff
USK-255	Davis, Mark
USK-255	Reutt, Pete

Non-KSC

OC	Dickey, Bernestine
OC	Rarick, Doug
OZ-2	Miley, Robert
OZ-2	Ried, Win
EA-321	Martin, Trent
EA-321	Bollweg, Ken
OC-KSC	Kinnan, Mike
OC-KSC	Walls, Troyce

AMS P/L Providers

JE-41EC	Tutt, Chris
JE-41EC	Mott, Phil
JE-41EC	Fohey, Mike
JE-41EC	Heilig, John
JE-41EC	Urban, Tim
JE-41EC	Dennet, Peter

For Distribution Changes Contact: John Balzer, KSC/Boeing-721S-S235, (321) 867-5745