

PAYLOAD HAZARD REPORT		a. NO: GHR AMS02-007
b. PAYLOAD: Alpha Magnetic Spectrometer-02 (AMS-02) GSE		c. PHASE: II
d. SUBSYSTEM: CGSE, TRD, Warm He System, Associated Flight Hardware	e. HAZARD GROUP: Injury, Illness	f. DATE: May 2008
g. HAZARD TITLE: Loss of breathable atmosphere in KSC facilities.		i. HAZARD CATEGORY <input checked="" type="checkbox"/> CATASTROPHIC <input type="checkbox"/> CRITICAL
h. APPLICABLE SAFETY REQUIREMENTS: KHB 1700.7, section 4.3.3.1.3j, 4.4.2 Hazardous Atmosphere		
j. DESCRIPTION OF HAZARD: Non-breathable gas leaks causes asphyxiation during ground support operations.		
k. HAZARD CAUSES: 1. Leakage/Release of oxygen displacing gases. 2. Prolonged close proximity to a gas release location causes personnel to suffer from reduced oxygen availability (deprivation). 3. Helium Tank burst disk rupture or other off-nominal venting in canister during transport to the pad. NOTE: Rupture of pressurized systems/dewars and pressurized lines addressed in hazard reports GHR-AMS02-003, GHR-AMS02-004. Flight Hazard Reports are AMS-02-F03 and AMS-02-F05.		
l. HAZARD CONTROLS: (See continuation sheet)		
m. SAFETY VERIFICATION METHODS: (See continuation sheet)		
n. STATUS OF VERIFICATION: (See continuation sheet)		
o. APPROVAL	PAYLOAD ORGANIZATION	SSP/ISS
PHASE I		
PHASE II	<i>TRENT MARTIN 10/2/08</i>	<i>Paul J. Pitt 10/3/08</i>
PHASE III		

PAYLOAD HAZARD REPORT CONTINUATION SHEET		a. NO: GHR AMS02--007
b.	Alpha Magnetic Spectrometer-02 (AMS-02) GSE	c. PHASE II
k. HAZARD CAUSES:		
1. Leakage/Release of oxygen displacing gases.		
l. HAZARD CONTROLS:		
1.1 Accumulation of oxygen displacing gases within all rooms and facilities where AMS-02 Flight and Ground sources of gases (compressed or cryogenic) will be precluded by providing adequate ventilation to account for all nominally vented/unvented gas evolution (as from a dewar) or inadvertent release.		
1.2 Oxygen sensors will be used to monitor any volume of air where oxygen displacing gases may accumulate and analysis indicates a potential for reducing ambient concentrations of oxygen below 19.5%.		
1.3 Personnel will be trained regarding evacuation procedures for the event of an alarm warning.		
1.4 Condition of AMS cryogenic systems will be monitored by AMS CGSE. This system will provide appropriate warnings to personnel to well before a vent occurs.		
m. SAFETY VERIFICATION METHODS:		
1.1.1 Oxygen displacement/accumulation analyses for Helium, Xenon, Carbon Dioxide, Nitrogen release into each KSC location for GSE and flight hardware to assure that a >19.5% oxygen concentration will be maintained or that sources that will not maintain that level are identified for venting/additional control.		
1.1.2 Review of venting design/installation requirements.		
1.1.3 Inspection of as built/installed venting provisions.		
1.2.1 Verification of O ₂ level monitoring and warning system(s) in all handling and operational procedures involving the flight hardware and GSE gas supplies.		
1.2.2 Monitor and warning systems will be adjusted/calibrated to account for the sensor bias when in a helium environment.		
1.3.1 Certification of personnel training on evacuation procedures.		
1.4.1 CGSE monitor and warning system will be tested prior to use at KSC.		
1.4.2 CGSE warning levels will be verified by procedure.		
n. STATUS OF VERIFICATION:		
1.1.1	Open	
1.1.2	Open	
1.1.3	Open	
1.2.1	Open	
1.2.2	Open	
1.3.1	Open	

PAYLOAD HAZARD REPORT CONTINUATION SHEET

a. NO: GHR AMS02--007

b. PAYLOAD: Alpha Magnetic Spectrometer-02 (AMS-02) GSE

c. Phase II

k. HAZARD CAUSES:

2. Prolonged close proximity to a gas release location causes personnel to suffer from reduced oxygen availability (deprivation).

l. HAZARD CONTROLS:

2.1 Nominal operations will not require proximity to uncontrolled evolution of oxygen displacing gases.

2.2 Labels will be provided which clearly indicate vent, relief, or other sources of oxygen displacing gases to warn personnel.

m. SAFETY VERIFICATION METHODS:

2.1.1 Operational procedures analysis will ensure that work locations avoid potential oxygen depletion zones or streams.

2.2.1 QA inspection of warning labels to verify that they are appropriately sized and located.

n. STATUS OF VERIFICATION:

2.1.1 Open

2.2.1 Open

PAYLOAD HAZARD REPORT CONTINUATION SHEET

a. NO: GHR AMS02--007

b. PAYLOAD: Alpha Magnetic Spectrometer-02 (AMS-02) GSE

c. Phase II

k. HAZARD CAUSES:

3. Helium Tank burst disk rupture or other off-nominal venting in canister during transport to the pad.

l. HAZARD CONTROLS:

3.1 Proper venting to preclude displacement of oxygen.

3.2 Measurement of atmosphere for adequate oxygen levels prior to allowing personnel into canister.

3.3 Requirement that during any entry while AMS-02 is in the canister that PPE be used/available for each person within the confined volume.

m. SAFETY VERIFICATION METHODS:

3.1.1 Inspection of layout of payload and GSE in canister.

3.2.1 Review of procedures for entering canister to ensure adequate atmospheric testing is included.

3.3.1 Review of procedures for entering canister.

n. STATUS OF VERIFICATION:

3.1.1 Open

3.2.1 Open

3.3.1 Open