NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
		108FM02		
EVVA, ITEM 108 ---------- 0108-10008-21 (1)	2/2	Cracked or scratched protective visor. Defective Material. Impact.	END ITEM: Cracked or scratched visor. GFE INTERFACE: Impaired vision. MISSION: Terminate EVA. CREW/VEHICLE: None. TIME TO EFFECT /ACTIONS: Seconds. TIME AVAILABLE: N/A TIME REQUIRED: N/A REDUNDANCY SCREENS: A-N/A B-N/A C-N/A	A. Design - The protective visor is fabricated from clear polycarbonate which has a tensile strength of 15,500 psi and a thickness of 0.060 + 0.010 - 0.005 inches. The protective visor is hard coated by NASA prior to installation. This hard coating provides resistance against scratches, cracks or abrasion of the visor. Polycarbonate was selected because it has the highest impact resistance compared to other plastic materials. The visor protects the pressure bubble from chemical attack. B. Test - Acceptance: The EVVA assembly is subjected to testing at Airlock per ATP 9833 with ILC source verification for optical defects and visible distortion. Receipt of thermal radiation and reflective test certifications from Goddard is also verified. PDA: None. Certification: The EV visor assembly was successfully tested (manned) during SSA certification to duplicate operational usage (Ref. ILC Engineering Memorandum EM-83-1083 and EM 98-0008). It has also passed S/AD shock, vibration and acceleration requirements in Hamilton Standard cert testing (ref. Hamilton Standard TER's 3067, 3048, 3042, and 3076). C. Inspection - Components and material manufactured to ILC requirements at an approved supplier are documented from procurement through shipping by the supplier. ILC incoming receiving inspection verifies that the materials received are as identified in the procurement documents, that no damage has occurred during shipment and that supplier certifications have been received which provides traceability information. The following MIP's are performed during the manufacturing process to assure the failure cause is precluded from the fabricated item: 1. Verification of optical defect and visible distortion tests have been successfully completed at Airlock. 2. Verification of acceptable thermal radiation and reflective test certifications from Goddard. 3. Verification of batch lot haze testing complete. During PDA per ILC Document 0111-70028J the assembly inspected for damage or wear and batch lot haze testing is verified complete. D. Failure History - B-EMU-108-A001 (6-11-87) Protective visor has distortion, impairing visual acuity in center of visual area. Discontinuity of the thermal coating was due to excessive/ improper handling. No corrective action required. B-EMU-108-A002 (7-8-87) Missing thermal discs & protruding screws, due to omitted step on opsheet in which screws are cut flush to one pitch below inner surface. The operation sheets have been revised and mandatory inspection points

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
		108FM02		(MIP) have been added to prevent reoccurrence. B-EMU-108-A007 (2/8/96) Post STS-72 inspection found 2 overlapping rings on the protective visor inner surface thermal coating. Analysis of the defect found cracking and delamination of the outermost magnesium flouride layer. A new coating vendor is being certified. E. Ground Turnaround - Inspected for non-EET processing per FEMU-R-001, Pre-Flight visual inspection. None for EET processing. Additionally, every 4 years from date of original EVVA and helmet interface the EVVA is removed from the helmet and completely inspected for structural integrity/material damage. F. Operational Use - Crew Response - Pre/post EVA - Use 3rd EMU Helmet if available. Otherwise, if vision not totally obscured, continue EVA operations. If vision totally obscured, terminate EVA opertions. EVA: If vision not totally obscured, continue EVA operations. If vision totally obscured, terminate EVA. Special Training - No training specifically covers this failure mode. Operational Considerations - EVA checklist procedures verify hardware integrity and systems operational status prior to EVA.

EXTRAVEHICULAR MOBILITY UNIT

SYSTEMS SAFETY REVIEW PANEL REVIEW

FOR THE

I-108 EXTRAVEHICULAR VISOR ASSEMBLY (EVVA)

CRITICAL ITEM LIST (CIL)

EMU CONTRACT NO. NAS 9-97150

Prepared by: _____ 3/27/02
HS - Project Engineering

_____
HS - Reliability

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HS - Engineering Manager

Approved by: _____
NASA - SSA/SSM

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NASA - EMU/SSM

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NASA - S & MA

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NASA - MOD

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NASA - Crew

_____ 6/4/02
NASA - Program Manager