NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
		108FM03		
EVVA, ITEM 108 ---------- 0108-10008-21 (1)	2/2	Cracked sun visor. Defective Material. Impact.	END ITEM: Cracks in sun visor. Support for pivoting cracked. GFE INTERFACE: Loss of structural support for sun visor. Visor will not rotate when lever is rotated. 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 sun visor is fabricated from polysulfone sheet which has a yield strength of 10,000 psi and a thickness of 0.060 + 0.010 - 0.005 inches. There are two configurations of sun visors. Both configurations are thermally coated on the inside (P/N 24153 and P/N 24153-1 are gold coated and P/N 24153-2 is aluminum coated) and hardcoated on the outside. The hardcoating provides resistance against scratches, cracks or abrasion of the visor. The pivot area is protected from impact by the EVVA shell. Cracking of the sun visor because of impact is also prevented by the close proximity of the visor to the protective visor and helmet bubble, which limits sun visor deflection before failure can occur. The visor material is more chemical resistant than polycarbonate (Ref. CSD-SH-259, Oct 17, 1987) B. Test - Acceptance: The EVVA Assembly is subjected to testing for optical defects and visible distortion at Airlock per ATP 9833 with ILC source verification. Receipt of thermal radiation and reflective test certification from the vendor is also verified. PDA: The following tests are conducted at the EVVA Assembly level in accordance with ILC Document 0111-70028J. Verify starting torque required to operate sun visor (4.5 - 10.0 in-lbs.). Certification: The EV Visor Assembly was successfully tested (manned) during SSA certification to duplicate operational life (Ref. ILC Engineering Memorandum EM-83-1083 and EM 98-0008). The following usage, reflecting requirements of significance to the EVVA was documented during certification testing: Requirement — S/AD — Actual Visor Actuations — 266 — 778 It has also passed S/AD shock, vibration and acceleration requirements in Hamilton Standard cert testing (ref. Hamilton Standard TER's 3067, 3048, 3043, and 3076). C. Inspection - Components and material manufactured to ILC requirements as 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 EVVA Assembly manufacturing process to assure the failure cause is precluded from the fabricated item: Verification of optical defect and visible distortion tests at airlock. Verification of acceptable thermal radiation and reflective test certifications from the vendor. Visual inspection for material defects.

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
		108FM03		Verification of sun visor torque of 4.5 - 10 in-lbs. During PDA the assembly is inspected for damage or wear per ILC Document 0111-70028J. D. Failure History - J-EMU-108-002 (02/14/83). Sun visor would not go full down. Corrected error in assembly. H-EMU-108-C001 (3/10/92) - After Helmet Holding Fixture certification testing, the EVVA exhibited cracks on the right side of the sun visor and by the rear stiffener. The cracks were most likely caused by the 9G shock test. No corrective action taken, as the cracks do not affect EVVA visual functionality. 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, troubleshoot problem. If vision not totally obscured, continue EVA operations. If vision totally obscured, terminate EVA operation. EVA : Use eyeshades if appropriate. 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

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HS - Engineering Manager

Approved by: _____
NASA - SSA/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