

CRITICAL ITEMS LIST

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REFERENCE DESIGNATOR:

PROJECT: HST tool and crew aids

SUBSYSTEM: HST tools and crew aids

NAME / QUANTITY: Light handle assembly

LRU NAME / QUANTITY: HST portable floodlight assembly

EFFECTIVITY: All Orbiters

DRAWING REFERENCE: 50033105500-701

LRU PART NUMBER: 50033105500-701

FAILURE MODE NUMBER HST-PFA-001	CRITICALITY 1R/2	FAILURE EFFECT	RETENTION RATIONALE
FUNCTION To secure portable floodlight assembly to Orbiter payload bay handrail for HST repair during EVA.		END ITEM Unable to release portable light to reposition or stow.	A. DESIGN: B. TEST/Analysis: C. INSPECTION: D. FAILURE HISTORY: E. OPERATIONAL USE:
FAILURE MODE AND CAUSE MODE Clamp mechanism fails to release. CAUSE(S) 1. Contamination. 2. Overtorquing. 3. Stuck due to internal parts binding.			
REDUNDANCY SCREENS A - Pass B - Pass C - Pass	REMAINING PARTS Standard HST tool 7/16-in. hexagonal removable nut on bottom of unit.	MISSION Possible impact to EVA timeline if alternate lighting is not available.	
		CREW / VEHICLE If contingency nut cannot be removed, the light could interfere with payload bay door closure or be inadvertently released during reentry in payload.	
		INTERFACE	
		CORRECTIVE ACTION TIMES	
		TIME TO EFFECT	TIME TO CORRECT
MISSION PHASE EVA		Hours	Minutes

PREPARED BY: Jack H. Cohen

REVISION: Initial release

SUPERSEDING DATE: None

DATE: October 1993

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PROJECT: HST tools and crew aids

SUBSYSTEM: HST tools and crew aids

NAME / QUANTITY: HST light handle assembly

LRU NAME / QUANTITY: HST portable floodlight

EFFECTIVITY: All Orbiters

DRAWING REFERENCE: SED33105500-701

LRU PART NUMBER: SED33105500

FAILURE MODE NUMBER	CRITICALITY	
HST-PFA-001	1R / 2	
RETENTION RATIONALE (CONTINUED)		
<p>A. Design</p> <ol style="list-style-type: none"> 1. The HST portable floodlight assembly was designed to an ultimate factor of safety of 1.4 by test. 2. Removal force of 7/16-in. standard EVA releasable nut is 65 to 75 in-lb. <p>B. Test / Analysis</p> <ol style="list-style-type: none"> 1. Unit has undergone predelivery acceptance testing per SKD3310517 for mechanical verification of handle functioning. 2. Test of 1.4 limit loads of 25 lb squeeze force of 84 in-lb on final secure knob. 3. Verification that force to remove 7/16-in. EVA releasable nut is within 65 to 85 in-lb. 4. Stress analysis MDS 789 was performed for the strength test of the HST portable floodlight assembly. 5. Materials were approved per material and fracture review as reported on the materials certification report MATL-93-176. 6. Thermal vacuum certified by test / analysis from -90 to 150°F at 10⁻² torr. <p>C. Inspection</p> <ol style="list-style-type: none"> 1. The portable floodlight assembly and light handle assembly were inspected prior to build up for compliance to drawings. 2. This unit will be stowed in foam in the starboard PSA. 3. The unit is inspected to the cleanliness levels described in JCS-5322 "visibly clean." The unit will be cleaned and bagged for shipment to KSC to prevent contamination from entering the unit. 	<p>D. Failure History</p> <p>None.</p> <p>E. Operations</p> <ol style="list-style-type: none"> 1. Effects of failure - Light handle assembly, if not released from the handrail, could release during entry or landing and cause damage to the Orbiter vehicle. It would also, under the worst case condition, prevent the Orbiter payload bay doors from fully closing. 2. Crew actions <ol style="list-style-type: none"> A. Remove light head assembly with quick disconnect feature B. Stow light head and power cord assembly. C. Remove 7/16-in. hexagonal head nut on bottom of handle assembly with HST power tool and release handle assembly D. If 7/16-in. hexagonal nut does not remove, use pry bar carefully. 3. Training <p>Mission constraints - none.</p> 4. In-flight checkouts <p>None.</p> 	<ol style="list-style-type: none"> 4. The unit will inspected and functionally examined after each test for any signs of galling as part of the pretest and posttest inspections.

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REVISION: Initial release

SUPERSEDING DATA: None

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