

REVISED 5-7-87

FMEA NO. <u>M 7.49.2</u> CRITICALITY <u>2/1R</u>	SHUTTLE CCTV CRITICAL ITEMS LIST	UNIT <u>Cable</u> DWG NO. <u>2293290-501, 502</u> ISSUED <u>10-14-85</u> SHEET <u>1</u> OF <u>6</u>
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FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	RATIONALE FOR ACCEPTANCE
Loss of +28V power (wrist) Short to GND	No wrist or elbow video. <u>Worst Case:</u> No PTU control of elbow camera which prevents arm stowage.	<p><u>DESIGN FEATURES</u></p> <p>The M7 RVS/RMS cable is a 20-inch long assembly, 35-wire assembly. The cable is terminated on each end with a 37-pin connector (#1, KJG6E14N35SA16). The video and sync wires are shielded #24 Twlnax twisted-pair wires. The M7 cable provides power and commands from the RVS to the RMS wrist or elbow camera stack and returns video signals to the RVS.</p> <p>The cable design is taken from the successfully flown Apollo program. The design is a cable-connector assembly in which the wire terminations are protected from excessive flexure at the joint between the wire and the connector terminal. The load concentration is moved away from the conductor connection and distributed axially along the length of the conductors encapsulated in a potted-taper profile. This technique also protects the assembly from dirt and entrapped moisture which could cause problems in space.</p> <p>The cable and its components meet the applicable requirements of NASA, Military and RCA specifications. These requirements include:</p> <ul style="list-style-type: none"> <li>• General/Mechanical/Electrical Features</li> <li>• Design and Construction</li> <li>• Materials</li> <li>• Terminal Solderability</li> <li>• Environmental</li> <li>• Qualification</li> <li>• Marking and Serialization</li> <li>• Traceability and Documentation</li> </ul>

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FAILURE MODE AND CAUSE		FAILURE EFFECT ON END ITEM	RATIONALE FOR ACCEPTANCE
MEA NO. <u>W 7.49.2</u> CRITICALITY <u>2/1R</u>		SHUTTLE CCTV CRITICAL ITEMS LIST	
		UNIT <u>Cable</u> DWS NO. <u>2293290-501, 502</u> ISSUED <u>10-14-86</u> SHEET <u>3</u> of <u>5</u>	
Loss of +28V power (wrist) Short to GND		No wrist or elbow video.  <u>Worst Case:</u>  No PTU control of elbow camera which prevents arm stowage.	<p><u>QA/INSPECTION</u></p> <p><u>Procurement Control</u> - Wire, connectors, solder, etc. are procured from approved vendors and suppliers which meet the requirements set forth in the CCTV contract and Quality Plan Work Statement (MS-2593176).</p> <p><u>Incoming Inspection &amp; Storage</u> - Incoming Quality Inspections are made on all received materials and parts. Results are recorded by lot and retained in file by drawing and control numbers for future reference and traceability. Accepted items are delivered to Material Controlled Stores and retained under specified conditions until cable fabrication is required. Non-conforming materials are held for Material Review Board (MRB) disposition. (PAI-307, PAI IQC-53).</p> <p><u>Assembly &amp; Test</u> - Prior to the start of assembly, all items are verified to be correct by stock room personnel as the items are accumulated to form a kit. The items are verified again by the operator who assembles the kit by checking against the as-built-parts-list (ABPL).</p> <p>Specific instructions are given in assembly drawing notes and applicable documents called out in the Fabrication Procedure and Record (FPR-2293290). These are 2280800 - Process Standard crimping flight connector contacts, 2280801 - Process Standard in-line splicing of standard interconnecting wire using Raychem solder sleeves, 2280876 - Process Standard marking of parts or assemblies with epoxy colors, 2280876. Potting material and test procedure (TP-AT-2293290). Quality and DCAS inspections are performed at the completion of key operations.</p> <p><u>Preparation for Shipment</u> - When fabrication and test is complete, the cable assembly is packaged according to 2280746, Process Standard for Packaging and Handling Guidelines. All related documentation including assembly drawings, Parts List, ABPL, Test Data, etc. is gathered and held in a documentation folder assigned specifically to each cable assembly. This folder is retained for reference.</p>

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<p>Loss of +28V power (wrist) short to GND</p>	<p>No wrist or elbow video. <u>Worst Case:</u> No PTU control of elbow camera which prevents arm stowage.</p>	<p><u>FAILURE HISTORY</u> There have been no reported failures during RCA testing, pre-flight or flight.</p>

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CRITICALITY 2/1R

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SHUTTLE CCTV  
 CRITICAL ITEMS LIST

UNIT	Cable
OMG NO.	2293290-501, 502
ISSUED	10-14-86
SHEET	5 OF 5

FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	RATIONALE FOR ACCEPTANCE
<p>Loss of +28V power (wrist)            port to GND</p>	<p>No wrist or elbow video.  <u>Worst Case:</u>            No PTU control of elbow camera which prevents arm stowage.</p>	<p><u>OPERATIONAL EFFECTS</u>            Loss of ability to position the Elbow camera. Possible inability to stow the RMS if the elbow camera physically interferes with a payload. If RMS cannot be stowed the port payload bay door cannot be closed. Loss of crew and vehicle.</p> <p><u>CREW ACTIONS</u>            Perform EVA to reposition the elbow camera, use RMS motion to reposition the camera, or jettison the RMS.</p> <p><u>CREW TRAINING</u>            Crew should be trained in contingency EVA and RMS operations procedures.</p> <p><u>MISSION CONSTRAINT</u>            Do not manifest Elbow camera for any flight where the payload and the elbow camera can interfere with each other (for any pan or tilt angle). If the camera must be flown do not change the camera position until the interfering payload is deployed.</p>