

FMEA NO. <u>W 7.29.1</u> CRITICALITY <u>2/1R</u>	SHUTTLE CCTV CRITICAL ITEMS LIST	UNIT <u>Cable</u> DWG NO. <u>2293290-501, 502</u> ISSUED <u>10-14-86</u> SHEET <u>1</u> OF <u>5</u>
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FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	RATIONALE FOR ACCEPTANCE
Loss of sync positive (RMS) elbow & wrist TVC OFF open/Short to GND	No elbow or wrist video Worst Case: No PTU control of elbow camera which prevents arm stowage.	<p><u>DESIGN FEATURES</u></p> <p>The W7 RVS/RMS cable is a 20-inch long assembly, 35-wire assembly. The cable is terminated on each end with a 37-pin connector (P1, KJ66E14N35SN16). The video and sync wires are shielded #24 Twinax twisted-pair wires. The W7 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"> • General/Mechanical/Electrical Features • Design and Construction • Materials • Terminal Solderability • Environmental • Qualification • Marking and Serialization • Traceability and Documentation

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<p>Loss of sync positive (RMS) (elbow & wrist TVC OFF)</p> <p>Open/Short to GND</p>	<p>No elbow or wrist video</p> <p><u>Worst Case:</u></p> <p>No PTU control of elbow camera which prevents arm stowage.</p>	<p><u>QUALIFICATION TEST</u></p> <p>Qualified by 1.) similarity to previous successful space programs and 2.) by use during qualification tests of CCTV LRUs.</p> <p><u>ACCEPTANCE TEST</u></p> <p>The cable acceptance test consists of an ohmmeter check to assure that each wire connection is present and intact. Results are recorded on data sheets.</p> <p><u>OPERATIONAL TEST</u></p> <p>The following tests verify that CCTV components are operable and that the commands from the PHS (A7A1) panel switch, through the RCU, through the sync lines to the Camera/PTU, to the Camera/PTU command decoder are proper. The tests also verify the camera's ability to produce video, the VSU's ability to route video and the monitor's ability to display video. A similar test verifies the MDM command path.</p> <p><u>Pre-Launch on Orbiter Test/In-Flight Test</u></p> <ol style="list-style-type: none"> 1. Power CCTV System. 2. Select a monitor via the PHS panel, as destination and the camera under test as source. 3. Send "Camera Power On" command from PHS panel. 4. Select "External Sync" on monitor. 5. Observe video displayed on monitor. If video on monitor is synchronized (i.e., stable raster), then this indicates that the camera is receiving composite sync from the RCU and that the camera is producing synchronized video. 6. Send Pan, Tilt, Focus, Zoom, ALC, and Gamma commands and visually (either via the monitor or direct observation) verify proper operation. 7. Select Downlink as destination and camera under test as source. 8. Observe video routed to downlink. 9. Send "Camera Power Off" command via PHS panel. 10. Repeat Steps 3 through 9 except issue commands via the MDM command path. This proves that the CCTV equipment is operational if video is satisfactory. 								

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SHUTTLE CCTV
CRITICAL ITEMS LIST

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ISSUED	10-14-86
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FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	RATIONALE FOR ACCEPTANCE
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Loss of sync positive (RMS)
Elbow & wrist TVC OFF)
Open/Short to GND

No elbow or wrist video
Worst Case:
No PTU control of elbow camera which prevents arm stowage.

FAILURE HISTORY

There have been no reported failures during RCA testing, pre-flight or flight.

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