

Critical Item: Current Transformer 1200/5 (18 each)
Find Number: N/A
Criticality Category: 1S
SAA No: 09EL02-001 REV.A System/Area: 60-Hz High Voltage/KSC
 (C-5 Substation)
NASA Part No: None PMN/Name: None/115kV Bus Differential
 Relay Protection System
Mfg/Part No: GE Type B7-B Drawing/Sheet No: 39K6150001/
 E-7, E-8, E-9

Function: The eighteen bushing-type current transformers (CT's) (one per phase in the 115kV oil circuit breakers 2, 3, 4, 5, 6 and 7) are part of the 115kV bus differential relay protection for C-5 substation. The 115kV buses induce a current into the CT's at a 1200/5 ratio. The currents to CT's in C-5 substation and currents from CT's on the two FP&L feeders are compared in a differential relay in the FP&L switch station. An imbalance of currents as would occur in case of a short on one of the buses at the interface of FP&L and C-5 substation will cause all C-5 substation oil circuit breakers to trip and clear the fault in 3 cycles.

Critical Failure Mode: Fails Open, FM09EL02-001.001

Failure Cause(s): Broken winding.

Failure Effect: Possible loss of all FP&L power at C-5 substation. Loss of power to all loads in Launch Complex 39A/B not backed-up by emergency power. Loss of power to the following critical loads could cause loss of life and/or loss of flight hardware in an emergency condition.

<u>o</u>	<u>Pads A</u>	<u>Crit. Cat.</u>
-	Potable water booster pump for safety showers and eye washes	1S
-	Door interlock and spill relay	1S
-	PCR duct damper control	1S
-	Air compressor (HVDS hazardous purge)	1S

<u>Pad B</u>	<u>Crit. Cat.</u>
- Potable water booster pump for safety showers and eye washes	1S
- Door interlock and spill relay	1S
- PCR duct damper control	1S
- Anti-icing GN ₂	2
- Power to HVDS cabinets	1S
<u>MLP</u>	<u>Crit. Cat.</u>
- HGDS	1S

Acceptance Rationale

Design

- o CT current ratio is 1200/5.
- o CT meets NEMA and ASA Published Standards.
- o These components are standard commercial items widely used and accepted throughout industry and electrical utilities.
- o This component is qualified by previous usage in the Apollo/Skylab programs.

Test:

- o CT's are in constant service and no specific tests are required. The CT's are located within the oil circuit breaker housing's. The potential for failure in mode indicated cannot be tested. The CT's turns ratio is validated during installation and/or replacement.

Inspection:

- o None

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Failure History:

- o No failure history for the Apollo program or subsequent use at KSC. No industrial failure history.
- o No PRACA failure history.
- o No GIDEP failure history.