Disposition

Master: 263971 -- Atlas Production Initiated: 28 NOV 16 Closed: 4 APR 17

I Def: Inspection Documentation Review

F Def: Bonding Insufficient Adhesive/Squeeze-Out

Closed to WO: RTS Ship #:

PA # Process: Rec Qty: 1 DCR #: Hold Rel:

PA # Product: Ins Qty: 1 CFP: Hold Code:

PA # Escape: Def Qty: Dispo Age: 92

TPT Code: TPT Log#: Prev Doc #:

DI Generic 1: Next Doc #:

DI Generic 2: Next Assy:

MI/DCR: DI Gen Dt:

System: Atlas V Launch System Airborne Avionics Flight Ctrl ORCA

Auth Doc: Auth Txt:

Dispo Need Date: Sig Anom: NO

Mfg Part: 1F67700-1 -- ORDNANCE CONTROL UNIT

Eng Part: 1F67740-1 -- CIRCUIT CARD ASSEMBLY - CONTRO

Lot No:

Heat Code:

Init Loc: Decatur Warehouse/Receiving

Hard Loc: Vandenberg (Atlas) Building 7525 High Bay

WO #: Step #: EID/ART: 5800427-10/AV072

Serial #: 0034 Rej Qty: 1 Ctrl Pt:

Close ID: Close Date:

MR Code: 3 Use-As-Is

Cause / Corrective Action

Delinquent: N Implement ECD: Fail Eff Rating: CA OK: ()

Impact: N Imp. Close Date: Fail CauCA Rating: CA OK Date:

IND/COL: I Next Doc: Next Art:

Crf Liab: N Liable Badge: Resp QE: ()

C/A Age: 134 Hold Code: Release Date:

Liab Loc: Supplier Denver Proc Supp Found Def

Liab Func: Supplier Systematic Flag: N

CA Gen 1: Justification:

CA Gen 2: Gen Date:

Cause: Process/Method Inadequate Instructions

C/A: Corrective Action Work Instruction Revised

CAS

Find Type: Auditor:

Cause PR:

Ref No: Unverified Failure: Recurring:

Found By: Safety Consideration: FA Required:

Crit Featr: SPRB Required: Opportunity:

Defect Dt: CAR Level: Eng Sig MRB: NO

PIE: () Site Sig MRB:

LMA Rqmt: Fnd On Op Type:

Criticality: C2 CATEGORY 2 - CA Required Cause Op Type:

BIT App: BIT Det: False Alarm: C&E: NO

ISO Elem:

Exec Own:
Doc Subj:
Mach Code:

Escapement

AMC: -- Est Comp:
Int Audit:

Supplier

Supplier: ZL748801 L-3 COMMUNICATIONS CINCINNATI RCN:
Sub-Tier: Buyer: Z51
PO Num: 4500030494 Line No: 36 Source Qual Rep.:

Text

Defect Text(s)...

Seq #: 1.000 *

Ins/Rev: 28-NOV-2016/28-NOV-2016 By: KERR, C.B. (20009338) QMRB

The supplier identified an escapement on OCU 1F67700-1 S/N 0034 while reviewing subassembly pictures for an unrelated purpose.

Several inductors on the 1F67750-1 CMS circuit card, S/N 0079, had epoxy fillets, but did not have the strap of epoxy applied to them. Reference the attached photo of the card.

Engineering Req. Text(s)...

Seq #: 1.000 *

Ins/Rev: 28-NOV-2016/28-NOV-2016 By: KERR, C.B. (20009338) QMRB

Per Dwg 1F67750 Zone A28 and Flag Note 31, "Fillet and single strap bond per STP1008-02 using STM1013-02" for L200-L208.

Disposition Text(s)...

Seq #: 0.100 * INFO

Ins/Rev: 28-NOV-2016/ By: KERR, C.B. (20009338) QMRB

Hardware is to remain in the MRC until a disposition decision has been reached.
The hardware will be controlled through use of a QS-814-1 "Withheld" label.

Okay to continue operations that are not affected by this defect.

Seq #: 0.500 * INFO

Ins/Rev: 28-NOV-2016/ By: KERR, C.B. (20009338) QMRB

Note: The QASS-SS-001 Appendix A checklist is not required for this work. Reference QS408.

The complexity, level of intrusiveness, uniqueness, or opportunity for problems associated with this work and/or process does not warrant the additional process controls/scrutiny provided by the checklist.

Seq #: 0.900 * INFO

Ins/Rev: 28-NOV-2016/ By: KERR, C.B. (20009338) QMRB

This PIRS document will be routed to CRE/EMRB/Engineering for evaluation and disposition.

Seq #: 1.000 * INFO

Ins/Rev: 30-NOV-2016/ By: KERR, C.B. (20009338) QMRB

The supplier is to perform a test in order to determine if this condition is acceptable to use as-is.

As directed by CRE Peter Van Der Hoop:

The strap bond is added to ensure the part is adequately held in place. The sleeved parts tend to lead to weak fillet bonds since the sleeve does not adhere to the 2216 very well and can tear. To build confidence in the shipped unit we would like to run a test to show the fillet bond is adequate to hold the small part in place. Below is a proposed test to gather some data:

1. Using a scrap PWB (does not need to be CMS card and long as there is a large enough area stake a ferrite bead on solder mask only)
2. Attach a sleeved ferrite bead to the PWB
   a. Clean the board prior to installing the bead
   b. Ensure the installation follows the OCU requirement for the fillet to go beyond the sleeve and onto the ferrite bead
   c. Do not add a strap bond to the test part
   d. Follow all OCU curing requirement
3. Loop a wire or string through the bead. The loop needs to be large enough and strong enough to attach a force gauge
4. Use a force gauge to determine the required force to pull the ferrite bead off the PWB
5. Document the failure mode that allowed the part to pull off

Seq #: 1.500 * INFO

Ins/Rev: 04-APR-2017/ By: KERR, C.B. (20009338) QMRB

The test plan in Disposition Sequence 1.500 was discarded in favor of taking advantage of a delta-Qualification that was taking place for an unrelated reason. A flight-like board, fully built up per the supplier's work instructions for flight units, was modified by removing the epoxy strap across these inductors. The card was then installed in OCU SN 0001. This unit is to undergo IAT and then the gamut of qualification tests, including handling, shock, and vibration, at qual levels. This is deemed to be more in line with TLYF, and the results will be used to disposition this PIRS.

Seq #: 2.000 * INFO

Ins/Rev: 30-MAR-2017/ By: VAN DER HOOP, P.D. (2000... EMRB

OCU SN0034 with missing strap bonding on L200-L208 on CMS SN0079 is acceptable for Use-As-Is based on the rationale discussed below.
All parts in question have fillet bonding per the drawing but lack the required strap bonds. The strap bonding is added to provide retention of the parts to the PWB. This strap bonding was added to the drawing as a precaution and was not identified by any analysis as being required. The strap bonding is added to ensure the part remains functional through all shock and vibe environments. Bonding on L200-L208 has no impact on functionality in any other environment.
As part of the Delta-Qual for the use of IEH connectors in the OCU, CMS SN0013 was modified to remove the strap bonds from L200-L208. The unit was then exposed the Qual Shock and Qual Vibe to demonstrate the fillet bonding adequately secures the parts. See the attached comparison of CMS SN0079 (CMS module in OCU SN0034) and CMS SN0013 (CMS modified to match the configuration in OCU SN0034 and exposed to Qual environments).
After modifying the CMS SN0013, the modules was installed in the Delta-Qual unit and passed all IAT testing and completed Qual handling, Transportation handling, Qual Shock and Qual vibe without any issue. The modified CMS passed a full functional after vibe with the data trended to confirm no measurements shifted. This testing confirms the configuration of the CMS installed in OCU SN0034 will function in all shock/vibe flight environments.

This Use-As-Is disposition has no bearing on our Test Like You Fly practices. Based on the testing completed we maintain our full qualification margin. This disposition will not negatively impact the performance, reliability, effective use or operation, maintainability, interchangeability, health or safety of OCU SN0034. No drawing change is required; strap bonding is still required for all hardware other than OCU SN0034.
No PIRS marking is required.

This disposition and qual testing was coordinated with the following people:
Blair Vaage - Avionics Chief Engineer
Fred Smigiel - ULA Test Engineer
John Ortmann - PWB Designer
Peter van der Hoop - OCU CRE
Cody Kerr - Quality Engineer
L3-CE - OCU Manufacturer and test house

Peter van der Hoop
OCU CRE/EMRB
3/29/2017

Seq #: 3.000 * INFO

Ins/Rev: 04-APR-2017/ By: KERR, C.B. (20009338) QMRB

I concur with this UAI disposition. No further action required. Okay to close.

Cody Kerr
QMRB
4/4/17

Corrective Action Text(s)...

Seq #: 1.000

Ins/Rev: 11-APR-2017/11-APR-2017 By: KERR, C.B. (20009338) QMRB

As a result of the internal CAR, the supplier has updated their work instructions (L3 CE internal Change Notice A15746) and clarified the inspection criteria for these epoxy straps. As part of the incorporation of this change, training for it was conducted with the operators building this board.

Miscellaneous Notes(s)...

Seq #: 1.000

Ins/Rev: 28-FEB-2017/ By: BOEHME, S.D. (20009417) QMRB

Subject: Hold Reason

Awaiting further dispo

End of report