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PRINT DATE: 06/29/92

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE

NUMBER: 06-18-0710-X

SUBSYSTEM NAME: ARS - COOLING

REVISION : 7 06/26/92

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	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
■ LRU :	REGENERABLE CO2 REMOVAL SYSTEM	MC623-0016
■ SRU :	MUFFLER, INLET	V070-623634

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PART DATA

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- EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:  
REGENERABLE CO2 REMOVAL SYSTEM INLET MUFFLER
- QUANTITY OF LIKE ITEMS: 1
- FUNCTION:  
ATTENUATES NOISE AT THE INLET OF THE REGENERABLE CO2 REMOVAL SYSTEM FAN.

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE  
 NUMBER: 06-1B-0710-02

SUBSYSTEM: ARS - COOLING  
 LRU :REGENERABLE CO2 REMOVAL SYSTEM  
 ITEM NAME: MUFFLER, INLET

REVISION# 7 06/26/92 R

CRITICALITY OF THIS  
 FAILURE MODE:2/2

■ FAILURE MODE:  
 RESTRICTED FLOW

MISSION PHASE:  
 OO ON-ORBIT

■ VEHICLE/PAYLOAD/KIT EFFECTIVITY: 102 - COLUMBIA  
 : 105 ENDEAVOUR

■ CAUSE:  
 MECHANICAL SHOCK, VIBRATION, CORROSION.

■ CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

■ REDUNDANCY SCREEN A) N/A  
 ■ B) N/A  
 ■ C) N/A

PASS/FAIL RATIONALE:

■ A)  
 ■ B)  
 ■ C)

- FAILURE EFFECTS -

- (A) SUBSYSTEM:  
 REDUCED FLOW THROUGH THE BEDS. THE RCRS IS NOT REMOVING CO2 FROM CABIN AIR. LOSS OF USE OF RCRS.
- (B) INTERFACING SUBSYSTEM(S):  
 INCREASED POCO2 IN CABIN.
- (C) MISSION:  
 POSSIBLE EARLY MISSION TERMINATION.

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- (D) CREW, VEHICLE, AND ELEMENT(S):  
NO EFFECT.
- (E) FUNCTIONAL CRITICALITY EFFECTS:  
LOSS OF USE OF THE RCRS. THE LIQH SUPPLY MUST BE USED FOR CO2 REMOVAL UNTIL LANDING. THE LIQH SUPPLY IS ADEQUATE TO ACCOMMODATE 3 DAY MISSION. LOSS OF ALL THESE BACKUPS MAY RESULT IN LOSS OF THE CREW/VEHICLE. A 1R3 PPP CRITICALITY RESULTS.

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- DISPOSITION RATIONALE -  
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- (A) DESIGN:  
THE INLET MUFFLER HOUSING/DUCT ASSEMBLY IS CONSTRUCTED FROM RIGID ARAMID FABRIC EPOXY MATERIAL. IT IS APPROXIMATELY 15 INCHES LONG AND PREFORMED TO FIT INTO THE RCRS DUCTING. THE "SCOTTFELT" ACOUSTIC FOAM LINER IS INCLOSED WITHIN THE MUFFLER HOUSING ASSEMBLY.
- (B) TEST:  
QUALIFICATION TEST:  
THE INLET MUFFLER HOUSING DUCT IS CERTIFIED BY SIMILARITY TO THE AIR REVITALIZATION SYSTEM (ARS) COOLING DUCTING SINCE THE BASIC CONSTRUCTION AND MATERIAL USED ARE THE SAME. THE ACOUSTIC FOAM LINER IS CERTIFIED BY SIMILARITY TO THE IMU MUFFLER SINCE THE FOAM MATERIAL USED IS THE SAME.  
  
OMRSD:  
ANY TURNAROUND CHECKOUT TESTING IS ACCOMPLISHED IN ACCORDANCE WITH OMRSD AT SYSTEM LEVEL.
- (C) INSPECTION:  
RECEIVING INSPECTION  
INCOMING MATERIAL IDENTIFICATION AND CERTIFICATION VERIFIED BY INSPECTION.  
  
CONTAMINATION CONTROL  
CLEANLINESS LEVEL VERIFIED BY INSPECTION AT DETAIL LEVEL.  
  
ASSEMBLY/INSTALLATION  
ASSEMBLY AND INSTALLATION VERIFIED BY INSPECTION.  
  
CRITICAL PROCESSES  
FABRICATION OF LAMINATED DETAILS VERIFIED BY INSPECTION. ASSEMBLY ADHESIVE BOND OPERATIONS VERIFIED BY INSPECTION.  
  
TESTING  
N/A  
  
HANDLING/PACKAGING  
HANDLING AND PARTS PROTECTION PER R.I. REQUIREMENTS.

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- (D) FAILURE HISTORY:  
NO FAILURE HISTORY.
- (E) OPERATIONAL USE:  
SHUT DOWN THE RCRS AND INSTALL NEW LIQH CANISTERS. THE LIQH CANISTER SUPPLY IS ADEQUATE FOR 3 ADDITIONAL DAYS.

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- APPROVALS -  
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RELIABILITY MANAGER : T. J. EAVENSON  
 DESIGN ENGINEERING : P. J. CHEN  
 QUALITY ENGINEERING : E. OCHOA  
 NASA RELIABILITY :  
 NASA SUBSYSTEM MANAGER :  
 NASA QUALITY ASSURANCE :

*K.L. Prater for 6/30/92*  
~~*P.J. Chen*~~  
~~*E. Ochoa*~~  
~~*T.J. Eavenson for T.J. Eavenson 6/30/92*~~  
~~*W. J. ... 9/8/92*~~  
~~*9/9/92*~~  
~~*8-21-92*~~  
*K. ...*