

DIGITAL

FCO CATEGORY [S]
Write Back Cache Batteries

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FIELD CHANGE ORDER

FCO NUMBER: HSWBC-S-0003

APPLICABILITY: RA310-xx, SWXRC-03, SWXRC-Zx, HSZ20

PROBLEM & SYMPTOM:

Batteries manufactured during calendar year 1996 and shipped in the HSZ20 based storage array controller are at risk from a manufacturing defect that results in an early life 'open' failure condition.

Risk: The sudden unavailability of customers RAID/Mirrorsets.

SOLUTION:

Replace identified batteries with production units from 1997 or later.

QUICK CHECK:(UTILIZE ATTACHED PROCEDURES BEFORE TAKING RA310/SWXRC-03/SWXRC-Zx Controller out of service)

All identified subsystems with serial number on/before NI720xxxxxx date code and ALL subsystems manufactured by CX should have their battery checked and replaced if it is a 1996 battery.

RE/CO-REQUISITE FCO:
NONE

MFIT HRS
0.6 HRS

TOOL/TEST EQUIPMENT:

29-26947-01 #10 Torx Head Screwdriver

FCO PARTS INFORMATION

FCO KIT NO.	DESCRIPTION OF CONTENTS
EQ-01754-01	including: 70-32162-02 WBC Battery Kit FA-05089-01 FCO Installation Document (Rev E)(4 steps added between steps 8 and 9. Identified web site location for patches

FCO CHARGING INFORMATION

NON-DIGITAL SERVICE PROVIDERS

Authorization, Ordering and Claims directions will be sent to you from the Digital AWSP office.

All request should be directed to 1-800-398-2977 (AWSP) #2.

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ESD SAFETY PROCEDURES:

When removing / handling any of the modules during execution of this FCO, follow carefully the safety procedures as follows:

Use ALL ESD safety precautions to prevent DOA's on material in kit. (Include the following caution statements and instructions for setting up the Velostat Kit or using an ESD module box, depending on the FCO)

* C A U T I O N *
* * * * *
* The module, as with all modules, contain electrostatic *
* discharge sensitive devices (ESDS). The use of the Velostat *
* Kit or ESD module box is essential to prevent damage which *
* may not be noticed immediately. *
* * * * *

Setting up Velostat Kit 29-27224-01(wrist strap) & 29-26240-00 (mat)

- a. Unfold the Velostat mat to full size (24" x 24")
- b. Attach the 15 foot ground cord to the Velostat snap fastener on the mat.
- c. Attach the alligator clip end of the ground cord to a good ground on the cabinet.
- d. Attach the wrist strap to either wrist and the alligator clip to a convenient portion of the mat.

TOOL List:

- 29-26947-01 #10 Torx Screwdriver
- Medium sized Phillips Screwdriver
- Medium sized Screwdriver

***** NOTE *****
* * * * *
* Discard the old batteries by following proper *
* disposal procedures for your location. *
* * * * *

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The following versions are the minimum necessary as recommended by Digital Storage Business.

HSZ20/SWXRC : V27Z-2 ; V30Z-3 ; V31Z-4

Examples of insufficient versions are:
for the HSZ20 : V27Z-0 ; V30Z-1
/RA310
/SWXRC

If the firmware of either the controller is below the recommended revision, the appropriate patches should be installed. See Revision Table below for details. Once done, proceed with FCO rework at page 5 at step 2.

NOTE: Patches must be installed sequentially, i.e., if ----- patch 3 is required, patches 1 and 2 are required to be installed prior to installation of patch 3.

Patch 1 and 2 are pre-requisites to 3.

* NOTE: Digital Storage Business Segment highly recommends that *
* run with the latest released version of HSOF software *
* and patches. *
* *
* It is recommended that you contact an MCS CSC for the *
* absolute latest patch information available. *

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Patch Revision Table

Controller Patch Number Patch Name

HSZ20/RA310	patch_v27z-1	Patch to permit HSZ40-BX and HSZ40-CX
/SWXRC-03		modules to be intermixed in dual
/SWXRC-Zx		configurations
	patch_v27z-2	Fix for Battery Test failures

patch_v30z-1	Fix for medium/forced errors on a RAID 1 (mirrorset)
patch_v30z-2	Fix for Battery Test failures
patch_v30z-3	Fix for Mirrorset Repair/Fast Buffer problem

patch_v31z-1	Fix BBR Forced Error index access
patch_v31z-2	Fix for Crash after Periodic Battery Test.
patch_v31z-3	Start-stop delay and LRU queue retention
patch_v31z-4	Forced Error flag improperly set.

NOTE: Patches files may be found at the following external website:

<http://www.storage.digital.com/homepage/support/patches.htm>

FIELD APPLICATION DOCUMENT (FA), Continuation Page

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PROCEDURE:

Use the following procedure WITH RAIDsets or Mirrorsets;

- 1) Schedule controller downtime
- 2) Connect to controller through the CLI

```
issue CLI> SHUTDOWN THIS_CONTROLLER
```
- 3) Wait for SHUTDOWN to complete - May take up to 5 minutes.
SHUTDOWN is complete when the controllers GREEN LED stops flashing.
- 4) Power off by pulling the AC power cord(s) to the subsystem cabinets.
- 5) Follow the instructions in the document EK-Z20BR-RP document enclosed within the EQ kit. Open up the subsystem cabinet, remove the controller assembly and replace the WBC battery.
- 6) Re-install the controller and restore configuration and cabling.
- 7) Restart subsystem by restoring AC power.
- 8) A fully charged battery state should show status "good" in a few minutes. You may verify this by issuing "show this" command.

NOTE: A fully discharged battery may take 5 hours to re-charge.

If the batteries are NOT "good", Cache_Policy=A will prohibit access to your RAID/Mirrorsets. Cache_Policy=B will allow write through access to your RAID/Mirrorsets for up to 10 hours.

9) Connect to the maintenance console port of the controller and do:

```
CLI> SHOW THIS_CONTROLLER
```

10) If the controller reports an invalid cache error, enter one of the following CLI commands to clear the error for EACH controller that shows cache errors:

For V2.7 of HSOF:

```
CLEAR_ERRORS INVALID_CACHE THIS_CONTROLLER DESTROY_UNFLUSHED_DATA
```

For V3.x of HSOF:

```
CLEAR_ERRORS THIS_CONTROLLER INVALID_CACHE DESTROY_UNFLUSHED_DATA
```

FIELD APPLICATION DOCUMENT (FA), Continuation Page

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11) From the maintenance console port, invoke the following command:

```
Show UNITS FULL
```

12) If any <unit> (i.e. Dxxx) shows "lost data", then invoke the following command:

```
CLEAR <unit> LOST_DATA
```

for each unit that indicates "lost data". Note that this indication does NOT mean that the customer lost data, but that the logic controls that are held in cache memory are "out of sync" as a result of the battery replacement procedure. This process clears any such improper conditions.

13) Report this FCO activity on the LARS form in the "Fail Area/Module/FCO/Comments" column as follows: FCO HSWBC-S-0003

14) Digital field engineers should report this FCO activity on their LARS from per the attached instructions.

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LARS

CATEGORY	F	USA	APA	EUROPE
Activity - Coverage Code				
(a)Contract		W	U	K
Warranty		W	U	W
Inhouse		A		
Invoiced per Call		F		
(b)IN-DEC Contract		K	U	
Non Contract/Non Warranty		F	F	
(c)RTD/Off-site Agreement		F	U	
Mkt/FS/Seg Code				
Code for W,K,		111	111	
Code for F		031	031	
BBC Code for K,W,A			111	
BBC Code for F			031	
DEC Option				
		*****	*****	*****
Option ID		X	N/A	N/A
Type of Call		M	M	
Request Type		I		
Action Taken		D	D	Y
Quality Codes		M,L,J,R,X,A,Y,Z		
Fail Area-Module		*****	*****	*****
FCO-Comments				

Material Used

- (a) Warranty Optimum, Warranty Standard and Warranty Basic (on-site) Agreements; * Note material (only) free of charge for all customers.
- (b) Applies to IN-DEC Area Only
- (c) RTD=Return to Digital or Off-site Agreements; If Field Engineer On-site, use Activity Code "F".

FCO CHARGING INFORMATION

WARRANTY/CONTRACT		NONWARRANTY/NONCONTRACT		
ON-SITE	OFF-SITE	ON-SITE	OFF-SITE	MATERIAL ONLY
TRAVEL/	EQ	TRAVEL/	EQ	ORDER-ADMIN, HANDLING
INSTALL	KIT	INSTALL	KIT	PKG, SHIPPING & EQ KIT

DEC	DEC	DEC	DEC	CUS	CUS	CUS	CUS	CUS
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