DIGITAL	FCO Write Back Cache Batteries	CATEGORY	PAGE 1		
	write Back Cache Batteries	[O] OF 14			
FIELD CHANGE	ORDER	NUMBER: HSWBC-00	01		
APPLICABILIT	HS1CP-AF, HSD30-YX, HSJ30-YC HSZ40-YX, HSZ40-BF, SWXRA-YA SWXRC-04, HS111-AA,AB, HS121	,YB,YD,YJ,YX,YY			
	nipped on write back cache module 5 are at risk for not making reli	-			
1. High Ris	s situation - can result in Data	Loss:	1		
Becar controller be lo	y connection may fail when the subset here is nothing that will include lose power, data stored in the world during the period of power lodisk drive(s) after power is restant.	dicate this, should rite back cache wil ss and cannot be fl	a l ushed to		
2. Low Risk S	Situation - down time on write-ba	ck cache.			
	sage of Write Back Cache on appli the suspect batteries are replac		ntil such		
Remove Cade bottom edge label independent battery(see markings of the second se	(ONLY UTILIZE ATTACHED PROCE.) Remove battery cove bel is on the batte e 1995, or July 199 placed. If the bat s NOT covered by th , and July 1995),	r. On the ry and the 5 then the tery has e FCO.		
PRE/CO-REQUIS	SITE FCO:		MFIT HRS		
TOOL/TEST EQU	JIPMENT:		—— I —————————————————————————————————		
	FCO PARTS INFORM	ATION			
FCO KIT NO.	DESCRIPTION OF CONTENTS				
EQ-01735-01 including: 70-32162-01 WBC Battery Kit FA-05070-01 FCO Installation Document					

FCO CHARGING INFORMATION "See last page of FA document"

Digital Employees should use the attached information to complete their LARS report.

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 1-800-298-2977 (AWSP) #2.

FIELD APPLICATION DOCUMENT (FA), Continuation Page

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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)

Setting up Velostat Kit

a. Unfold the Velostat mat to full size (24" x 24")

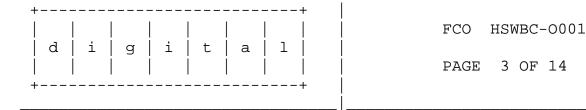
b. Attach the 15 foot ground cord to the Velostat snap fastener on the mat.

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.

e. Remove the module from it's CPU option slot and place it on the mat.

FIELD APPLICATION DOCUMENT (FA), Continuation Page



CONGIGURATION INFORMATION:

There are two distinct procedures for battery replacement depending upon the controller configuration.

Configuration 1) Either (A) redundant configuration WITH RAID sets and/or Mirror sets or (B) non-redundant configuration. This procedure requires system downtime.

Configuration 2) Redundant configuration WITHOUT RAID sets or

Mirror sets configured. Downtime may be

scheduled or C_SWAP can be run to avoid

downtime.

In either case, replacement of the Write Back Cache batteries requires a clean rundown of the controller, allowing all unwritten cache data to be flushed to media. This is accomplished through the CLI console SHUTDOWN command, which performs the rundown and halts the controller.

NOTE: The IGNORE_ERRORS and IMMEDIATE_SHUTDOWN (non-default) qualifiers to the SHUTDOWN command are "NOT" to be set.

OVERIRIDE_ONLINE (HSJ/HSD) is acceptable because it will rundown the cache.

The following procedure is to be used for Configuration 1 (non-redundant configuration or redundant configuration WITH RAIDsets or Mirroring sets);

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

NOTE: If dual redundant configuration, SHUTDOWN both controllers before proceeding.

3) Wait for SHUTDOWN to complete - May take up to 5 minutes

FIELD APPLICATION DOCUMENT (FA), Continuation Page

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			PAGE 4 OF 14

- 4) Remove controller module (See HS family of Array Controllers Service Manual, REV D.01, Page 7-7)
- 5) Remove cache module (See HS Family of Array Controllers Service Manual, Page 7-25)
- 6) Inspect battery per quick check on page 1. If battery needs to be replaced, replace batteries per the instructions included with the replacement kit (EK-HSFAM-RI) or HS Family of Array Controller Service Manual, Page 7-33, Revision D.
- 7) Reinsert cache Module
- 8) Reinsert Controller module (Do not over tighten the screws on the bezel! A snug connection is all that is required.)

NOTE: If dual redundant configuration, complete both controllers before proceeding.

- 9) Restart Controller
- 10) A fully charged battery should show status "good" in a few minutes.

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

- 11) Report this FCO activity on the LARS form in the "Fail Area/Module/FCO/Comments" column as follows: FCO HSWBC-0001
- 12) Digital field engineers should report this FCO activity on their LARS from per the attached instructions.

FIELD APPLICATION DOCUMENT (FA), Continuation Page

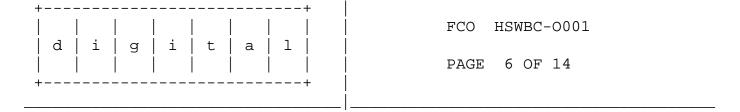
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* CONFIGURATION #2 *

For Configuration 2 (redundant configurations WITHOUT RAID sets or Mirroring sets), either follow the above procedures for Configuration 1 or:

- a. Connect to controller through the CLI CLI> SET <unit name> NOWRITEBACK for all WRITEBACK enabled units configured on this pair controller
- b. Run C_SWAP to avoid downtime (see attachment)
- c. Connect to controller through the CLI CLI> SET <unit name> WRITEBACK for all previous WRITEBACK enabled units

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Attachment: C_SWAP procedures

A. If the controller is running a version of HSOF previous to V2.5x, Follow the C-Swap procedures in the HS Family of Array Controllers Service Manual, Revision D.01, Page 7-59.

When the cache module is removed, follow the battery

replacement procedures on page 7-33 of the same manual or utilize the instruction sheet EK-HSFAM-RI included with the battery kit.

Complete the C-swap procedures for the first controller, then proceed with the second controller/cache.

B. If the controller is running HSOF V2.5x or greater, new C-swap procedures, listed below, must be followed.

NOTE: In order for the process identified below to work properly, both controllers must, at a minimum, be at the patch revision identified in STEP # 2 below.

Additionally, in order for this C-Swap process to work, two (2) controller power supplies must be installed. If you have only one controller power supply, either temporarily install a second power supply, or take down both controllers at the same time.

- . At the console of the controller whose batteries are to be replaced, type "SHOW THIS CONTROLLER".
- 2. Check the output text for one of the following two messages:

If you see:

"Not configured for dual-redundancy"

Proceed to non-redundant configuration procedures above (Configuration 1).

If you see:

"Configured for dual-redundancy with ZG...."

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Check the firmware version that was reported in the previous line of text. The following versions are the minimum

necessary to proceed:

HSJ40,HSJ30: V25J-2 HSD30,HS1CP: V25D-4 HSZ40 : V25Z-4

Examples of insufficient versions are:

for the HSJ30/HSJ40: V25J-0 for the HSD30/HS1CP: V25D-0 for the HSZ40: V25Z-0

If the firmware of either the controller is below the required revision, the appropriate patches must be installed. See Revision Table below for details. Once done, proceed with step # 3.

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. 1 and 2 are pre-requisites to 3.

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Patch Revision Table

Controller Patch Number Patch Name

status

HSD30/HS1CP patch_v25d-1 Work Around for 710/720 NMIs during
 loopback \test 2 & LCRC tests
 patch_v25d-2 Fixes for repetitive mirrorset
 recoveries and CLONE bugcheck
 patch_v25d-3 DSSI Port 240ns sync transfer period
 change
 patch_v25d-4 Fix SET NOFAILOVER to ignore ONLINE
 status

HSJ30/40 patch_v25j-1 Fixes for repetitive mirrorset
 recoveries and CLONE bugcheck
 patch_v25j-2 Fix SET NOFAILOVER to ignore ONLINE

HSZ40 patch_v25z-1 Work Around for 710/720 NMIs during loopback test 2 & LCRC tests patch_v25z-2 SCSI VT Flow Control Correction patch_v25z-3 Fixes for repetitive mirrorset recoveries and CLONE bugcheck patch_v25z-4 Fix SET NOFAILOVER to ignore ONLINE status

NOTE: HSZ-AX and HSZ-BX have different scripts in the following directory.

NOTE: Procedures and scripts for installation of these patches can be found at:

CSC32::ISG\$COMMON:[ISGVAX.HSJ40.HSJ_PATCHES]

The following entries can be found in that account:

FIB-SCRIPT_AXP.EXE;1

HSD30_PATCHES.TXT;1

HSJ40_PATCHES.TXT;1

PATCH_V25D-2.SCRIPT;1

PATCH_V25D-4.SCRIPT;1

PATCH_V25J-2.SCRIPT;1

PATCH_V25ZA-2.SCRIPT;1

PATCH_V25ZA-4.SCRIPT;1

PATCH_V25ZB-3.SCRIPT;1

PATCH_V25ZB-4.SCRIPT;1

PATCH_V25ZB-3.SCRIPT;1

PATCH_V25ZB-4.SCRIPT;1

PATCH_V25ZB-3.SCRIPT;1

PATCH_V25ZB-4.SCRIPT;1

FIELD APPLICATION DOCUMENT (FA), Continuation Page



- 3. Cleanly SHUTDOWN the controller whose battery is to be replaced. Be certain that all online units are online to the OTHER controller.
- 4. On the console of the OTHER controller, type "SET NOFAILOVER".
- 5. At the console of the OTHER controller, type "RUN C_SWAP".
- 6. Answer the question

"Do you wish to REMOVE the other HSJ40 Y/N [N] ?"
RESPOND by typing: "YES".

7. Answer the question

"Will its cache module also be removed Y/N [N] ?" RESPOND by typing "YES".

8. Wait for the following text to appear at the console:

"Killing other controller.

Attempting to quiese all ports.

Port 1 quiesced.

Port 2 quiesced.

Port 3 quiesced.

Port 4 quiesced.

Port 5 quiesced.

Port 6 quiesced.

All ports quiesced.

Remove the other HSJ40 (the one WITHOUT a blinking green LED) within 5 minutes. "

- 9. Remove the console cable, port connector, trilink (leaving cables connected to the trilink for HSD30 and HSZ40) and program card from the controller whose battery is being replaced.
- 10. Remove the controller whose battery is being replaced..
- 11. Wait for the following text to appear on the surviving controller's console:

"Restarting ALL ports.

Port 1 restarted.

Port 2 restarted.

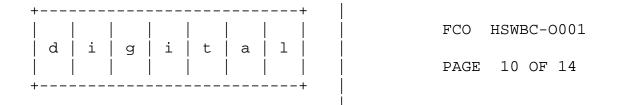
Port 3 restarted.

Port 4 restarted.

Port 5 restarted.

Port 6 restarted. "

FIELD APPLICATION DOCUMENT (FA), Continuation Page



- 12. Remove the now-exposed cache module.
- 13. Inspect batteries per quick check on page 1. If necessary, replace the batteries on this cache module. (See enclosure EK-HSFAM-RI or HS Family of Array Controllers Service Manual Page 7-33)

14. Answer the question
 "Do you have a replacement HSJ40 readily available [N] ?"
RESPOND by typing "YES".

15. Answer the question
 "*** Sequence to INSERT other HSJ40 has begun. ***
 Do you wish to INSERT the other HSJ40 [N] ?"

RESPOND by typing "YES".

16. Wait for the following text to appear on the surviving controller's console:

"Attempting to quiese all ports.

Port 1 quiesced.

Port 2 quiesced.

Port 3 quiesced.

Port 4 quiesced.

Port 5 quiesced.

Port 6 quiesced.

All ports quiesced.

Insert the cache module, then insert the other HSJ40, WITHOUT its program card, and press Return ?"

- 17. Insert the cache module that was removed in STEP 10. Then insert the controller module WITHOUT the program card. Attach the console cable. (Do not overtighten the screws in the bezel! A snug connection is all that is required.)
- 18. Press the 'RETURN' key on the surviving controller's console.

FIELD APPLICATION DOCUMENT (FA), Continuation Page



19. Wait for the following text to appear on the surviving controller's console:

"Restarting ALL ports.

Port 1 restarted.

Port 2 restarted.

Port 3 restarted.

Port 4 restarted.

Port 5 restarted.

Port 6 restarted.

Controller Warm Swap program terminated.

The configuration has two contollers.

To restart the other HSxxx:

- 1) Enter the command RESTART OTHER.
- 2) Press and hold in the Reset (//) button while inserting the program card.
 - 3) Release Reset (//); the controller will initialize.
- 4) Configure new controller by referring to the controller's user guide
- 20. At the surviving controller's console, type "RESTART OTHER".
- 21. Insert the PCMCIA program card while depressing the green reset button on the bezel of the controller whose battries were replaced. After the PCMCIA card is seated, release the green reset switch.
- 22. On the console of the controller whose batteries were replaced type, "SET NOFAILOVER".
- 23. (HSJ, HSD, HS1CP only) On the same controller console, type "RESTART THIS".
- 24. On the same controller console, type "SET FAILOVER COPY=OTHER".
- (NOTE) On HSZ40, replacement controller will restart automatically after issuing this command.
- 25. Attach the port cable to the controller whose batteries were just replaced.
- 26. A fully charged battery should show status "good" in a few minutes.

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

FIELD APPLICATION DOCUMENT (FA), Continuation Page

27. Proceed to the beginning of this process to replace the batteries in the OTHER cache module.

- Report this FCO activity on the LARS form in the "Fail Area/Module/FCO/Comments" column as follows: FCO HSWBC-0001
- 29. 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:

28.

NOTE: The Write Back Cache is identified by both 70-CLASS and Digital standard model numbers. Therefore, in the DEC Option section of the LARS use the name of the option you're installing the FCO on, such as,

```
If installing FCO on: On LARS use DEC Option:
```

HSZ40B HSZ40-BF HSZ40 HSZ40-YX HS1CP HS1CP-AF HSD30 HSD30-YX SWXRC-04 HSZ40-YX HSJ40 HSJ40-YA HSJ40-YB (16MB CACHE) HSJ40-YC (32MB CACHE) HSJ30 HSJ30-YC

USA APA EUROPE

Option ID X N/AN/AType of Call Μ M Request Type I Action Taken D D Y Quality Codes M,L,J,R,X,A,Y,ZFail Area-Module HSWBC-0001 HSWBC-0001 HSWBC-0001

Material Used EQ-01735-01 EQ-01735-01 EQ-01735-01

Material Used continued...

FCO-Comments

- (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						TRACT		
ON-SI	TE	OFF-5	SITE		 ГЕ	OFF-S	SITE	MATERIAL ONLY
TRAVEL/	EQ	 	EQ	 TRAVEL/	EQ		EQ	ORDER-ADMIN, HANDLING
INSTALL	KIT	INSTALL	KIT	INSTALL	KIT	INSTALL	KIT	PKG, SHIPPING & EQ KIT
DEC	DEC	DEC	DEC	 CUS	 CUS 	CUS	CUS	CUS