

Orbit Operations Checklist

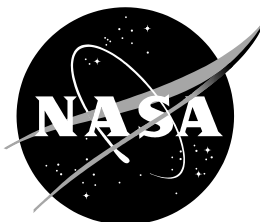
STS-103 Flight Supplement

Mission Operations Directorate
Operations Division

Final
July 30, 1999

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas



United Space Alliance



ORBIT OPERATIONS, STS-103 Flt Suppl**FINAL (July 30, 1999)****PCN-1 (Sept 30, 1999) Sheet 1 of 1**

List of Implemented Change Requests (482s):

ORB OPS-1598B
ORB OPS-1605C
ORB OPS-1618
ORB OPS-1621B
ORB OPS-1622
ORB OPS-1624A
ORB OPS-1627A
ORB OPS-1636
ORB OPS-1641
ORB OPS-1642

Incorporate the following:

1. Replace FS iii thru FS viii
Delete FS ix and FS x
2. Replace section 3 (20 pages)
3. Replace FS 4-17 and FS 4-18, FS 4-21 and FS 4-22
4. After FS CC 6-4, add sections 7 thru 11 (28 pages)

Prepared by: _____
Book Manager

Approved by: _____
Supervisor, Procedures Management (USA)

Accepted by: _____
FDF Subsystem Manager (NASA)

Encl: 58 pages

File this PCN immediately behind the front cover as a permanent record

Verify this is the correct version for the pending operation (training, simulation or flight).
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MISSION OPERATIONS DIRECTORATE

**ORBIT OPERATIONS CHECKLIST
STS-103 FLIGHT SUPPLEMENT**

FINAL
July 30, 1999

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This document is under the configuration control of the Crew Procedures Control Board (CPCB). All proposed changes must be submitted on JSC Form 482 to DO3/FDF Manager.

Additional distribution of this book for official use must be requested in writing to DO3/FDF Manager. The request must include justification and requester's name, organization, position, and phone number. Contractor requests are made through the NASA or DOD organization supported. Deletions, reduction in quantity, or change of address may be submitted to DO3/FDF Management Office, 281-244-1184.

ORB OPS/103/FIN

Incorporates the following:

482#: ORB OPS-1598A
ORB OPS-1606
ORB OPS-1607

AREAS OF TECHNICAL RESPONSIBILITY

Book Manager	DO3/H. Scott	281-483-0670
Alt Book Manager	DO3/P. Hancock	281-244-1188

ORBIT OPERATIONS CHECKLIST
 STS-103 FLIGHT SUPPLEMENT

LIST OF EFFECTIVE PAGES

	FINAL	07/30/99		
	PCN-1	09/30/99		
Sign Off	* 103/FIN		FS 3-11	103/FIN 1
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* - Omit from flight book

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ORBIT OPS CUE CARDS

<u>Title</u>	<u>Ref. Page</u>	<u>Card No.</u>
SINGLE SHIFT ORBITER		
CO2 ABSORBER		
REPLACEMENT		
(Front)	FS CC 6-3	ORB OPS-29a/103/O/A
(Back)	FS CC 6-4	ORB OPS-29b/103/O/A

* - Omit from flight book

POC SOFTWARE

<u>PROGRAM TITLE</u>	<u>VERSION</u>	<u>MEDIA</u>
3D Orbiter	generic	H
10.2 Depress	generic	H
Acrobat Reader	generic	H
AutoXD Configurator	generic	F
Cabin Leak	generic	H
Crew Mail	generic	H
Cyrillic Starter/Keyboard	generic	H
Deorbit Manager	generic	H
ESC SCSI Interrogator	generic	H
Excel	generic	H
Floppy Update (PADM)	generic	H
Fuel Cell Monitoring System	generic	H
HazMat	generic	H
Internet Explorer	generic	H
Kodak TWAIN Drivers	generic	H
Locker Stow	generic	H
NetCheck	generic	H
Norton AntiVirus	generic	H
Norton Utilities Emergency Disks	generic	F
OCA Audio	generic	H
*OCA Diagnostic	generic	F
OCA KFX	generic	H
OCA MFX	generic	H
OCA Stats	generic	H
OMS-RCS	generic	H
Outlook '97	generic	H
Packet Display Program	generic	H
Pan/Tilt	generic	H
Pass Wizard	generic	H
pcANYWHERE32	generic	H
*PCDecom	generic	H
PET Timer	generic	H

H - Hard Drive F - Floppy Disk P - PCMCIA Card
CD - Compact Disk

* DOS only

** DOS applications available under Windows 95

<u>PROGRAM TITLE</u>	<u>VERSION</u>	<u>MEDIA</u>
PGT Remote	generic	H
* PILOT	generic	H
PingMaster	generic	H
POC Plot	generic	H
Procomm Plus	generic	H
ProShare	generic	H
RBEV	generic	H
RPOP	generic	H
RSAD	generic	H
Spawn Print	generic	H
* Super Memory Event Monitor	generic	H
Telemetry Server	generic	H
Telemetry Server Starter	generic	H
ThumbsPlus	generic	H
Time Calculator	generic	H
Time Vector Server	generic	H
Time Vector Server Starter	generic	H
* TV Controller	generic	H
Video Capture	generic	H
Video Overlay	generic	H
Water Dump	generic	H
Windows '95	generic	H
(Calculator, CD Player, Character Map, Clipboard Viewer, Control Panel, Direct Cable Connection, Explorer, HyperTerminal, Media Player, Notepad, Paint, Sound Recorder, Word Pad)		
WinDecom	generic	H
WinZip	generic	H
Word	generic	H
World Map	generic	H
<u>FDF DOCUMENT FILES</u>		P/CD

H – Hard Drive F – Floppy Disk P – PCMCIA Card
 CD – Compact Disk

* DOS only

** DOS applications available under Windows 95

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COMM/INST

LOAD PCMMU FORMAT FS 1-2
PDI DECOM FORMAT FS 1-4

**COMM/
INST**

FS 1-1

ORB OPS/103/FIN

COMM/
INST

LOAD PCMMU FORMAT

- C3 1. √OI PCMMU FORMAT – GPC
SM 62 PCMMU/PL COMM
- CRT 2. FORMAT:
FXD – ITEM 1 EXEC (*)
SEL ID – ITEM 3 +X X X EXEC
3. √SM COMM BUF – RDY
LOAD – ITEM 4 EXEC
√LOAD, ITEM 4 – RUN,CPLT
- If LOAD – CPLT:
Repeat steps 2 and 3 for second ID
- * If LOAD – FAIL and ERR MSG – 'I/O *
* ERR MMU 1(2)': *
* Go to 5.2a, 'I/O ERR MMU 1(2)' (MAL, *
* DPS) >> *
* *
* If LOAD – FAIL and a first load attempt: *
* Repeat steps 2 and 3 for failed ID *
* *
* If LOAD – FAIL and a subsequent load *
* attempt: *
* √MCC *
C3 * OI PCMMU PWR – 2(1) *
* √ERR MSG – 'I/O ERR PCM' *
CRT * I/O RESET PCM – ITEM 5 EXEC (*) *
* Repeat steps 2 and 3 *
4. When final LOAD – CPLT:
PGM – ITEM 2 EXEC (*)

DNLIST COMPATIBILITY	PHASE	FORMAT ID 64/128	CONFIG NO.
G1,BFS	ASCENT	102/129	–
G2,G8,S2	ORBIT/ORBIT BURN/FCS C/O	103/161	–
G2,S2	HST 32K OPS (PRIME)	103/179	757
G2,S2	HST 32K OPS (B/U)	103/203	765
G2,S2	HST 4K OPS (PRIME)	103/184	760
G2,S2	HST 4K OPS (B/U)	103/205	767
G2,S2	HST 32K OPS (INVERTED)	103/185	761
G3,BFS	ENTRY	102/164	–
G2,S2,OPS0	OPS 0	–/163	–
G2,S2,P9	MMU C/O	–/163	–
G3,G9,S2	LOSS OF 2 GNC GPCs	–/172	–
GNC,BFS	–	102/FXD	–

NOTE

LDR TFL may affect PCMMU BITE. If PCMMU or SM 2 GPC switched since last TFL, ID 64 and 128 will not reflect current state

LOAD PDI DECOM FORMAT

SM 62 PCMMU/PL COMM

CRT 1. PDI:
√I/O RESET – ITEM 8 (*)
SEL DECOM – ITEM 9 +X EXEC
SEL FMT – ITEM 10 +X X X EXEC
LOAD – ITEM 11 EXEC

If LOAD – CPLT:
SEL INPUT – ITEM 12 +X EXEC
LOAD – ITEM 13 EXEC
Repeat step 1 for additional DECOMs/FPM

* If LOAD – FAIL and ERR MSG – 'I/O *
* ERR MMU 1(2)': *
* Go to 5.2a, 'I/O ERR MMU 1(2)' (MAL, *
* DPS) >> *
* *
* If LOAD – FAIL and a first load attempt: *
* Repeat step 1 *
* *
* If LOAD – FAIL and a subsequent load *
* attempt: *
* *
* NOTE *
* Power cycling PDI will cause PDI to *
* lose DFLs previously loaded *
* *
* √MCC *
A1L * S-BD CNTL – PNL *
* PL DATA INTLVR PWR – OFF,ON *
* √ERR MSG – 'S62 BCE BYP PL' *
* √'S62 BCE BYP PDI' *
* S-BD CNTL – CMD *
* *
* PCM: *
CRT * I/O RESET PCM – ITEM 5 EXEC (*) *
* *
* PDI: *
* I/O RESET – ITEM 8 EXEC (*) *
* Repeat step 1 for all of config (XXX) *

CONFIG	DECOM	FMT	INPUT	USE
757 HST 32K OPS (PRIME) TFL 179	1	9	1(2)	HST (32K) *
	2	-	-	-
	3	-	-	-
	4	1	1(2)	HST FMT M (4K) *
	5-FPM	501		L-H-H **
765 HST 32K OPS (B/U) TFL 203	1	-	-	-
	2	11	1(2)	HST FMT M (4K) *
	3	19	1(2)	HST (32K) *
	4	-	-	-
	5-FPM	506		L-H-H **
760 HST 4K OPS (PRIME) TFL 184	1	-	-	-
	2	7	1(2)	HST FMT A (4K) *
	3	6	1(2)	HST FMT D (4K) *
	4	1	1(2)	HST FMT M (4K) *
	5-FPM	505		H-H-H **
767 HST 4K OPS (B/U) TFL 205	1	-	-	-
	2	11	1(2)	HST FMT M (4K) *
	3	-	-	-
	4	17	1(2)	HST FMT A (4K) *
	5-FPM	503		H-H-H **
761 HST 32K OPS (INVERTED) (PRIME) TFL 185	1	-	-	-
	2	8	1(2)	HST (32K INVERTED)
	3	-	-	-
	4	-	-	-
	5-FPM	502		L-H-H **

* Denotes Downlinked Format

** OI-GNC-SM, Orbiter Downlist Data Rates (High or Low)

- No Entry Req'd

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PTG

STAR PAIRS PAD FS 2-2
PAIRS FS 2-3

PTG

FS 2-1

ORB OPS/103/FIN

PTG

STAR PAIRS PAD									
		ATT SET 1				ATT SET 2			
PAIR	ANG SEP	DUAL S TRK	SINGLE S TRK		DUAL S TRK	SINGLE S TRK			
			-Z	-Y		-Z	-Y		
A	91.3	-Y:16 R+ 207 -Z:59 P+ 85 Y+ 295	R+ 149 -Z:16 P+ 119 Y+ 298	R+ 284 -Y:59 P+ 73 Y+ 281	-Y:59 R+ 26 -Z:16 P+ 307 Y+ 64	R+ 328 -Z:59 P+ 273 Y+ 62	R+ 102 -Y:16 P+ 320 Y+ 79		
B	84.2	-Y:72 R+ 143 -Z:80 P+ 37 Y+ 10	R+ 57 -Z:72 P+ 42 Y+ 356	R+ 229 -Y:80 P+ 23 Y+ 6	-Y:80 R+ 129 -Z:72 P+ 219 Y+ 8	R+ 44 -Z:80 P+ 221 Y+ 354	R+ 215 -Y:72 P+ 204 Y+ 7		
C	84.0	-Y:76 R+ 295 -Z:42 P+ 189 Y+ 37	R+ 208 -Z:76 P+ 192 Y+ 52	R+ 10 -Y:42 P+ 206 Y+ 33	-Y:42 R+ 343 -Z:76 P+ 19 Y+ 307	R+ 249 -Z:42 P+ 6 Y+ 318	R+ 80 -Y:76 P+ 35 Y+ 316		
D	89.8	-Y:84 R+ 310 -Z:14 P+ 181 Y+ 350	R+ 222 -Z:84 P+ 180 Y+ 5	R+ 40 -Y:14 P+ 197 Y+ 351	-Y:14 R+ 321 -Z:84 P+ 3 Y+ 353	R+ 233 -Z:14 P+ 359 Y+ 7	R+ 50 -Y:84 P+ 18 Y+ 357		

FS 2-2

ORB OPS/103/FIN

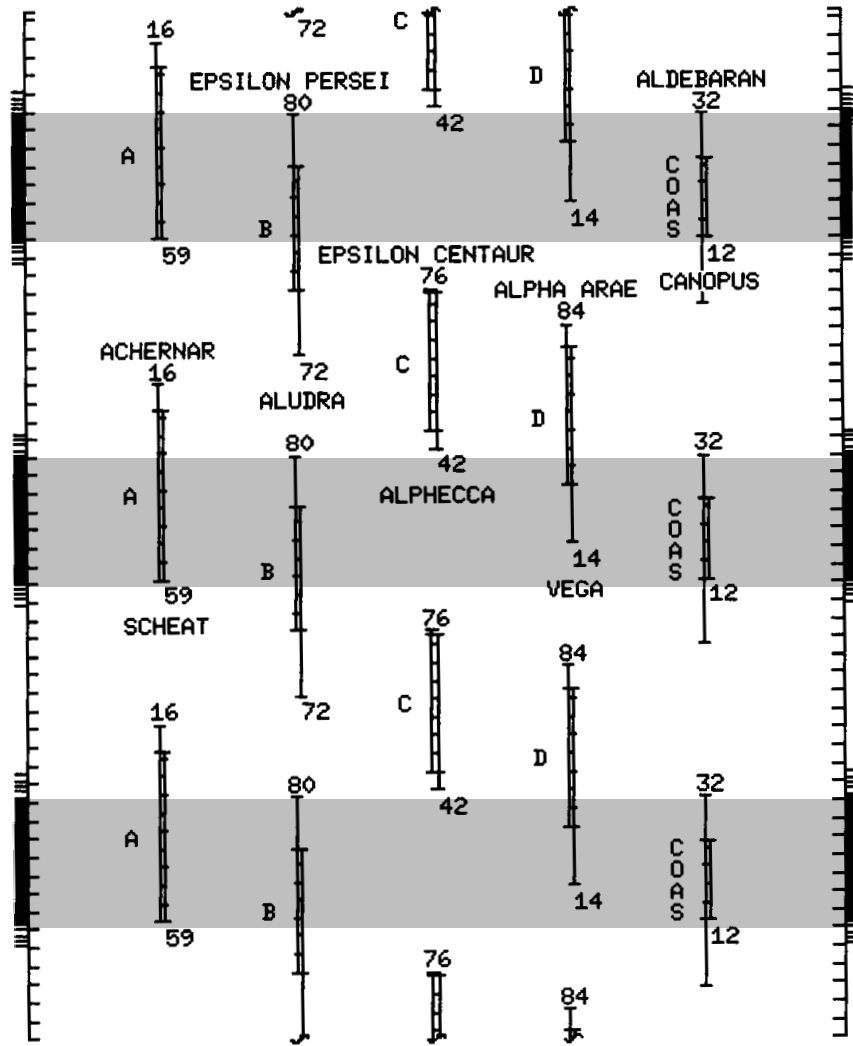
PAIR		COAS ALIGN ATTITUDE 1	ANG SEP	COAS ALIGN ATTITUDE 2
C	+X COAS	32 R+ 52 P+ 322 Y+ 63	NOSE ↑ 73 TRAIL ↑	12 R+ 290 P+ 94 Y+ 37
A		32 R+ 107 P+ 101 Y+ 21		12 R+ 115 P+ 126 Y+ 312
S	-Z COAS			

SINGLE S TRK MIN MNVR OPT
TGT ID = 11-110 NAV STAR #
BODY VECTOR = 5

	-Z S TRK	-Y S TRK
P	87.7	0
Y	358	280.6

MET Applicable: 0/00:00:00 - 9/00:00:00
Date L/O: 10/14/99
GMT L/O: 287/09:42:00

STAR PAIRS



MET Applicable: 0/00:00:00 - 9/00:00:00
 Date L/O: 10/14/99
 GMT L/O: 287/09:42:00

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OCA

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CABLE DIAGRAM – LOOPBACK	FS 3-19

OCA

OCA SETUP

1. Unstow:

- OCA Router PGSC with Expansion Unit
- ProShare PGSC with Expansion Unit
- AC Pwr cables (if not pre-routed)
- OCA I/F cable (if not pre-routed)
- PGSC Modem cable (if reqd)
- PCMCIA Ethernet card, adapter assemblies
- Ethernet cables
- Network T-connectors
- Network terminators (2)
- Network barrel connectors (if reqd)

OCA

If adding OCA Router PGSC to existing network, perform the following for each PGSC on network:

2. If time permits for PGSC shutdown and boot-up process:
 - Shut down Windows
 - Go to step 5
3. Click on 'PCMCIA card' icon in system tray
Click on pop-up window displaying 'Stop NAME_OF_NETWORK_CARD', wait for prompt
4. Press [ENTER] at network card dialog box displaying 'You may safely remove this device'
5. Remove PCMCIA Ethernet card from PCMCIA card slot
6. Repeat steps 2 thru 5 for each PGSC on network

PGSC

NOTE

At a minimum, network equipment should be configured for OCA Router and ProShare PGSCs. Network must always be properly terminated when connected to powered PGSCs

Cont next page

OCA ROUTER PGSC SETUP

7. Config network equipment per:
NETWORK SETUP DIAGRAM, 12-21
PGSC Usage Chart (if available) or UTILITY
OUTLET PLUG-IN PLAN ORBIT CONFIG-
URATION (REF DATA FS, UTIL PWR)
- SSP3 8. Config switches for Ku-Band file xfer:
cb PDIP PWR 2 KU BAND RLY - cl
L12 √MCC for Ku Band rate
Ku BAND RATE - LO(HI)
9. For PGSC Modem cable (if reqd) and OCA I/F
cable per OCA CABLE DIAGRAM, FS 3-7
- ML85E 10. √AC UTIL PWR - OFF
11. Connect AC Pwr cable between AC UTIL PWR
outlet and OCA Router PGSC per:
PGSC Usage Chart (if available) or UTILITY
OUTLET PLUG-IN PLAN ORBIT CONFIG-
URATION (REF DATA FS, UTIL PWR)
12. If OCA Router and ProShare PGSCs powered
from same AC UTIL PWR outlet, connect AC
Pwr cable to ProShare PGSC
13. If reqd, perform UNSTOW AND ASSEMBLE
COLOR PRINTER (COLOR PRINTER),
FS 11-2, then:
14. AC UTIL PWR - ON
- OCA
Router
PGSC 15. If reqd, perform PGSC HARD DISK LATE
UPDATE, 12-6, then:
16. Shut down Windows
17. Insert PCMCIA Ethernet card into PCMCIA card
slot

Cont next page

NOTE

After powering on OCA Router PGSC,
allow approx 2 min for completion of
boot-up process

18. PGSC pwr – on
19. Press [CTRL]/[ALT]/[DEL] to logon to Windows NT
Sel 'OK' on 'Logon Information' dialog box
Wait approx 10 sec for logon sequence to complete
20. Verify data rate:
Double-click 'OCA Control Panel Applet' icon
on desktop

- * If error msg displayed: *
- * Acknowledge msg *
- * PGSC pwr – off *
- * Eject,reinsert PCMCIA card *
- * Repeat steps 18 thru 20 *
- * If no joy: *
- * PGSC pwr – off *
- * Replace PCMCIA card,adapter *
- * Repeat steps 18 thru 20 *

√'Local OCA Card-1' display on desktop
In 'OCA-FLIGHT VC-2D' section of 'Local
OCA Card-1' display:
√SEND – 2(4)M

- * If send rate out of config: *
- * Sel 'Control'>'Transmit Rate'>'2(4) *
- * Mbps OCA internal clock (Shuttle *
- * Ku Channel 2(3))' *

PROSHARE PGSC SETUP

21. If ProShare PGSC already connected to AC Pwr
cable, go to step 25

ML85E 22. √AC UTIL PWR – OFF

Cont next page

23. Connect AC Pwr cable between AC UTIL PWR outlet and ProShare PGSC per:
PGSC Usage Chart (if available) or UTILITY OUTLET PLUG-IN PLAN ORBIT CONFIGURATION (REF DATA FS, UTIL PWR)
24. AC UTIL PWR – ON

ProShare

- PGSC 25. If reqd, perform PGSC HARD DISK LATE UPDATE, 12-6, then:
 26. Shut down Windows
 27. Insert PCMCIA Ethernet card into PCMCIA card slot
 28. If PGSC powered off:
PGSC pwr – on
If reqd, sel appropriate Expansion Unit config at Startup Menu, then press [ENTER]
 29. Press [ENTER] for any of the following:
Network password prompt (if displayed)
'Restoring Network Connections' dialog boxes
'Windows Networking' dialog boxes (if displayed)
 30. Repeat steps 27 thru 29 for each PGSC to be added to network
 31. Verify network connectivity using PingMaster:
Double-click 'Shuttle Apps'>'Network Config'>'PingMaster'
√'Status' column of 'Network Primary' and 'Network Nodes' sections for networked PGSCs
If status is 'Good Response' for networked PGSCs, press [CTRL]/[x] to exit PingMaster (if desired)

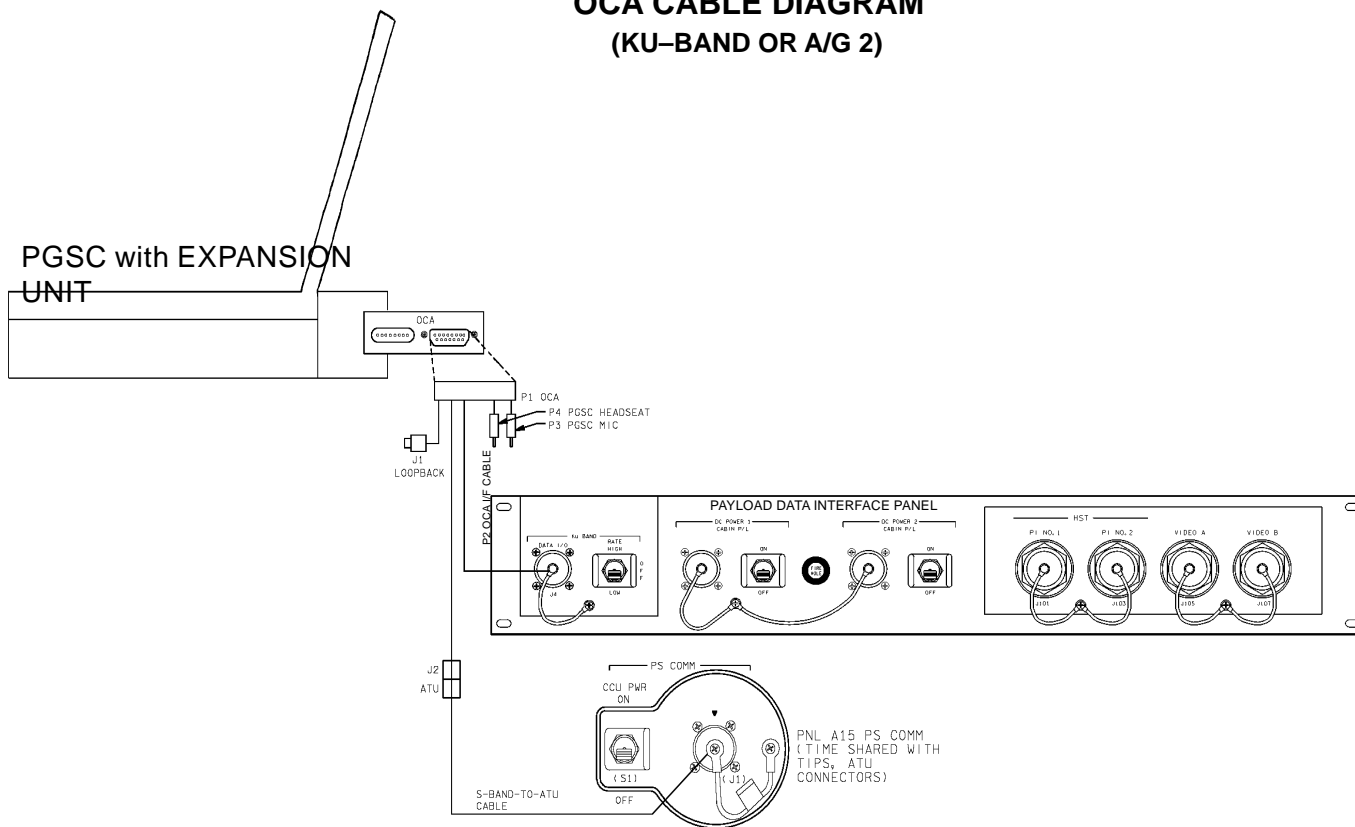
Cont next page

- * If status is not 'Good Response', verify *
- * proper network cable and card *
- * connections then recheck status in *
- * PingMaster *

ProShare

PGSC 32. Double-click 'Shuttle Apps'>'OCA
ProShare'>'KFX'
Arrange 'KFX' window as desired

OCA CABLE DIAGRAM (KU-BAND OR A/G 2)



FS 3-7

ORB OPS/103/FIN 1

OCA DOWNLINK VIA GROUND CMD

1. MOVE FILE(S) TO DOWNLINK DIRECTORIES

NOTE

Files will be downlinked via ground cmd, unless MCC instructs otherwise

See OCA DIRECTORY STRUCTURE, FS 3–9
See OCA FILENAMES, FS 3–10, for file naming convention

PGSC

Copy(Move) desired files to
c:\oca-down\mail(payloads)
Notify MCC when complete

2. MONITOR KFX DOWNLINK (if desired)

When link established:

From 'KFX' window:

- √REMOTE KFX – green
- √Uplink arrow ('↑' next to send rate) – green
- √Dnlink arrow ('↓' next to send rate) – green

√KFX application activated

√File Transfer Status dialog (displayed during file xfer)

3. MONITOR MFX DOWNLINK (if desired)

If MFX application not activated:

Perform OCA S–BAND MODEM(MFX)
ACTIVATION, FS 3–12, then:

If minimized:

- √Icon Title displaying File Name, Send/Receive Status

NOTE

For detailed file xfer information, following steps must be completed prior to file xfer initiation

Sel 'File' on menu bar of MFX application

- √Show Status During File Xfers – (√)
- √Z MODEM(1K–X MODEM) display appears
- √Displaying File Name, Send/Receive Status

OCA DIRECTORY STRUCTURE

```
C:\
├── OCA-DOWN
│   ├── MAIL
│   └── PAYLOADS *
├── OCA-UP
│   ├── ARCHIVE
│   ├── MAIL
│   │   ├── CDR
│   │   ├── MS1
│   │   ├── MS2
│   │   ├── MS3
│   │   ├── MS4
│   │   ├── MS5
│   │   ├── PLT
│   │   ├── PS1
│   │   └── PS2
│   ├── NEWS
│   ├── OTHER
│   ├── PAYLOADS
│   ├── SPOC **
│   └── WEB
└── OCA—SW (Ground Use Only)
```

* PAYLOADS Directory: Directory may contain flight specific subdirectory

** SpOC Directory: Directory will contain latest SpOC updates. To create SpOC update disk, copy all files in c:\oca-up\spoc\uplink to a:\uplink

OCA FILENAMES

UPLINKED FILES

LOCATION

SpOC updates:	a:\uplink\ (c:\oca-up\spoc\)
World News:	c:\oca-up\news\
Ops notes:	c:\oca-up\other\opsxxxx.doc
Graphics files:	c:\oca-up\other\othrxxxx.bmp
Uplinked personal mail:	c:\oca-up\mail\
Uplinked Payload files:	c:\oca-up\payloads\

DOWNLINKED FILES

LOCATION

Personal mail, other:	c:\oca-down\mail\
P/L files:	c:\oca-down\payloads\

STD FILENAMES

filename.doc	WORD documents only
filename.txt	ASCII text file (NOTEPAD or WORD)
filename.bmp	Graphics file (Paint)
filename.pcx	Graphics file (Paint)
famcdr01.doc	family mail: CDR → family on FD01
cdrfam02.doc	family mail: family → CDR on FD02
fltcd02.doc	message: CDR → FLT Director on FD02
plx_06.doc	message: to Payload X on FD06

NOTE

Do not downlink medical data. Downlink directories will be cleared of all files at end of each OCA session. To retain archive copy of downlink msgs, save in personal directory

OCA KU-BAND (KFX) MANUAL DOWNLINK

- PGSC
1. CONFIGURE S/W FOR FILE DOWNLINK
If reqd, enlarge 'KFX' window

From 'KFX' window:
 - √REMOTE KFX – green
 - √Uplink arrow ('↑' next to send rate) – green
 - √Dnlink arrow ('↓' next to send rate) – green
 2. SELECT FILE(S) TO DOWNLINK
Use WINDOWS EXPLORER to sel files/directories to transfer
Drag files over KFX window
Rel mouse button
√'KFX File Transfer Preview' display appears with selected file(s) listed
 3. ADD ADDITIONAL FILE FOR DOWNLINK (if reqd)
 - √'KFX File Transfer Preview' display active
 - Sel 'add to list' button (button with documents, '+' symbols)
 - √'Select Files for Transfer' display appears
 - Sel desired file from file listbox
 - Sel Select' button
 - Repeat for each additional file as reqd
 - Sel Done' button
 4. REMOVE FILE FROM DOWNLINK (if reqd)
 - √'KFX File Transfer Preview' display active
 - Sel desired file(s) in listbox
 - Sel 'delete' button (button with 'X')
 5. START FILE DOWNLINK

NOTE

User may halt transfer while in progress by sel Abort' button

- √'KFX File Transfer Preview' display active
- Sel 'downlink' button (button with '↓')
- √'File Transfer Status' display appears
- √Displaying xfer status

* If error displayed, repeat step 5 *

OCA S-BAND MODEM (MFX) ACTIVATION

1. ESTABLISH LINK

On MCC GO:

A15 PS COMM CCU PWR – OFF

L9 PS AUD PWR – AUD
A/G 1 – OFF
A/G 2 – T/R
A/A – OFF
ICOM (two) – OFF
VOL A/G 2 tw – 0
XMIT/ICOM MODE – PTT/PTT

CAUTION

Loss of A/A (UHF) will occur if OCA PGSC Modem cable connected to COMM OUTLET and A/A in T/R on ATU

O9 R AUD A/G 2 – OFF
O5 L AUD A/G 2 – OFF
R10 MS AUD A/G 2 – OFF
A13(OV102) OS AUD A/G 2 – OFF
MO42F MIDDECK SPKR AUD A/G 2 – OFF

A15 √PGSC Modem cable connected to PS COMM outlet

2. ACTIVATE FILE XFER S/W

OCA Router
PGSC

If PGSC not running Windows 95:
Restart (or pwr on) PGSC
At Startup Menu, sel Windows 95 option
Press [ENTER]

Double-click 'Shuttle Apps' icon on desktop
Double-click 'OCA' folder
Double-click 'MFX' icon
√'MFX' display appears
√WINDOW – OFFLINE
Arrange 'MFX' window as reqd

VIDEO CONFERENCING

1. Unstow:
 - Headset
 - Mini-cam
 - ProShare Video/Pwr cable
 - VLHS/VTS I/F cable
2. Perform OCA SETUP, steps 1 thru 5, FS 3-2, then:
3. Config cables per P/TV VIDEO CONFERENCING (PHOTO/TV FS, P/TV06 VID CONE)

ProShare
PGSC

4. Double-click 'Shuttle Apps' icon on desktop
Double-click 'OCA' folder
Double-click 'OCA ProShare Video' icon
5. ✓Video active in 'Local' window
6. Adjust Thinkpad display tilt-angle, camera position, iris, focus so oper's face centered in 'Local' video window
7. ✓Picture quality and position
 - * If picture quality poor:
 - * From 'Local' video window: *
 - * Sel 'Adjusts video' button ('slide *
 - * bar' icon) *
 - * Adjust picture quality as reqd *
 - * Sel 'Close' button *
 - * If 'Save camera control settings?' *
 - * appears, sel 'Yes' button *
 - * *
 - * From 'Local' video window: *
 - * ✓'Zooms in' button (mag glass) in *
 - * out position *
8. TO RECEIVE CALL
Notify MCC when ready to receive video conference call, wait for MCC to initiate

Cont next page

9. TO INITIATE CALL

Notify MCC when ready to place video conference call, wait for MCC confirmation
Sel 'Dial List' button
Sel 'MCC, PC'
Sel 'Dial' button

NOTE

Title of remote video window changes to designate caller when video conference established

10. CONDUCT VIDEO CONFERENCE

NOTE

Video conference performance may be affected if other applications are active

- √Remote video window active, audio active
Sel 'Split' button on handset
Move remote video window directly beneath camera
Adjust audio volume using slide bar under remote video window
- √Headset/speaker Toggle button configured for headset audio (button not depressed)

11. TERMINATE VIDEO CONFERENCE

NOTE

When video conference completed, either side can terminate call. If MCC has disconnect, 'Hang Up' button will change to 'Dial'

From ProShare Video handset:

Sel 'Hang Up' button
Sel System Menu (upper left corner)
Sel 'Exit' ([ALT]/[SHIFT]/[F4])

OCA CHALKBOARD

1. Perform VIDEO CONFERENCING, steps 1 thru 8(9), FS 3–13, then:
2. TO RECEIVE CHALKBOARD SESSION
Notify MCC when ready to receive chalkboard session, wait for MCC to initiate

PGSC

From ProShare Video handset, sel 'Split' button
If 'Local' video remains on screen, minimize 'Local' video window

3. TO INITIATE CHALKBOARD SESSION
Notify MCC when ready to initiate chalkboard session, wait for MCC confirmation

From ProShare Video handset, sel 'OCA CHALKBOARD' button

Sel 'Yes' at 'Do You Want to Share Notebook?' dialog

Minimize all unused windows

4. TERMINATING CHALKBOARD SESSION

NOTE

When chalkboard session completed, either side can terminate session

From ProShare Personal Conferencing menu bar:
Sel 'Conference'
Sel 'UnShare Notebook' menu

If MCC has terminated session, sel 'OK' in 'The other participant closed the notebook'

From ProShare Personal Conferencing menu bar:
Sel 'File'
Sel 'Exit'

NOTE

Operator will be prompted to save chalkboard session in 'xxxx.mtg' file

APPLICATION SHARING

- PGSC
1. Launch desired application
 2. Perform OCA CHALKBOARD, steps 1 thru 3, FS 3-15, then:
 3. From ProShare Personal Conferencing menu bar:
Sel 'Application'
Sel 'Share Application View..'
 4. From 'Share Application View' dialog box:
Sel desired application
Sel 'OK'
 5. Perform application edits with MCC when application is shared

NOTE

Mouse operation, shared between MCC and flight operator, must be coordinated using conference audio

6. TERMINATING APPLICATION SHARING
Either side can terminate application sharing by exiting application

REMOTE PAN/TILT/ZOOM CONTROL OF GROUND CAMERA (KCA CAMERA CNTL)

NOTE

PAN/TILT control only available if ground workstation involved in video conference has PAN/TILT, and ground PAN/TILT camera is running

1. Perform VIDEO CONFERENCING, steps 1 thru 8(9), FS 3-13, then:

ProShare

PGSC

2. Double-click 'Shuttle Apps' icon on desktop
Double-click 'OCA' folder
Double-click 'OCA ProShare Pan-Tilt' icon
3. Sel 'Help' in KCA Camera Control menu bar for instructions
4. When camera control ops complete, close KCA camera control application

OCA PROSHARE CONFIG FOR CAMCORDER OPS

NOTE

Only one instance of OCA ProShare application can be open at one time

ProShare

PGSC

1. If open, exit ProShare application
2. Double-click 'Shuttle Apps' icon on desktop
3. Double-click 'OCA' folder
4. Double-click 'OCA ProShare Video with Camcorder' icon

OCA LOOPBACK TEST

NOTE

Perform procedure on OCA Router
PGSC running in Windows NT

- OCA Router
PGSC
1. LOGON TO WINDOWS NT
Press [CTRL]/[ALT]/[DEL] to logon to Windows NT
Sel 'OK' on 'Logon Information' dialog box
Wait approx 10 sec for logon sequence to complete
Double-click 'OCA Control Panel Applet' icon on
desktop
√'Local OCA Card-1' display on desktop
 2. INITIATE INTERNAL LOOPBACK TEST
From 'Local OCA Card-1' display:
Sel 'OCA Self Tests' on menu bar
Sel 'Internal Loopback'

√'Local OCA Card-1' display:
Successful Test – Animated Signal moving
inside PC icon
Unsuccessful Test – 'Frowny Face' displayed
inside PC icon
Inform MCC of results
 3. TERMINATE INTERNAL LOOPBACK TEST
From 'Local OCA Card-1' display:
Sel 'OCA Self Tests' on menu bar
Sel 'Stop Loopback Testing'
 4. INITIATE EXTERNAL LOOPBACK TEST
Disconnect OCA I/F cable from PDIP panel
Connect PDIP end of OCA I/F cable to loopback
port on PGSC end of cable
See OCA CABLE DIAGRAM – LOOPBACK,
FS 3-19, for cable config

From 'Local OCA Card-1' display:
Sel 'OCA Self Tests' on menu bar
Sel 'External Loopback #1'

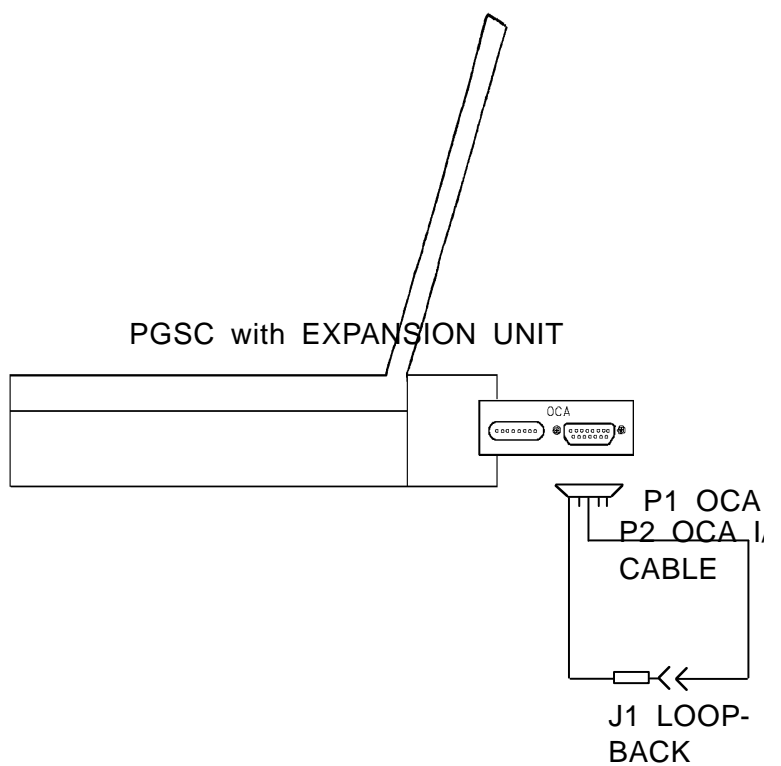
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- √'Local OCA Card-1' display:
 - Successful Test – Animated Signal moving outside PC icon
 - Unsuccessful Test – 'Frowny Face' displayed inside PC icon
- Inform MCC of results

5. TERMINATE EXTERNAL LOOPBACK TEST

- From 'Local OCA Card-1' display:
 - Sel 'OCA Self Tests' on menu bar
 - Sel 'Stop Loopback Testing'

OCA CABLE DIAGRAM – LOOPBACK



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GPS

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GPS

GPS

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GPS DEVELOPMENT FLIGHT TEST

OPS 2 GPS TEST

- A13 1. GPS POWER UP
√GPS PWR – ON
- CRT *
- * If receiver not powered, *
 - * GPS PWR – ON *
 - * √GPS ENCRYPT – NORMAL *
 - * Wait at least 30 sec *
 - * GNC I/O RESET *
 - * *
 - * GNC 55 GPS STATUS *
 - * INIT – ITEM 15 EXEC (*) *
 - * √MODE – CINI *
 - * NAV – ITEM 18 EXEC (*) *
 - * √MODE – INS *
 - * On MCC GO, proceed to next step *
2. GPS TO NAV VECTOR INCORPORATION
- A. 1st NAV INCORPORATION
- C3 On MCC GO:
S-BD PM ANT – BEST ANT
DAP: FREE
- GNC 55 GPS STATUS
GPS TO NAV AUTO – ITEM 35 EXEC (*)
√GPS MINUS NAV
(expect <100 ft in ΔH, ΔDR, ΔCR)
- C3 √MCC for good vector incorporation
DAP: AUTO
S-BD PM ANT – GPC

Cont next page

B. 2nd NAV INCORPORATION

On MCC GO (approx 90 min):

C3 S-BD PM ANT – BEST ANT
DAP: FREE

CRT √MCC for good vector incorporation
GPS TO NAV INH – ITEM 36 EXEC (*)

C3 DAP: AUTO
S-BD PM ANT – GPC

3. GPS SHORT PWR CYCLE

CRT √NAV – ITEM 18 (*)
A13 GPS PWR – OFF (5 sec), ON
(expect 'BCE STRG 2 GPS')
Wait 10 sec
CRT GNC I/O RESET

√MODE – INS
√SATELLITES – tracking 4 satellites
√MCC before proceeding

4. GPS LONG PWR CYCLE

CRT √NAV – ITEM 18 (*)
A13 GPS PWR – OFF (at least 30 sec), ON
(expect 'BCE STRG 2 GPS')
Wait at least 30 sec
CRT GNC I/O RESET

CRT INIT – ITEM 15 EXEC (*)
√MODE – CINI
NAV – ITEM 18 EXEC (*)

√MODE – INS
√SATELLITES – tracking (may take up to 12 min
to acquire 4 or more satellites)
√MCC before proceeding

5. GPS FILTER RESTART

√MODE – INS
RESTART – ITEM 21 EXEC (*)
Wait 5 sec
√RESTART – ITEM 21 (no *)

OPS 3 GPS TEST

1. DPS CONFIG FOR OPS 3

NOTE

Do not perform any keyboard item entries or switch throws 10 sec before and after moding PASS GPCs to RUN or making OPS transition requests

O6 ACTIVATE GPC 2 (if in HALT)
√GPC MODE 2 – HALT (tb–bp)
 √OUTPUT 2– NORM
 √PWR 2 – ON
 MODE 2 – STBY (tb–RUN),RUN

TRANSITION GPCs 1 & 2 TO OPS 2
(if GPC 2 just activated)

1: GNC 0 GPC MEMORY
CONFIG – ITEM 1 +2 EXEC

Modify MC 2 per table →

GNC, OPS 201 PRO

	CONFIG GPC	2 12000
STR	1	1
	2	2
	3	1
	4	2
PL	1/2	0
CRT	1	1
	2	2
	3	0
	4	2
L	1	0
	2	0
MM	1	1
	2	2

1: GNC 22 S TRK/COAS CNTL
S TRK –Y,–Z: STAR TRK – ITEM 3,4 EXEC (*)

1: GNC 21 IMU ALIGN
RESUME

Cont next page

FS 4–5

ORB OPS/103/FIN

- O14,
O15,
O16
2. SYS CONFIG FOR OPS 3
 cb DDU L (two) – cl
 RGA (four) – ON
 cb MNA,B,C ADTA (four) – cl
 ASA (four) – ON
 √Pri RJD LOGIC,DRIVER (sixteen) – ON
- O8 MLS (three) – ON
- C3 √FCS CH (four) – AUTO

3. OPS 3 TRANSITION

A. CONFIGURE PCMMU FOR TEST

SM 62 PCMMU/PL COMM

SELECT FXD FORMAT – ITEM 1 EXEC (*)

B. TRANSITION GPC 1 & 2 TO GNC OPS 3

1: GNC 0 GPC MEMORY

CONFIG – ITEM 1 +3 EXEC

Modify MC 3 per table →

GNC, OPS 301 PRO

CONFIG	3
GPC	12000
STR 1	1
2	2
3	1
4	2
PL 1/2	0
CRT 1	1
2	2
3	0
4	2
L 1	0
2	0
MM 1	1
2	2

1: GNC DEORB MNVR COAST

Cont next page

O6 C. TRANSITION BFS GPC TO GNC OPS 3
√GPC PWR 5 – ON
MODE 5 – STBY (tb–RUN)

C2 CRT 3 PWR – ON

C3 BFC CRT DISP – ON
√SEL – 3+1

O6 CRT3

3: BFS, GNC BFS MEMORY

GPC OUTPUT 5 – B/U (tb–bp)
√TFL ENA – ITEM 29 (*)
BFS, GNC OPS 301 PRO

3: BFS, GNC DEORB MNVR COAST

4. ATTITUDE MNVR
If dedicated COMM attitude reqd:

GNC DEORB MNVR COAST

√MCC for attitude

R – ITEM 24 + _ _ _ EXEC
P – ITEM 25 + _ _ _ EXEC
Y – ITEM 26 + _ _ _ EXEC

√DAP: AUTO
ITEM 27 EXEC

A13 5. GPS POWER UP
√GPS PWR – ON

CRT * If receiver not powered, *
* GPS PWR – ON *
* √GPS ENCRYPT – NORMAL *
* Wait at least 30 sec *
* GNC I/O RESET *
* *
*

GNC 55 GPS STATUS

 *
* INIT – ITEM 15 EXEC (*) *
* √MODE – CINI *
* NAV – ITEM 18 EXEC (*) *
* √MODE – INS *
* On MCC GO, proceed to next step *

Cont next page

6. GPS TO NAV VECTOR INCORPORATION – PASS/BFS

C3

On MCC GO:

S-BD PM ANT – BEST ANT

DAP: INRTL

ROT: PULSE/PULSE/PULSE

GNC 55 GPS STATUS

GPS TO NAV AUTO – ITEM 35 EXEC (*)

√GPS MINUS NAV

(expect <100 ft in ΔH , ΔDR , ΔCR)

BFS 50 HORIZ SIT

GPS AUTO – ITEM 42 EXEC (*)

√RATIO < 1

√MCC for good vector incorporation

Wait 5 min

GNC 55 GPS STATUS

GPS TO NAV INH – ITEM 36 (*)

BFS 50 HORIZ SIT

GPS INH – ITEM 43 EXEC (*)

C3

DAP: AUTO

S-BD PM ANT – GPC

If dedicated COMM attitude reqd:

GNC DEORB MNVR COAST

ITEM 27 EXEC

Cont next page

7. GPS SHORT PWR CYCLE

GNC 55 GPS STATUS

- CRT
A13 √NAV – ITEM 18 (*)
GPS PWR – OFF (5 sec),ON
 (expect 'BCE STRG 2 GPS')
Wait 10 sec
- CRT GNC I/O RESET
- √MODE – INS
 √SATELLITES – tracking 4 satellites
 √MCC before proceeding

8. GPS LONG PWR CYCLE

- CRT
A13 √NAV – ITEM 18 (*)
GPS PWR – OFF (at least 30 sec),ON
 (expect 'BCE STRG 2 GPS')
Wait at least 30 sec
- CRT GNC I/O RESET
- INIT – ITEM 15 EXEC (*)
 √MODE – CINI
 NAV – ITEM 18 EXEC (*)
 √MODE – INS
 √SATELLITES – tracking (may take up to 12 min
 to acquire 4 or more satellites)
 √MCC before proceeding

9. GPS FILTER RESTART

- √MODE – INS
 RESTART – ITEM 21 EXEC (*)
 Wait 5 sec
 √RESTART – ITEM 21 (no *)

10. ZEROIZE GPS

- A13 GPS ENCRYPT – ZEROIZE
After 1 sec:
 GPS ENCRYPT – NORMAL
- CRT √MODE – RINI (~5 sec)
 √MODE – INS

Cont next page

11. DPS CONFIG FOR OPS 2

NOTE

Do not perform any keyboard item entries or switch throws 10 sec before and after moding PASS GPCs to RUN or making OPS transition requests

O14,O15:F A. TRANSITION TO GNC OPS 201
 √MMU (two) – ON

GNC 0 GPC MEMORY
 CONFIG – ITEM 1 +2 EXEC

Config for single G2 GPC ops unless directed otherwise by MCC

		DUAL G2	SINGLE G2
Modify MC 2 per table →	CONFIG GPC	2 12000	2 10000
	STR 1	1	1
	2	2	1
	3	1	1
	4	2	1
	PL 1/2	0	0
GNC, OPS 201 PRO BFS, MSG RESET	CRT 1	1	1
	2	2	1
	3	0	0
	4	2	1
L	1	0	0
	2	0	0
MM	1	1	1
	2	2	1

C2

GNC UNIV PTG
 DAP: A/AUTO/VERN

Cont next page

CRTX If single G2 GPC ops:
 MAJ FUNC – PL
 GPC/CRT2/X EXEC

O6 X: PL GPC MEMORY
 CONFIG ITEM 45 +2 EXEC
 GPC ITEM 46 +2 EXEC
 STORE ITEM 47 EXEC
 Store complete when MC = 02 (~18 sec)
 GPC MODE 2 – STBY (tb–bp)
 – HALT (tb–bp)
 – STBY (tb–RUN)
 – HALT (tb–bp)

O14:F,
 O15:F √MMU 2 – OFF

CRT3 B. SECURE BFS
 BFS, GNC OPS 000 PRO

C3 3: BFS, GNC GPC MEMORY
 BFC CRT DISP – OFF

O6 √All CRTs deassigned from BFS
 GPC MODE 5 – HALT (tb–bp)
 OUTPUT 5 – NORM (tb–bp)

C2 C. RECONFIG CRTs
 CRT 3 PWR – OFF

D. CONFIGURE PCMMU FOR OPS 2 SUPPORT
SM 62 PCMMU/PL COMM
 SELECT PGM FORMAT – ITEM 2 EXEC (*)

E. ERROR LOG RESET
 After MCC GO:
SM 0 GPC MEMORY
 ERR LOG RESET – ITEM 48 EXEC

GNC 0 GPC MEMORY
 ERR LOG RESET – ITEM 48 EXEC

Cont next page

12. SYS CONFIG FOR OPS 2
O14, RGA (four) – OFF
O15, cb MNA,B,C ADTA (four) – op
O16 ASA 1,2,3 (three) – OFF
√Pri RJD LOGIC,DRIVER (sixteen) – as reqd
cb DDU L (two) – op
O8 MLS (three) – OFF
C3 √FCS CH (four) – AUTO
√FLIGHT PLAN attitude
GNC 22 S TRK/COAS CNTL
S TRK –Y,–Z: STAR TRK – ITEM 3,4 EXEC (*)
GNC 21 IMU ALIGN
RESUME
O15:F If in GROUP B(C) PWRDN, MMU 2 – OFF

NAV RECOVERY

1. SYSTEM SAFING

GNC 55 GPS STATUS

GPS TO NAV INH – ITEM 36 EXEC (*)

C3

DAP: FREE
S-BD PM ANT – BEST ANT

Establish COMM with MCC
If COMM established, MCC will uplink Orbiter
State Vector

* If no joy on COMM: *
* Proceed to step 2 *

C3

On MCC GO:
DAP: AUTO
S-BD PM ANT – GPC

2. NAV RECOVERY

NOTE

This step is applicable only in GNC OPS 2,
and only when MCC has previously
uplinked a Target State Vector

GNC 33 REL NAV

RNDZ NAV ENA – ITEM 1 (*)
TGT TO ORB – ITEM 11 (*)

Establish COMM with MCC

C3

On MCC GO:
DAP: AUTO
S-BD PM ANT – GPC

GNC 33 REL NAV

RNDZ NAV ENA – ITEM 1 (no *)

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**SINGLE STRING GLOBAL POSITIONING SYSTEM
(DTO 700-14)**

SPACE INTEGRATED GPS/INS (DTO 700-15)

MAGR/SIGI UNSTOW

- MA16D/ 1. Open locker doors
MA16F
2. √Temp strip – rightmost three blocks black
- * If Temp strip rightmost three blocks not *
 - * black (temp > 122 degF) *
- MO13Q * DC UTIL PWR – OFF *
- * Wait 10 min *
- MA16D/MA16F * Expansion Chassis pwr – off *
- * √Temp strip rightmost three blocks black *
- MO13Q * DC UTIL PWR – ON *
- MA16D/MA16F * Expansion Chassis pwr – on *
- * PGSC pwr – on *
- * √MCC *
- MA16D/ 3. Remove PGSC foam assy
MA16F
- MAGR 4. Open PGSC monitor
PGSC √Data Display
- * If data not updating, √MCC *
5. Press [ESC] twice to exit data collection program
√‘C:\GPS>’ appears on display
6. Enter ‘cflash’ [RETURN]
Record number of files in directory from upper
flash card. Press [ENTER] and then record
number of files in directory from lower flash
card. Report to MCC and press [ENTER]
- SIGI 7. Open PGSC monitor
PGSC √1553 Status successful counter incrementing

Cont next page

* If 1553 Status unsuccessful *
* counter incrementing, √MCC *

8. Enter ALT-ESC
√'C:\>' appears on display
9. Enter 'cflash' [RETURN]
√'C:\>' reappears on display
- MAGR/
SIGI
PGSC 10. PGSC pwr – off
Expansion Chassis pwr – off
- MO13Q 11. DC UTIL PWR – OFF
- MAGR/
MA16F 12. Demate power and GPS RS-422 connections
13. Remove cables from locker door openings
- MAGR
PGSC 14. Reconnect power and GPS RS-422 data cables
- SIGI/
MA16D 15. Demate power, SIO, and 1553 connections
16. Remove cables from locker door openings
- SIGI
PGSC 17. Reconnect power, SIO, and 1553 connections
1553 cable: P1/A to 1553A
P2/B to 1553B
18. Locate SIGI RS-232 data Y-power cable
- PCDecom
PGSC 19. Connect RS-232 cable to STS1 WINDECOM
COM 1 (SRC)
- SIGI
PGSC 20. Connect RS-232 cable to SIGI COM 1 (RX)
- MO13Q 21. DC UTIL PWR – ON
- MAGR/
SIGI
PGSC 22. Expansion Chassis pwr – on
PGSC pwr – on

MAGR ONORBIT SETUP

MAGR
PGSC

1. At 'C:\GPS>', enter 'GPS'
2. At intro display, select 'orbit'
 - * If error msg appears, √MCC *
3. When intro display returns, press [F1]
4. √Data Display is updating
5. Wait until at least one satellite SV in STAT 5 appears on the display
6. Enter CTRL-T (sets clock in PGSC)
7. √Data is being recorded
 - If recording, the following should appear in FLAGS blocks:
 - 'Recording'
 - Filename
 - 'ON'
 - * If not recording, *
 - * enter [F8] to toggle recording *
8. Record approx MET ____:____:____
Record drive letter and filename located in
FLAGS block ____:____.____
Record Disk space remaining in Mbytes located
below FLAGS block _____ Mb
9. Call MCC (report step 8 results)

NOTE

Velocity RSS, FOM, time since 4 SV NAV,
'4 at STAT 5' flags are located in DATA
DISPLAY (F1). FOM and time since 4 SV
NAV are located in WorldMap Display (F2)

10. If FOM = 9, and Time since 4 SV NAV > 1 hr, or if
ENU Velocity RSS > 8000 m/s, report to MCC

SIGI ONORBIT SETUP

- SIGI
PGSC
- √Flash card installed in top PCMCIA slot
 - √‘C:\>’ appears on display
 - * If not, enter ALT-ESC *
 - Enter ‘orbit’
√1553 Status successful counter incrementing
 - * If counter not incrementing, *
 - * √MCC *
 - √If “SELF-TEST REQUIRED” flag appears on right side of Status Page; √MCC
 - √Blended Summary from right side of screen against expected values (compare with WorldMap PGSC):

GMT TIME	GMT within 5 sec
LAT	within 2°
LON	within 2°
ALT	within 2nm
# SATS TRACKED	4 or 5

Call MCC and report
 - To verify PCDecom connection, enter ALT-F6
SIGI Status Page display should return within 1 min
 - * If “Delay to read PCDecom: xx” *
 - * message remains on screen and *
 - * counter exceeds 30, √PCDecom *
 - * connections/interface and √MCC *
 - Close PGSC monitor if desired

SIGI OCA DOWNLINK

- | | |
|----------------|--|
| SIGI
PGSC | <ol style="list-style-type: none">1. Press ALT-F8 to stop data recording to flash cards2. Remove both flash cards from top and bottom PCMCIA slots |
| PGSC
on LAN | <ol style="list-style-type: none">3. Insert flash card into any machine with open PCMCIA slot on the Network4. Open Windows Explorer5. On left side of screen, select directory icon 'D:' drive6. Press CTRL-A to select all files on the flash card7. Press CTRL-C to copy all files8. On left side of screen, select OCA directory 'GPS' located under:
 'Oca-down'
 'Payloads'9. Press CTRL-V to paste all files to the OCA directory10. Left click on the PCMCIA icon on far right side of task bar to eject the flash card11. Remove flash card
Repeat steps 3-10 for second flash card |
| SIGI
PGSC | <ol style="list-style-type: none">12. Insert flash card(s) to open PCMCIA slot(s)13. Press CTRL-D to delete files on both flash cards14. Press ALT-F8 to resume flash card recording15. Call MCC and report the number of files transferred to the OCA |

MAGR/SIGI ENTRY SETUP

- | | |
|-----------------------|--|
| MAGR
PGSC | 1. Press ESC twice to exit data collection program
PGSC
√'C:\GPS>' appears on display |
| SIGI
PGSC | 2. Enter ALT-ESC to exit data collection program
√'C:\>' appears on display |
| MAGR/
SIGI
PGSC | 3. PGSC pwr – off
Expansion Chassis pwr – off |
| MO13Q | 4. DC UTIL PWR – OFF |
| MAGR
PGSC | 5. Demate power and GPS RS-422 connectors |
| MAGR/
MA16F | 6. Reroute power and GPS RS-422 cables through
locker door |
| | 7. Reconnect power and GPS RS-422 connectors |
| SIGI
PGSC | 8. Demate power, SIO, and 1553 A&B connectors |
| | 9. Demate SIGI RS-232 data Y-cable |
| SIGI/
MA16D | 10. Reroute power, SIO, and 1553 cables through
locker door |
| SIGI
PGSC | 11. Reconnect power, SIO, and 1553 A&B connections
1553 cable: P1/A to 1553A
P2/B to 1553B |
| MO13Q | 12. DC UTIL PWR – ON |
| MAGR/
SIGI
PGSC | 13. Expansion Chassis pwr – on
PGSC pwr – on |

Cont next page

14. √DOS prompt appears on display
√Expansion Chassis fan running
15. √Flash cards (two) installed in PCMCIA slots
- MA16D/ 16. Unstow foam assy and carefully place PGSC
MA16F in foam
√Cables routed through foam and PGSC
connections secure
- MAGR 17. At 'C:\GPS>' prompt, enter 'dflash' to erase data
PGSC on PCMCIA cards
18. When DOS prompt returns, enter 'GPS'
19. At intro display, select 'entry' [RETURN]
 - * If error msg appears, √MCC *
20. √Data Display is updating
21. Wait until at least one satellite SV in STAT 5
appears on the display
22. Enter CTRL-T (sets clock in PGSC)
√Data recording OFF (lower right corner of screen)
 - * If recording, press [F8] to toggle *
 - * recording OFF *
23. Record approx MET ____:____:_____

NOTE

Velocity RSS, FOM, time since 4 SV NAV,
'4 at STAT 5' flags are located in DATA
DISPLAY (F1)

24. If FOM = 9, and Time since 4 SV NAV > 1 hr, or if
Velocity RSS > 8000 m/s, call MCC (finished
step 23, approx MET)

Cont next page

SIGI 25. Enter 'entry' to begin data acquisition
PGSC √1553 Status successful counter incrementing

* If counter not incrementing, *
* √MCC *

26. √Blended Summary from right side of screen
against expected values (compare with
WorldMap PGSC):

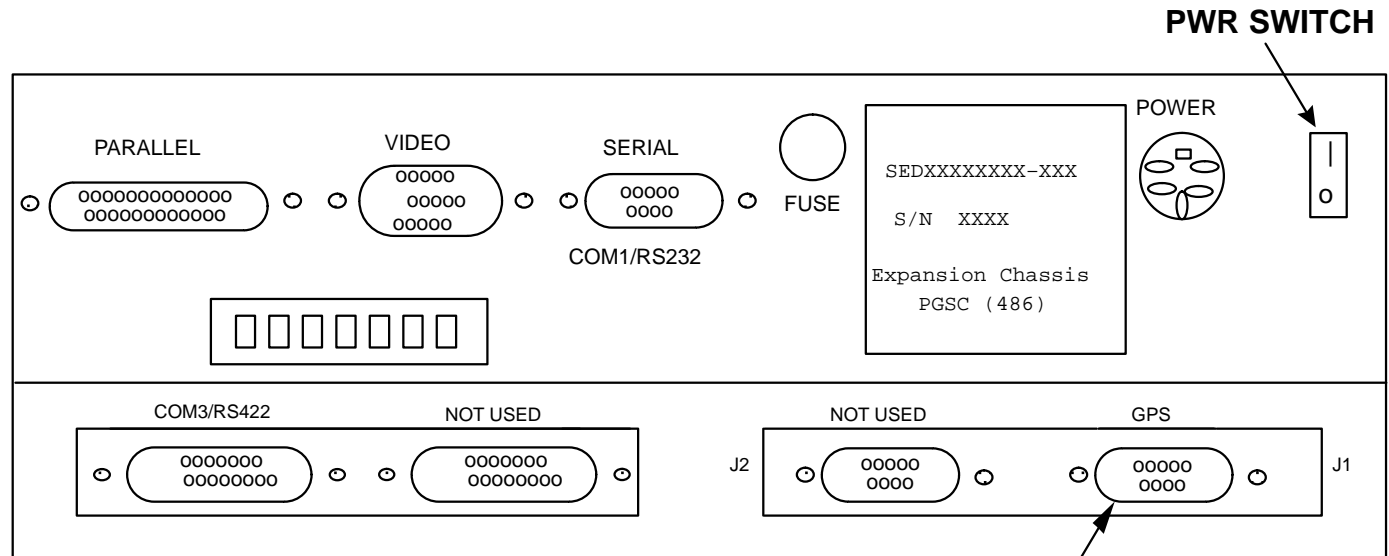
GMT TIME	GMT within 5 sec
LAT	within 2°
LON	within 2°
ALT	within 2nm
# SATS TRACKED	4 or 5

Call MCC and report

MA16D/ 27. Close monitors
MA16F

28. Stow foam assy (with PGSC inside) in locker and
close locker door
√PGSC cable connections secure

MAGR PGSC SCHEMATIC



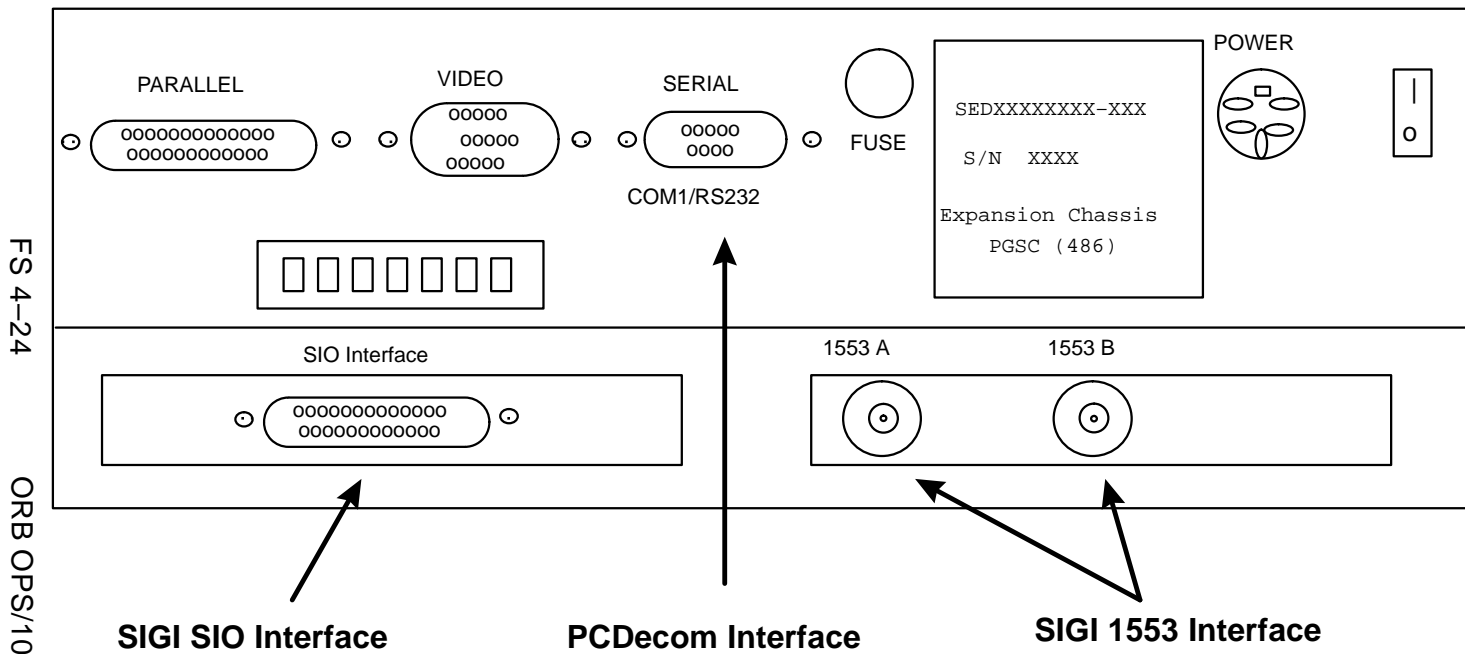
PWR SWITCH

MAGR RCVR (RS-422 CABLE)

FS 4-23

ORB OPS/103/FIN

SIGI PGSC SCHEMATIC



FS 4-24

ORB OPS/103/FIN

SIGI SIO Interface

PCDecom Interface

SIGI 1553 Interface

SIGI COLDSTART (CONTINGENCY)

- A13
1. SIGI/GPS PWR – OFF
 2. Wait 30 sec
SIGI/GPS PWR – ON
- SIGI
PGSC
3. √SIGI Status Page appears on display
* If not, SIGI ONORBIT SETUP *
 4. √PCDECOM CONNECT completed
 5. √1553 Status successful counter incrementing
* If 1553 Status unsuccessful *
* counter incrementing, √MCC *

NOTE

1553 Status unsuccessful counter will not be zero since the SIGI was powered off for a short time. However, the counter should not be incrementing

6. Start GPS reinitialization by pressing ALT–F4
7. Press ‘Y’ in response to following message:
“You have selected to cold start SIGI.
Do you wish to continue (Y or N)?”
8. If “Delay to read PCDecom Data” message remains on screen and counter continues to increment past 30, √PCDecom connection and call MCC
9. SIGI Status Page display should return within 1 min
10. Wait until the # SATS TRACKED \geq 1. This should take less than 5 min

Cont next page

* If, after 5 min, no satellites are *
* tracked, √MCC *

11. Report following from SIGI Status Page to MCC
(upper left corner of display):
Last Coldstart _____

SIGI ATT INIT (CONTINGENCY)

SIGI
PGSC

1. √SIGI Status Page appears on display

* If not, SIGI ONORBIT SETUP *

2. √PCDECOM CONNECT completed

3. √# SATS TRACKED ≥ 1

* If no satellites tracked, √MCC *

4. Start attitude reinitialization by pressing ALT-F5

5. Press 'Y' in response to following message:
"You have selected to initialize INS attitude
via delta quaternion.
Do you wish to continue (Y or N)?"

6. Press 'Y' in response to second message:
"You have selected to transfer INS attitude to
blended solution.
Do you wish to continue (Y or N)?"

7. If "Delay to read PCDecom Data" message
remains on screen and counter continues to
increment past 30, √PCDecom connection and
call MCC

8. Report following from SIGI Status Page to MCC
(upper left corner of display):
Last Att init _____

SIGI SELF-TEST (CONTINGENCY)

- SIGI
PGSC
1. ✓Orbit program is running on SIGI Status Page
 2. Start self test by pressing ALT-F7
 3. Press 'Y' in response to following message:
"You have selected to test SIGI.
Do you wish to continue (Y or N)?"
 4. If "Delay to read PCDecom Data" message remains on screen and counter continues to increment past 30, ✓PCDecom connection and call MCC
 5. After 5 min counter finishes, 'Test Completed' message will appear briefly, then program will return to the SIGI Status Page

SIGI SOFTWARE UPDATE (CONTINGENCY)

- OCA
PGSC
1. Insert floppy disk in drive A
 2. Use Windows Explorer to copy all files from 'C:\oca-up\payloads\sigi' folder to 'A:\'
 3. Remove floppy disk
- SIGI
PGSC
4. ✓PGSC pwr – on
✓Expansion Chassis pwr – on
 5. ✓'C:\>' appears on display
 - * If not, enter ALT-ESC to terminate *
 - * data recording *
 6. Insert floppy disk in drive A
 7. Enter 'A:\update' to load new software
 8. When batch program is finished, remove floppy disk

MAGR DOWNLINK (CONTINGENCY)

NOTE

GPS Filenames are: GPSXXX.001 –
GPSXXX.999 where XXX is Julian day.

Files are located in C:\GPS subdirectory.

When Recording Bit toggled OFF/ON,
new file is created

- PGSC
1. Exit GPS program (press [ESC] twice)
 2. Insert OCA data disk into floppy drive
 3. From 'C:\GPS>' subdirectory, enter "copy
GPSXXX.XXX a:" to copy GPS data file to
floppy drive where "GPSXXX.XXX" is GPS data
file to be downlinked
 4. Remove disk from floppy drive
 5. Perform MAGR ONORBIT SETUP, steps 1 thru 4
- OCA
6. Insert OCA data disk into OCA PGSC floppy drive
Go to OCA DOWNLINK VIA GROUND CMD
(OCA) to downlink desired file(s)

MAGR/SIGI HARD DRIVE SWAP (CONTINGENCY)

- | | |
|-----------------------|---|
| MAGR
PGSC | 1. Enter ESC twice to exit data collection program
√'C:\GPS>' appears on display |
| SIGI
PGSC | 2. Enter ALT-ESC to exit data collection program
√'C:\>' appears on display |
| MAGR/
SIGI
PGSC | 3. PGSC pwr – off
Expansion Chassis pwr – off |
| MA16D/
MA16F | 4. Obtain spare DTO 700-14/700-15 3GB hard
drive from foam assy and remove packaging |
| MAGR/
SIGI
PGSC | 5. Open monitor |
| | 6. Pull keyboard release latches (same latches
used to open monitor) forward until 'snap',
lift keyboard up |
| | 7. Using blue tabs, pull up handle on hard drive
(hard drive is located in front, right-hand side) |
| | 8. Pull up and back on handle to remove hard drive |
| MA16D/
MA16F | 9. Stow removed hard drive in foam assy |
| MAGR/
SIGI
PGSC | 10. Place fresh hard drive in PGSC and snap handle
into place to secure |
| | 11. Pull keyboard release latches forward and close
keyboard |
| | 12. Expansion Chassis pwr – on
PGSC pwr – on
√DOS prompt appears on display |

MAGR D: DRIVE RESTART (CONTINGENCY)

1. √'C:\GPS>' appears on display
2. Enter 'dir/od' [RETURN]
3. Record name of last file displayed ('gpsxxx.yyy') and call MCC
4. Enter 'move gpsxxx.yyy d:\', where gpsxxx.yyy is file name recorded above
5. Proceed with MAGR ONORBIT SETUP

VRCS REBOOST

YAW VRCS REBOOST FS 5-2 |

**VRCS
REBOOST**

FS 5-1

ORB OPS/103/FIN

YAW VRCS REBOOST

1. CONFIG FOR JET FIRINGS

GNC 20 DAP CONFIG

Change DAP B to B14

O14:E,
O15:E,
O16:E

cb DDU L,R (two) – cl

GNC 23 RCS

RCS L – ITEM 2 EXEC (*)

JET DES L5L – ITEM 37 EXEC (*)

RCS R – ITEM 3 EXEC (*)

JET DES R5R – ITEM 37 EXEC (*)

GNC 25 RM ORBIT

SW RM INH – ITEM 16 EXEC (*)

F7,F8

L(R) FLT CNTLR PWR – ON

GNC 25 RM ORBIT

SW RM INH – ITEM 16 EXEC (no *)

L ADI ATT – LVLH

2. PERFORM VRCS YAW FIRINGS

DAP: B/INRTL/VERN

DAP ROT: PLS/PLS/DISC

Repeat following sequence for reboost. Monitor
Universal Pointing for rates and attitude errors.
Input Roll pulses as reqd to maintain attitude

VRCS
REBOOST

Cont next page

* If attitude error > 20 degrees and *
* diverging, select DAP: AUTO to *
* reinitiate burn attitude. When in *
* attitude, repeat step 2 *

* If SA tip deflection greater than allowable *
* limit, select DAP: FREE *

NOTE

YAW: After each input, RHC can be released briefly. Make next input in direction of RCS CMD light before $|\text{Yaw Rate}| < 0.04$

PITCH: Modify pulses as reqd to maintain pitch att and orb rate (+0.062 deg/s)

ROLL: Yaw couples into roll. Read roll error at end of each yaw cycle. Monitor trend over several cycles, then input one roll pulse

RHC: -Yaw, hold until Yaw rate = -0.2
+Yaw, hold until Yaw rate = $+0.2$

When Yaw rate < 0.04 ,

RHC: -Pitch, 2 Pulses followed by next Yaw input

3. JET FIRING TERMINATION

DAP: A/LVLH/VERN

L(R) FLT CNTLR PWR - OFF

4. CLEANUP

GNC 23 RCS

RCS L - ITEM 2 EXEC (*)

JET DES L5L - ITEM 37 EXEC (no *)

RCS R - ITEM 3 EXEC (*)

JET DES R5R - ITEM 37 EXEC (no *)

O14:E,
O15:E,
O16:E

cb DDU L,R (two) - as reqd

Reconfig to FLIGHT PLAN DAP and ATT

FS 5-3

ORB OPS/103/FIN

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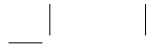
CUE CARD CONFIGURATION

CUE
CARD

NOT FLOWN

FS 6-1

ORB OPS/103/FIN



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**CUE
CARD**



NOT FLOWN

FS 6-2

ORB OPS/103/FIN



TOP

HOOK
VELCRO

**SINGLE SHIFT ORBITER
CO2 ABSORBER REPLACEMENT**
(7 Crewmembers/1 Shift/FD 1-14)

FLIGHT DAY	POS A	POS B	CK CMPLT
LAUNCH	1*	2	
PRE FD1	3*	"	
POST FD2	4	5	
PRE FD2	"	6*	
POST FD3	7	8	
PRE FD3	9	"	
POST FD4	10	11	
PRE FD4	"	12	
POST FD5	13	14	
PRE FD5	15	"	
POST FD6	16	17	
PRE FD6	"	18	
POST FD7	19	20	
PRE FD7	21*	22*	
POST FD8	23	24	
PRE FD8	"	25	
POST FD9	26	27	
PRE FD9	28	"	
POST FD10	29	30	
PRE FD10	"	31	
POST FD11	32	33	EOM
PRE FD11	34	"	
POST FD12	35	36	EOM + 1
PRE FD12	"	37	
POST FD13	38	39	EOM + 2
PRE FD13	40*	41	
POST FD14	42	"	EOM + 3

* Reseal LiOH cans w/Gray Tape and stow

ORB OPS-29a/103/O/A

NOTE

This card is specifically used for STS-103 mission with orbiter conducting single shift ops with crew size of 7

(reduced copy)

FAB USE ONLY

FS CC 6-3

ORB OPS/103/FIN

TOP
BACK OF 'SINGLE SHIFT ORBITER
CO2 ABSORBER REPLACEMENT'

HOOK
VELCRO

ORB OPS-29b/103/O/A

(reduced copy)
FS CC 6-4

ORB OPS/103/FIN

FAB USE ONLY

GALLEY IODINE REMOVAL

GALLEY IODINE REMOVAL ASSEMBLY (GIRA)	
INSTALLATION	FS 7-2
GALLEY OVERNIGHT CONFIG	FS 7-4
MORNING CONFIG	FS 7-4
WATER SAMPLE	FS 7-5
GIRA STOWAGE	FS 7-6

GIRA

**GALLEY IODINE REMOVAL ASSEMBLY (GIRA)
INSTALLATION**

(Time: 1 hr)

EQUIPMENT PREPARATION

Unstow the following from _____:

MCV (short metal cartridge)
ACTEX hose (labeled #3,4,5)
ACTEX (large insulated cartridge labeled #2,3)
Hose/Microbe filter (wrapped in washcloth)
assembly (labeled #1,2)

NOTE

Have towel ready for possible release of water
when mating/demating any connections.
Numbered figure labels are indicated in ()

- ML90N
1. Remove tie-wrap (if present) connecting Galley Ambient and Chilled hoses
Detach Galley Ambient and Chilled hoses from QD bracket
 2. Install MCV on Ambient (uninsulated) supply line by connecting MCV to Ambient QD at QD bracket and connecting Galley Ambient supply hose to other end of MCV (See figure 7-1)
 3. Connect Hose/Microbe filter (#1) assembly to Galley Chilled (insulated) hose
 4. Attach ACTEX (#2) to Hose/Microbe filter assembly (#2)
 5. Attach ACTEX hose (#3) to ACTEX assembly (#3)
 6. Connect ACTEX hose (#4) to Chilled QD at QD bracket
 7. Secure ACTEX assembly as reqd
Secure Microbe filter below galley with hose connection forward. (Reference figure 7-1).
Ensure access to locker MF14O
 8. Circulate water through galley:
OVEN/RHS – OFF,ON
- Galley

GIRA

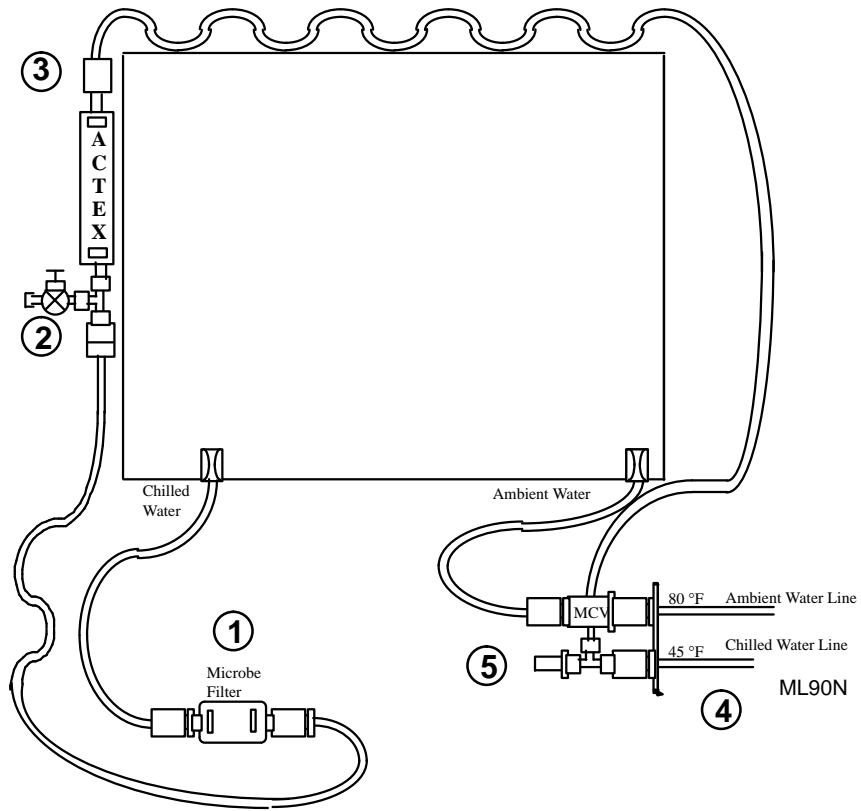


Figure 7-1.- GIRA configuration (connections and routing).

GALLEY OVERNIGHT CONFIG

(Time: 5 min) |

NOTE

Have towel ready for possible release of water when mating/demating any connections

- ML90N
1. Disconnect Galley Chilled hose from Microbe filter (#1)
 2. Connect Galley Chilled hose to free end (#5) of Tee attached to Chilled QD at QD bracket
 3. Circulate water through galley:
OVEN/RHS – OFF,ON
- Galley

GALLEY MORNING CONFIG

(Time: 5 min) |

NOTE

Have towel ready for possible release of water when mating/demating any connections

- ML90N
1. Disconnect Galley Chilled hose from Tee (#5) attached to Chilled QD at QD bracket
 2. Connect Galley Chilled hose to Microbe filter (#1)
 3. Circulate water through galley:
OVEN/RHS – OFF,ON
- Galley

GALLEY WATER SAMPLE

(Time: 5 min) |

NOTE

Each Galley Water Sample Kit consists of a brown Ziploc-type bag containing a Sample Bag and Teflon Luer adapter. The Luer adapter is inside a sterile pouch

Retrieve Galley Water Sample Kits from _____:

1. Un-package Luer adapter and Sample Bag from one kit
2. Remove tethered cap from bag sample port
3. Affix Luer adapter to Sample Bag
4. Wipe RHS needle with Wet Wipe
5. Fill one Sample Bag with 8 oz hot water
6. Detach Luer adapter from Sample Bag
7. Replace cap on bag sample port
8. Fill out label (circle hot or cold, record MET)
9. Return Sample Bag and Luer adapter to Galley Water Sample Kit
10. Repeat steps 1 thru 9 EXCEPT, in step 5, fill Sample Bag with 8 oz chilled water
11. Stow Sample Kits in an empty fresh food locker

GIRA STOWAGE

(Time: 15 min)

NOTE

Have towel ready for possible release of water when mating/demating any connections

- | | |
|----------------|---|
| MAR/
Galley | 1. Remove all black Velcro/Gray Tape from Chilled line assembly and hoses
Leave insulation covers in place |
| ML90N | 2. Detach Galley Chilled hose (insulated) from Microbe filter (#1)
Disconnect ACTEX hose from QD bracket |
| | 3. Detach Galley Ambient hose (uninsulated) from MCV
Remove MCV from QD bracket
Reconnect Galley Ambient and Chilled hoses to QD bracket |
| | 4. Break down assembly formerly installed on Chilled line into sub-assemblies as follows:
Between ACTEX hose and ACTEX cartridge (#3)
Between ACTEX cartridge and Hose/Microbe filter assembly (#2) |
| | 5. Resecure Galley Ambient and Chilled hoses with tie wrap (if present) |
| | 6. Return hardware to launch stowage location |

EVA COMM

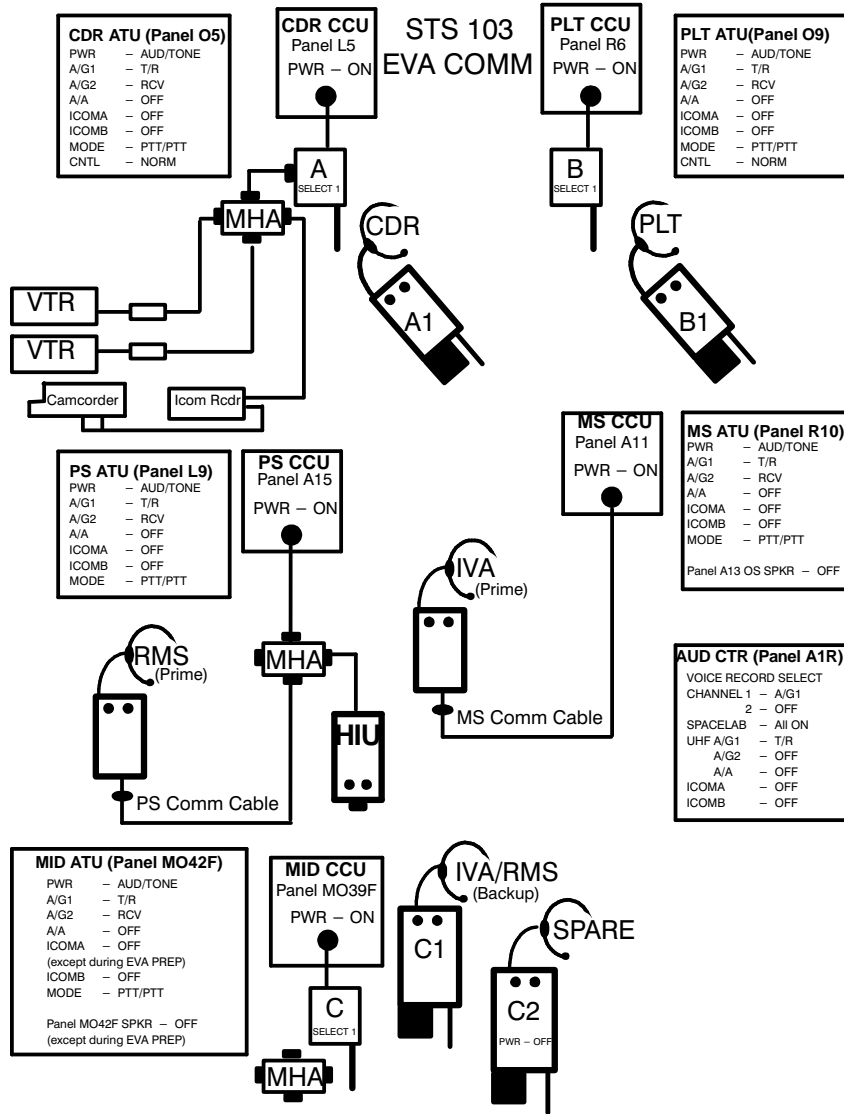
STS-103 EVA COMM FS 8-2

**EVA
COMM**

FS 8-1

ORB OPS/103/FIN 1

**EVA
COMM**



FRED

FRED SETUP	FS 9-2
STOWAGE	FS 9-3

FRED

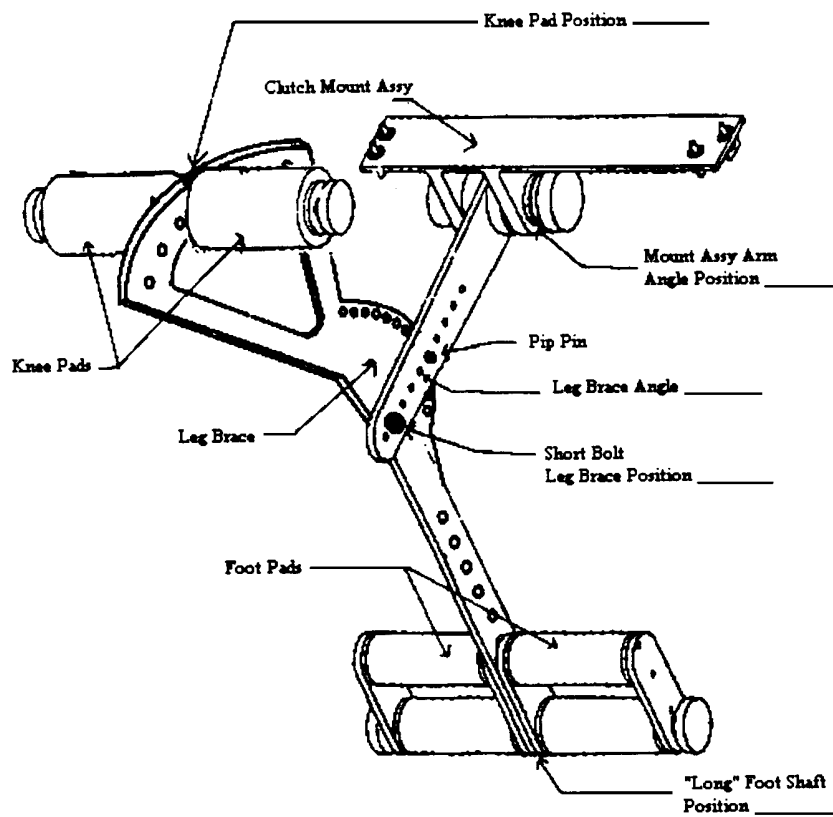
FS 9-1

ORB OPS/103/FIN 1

FRED

FRED SETUP

- MF57G, A16 1. Unstow FRED tray and FRED leg brace
- A8L 2. Attach clutch bracket mount assy below aft panel A8 with captive fasteners (four)
3. Assemble FRED as shown and adjust to desired position. Note positions



FRED STOWAGE

1. Disassemble FRED and set clutch bracket mount assy to #8 angle position
- MF57G 2. Stow FRED in locker tray cushion. Re-adjust clutch bracket mount assy as required
- A16 3. Stow leg brace

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SHUTTLE COMPOUND SPECIFIC ANALYZER –
COMBUSTION PRODUCTS (CSA-CP)

ACTIVATION	FS 10-2
DATA LOGGER ACTIVATION	FS 10-2
CSA-CP DEACTIVATION	FS 10-2
BATT CHANGEOUT	FS 10-3

CSA-CP

CSA-CP

ACTIVATION

- MA73J 1. Unstow:
CSA-CP

NOTE

Audible beep occurs when MODE pb depressed during unit activation

2. MODE pb – press, hold until 'RELEASE' displayed

NOTE

Wait ~1 min while unit runs self-check routine. A single beep occurs when self-check routine complete

3. √Display indicates readings for O2, HCN, HCL, CO

DATA LOGGER ACTIVATION

- CSA-CP 1. Press MODE pb 9 times until 'LOG OFF' displayed

NOTE

The operation mode will revert to nominal display after 10 sec

2. '+' pb – press to activate CSA-CP internal data logger
√'LOG ON' displayed

3. Deploy CSA-CP in mid-deck location w/ good air flow
Record location: _____

CSA-CP DEACTIVATION

1. MODE pb – press, hold until 'RELEASE' displayed
√Unit off

- MA73J 2. Stow CSA-CP

BATT CHANGEOUT

- MA73J
1. Unstow:
Batt Pack
 2. Deactivate CSA-CP, if activated
MODE pb – press, hold until 'RELEASE'
displayed
 3. Turn fasteners (two) on back panel ccw 1/4 turn
Temp stow panel

NOTE

Stowed data maintained for maximum of 30
min w/o batt installed. All data will be lost
if batt installation delayed >30 min

4. Grasp Batt Pack pull tab, remove pack and mark
as "Discharged"
 5. Install replacement Batt Pack, press firmly to
seat electrodes
 6. Replace panel, press firmly, turn fasteners (two)
cw 1/4 turn to lock
- MA73J
7. Stow used Batt Pack
 8. If redeploying CSA-CP, repeat ACTIVATION,
DATA LOGGER ACTIVATION, and CSA-CP
DEACTIVATION
If not deploying CSA-CP, stow

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COLOR PRINTER PROCEDURES

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**COLOR
PRINTER**

UNSTOW AND ASSEMBLE COLOR PRINTER (10 min) |

NOTE

Power Printer off when not in use

**COLOR
PRINTER**

1. UNSTOW
- ML60E Printer
AC Pwr Cable (if reqd)
Printer Data Cable (one of the following):
6 ft parallel data cable
25 ft parallel data cable
25 ft network data cable and T–connector
- ML60J Printer Paper
Printer Paper Feeder Tray
Paper Output Tray
2. ASSEMBLE PRINTER
- Printer Align arrows on Paper Feeder Tray and back of Printer
Insert white tabs on Paper Feeder Tray (near arrows) into black outlined slots on Printer (See figure 11–1)
Slide tray downward
Attach Paper Feeder Tray to Printer (Secure via thumbscrews)
Attach Paper Output Tray to Printer (Secure via thumbscrews)
- ML85E Printer 3. AC UTIL PWR – OFF
 AC Pwr Cable connected to AC UTIL PWR panel
Connect AC Pwr Cable to Printer Power Port
(See figure 11–2)
- If Printer to be set up as Network Printer:
Connect network cable, T–connector to Printer Network Port (See figure 11–2)
Connect other end of network cable to T–connector of networked PGSC
- If Printer to be set up as Local Printer:
Connect parallel cable between Printer Parallel Port and PGSC Parallel Port (See figure 11–2)

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Insert 8.5" x 11" paper into Paper Feeder Tray
(~50 sheets)

Attach Printer to wall of desired area (example:
AFD or Airlock ditch) using Velcro

If OCA Router not configured, perform OCA
SETUP, FS 3-2

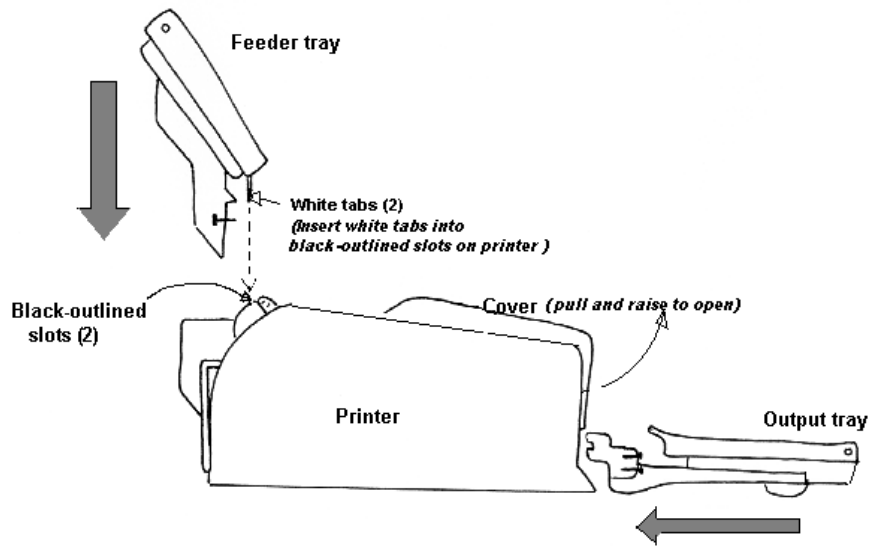
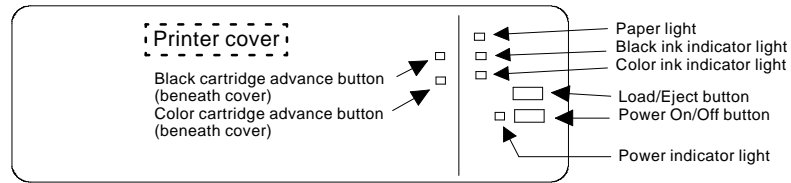
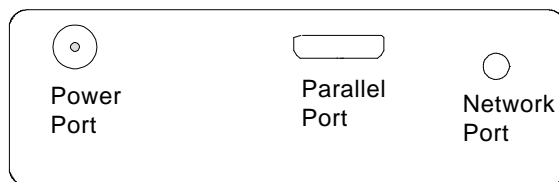


Figure 11-1.- Side view of printer and trays, ready for assembly.

PRINTER Top View (Inside Cover)



PRINTER Back View



PGSC with Expansion Unit

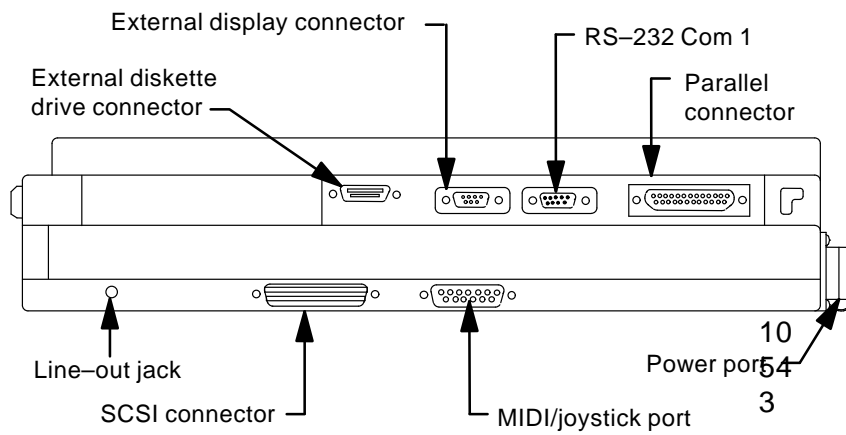


Figure 11-2.- Printer – Top view/back view.

WARM-UP AND SELF-TEST

WARM-UP

- ML85E 1. AC UTIL PWR – ON
- PGSC 2. √OCA Router PGSC pwr – on
√ProShare PGSC pwr – on
- Printer 3. Printer pwr – on (See figure 11–2)
√Flashing green pwr light (~5 min)
4. √Printer ready
Ready when pwr light is steady green

SELF-TEST

NOTE

After successful test print, terminate
SELF-TEST by powering printer OFF

- Printer 1. Printer pwr – off
2. Press and hold Load/Eject button, then press
power button
Hold Load/Eject button for 3 sec after depressing
power button, then release
3. Observe printing of one black text page and one
color text page
4. √Print quality
Look for missing sections in Nozzle Check
section
5. If print quality not acceptable, go to CLEANING
PRINTER HEADS, FS 11–10
6. If paper jam, go to COLOR PRINTER PAPER
JAM, FS 11–7
7. If printer quality acceptable, Printer pwr – off (to
terminate SELF-TEST)
8. Notify MCC: Status of SELF-TEST results

STOW COLOR PRINTER

Printer	Printer pwr – off (press power button once) √Printer It – off Wait for unit to stop moving. Printer head should be at right side and locked into place
ML85E	1. AC UTIL PWR – OFF 2. Disconnect AC Pwr Cable from AC UTIL output panel, if reqd
ML60E	3. Remove paper from Paper Feeder Tray and stow it
Printer	4. Remove Paper Feeder Tray from Printer (disconnect via thumbscrews) 5. Remove Paper Output Tray from Printer (disconnect via thumbscrews) 6. Disconnect AC Pwr Cable from Printer 7. If Printer is set up as Network Printer: Disconnect network cable, T–connector from Printer Network Port (See figure 11–2) If Printer is set up as Local Printer: Disconnect parallel cable between Printer Parallel Port and PGSC Parallel Port (See figure 11–2)
ML60E	<u>STOW</u> Printer AC Pwr Cable (if reqd) Printer Data Cable (one of the following): 6 ft parallel data cable 25 ft parallel data cable 25 ft network data cable and T–connector
ML60J	Printer Paper Printer Paper Feeder Tray Paper Output Tray

CHECK COLOR PRINTER SETTINGS

NOTE

Perform following procedure to verify Printer settings on PGSC from which printing is being executed (i.e., settings are not on Printer)

- PGSC
1. Sel 'Start' from Windows taskbar
 2. Sel 'Settings'
 3. Sel 'Printers'
 4. Right-click on appropriate printer icon:
Parallel: Local Color Printer
Network: Network Color Printer
 5. Verify 'Set as default' selected (✓)
 6. Sel 'Properties'
 7. Sel 'Main' tab
 8. Verify 'Automatic' selected (●)
 9. Sel 'OK' to exit

COLOR PRINTER PAPER JAM

- Printer
1. Printer pwr – off (press power button once)
 2. ✓Printer It – off
 3. ✓Paper Feeder Tray clear of obstruction
✓Paper Output Tray clear of obstruction
 4. Raise Printer cover (See figure 11–1)
✓Inside of Printer clear from obstruction
 5. If paper jam cleared, perform WARM-UP AND SELF-TEST, FS 11–5, then:
 6. If paper jam continues, **NOTIFY MCC**
 7. If reqd, perform STOW COLOR PRINTER, FS 11–6

COLOR(BLACK) INK CARTRIDGE CHANGEOUT

NOTE

Perform if color(black) ink cartridge light is illuminated. Changeout of color and black cartridges takes approx 5 min.

If color(black) ink cartridge light is flashing, ink is low.

If color(black) ink cartridge light is solid, ink is out

- Printer
1. ✓Printer ready (notice steady green pwr light)
 2. Raise Printer cover (See figure 11-1)

NOTE

Printer will reset if step 4 not performed within 1 min after step 3. If reset experienced, repeat step 3

3. Press and hold "color(black) ink cartridge advance button" (~3 sec) and release. Color(black) ink cartridge will move and become accessible

CAUTION

Do **NOT** squeeze INK CARTRIDGES

4. Lift tab on purple cover
Remove color(black) ink cartridge
 5. Cover opening on used cartridge with Gray Tape
Stow old cartridge in Ziploc bag
Place Ziploc in printer locker
- ML60E
6. Unstow new cartridge from sealed pack
Remove small yellow plastic tab on top (Do not remove white tab; reference instructions on cartridge)

Cont next page

- Printer
7. Insert new cartridge (arrow should be pointing toward back of printer)
 8. Lower and latch tab on purple cover
(Do not reopen)
If also changing other cartridge, go to step 3
Otherwise, continue
 9. Lower and close Printer cover
 10. Press the Load/Eject button; Printer will perform a cleaning that will last approx 3 min
 11. Perform WARM-UP AND SELF-TEST, SELF-TEST, FS 11-5, to ensure proper operations

CLEANING PRINTER HEADS (Black and/or Color)

NOTE

Printer must be ON, not printing and appropriate ink cartridge light must not illuminate red

- Printer
1. ✓Printer pwr – on
 2. ✓Ink cartridge lt – OFF
If ink cartridge lt flashing or solid, go to INK CARTRIDGE CHANGEOUT

NOTE

Perform following steps from PGSC connected to Printer via parallel cable or networked to Printer

- PGSC
3. Sel 'Start' from Windows taskbar
 4. Sel 'Settings'
 5. Sel 'Printers'
 6. Right-click on appropriate printer icon:
Parallel: Local Color Printer
Network: Network Color Printer
 7. Verify 'Set as default' selected (✓)
 8. Sel 'Properties'
 9. Sel 'Utility' tab
 10. Sel 'Head Cleaning'
Sel 'Next'
 11. Sel 'Black', 'Color', or 'Both'
Sel 'Next'
 12. When cleaning is complete (~5 min), sel 'Nozzle Check'
If test still missing sections, repeat steps 10 and 11
 13. If nozzle test is nominal, click 'OK' to exit

EXECUTE PACKAGE PRINTING

NOTE

Perform following procedure(s) if instructed by MCC. Perform from PGSC connected to Printer via parallel cable or networked to Printer

DOCUMENTS

- PGSC
1. Double-click 'Shuttle Apps' from Desktop
 2. Double-click 'Epson' group folder
 3. Double-click 'DOCS Printing' Icon

PICTURES

1. Double-click 'Shuttle Apps' from Desktop
2. Double-click 'Epson' group folder
3. Double-click 'PICS Printing' Icon

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ORBIT OPS CHECKLIST

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Flight Cover (trim bottom to expose tabs)