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<tr>
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<td>EP - FAILED</td>
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<td>5-50</td>
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<td>PL JETTISON</td>
<td>5-56</td>
</tr>
<tr>
<td>(RMS joint failure - jett PL, save arm)</td>
<td></td>
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</tbody>
</table>
RMS POWERUP
(Assumes RMS in TEMP MONTR)

1 PLB LTS, CCTV ACT

A7

PL BAY FLOOD - as reqd

Perform TV ACT, VTR ACT, TV/VTR/DAC
Cue Card

TV CAMR PWR as reqd - ON

Physical integrity of arm, EE, blankets

2 RMS SEL (IDLE MODE)

√BRAKES - ON (tb-ON)
√RMS SEL - OFF
√PWR - PRI

CRT

| SM 94 PDRS CONTROL |
√I/O ON, ITEM 5 - (*)
√ENA, ITEM 9,11 - (*)

RMS SEL - PORT (if cradled, MA, C/W RCH LIM 1t-on (SP,EP), SINGULAR 1t-on (EP))

√SAFING tb - gray
3 DEPLOY/RELEASE ARM

R13L PL BAY MECH PWR SYS (two) - ON
PORT RMS - DPY (tb-DPY) (34 sec max), then
- OFF

PORT RMS RETEN LAT - REL (tb-REL)
(8 sec max), then
- OFF

R13L PL BAY MECH PWR SYS (two) - OFF

4 ARM UNCRADLE

PARAM sel - JOINT ANGLE
BRAKES - OFF (tb-OFF)
Until clear of MPMs:
RATE sw - VERN (RATE MIN tb-on)
MODE - SINGLE, ENTER

SINGLE DR to approx:

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BRAKES - ON (tb-ON)
This Page Intentionally Blank
RMS CHECKOUT
RMS CHECKOUT
(Required only on first RMS deployment)

1 PANEL LIGHTING TEST
   PARAM sel - TEST (MA) (30 sec max)
   √IND 1, 2, 3 - +8.8.8.8
   √All pn1 AB its - on

2 TV CAMERA CHECKOUT
   TV CAMR PWR A, B, C, D, RMS - ON
   √Each camera for proper operation
   TV CAMR PWR as reqd - OFF

3 JOINT DRIVE TEST
   PARAM sel - JOINT ANGLE
   BRAKES - OFF (tb-OFF)
   MODE - SINGLE, ENTER

   SINGLE OR to approx:

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<td>-15</td>
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</table>

   SY, WR - each joint in turn
   SINGLE OR - '+/-'

   √Motion visually for correct phasing

   BRAKES - ON (tb-ON)
EE CHECKOUT

CCTV - MON 2 - B
Adjust Camera B to view inside of EE

BRAKES - OFF (tb-OFF)
MODE - SINGLE, ENTER
EE MODE - MAN

EE CAPTURE sw - depress (hold until CLOSE tb-gray) (3 sec max)

EE MAN CONTR - RIGID (hold until RIGID tb-gray) (20 sec max)

EE MAN CONTR - DERIGID (hold until DERIGID tb-gray) (5 sec max)

EE RELEASE sw - depress (hold until OPEN tb-gray) (3 sec max)

EE MAN CONTR - DERIGID (hold until EXTEND tb-gray) (20 sec max)
EE MODE - AUTO
EE CAPTURE sw - depress (mom)

EE MODE - OFF
BRAKES - ON (tb-ON)

5  B/U DRIVE AND PAYLOAD RELEASE TEST

✓ B/U PL REL - OFF
RMS SEL - OFF

RMS PWR - B/U
SEL - PORT

B/U PL REL - ON
✓ Visually snare open and lying in grooves
B/U PL REL - OFF  

B/U JOINT - each joint in turn
DR - '+/-' 
✓ Motion visually for correct phasing

6  RECONFIGURE TO PRIMARY POWER

RMS SEL - OFF
PWR - PRI (MA)

CRT

[SM 94 PORS CONTROL]
I/O ON - ITEM 5 EXEC

RMS SEL - PORT
SAFING - CANCEL (tb-gray)
7  AUTO RELEASE CHECK

✓

EE MODE - MAN
EE CAPTURE sw - depress (hold until CLOSE tb-gray) (3 sec max)

✓

EE MAN CONTR - RIGID (hold until RIGID tb-gray) (20 sec max)

✓

EE MODE - AUTO
EE RELEASE sw - depress (mom)
(after - 20 sec)

✓

EE MODE - OFF  VTR- STOP

2  HAND CONTROLLER CHECK

BRAKES - OFF (tb-OFF)
MODE - TEST, ENTER

RHC, THC - each axis in turn,
deflect hand controller hard over
✓ There is no arm movement, actual rates are zero. Commanded rates: THC - √rate meter,
RHC - √SPEC 96 - proportional to deflection

BRAKES - ON (tb-ON)
RMS POWERDOWN
RMS POWERDOWN

1 ARM CRADLE

PRE-CRADLE Ref: (0, 25, -25, +5, 0, 0)

\[
\begin{array}{ccccccc}
X & Y & Z & P & Y & R \\
-1261 & -146 & -551 & 5 & 2 & 0
\end{array}
\]

NOTE
C/W SINGULAR It - on (MA) \((EP = -7.6)\)
REACH LIM It - on (MA) \((EP = -2.4)\)
\((SP = +2.6)\)

When S/W STOP tb - bp \((EP = -0.4)\)
Then MODE - SINGLE, ENTER

BRAKES - OFF (tb-OFF)
When near MPMs:
RATE sw - VERN
MODE - SINGLE, ENTER

SINGLE OR to:

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<td>0</td>
<td>+1 (MA)</td>
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</table>

√PORT RMS R-F-L tb (three) - gray
BRAKES - ON (tb-ON)

2 LATCH/STOW ARM

R13L PL BAY MECH PWR SYS (two) - ON
√PORT RMS R-F-L tb (three) - gray
PORT RMS RETEN LAT - LAT (tb-LAT)
\((8\text{ sec max})\)
- OFF
PORT RMS - STOW (tb-STO) (34 sec max) - OFF

PL BAY MECH PWR SYS (two) - OFF

3 CCTV, PLB LTS DEACT

PLB FLOOD (six) - OFF, as reqd
Perform TV DEACT, VTR DEACT, TV/VTR/DAC
Cue Card
CAMERA PWR (five) - OFF, as reqd

4 RMS TEMP MON

√BRAKES - ON (tb-UN)

RMS SEL - OFF
√RMS PWR - PRI

CRT | 5M 94 PDRS CONTROL |
√I/O ON - ITEM 5(*)

PARAM sel - PORT TEMP
JOINT - CRIT TEMP

NOTE
Steps 5, 6 performed only if RMS to be completely powered down without HTRs

5 RMS POWERDOWN

RMS PWR - OFF
PORT RMS HTR - OFF

6 ORBITER/PDRS AC POWERDOWN

MA73C:F cb AC1 RMS PRI φA - op
cb AC2 RMS B/U φA - op
ACTIVATE TEMP MONITOR
ACTIVATE TEMP MONITOR

017  √MEC (two) - OFF

CRT  √SM GPC MEMORY
     √LAUNCH I, ITEM 16 assigned to SM GPC
     √RMS SEL - OFF
     √RMS PWR - OFF

RMS PWR - PRI (MA)

CRT  [SM 94 PDRS CONTROL] (MA, GPC DATA 1t-on, if calling SPEC 94 for first time)
     I/O ON - ITEM 5 EXEC
     SAFING - CANCEL (tb-bp) (√GPC DATA 1t-off)

PARAM sel - PORT TEMP
JOINT - CRIT TEMP

Record any out of limit temps
CONTINGENCY OPERATIONS
NOTE
For RMS JETTISON procedure (5-2 thru 5-11), CDR activities are now on even numbered pages and PLT activities on odd numbered pages

NOTE
Jettison between sunrise and noon if possible

CDR
AUTO MNVR TO -XLV

CRT
GNC UNIV PTG
START TIME at least 15 min prior to sunrise
TGT ID +2
BODY VECT +2
CM +0
Initiate TRK

A6U
DAP: A/AUTO/VERN

014, RJD DRIVER (nine) - ON
015, 016
A6U
FLT_CNTL PWR - ON
EVENT TIMER MODE - UP
CNTL - STOP
TIMER - RESET

A7U
Lighting - as reqd
When in attitude, then

CRT
GNC 33 REL NAV
AVG G ON - ITEM 1 EXEC (*)

When PLT confirms CCTVs configured to monitor jettison, then proceed to 5-8
PLT

**POWER UP RMS PYROS**
✓**BREAKS - ON (tb-ON)**

**A14**
✓**PYRO PORT RMS (five) - SAFE**
✓**RMS LAT - SAFE**

**ML868**
cb MNB PYRO JETT SYS A PORT RMS - c1
cb MNC PYRO JETT SYS B PORT RMS - c1

**IF MPM FAIL (Latches go with RMS)**

**R13L**
✓**PL BAY MECH PWR SYS (two) - OFF**
✓**PORT RMS RETEN LAT tb - LAT**
✓**RMS LAT - DEADFACE**
✓**PORT RMS RETEN LAT tb - bp**
✓**PYRO PORT RMS ARM - GUILLOTINE**

**A14**
Wait 1 sec, then
✓**PYRO PORT RMS LAT (three) - GUILLOTINE**
✓**ARM - SAFE**
✓**JETT**

Wait 1 sec, then
✓**PYRO PORT RMS LAT (three) - JETT**
✓**SAFE**

or
✓**ARM - SAFE**

**PARAM sel - JOINT ANGLE**
**BREAKS - OFF (tb-OFF)**
**MODE - SINGLE, ENTER**

**Drive to:**

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**BRAKES - ON (tb-ON)**

Go to POWER DOWN MRL AND RMS, 5-7
IF MRL FAIL (Latches stay with MPM)
PL BAY MECH PWR SYS (two) - ON
PORT RMS RETEN LAT - REL (tb-REL) - OFF
PL BAY MECH PWR SYS (two) - OFF
PARAM sel - JOINT ANGLE
BRAKES - OFF (tb-OFF)
MODE - SINGLE, ENTER
Drive to:
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</table>
BRAKES - ON (tb-ON)
Go to POWER DOWN MRL AND RMS, 5-7

IF EE FAIL TO RELEASE (PL goes with RMS)
PARAM sel - JOINT ANGLE
BRAKES - OFF (tb-OFF)
MODE - SINGLE, ENTER
Drive to:
<table>
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</table>
BRAKES - ON (tb-ON)
Go to POWER DOWN MRL AND RMS, 5-7

IF JOINT DRIVE FAIL (PL goes with RMS if still grappled)
Consult MCC for mode capability and joint configuration for jettison
PARAM sel - JOINT ANGLE

MODE -
Drive to:
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</table>
BRAKES - ON (tb-ON)
POWER DOWN MRL AND RMS

R13L  /PL BAY MECH PWR SYS (two) - OFF
A14  RMS LAT - DEADFACE
AB  /PORT RMS RETEN LAT tb - bp
     /LAT - OFF
     PORT RMS HTR - OFF
     RMS SEL - OFF
     PWR - OFF

GUILLOTINE WIRES AT SHOULDER

A14  PYRO PORT RMS ARM - GUILLOTINE
    Wait 1 sec, then
    PYRO PORT RMS SHLDR - GUILLOTINE
                     - SAFE
                     ARM - SAFE

CONFIGURE CCTVs TO MONITOR JETTISON

A7U  CCTV MON 1 - A
     2 - B
    POINT B CCTV AT RMS SHOULDER JOINT
    Put new tape in VTR
JETTISON

DAMP RATES

DAP ROT: DISC/DISC/DISC
TRANS: PULSE/PULSE/NORM

If VERN jets avail
DAP: A/MAN/VERN
If VERN jets not avail
DAP: B/MAN/NORM
Wait until rates damped, then
DAP: A/MAN/NORM
/SENSE - as reqd

NOTE
After JETT, initiate opening rate ASAP. Minimize other THC/RHC inputs

START TIMER
EVENT TIMER_CNTL - START

JETT+

0:01

WHEN JETTISON COMPLETE, TRANSLATE AWAY
THC +Z, 2 sec (1 ft/sec)
(-X sense: THC dn)
(-Z sense: THC out)

2:00

SECOND SEP BURN
SENSE - as reqd
THC +Z, 2 sec (1 ft/sec)
(-X sense: THC dn)
(-Z sense: THC out)

Maintain visual contact with RMS in OVHD window using RHC

When RMS no longer visible, then
When rates damped, then
VTR - PLAY/RCO/RUN

When Timer started, then
A14
PYRO PORT RMS ARM - JET
Wait 1 sec, then
PYRO PORT RMS SHLDR - JET

Maintain RMS in B CCTV
CLEANUP

CRT

<table>
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<th>GNC 33 REL NAV</th>
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<tbody>
<tr>
<td>AVG G ON - ITEM 1 EXEC (no *)</td>
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<tr>
<td>(Turns AVG G off)</td>
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</table>

GNC UNIV PYG

✓ START TIME in past
✓ TGT ID +2
✓ BODY VECT +3
✓ OM +0
Initiate TRK

A6U
DAP: A/AUTO/VERN

014, ✓ All primary RJD DRIVER (eight) - as reqd
015,
016

A7U ✓ Lighting - as reqd
PLT

CLEANUP
VTR - STOP

A14
RMS LAT - SAFE
PYRO PORT RMS SHLDR - SAFE
ARM - SAFE

ML86B
cb MNB PYRO JETT SYS A PORT RMS - op
cb MNC PYRO JETT SYS B PORT RMS - op

..................If no MPM fail..................

. R13L PL BAY MECH PWR SYS (two) - ON
. A8 PORT RMS - STOW (tb-STO) - OFF
. R13L PL BAY MECH PWR SYS (two) - OFF
EXTERIOR SURVEY (CONFIGURATION A)

(PORT SIDE, ORBITER NOSE)

SETUP

CRT

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<th>GNC UNIV PTG</th>
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<tr>
<th>TGT ID</th>
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<th>per MCC</th>
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A6

DAP: A1/AUTO/VERN
Initiate TRK

A7

CCTV - MON 1 - B
MON 2 - RMS/Wrist (ZOOM OUT)
VTR RCD - RMS/Wrist

ALC, GAMMA - NORM

R11(OV099) VTR - √Tape
L12(OV102)

PARAM sel - JOINT ANGLE

<table>
<thead>
<tr>
<th>BRAKES - OFF (tb-OFF)</th>
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<th>MODE - SINGLE, ENTER</th>
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SINGLE OR to:

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<th>BRAKES - ON (tb-ON)</th>
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Tol: ±1 deg
**SURVEY**

**BRAKES** - OFF (tb-OFF)
**MODE** - SINGLE, ENTER
Adjust ALC, GAMMA, as reqd
RMS SPOT PORT - ON, as reqd

<table>
<thead>
<tr>
<th>R11(OV099)</th>
<th>VTR pb - PLAY, RCD</th>
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<tr>
<td>L12(OV102)</td>
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**BRAKES** - ON (tb-ON)
**VTR pb** - STOP

**RECONFIGURE**

**BRAKES** - OFF (tb-OFF)
**MODE** - SINGLE, ENTER

If continuing exterior survey

SINGLE DR to:

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**BRAKES** - ON (tb-ON)
Go to next survey configuration

If survey finished

SINGLE DR to:

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**BRAKES** - ON (tb-ON)
RMS SPOT PORT - OFF

Mnvr back to attitude per CAP

5-14  ALL VEH/BAS 1
EXTERIOR SURVEYS (CONFIGURATION B.C)
(Orbiter underbody, landing gear)

SETUP

CRT
- SM 94 PDRS CONTROL
- SOFT STOP, ITEM 7 - ENA
- AUTO BRAKE, ITEM 9 - ENA

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A6
- DAP: A1/AUTO/VERN
- Initiate TRK

A7
- CCTV - MON 1 - B
- MON 2 - RMS/Wrist
- VTR RCD - RMS/Wrist
- ALC, GAMMA - NORM

R11(OV099) VTR - √ Tape
L12(OV102) RATE sw - VERN
- PARAM sel - JOINT ANGLE
- BRAKES - OFF (tb-OFF)
- MODE - SINGLE, ENTER

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BRAKES - ON (tb-ON)

L9,R10, A11 AUD A/A - RCV (IF SINGLE USED) ..
05,09, A13, MO42F

5-15 ALL VEH/BAS 1
### CAUTION

UHF XMIT MUST BE INHIBITED IF SINGLE MODE

---

**A7**

Adjust ALC, GAMMA, as reqd

RMS SPOT PORT - ON, as reqd

**R11(OV099) VTR pb - PLAY, RCD**

**L12(OV102)**

**BRAKES - OFF (tb-OFF)**

**MODE - SINGLE, ENTER**

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**BRAKES - ON (tb-ON)**

**R11(OV099) VTR pb - STOP**

**L12(OV102)**

---

5-16 ALL VEH/BAS 1
RECONFIGURE
BRAKES - OFF (tb-OFF)
MODE - SINGLE, ENTER

If continuing exterior survey

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BRAKES - ON (tb-ON)

REENABLE UHF TRANSMITTER
ATT AUD A/A - T/R ...

Go to next survey configuration

If survey finished

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BRAKES - ON (tb-ON)

REENABLE UHF TRANSMITTER
ATT AUD A/A - T/R ...

L9, R10,
05, 09,
A13, M042F

A7
RMS SPOT PORT - OFF
Mnvr back to attitude per CAP
SETUP

CRT

[SM 94 PDRS CONTROL]
✓SOFT STOP, ITEM 7 - ENA
✓AUTO BRAKE, ITEM 9 - ENA

TGT ID  +2 (earth)
BODY VECT  +5
P  +0  +YLV
Y  +90
OM - per MCC

A6

DAP: A1/AUTO/VERN
Initiate TRK

A7

CCTV - MON 1 - A
- MON 2 - RMS/Wrist (ZOOM OUT)
- VTR RCD - RMS/Wrist
ALC, GAMMA - NORM

R11(OV099) VTR - √Tape
L12(OV102)

RATE sw - VERN
PARAM sel - JOINT ANGLE
BRAKES - OFF (tb-OFF)
MODE - SINGLE, ENTER

SINGLE OR to:

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BRAKES - ON (tb-ON)

Tol:  +1 deg
SURVEY

BRAKES - OFF (tb-OFF)
MODE - SINGLE, ENTER
Adjust ALC, GAMMA, as reqd
RMS SPOT PORT - ON, as reqd

R11(OV097) VTR pb - PLAY, RCD
L12(OV102)

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BRAKES - ON (tb-ON)
R11(OV097) VTR pb - STOP
L12(OV102)

RECONFIGURE
BRAKES - OFF (tb-OFF)
MODE - SINGLE, ENTER
If continuing exterior survey

SINGLE DR to:

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BRAKES - ON (tb-ON)
Go to next survey configuration

If survey finished

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BRAKES - ON (tb-ON)
RMS SPOT PORT - OFF

Mnvr back to attitude per CAP

5-19          ALL VEH/BAS 1
SETUP

CRT

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per MCC

A6

DAP: A1/AUTO/VERN
Initiate TRK

A7

CCTV - MON 1 - C
- MON 2 - RMS/Wrist (ZOOM OUT)
- VTR RCD - RMS/Wrist

ALC, GAMMA - NORM

R11(0V099) VTR - T Tape

L12(0V102)

PARAM sel - JOINT ANGLE

BRAKES - OFF (tb-OFF)

MODE - SINGLE, ENTER

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BRAKES - ON (tb-ON)

Tol: +1 deg
SURVEY
BRAKES - OFF (tb-OFF)
MODE - SINGLE, ENTER

Adjust ALC, GAMMA, as reqd
RMS SPOT PORT - ON, as reqd

R11(OV099) VTR pb - PLAY, RCD
L12(OV102) SINGLE OR to:

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R11(OV099) VTR pb - STOP
L12(OV102) RECONFIGURE
BRAKES - OFF (tb-OFF)
MODE - SINGLE, ENTER

If continuing exterior survey

SINGLE OR to:

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BRAKES - ON (tb-ON)
Go to next survey configuration

If survey finished

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A7 BRAKES - ON (tb-ON)
RMS SPOT PORT - OFF

Mnvr back to attitude per CAP
EXTERNAL SURVEY (CONFIGURATION F)
(Top side, nose - ovhd windows)

SETUP

CRT
| GNC UNIV PTG |
| TGT ID | +2 (earth) |
| BODY VECT | +3 (-Z) |
| OM | - per MCC |

A6
DAP: A1/AUTO/VERN
Initiate TRK

A7
CCTV - MON 1 - B
- MON 2 - RMS/Wrist (ZOOM OUT)
- VTR RCD - RMS/Wrist
ALC, GAMMA - NORM

R11(0V099) VTR - √Tape
L12(0V102)
PARAM sel - JOINT ANGLE
BRAKES - OFF (tb-OFF)
MODE - SINGLE, ENTER

SINGLE DR to:     Tol: +1 deg

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BRAKES - ON (tb-ON)
SURVEY

BRAKES - OFF (tb-OFF)
MODE - ORB UNL, ENTER
A7 Adjust ALC, GAMMA, as reqd
RMS SPOT PORT - ON, as reqd
R11(0V099) VTR pb - PLAY, RCD
L12(0V102) Translate +X (THC OUT) to X = -300, then return to X = -500

BRAKES - ON (tb-ON)
R11(0V099) VTR pb - STOP
L12(0V102)

RECONFIGURE

BRAKES - OFF (tb-OFF)
MODE - SINGLE, ENTER
If continuing exterior survey

SINGLE DR to:

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BRAKES - ON (tb-ON)
Go to next survey configuration

If survey finished

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A7 BRAKES - ON (tb-ON)
RMS SPOT PORT - OFF

Mnvr back to attitude per CAP
EXTERIOR SURVEYS
CONFIGURATION G (STBD), H (PORT)
(Top views: Config G-STBD wing; Config H-port wing)

SETUP

CRT
| GNC UNIV PTG |
TGT ID +2 (earth)
BODY VECT +3 (-Z)
OM - per MCC

A6
DAP: A1/AUTO/VERN
Initiate TRK

A7
CCTV - MON 1 - C
  - MON 2 - RMS/Wrist (zoom out)
  - VTR RCD - RMS/Wrist

ALC, GAMMA - NORM

R11(OV099) VTR - √Tape
L12(OV102)

PARAM sel - JOINT ANGLE
BRAKES - OFF (tb-OFF)
MODE - SINGLE, ENTER

If Configuration G
SINGLE DR to:

<table>
<thead>
<tr>
<th></th>
<th>SY</th>
<th>SP</th>
<th>EP</th>
<th>WP</th>
<th>WY</th>
<th>WR</th>
</tr>
</thead>
<tbody>
<tr>
<td>IC</td>
<td>-60</td>
<td>45</td>
<td>-45</td>
<td>-75</td>
<td>35</td>
<td>60</td>
</tr>
<tr>
<td>REF</td>
<td>(-950)</td>
<td>(220)</td>
<td>(-700)</td>
<td>(310)</td>
<td>(350)</td>
<td>(0)</td>
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</tbody>
</table>

If Configuration H
SINGLE DR to:

<table>
<thead>
<tr>
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<th>SP</th>
<th>EP</th>
<th>WP</th>
<th>WY</th>
<th>WR</th>
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<tr>
<td>REF</td>
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<td>(-250)</td>
<td>(-800)</td>
<td>(300)</td>
<td>(0)</td>
<td>(0)</td>
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</table>

BRAKES - ON (tb-ON)
SURVEY

A7
Adjust ALC, GAMMA, as reqd
RMS SPOT PORT - ON, as reqd
R11(OV099) VTR pb - PLAY,RCD
L12(OV102)
BRAKES - OFF (tb-OFF)

If evaluating stdb wing (G)
MODE - END EFF, ENTER
Mnvr to scan stdb wing surface

If evaluating port wing (H)
MODE - ORB UNL, ENTER

Mnvr to approx:
X  Y  Z  P  Y  R
-950  -250  -800  300  0  0
then,
MODE - END EFF, ENTER
Mnvr to scan port wing surface

BRAKES - ON (tb-ON)
R11(OV099) VTR pb - STOP
L12(OV102)
RECONFIGURE

If continuing exterior survey
Go to next survey configuration

If survey finished
A7
RMS SPOT PORT - OFF
Mnvr back to attitude per CAP
EXTerior SURVEY (CONFIGURATION J)
(Orbiter underbody, vent doors)

SETUP

CRT
<table>
<thead>
<tr>
<th>SM 94 PORS CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ SOFT STOP, ITEM 7 - ENA</td>
</tr>
<tr>
<td>✓ AUTO BRAKE, ITEM 9 - ENA</td>
</tr>
</tbody>
</table>

TGT ID +2 (earth)
BODY VECT +5
P +270, +ZLV
Y +0
OM [ ] - per MCC

DAP: A1/AUTO/VERN
Initiate TRK

IF RADIATORS UNSTOWED...

SINGLE RAD OPS
(Requires opening MAY3C: C&D MCA LOGIC
PWR AC cbs)

STOW: STBD RAD cbs | PORT RAD cbs
AC1 MID3 | AC1 MID1
AC3 MID2 | AC3 MID4

LATCH: AC1 MID3 | AC1 MID1
AC2 MID2 | AC2 MID4
AC3 MID2 | AC3 MID4

✓ RAD LAT CNTL SYS (two) - OFF (tb-REL)
✓ CNTL SYS (two) - OFF (tb-DPY)
PL BAY MECH PWR SYS (two) - ON
RAD CNTL SYS (two) - STOW (concurrently)
✓ STBD tb - DPY
✓ PORT tb - bp -40 sec, STOW
SYS (two) - OFF
RAD LAT CNTL SYS (two) - LAT(concurrently).
  /STBD tb - REL
  /PORT tb - bp -25 sec, LAT
  SYS (two) - OFF
  PL BAY MECH PWR SYS (two) - OFF

A7 CCTV - MON 1 - B
  - MON 2 - RMS/Wrist (ZOOM OUT)
  - VTR RCD - RMS/Wrist
  ALC, GAMMA - NORM
R11(OV099) VTR - √Tape
L12(OV102)
  PARAM sel - JOINT ANGLE
  BRAKES - OFF (tb-OFF)
  MODE - SINGLE, ENTER

SINGLE DR to:

<table>
<thead>
<tr>
<th></th>
<th>SY</th>
<th>SP</th>
<th>EP</th>
<th>WP</th>
<th>WY</th>
<th>WR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>90</td>
<td>45</td>
<td>-10</td>
<td>-112</td>
<td>0</td>
<td>180</td>
</tr>
<tr>
<td>2</td>
<td>55</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

L9,P10, A11 AUD A/A - RCV (IF SINGLE MODE USED)''
05,09, A13,MO42F

SURVEY

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>UHF XMIT must be INHIBITED</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PORT RADIATOR must be stowed</td>
</tr>
</tbody>
</table>
BRAKES - OFF (tb-OFF)
MODE - SINGLE, ENTER
Adjust ALC, GAMMA, as reqd
RMS SPOT PORT - ON, as reqd
R11(OV099) VTR pb - PLAY, RCD
L12(OV102)

SINGLE OR to:

<table>
<thead>
<tr>
<th>SY</th>
<th>SP</th>
<th>EP</th>
<th>WP</th>
<th>WY</th>
<th>WR</th>
</tr>
</thead>
<tbody>
<tr>
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<td>55</td>
<td>5</td>
<td>-100</td>
<td>-112</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>55</td>
<td>5</td>
<td>-100</td>
<td>-45</td>
<td>-105(MA)</td>
</tr>
<tr>
<td>3</td>
<td>114</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
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<td></td>
<td></td>
<td></td>
<td>-45</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-90(MA)</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>30</td>
</tr>
</tbody>
</table>

BRAKES - ON (tb-ON)
R11(OV099) VTR pb - STOP
L12(OV102)

RECONFIGURE

BRAKES - OFF (tb-OFF)
MODE - SINGLE, ENTER

SINGLE OR to:

<table>
<thead>
<tr>
<th>SY</th>
<th>SP</th>
<th>EP</th>
<th>WP</th>
<th>WY</th>
<th>WR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>55</td>
<td>45</td>
<td>-100</td>
<td>-114</td>
<td>-90</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>-30</td>
<td></td>
</tr>
</tbody>
</table>

REENABLE UHF TRANSMITTER
ATT A/D ADJ A/A - T/R -

L9, R10,
05, 09,
A13, M042F
IF RADIATOR DEPLOY REQD.

UNLATCH/DEPLOY PORT RAD

SINGLE RAD OPS
(Requires opening MA73C: C&D MCA LOGIC PWR AC cb s)

<table>
<thead>
<tr>
<th>STOW: STBD RAD cb s</th>
<th>PORT RAD cb s</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC1M1D3</td>
<td>AC1M1D1</td>
</tr>
<tr>
<td>AC3M1D2</td>
<td>AC3M1D4</td>
</tr>
</tbody>
</table>

LATCH: AC1M1D3       AC1M1D1
<table>
<thead>
<tr>
<th>AC2M1D2</th>
<th>AC2M1D4</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC3M1D2</td>
<td>AC3M1D4</td>
</tr>
</tbody>
</table>

.R13L

√RAD LAT CNTL SYS (two) - OFF
√CNTL SYS (two) - OFF
PL BAY MECH PWR SYS (two) - ON
RAD LAT CNTL SYS (two) - REL (concurrently)
√STBD tb - REL
√PORT tb - bp -25 sec, REL SYS (two) - OFF
RAD CNTL SYS (two) - DPY (concurrently)
√STBD tb - DPY
√PORT tb - bp -40 sec, DPY SYS (two) - OFF
PL BAY MECH PWR SYS (two) - OFF

.MA73C:C&D cb MCA LOGIC PWR (five) - c1

BRAKES - OFF (tb-OFF)
MODE - SINGLE, ENTER

If continuing exterior survey
SINGLE DR to:

<table>
<thead>
<tr>
<th></th>
<th>SY</th>
<th>SP</th>
<th>EP</th>
<th>WP</th>
<th>WY</th>
<th>WR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>55</td>
<td>45</td>
<td>-10</td>
<td>114</td>
<td>-90</td>
</tr>
</tbody>
</table>

BRAKES - ON (tb-ON)
- Go to next survey configuration
If survey finished

SINGLE DR to:

<table>
<thead>
<tr>
<th></th>
<th>SY</th>
<th>SP</th>
<th>EP</th>
<th>HP</th>
<th>WY</th>
<th>WR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>55</td>
<td>45</td>
<td>-10</td>
<td>114</td>
<td>-90</td>
<td>30</td>
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<tr>
<td>2</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

BRAKES - ON (tb-ON)

RMS SPOT PORT - OFF

Mnvr back to attitude per CAP
This Page Intentionally Blank
RMS/EVA

MPM FAILURE

A8L
R13L
A7

✓PORT RMS - OFF
✓PL BAY MECH PWR SYS (two) - OFF
PLB FLOOD (six) - OFF, as reqd
CAMERA PWR (five) - OFF, as reqd
✓BRAKES - ON (tb-ON)
RMS sel - OFF
✓RMS PWR - PRI

CRT

SM 94 PDRS CONTROL
✓I/O ON, ITEM 5 - (•)

PARAM sel - PORT TEMP
JOINT - CRIT TEMP
MRL FAILURE

R13L  √PL BAY MECH PWR SYS (two) - ON
      √PORT RMS RETEN LAT - OFF
      - STOW (tb-STO) (34 sec norm)
      - OFF

* If tb does not respond
  √SM 94 PDRS CONTROL
  √RMS STO/DPLY
      * SHLD 1 1 0 0
  * If CRT reads as above, proceed *

PL BAY MECH PWR SYS (two) - OFF

A7  PLB FLOOD (six) - OFF, as reqd
    CAMERA PWR (five) - OFF, as reqd

√BRAKES - ON (tb-ON)
RMS sel - OFF
√RMS PWR - PRI

CRT  √SM 94 PDRS CONTROL
  √170 ON, ITEM 5 - (*)

PARAM sel - PORT TEMP
JOINT - CRIT TEMP
JOINT FAILURE

√ BRAKES - ON (tb-ON)

MODE - DIRECT (lt-on)

Configure arm per following options using DIRECT MODE

IF FAILED JOINT IS FROZEN,
CONFIGURE GOOD JOINTS:

<table>
<thead>
<tr>
<th>SY</th>
<th>SP</th>
<th>EP</th>
<th>WP</th>
<th>WY</th>
<th>WR</th>
</tr>
</thead>
<tbody>
<tr>
<td>0°</td>
<td>+25°</td>
<td>-25°</td>
<td>0°</td>
<td>0°</td>
<td>0°</td>
</tr>
</tbody>
</table>

NOTE
These are desired joint locations. If shoulder or elbow joint fails, arm should be placed in a position over the port longeron and clear of the Orbiter if possible.

IF FAILED JOINT IS FREE,
If wrist joint free, configure good joints:

<table>
<thead>
<tr>
<th>SY</th>
<th>SP</th>
<th>EP</th>
<th>WP</th>
<th>WY</th>
<th>WR</th>
</tr>
</thead>
<tbody>
<tr>
<td>0°</td>
<td>+25°</td>
<td>-25°</td>
<td>0°</td>
<td>0°</td>
<td>0°</td>
</tr>
</tbody>
</table>

If EP free:

<table>
<thead>
<tr>
<th>SY</th>
<th>SP</th>
<th>EP</th>
<th>WP</th>
<th>WY</th>
<th>WR</th>
</tr>
</thead>
<tbody>
<tr>
<td>0°</td>
<td>140°</td>
<td>FREE</td>
<td>0°</td>
<td>0°</td>
<td>0°</td>
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</table>

If SP free:

<table>
<thead>
<tr>
<th>SY</th>
<th>SP</th>
<th>EP</th>
<th>WP</th>
<th>WY</th>
<th>WR</th>
</tr>
</thead>
<tbody>
<tr>
<td>-90°</td>
<td>FREE</td>
<td>-10°</td>
<td>0°</td>
<td>0°</td>
<td>0°</td>
</tr>
</tbody>
</table>
If SY free:

<table>
<thead>
<tr>
<th>SY</th>
<th>SP</th>
<th>EP</th>
<th>WP</th>
<th>WY</th>
<th>WR</th>
</tr>
</thead>
<tbody>
<tr>
<td>FREE</td>
<td>90°</td>
<td>-10°</td>
<td>0°</td>
<td>0°</td>
<td>0°</td>
</tr>
</tbody>
</table>

**NOTE**

These configurations allow free joint to move its full travel limits without contacting Orbiter structure.

**A7**

- PLB FLOOD (six) - OFF, as reqd
- CAMERA PWR (five) - OFF, as reqd

- ✓ BRAKES - ON (tb-ON)
- ✓ RMS sel - OFF
- ✓ RMS PWR - PRI

**CRT**

- SM 94 PORTS CONTROL
- ✓ 1/0 ON, ITEM 5 - (*

- PARAM sel - PORT TEMP
- JOINT - CRIT TEMP
1. **PARAM sel** - JOINT ANGLE
   
   JOINT - SP
   
   Record SP angle __________

2. **BRAKES** - ON (tb-ON)
   
   MODE - DIRECT (1t-on)
   
   DIRECT DR - EP to safe configuration to drive arm in SY
   
   DIRECT DR SY - +75°
   
   EP - -(2 x SP) or max of -90°
   
   WP - 0°
   
   WY - 0°
   
   WR - 0°

3. CRT
   
   SM 94 PDRS CONTROL
   
   AUTO BRAKES INH - ITEM 10 EXEC

4. JOINT - EP
   
   BRAKES - OFF (tb-OFF)
   
   MODE - SINGLE, ENTER
   
   RATE sw - COARSE (RATE MIN tb-OFF)
   
   SINGLE DR - (+)
   
   After 2 sec,
   
   BRAKES - ON (while still holding SINGLE DR sw)
   
   SINGLE DR sw - release
   
   JOINT - SP (Compare SP angle to original value)

   **NOTE**
   
   When EP - -80°, reconfigure EP

   **BRAKES** - ON (tb-ON)
   
   MODE - DIRECT (1t-on)
   
   DIRECT DR EP - -(2 x SP)

   Repeat step 4 until SP = 2-5°
5  √BRAKES - ON (tb-ON)
    MODE - DIRECT (lt-on)

    CAUTION
    Use CCTV to monitor proximity of arm
    and Orbiter

    DIRECT DR EP - +1°
    WP - +10°
    WY - 0°
    WR - 0°
    SY - 0°
    EP - -2°

6  JOINT - EP
BRAKES - OFF (tb-OFF)
MODE - SINGLE, ENTER
SINGLE DR - (+)
After 1/2 sec,
BRAKES - ON (while still holding SINGLE
    DR sw)
SINGLE DR sw - release
JOINT - SP (Note SP angle)

    NOTE
    When EP - +1°, reconfigure EP

5  √BRAKES - ON (tb-ON)
    MODE - DIRECT (lt-on)
    DIRECT DR EP - (-) as far that is safe

Repeat step 6 until
PORT RMS R-F-L FWD tb - gray

7  √BRAKES - OFF (tb-OFF)
    MODE - SINGLE, ENTER
    RATE sw - VERN (RATE MIN tb-ON)
    SINGLE DR EP - 0°
        WP - 0°
5  PORT RMS R-F-L tb (three) - gray
    BRAKES - ON (tb-ON)

8  Go to RMS PWRDN, steps 2,4
1. PARAM sel - JOINT ANGLE
   JOINT - EP
   Record EP angle

2. √BRAKES - ON (tb-ON)
   MODE - DIRECT (1t-on)
   DIRECT DR SP - -(2 x EP) or max of +130°
   SY - 0°
   WP - +5°
   WY - 0°
   WR - 0°

CRT 3 | SM 94 PDRS CONTROL |
     AUTO BRAKES INH - ITEM 10 EXEC

4. JOINT - SP
   BRAKES - OFF (tb-OFF)
   MODE - SINGLE, ENTER
   RATE sw - COARSE (RATE MIN tb-OFF)
   SINGLE DR - (-)
   After 4 sec,
   BRAKES - ON (while still holding SINGLE
             DR sw)
   SINGLE DR sw - release
   JOINT - EP (Note EP angle)

   NOTE
   When SP < -(EP), reconfigure SP

√BRAKES - ON (tb-ON)
MODE - DIRECT (1t-on)
DIRECT DR SP - -(2 x EP)

Repeat step 4 until EP -1°

5. JOINT - SP
   BRAKES - OFF (tb-OFF)
   MODE - SINGLE, ENTER
   SINGLE DR - (-)
After 1/2 sec,
BRAKES - ON (while still holding SINGLE DR sw)
SINGLE DR sw - release
JOINT - EP (Note EP angle)

Repeat step 5 until EP = $0^\circ \pm 0.1^\circ$

6. √BRAKES - OFF (tb-OFF)
   MODE - SINGLE, ENTER
   RATE sw - VERN (RATE MIN tb-ON)
   SINGLE DR SP - $0^\circ$
   WP - $0^\circ$
   √PORT RMS R-F-L tb (three) - gray
   BRAKES - ON (tb-ON)

7. Go to RMS_PWRDN, steps 2, 4
1 PARAM sel - JOINT ANGLE
   JOINT - WP
   Record WP angle ______

2 ✓ BRAKES - ON (tb-ON)
   MODE - DIRECT (lt-on)
   DIRECT OR SP - +90°
   EP - -90°
   SY - 0°
   WY - 0°
   WR - +19.5°

CRT 3 SM 94 PORS CONTROL
AUTO BRAKES INH - ITEM 10 EXEC

4a If WP < 0:
   JOINT - WP
   BRAKES - OFF (tb-OFF)
   MODE - END EFF, ENTER
   RATE sw - COARSE (RATE MIN tb-OFF)
   or THC - UP (1/3 to 1/2 deflection) (hold)
      When RATE METER (ACTUAL RATE)
      hesitates,
      THC - down (full deflection) (hold)
      When WP (DIGITAL DISPLAY #3) is
      constant,
      Remove THC command slowly

4b If WP > 0:
   JOINT - WP
   BRAKES - OFF (tb-OFF)
   MODE - END EFF, ENTER
   RATE sw - COARSE (RATE MIN tb-OFF)
   THC - down (1/3 to 1/2 deflection) (hold)
      When RATE METER (ACTUAL RATE)
      hesitates,
      THC - up (full deflection) (hold)
      When WP (DIGITAL DISPLAY #3) is
      constant,
      Remove THC command slowly
If $\text{SP} > 120^\circ$ or $< 60^\circ$, reconfigure

$\sqrt{\text{BRAKES}}$ - ON (tb-ON)

$\text{MODE} = \text{DIRECT}$ (tt-on)

$\text{DIRECT DR} \ SP = +30^\circ$

$\text{EP} = -90^\circ$

$\text{SY} = 0^\circ$

$\text{WY} = 0^\circ$

$\text{WR} = +19.5^\circ$

$\sqrt{\text{NOTE}}$

Use vernier rates when WP $< 2^\circ$

Repeat step 4 until WP $= 0^\circ \pm 0.1^\circ$

5 $\sqrt{\text{BRAKES}}$ - OFF (tb-OFF)

$\text{MODE} = \text{SINGLE, ENTER}$

$\text{RATE sw} = \text{VERN}$ (RATE MIN tt-ON)

$\text{SINGLE DR} \ EP = +1^\circ$

$\text{SP} = +10^\circ$

$\text{SY} = 0^\circ$

$\text{WY} = 0^\circ$

$\text{WR} = 0^\circ$

$\text{SP} = 0^\circ$

$\text{EP} = 0^\circ$

$\sqrt{\text{PORT RMS R-F-L tt (three)} - \text{gray}}$

6 Go to RMS PWDRN, steps 2, 4
1 PARAM sel - JOINT ANGLE
   JOINT - WY
   Record WY angle ______

2 BREADS - ON (tb-ON)
   MODE - DIRECT (it-on)
   DIRECT DR SP - +90°
   EP - -90°
   SY - 0°
   WP - 0°
   WR - +19.5°

CRT 3 SM 94 PDRS CONTROL
     AUTO BRAKES INH - ITEM 10 EXEC

4a If WY < 0:
   JOINT - WY
   BRAKES - OFF (tb-OFF)
   MODE - END EFF, ENTER
   RATE sw - COARSE (RATE MIN tb-OFF)
   THC - RIGHT (1/3 to 1/2 deflection) (hold)
     When RATE METER (ACTUAL RATE)
       hesitates,
     THC - LEFT (full deflection) (hold)
     When WY (DIGITAL DISPLAY #3) is constant,
     Remove THC command slowly

4b If WY > 0:
   JOINT - WY
   BRAKES - OFF (tb-OFF)
   MODE - END EFF, ENTER
   RATE sw - COARSE (RATE MIN tb-OFF)
   THC - left (1/3 to 1/2 deflection) (hold)
     When RATE METER (ACTUAL RATE)
       hesitates,
     THC - right (full deflection) (hold)
     When WY (DIGITAL DISPLAY #3) is constant,
     Remove THC command slowly
NOTE
If SP > 120° or < 60°, reconfigure

✓ BRAKES - ON (tb-ON)
   MODE - DIRECT (lt-on)
   DIRECT OR SP - +90°
   EP - -90°
   SY - 0°
   WP - 0°
   WR - +19.5°

NOTE
Use vernier rates when WY < 2°

Repeat step 4 until WY = 0° ±0.1°

5 ✓ BRAKES - OFF (tb-OFF)
   MODE - SINGLE, ENTER
   RATE sw - VERN (RATE MIN tb-ON)
   SINGLE OR EP - +1°
   SP - +10°
   SY - 0°
   WR - 0°
   WP - +5°
   SP - 0°
   EP - 0°
   WP - 0°

✓ PORT RMS R-F-L tb (three) - gray

6 Go to RMS PWRDN, steps 2,4
BACKUP CRADLE

1. ARM CRADLE
   √BRAKES - ON (tb-ON)
   RMS SEL - OFF
   RMS PWR - B/U
   RMS SEL - PORT

   Drive arm to approx:

<table>
<thead>
<tr>
<th>SY</th>
<th>SP</th>
<th>EP</th>
<th>WP</th>
<th>WY</th>
<th>WR</th>
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<td>+1</td>
<td>+5</td>
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   (WR = 0 when wrist camera aligned w/Z -axis)

   Drive SP to get FWD R-F-L, then
   Drive EP to get MID R-F-L, then
   Drive WP to get AFT R-F-L

2. RECONFIGURE TO PRIMARY POWER (TEMP MONITOR)

   RMS SEL - OFF
   RMS PWR - PRI (MA)

   CRT
   [SM 94 PORS CONTROL]
   170 ON - ITEM 5 EXEC

   SAFING - CANCEL (tb-bp)

   Go to RMS PWRDN, step 2 LATCH/STOW ARM
INADVERTENT RELEASE
INADVERTENT PL RELEASE

BACkOFF
DAP: A/MAN/NORM
DAP ROT: DISC/DISC/DISC
DAP TRANS: NORM/NORM/NORM
\(\text{\check{S}ENSE} = -X\)
THC \(\pm Z\) (dn) 2 sec (1 FPS)
Maintain visual contact through ovhd/aft window with THC \(\pm X, \pm Y\) as reqd until out-of-plane burn performed

MANEUVER OUT OF PLANE

\text{[GNC UNIV PTG]}
\text{STOP} - \text{ITEM 21 EXEC}
\text{GNC, OPS 202 PRO}
\text{[GNC ORBIT MNVR EXEC]}
\text{RCS SEL} - \text{ITEM 4 EXEC (*)}
Set TIG to current time +2:00
TGT PEG 7 \(\Delta V_x\) - \text{ITEM 19 +0 EXEC}
\(\Delta V_y\) - \text{ITEM 20 +2 EXEC}
\(\Delta V_z\) - \text{ITEM 21 +0 EXEC}
LOAD - ITEM 22 EXEC
TIMER - ITEM 23 EXEC
\(\sqrt{VGO} Z \geq 0\); if \(VGO Z < 0\), then
* TGT PEG 7 \(\Delta V_y\) - ITEM 20 -2 EXEC *
* LOAD - ITEM 22 EXEC *
* TIMER - ITEM 23 EXEC *
* \(\sqrt{VGO} Z \geq 0\)

DO NOT MNVR to BURN ATT
At TIG deflect THC to null VGOs
PERFORM FINAL SEP MNVR

✓ RCS SEL - ITEM 4 (*)
TV ROLL - ITEM 5 +1 8 0 EXEC
Set TIG to last TIG +20:00
TGT PEG 7 ΔVx - ITEM 19 +5 EXEC
    ΔVy - ITEM 20 +0 EXEC
    ΔVz - ITEM 21 +0 EXEC
LOAD - ITEM 22 EXEC
TIMER - ITEM 23 EXEC
DAP: A/AUTO/NORM
At TIG -8:00; MNVR - ITEM 27 EXEC (*)
At TIG deflect THC to null VGOs

MNVR TO MINIMUM DRAG ATTITUDE (-ZLV)

DAP: A/AUTO/VERN
GNC, OPS 201 PRO
|GNC UNIV PTG|
✓ TGT ID - 2
BODY VECT - 3
OM - 180
START TRK - ITEM 19 EXEC (CUR *)
PL JETTISON (RMS ok - PL cannot be berthed)

NOTE
For PL JETTISON procedure (5-50 thru 5-55), CDR activities are now on even numbered pages and PLT activities on odd numbered pages

NOTE
Jettison between sunrise and noon if possible

CDR
AUTO MNVR TO -XLV

CRT
| GNC UNITV PTG |
✓ START TIME at least 15 min prior to sunrise
✓ TGT ID +2
✓ BODY VECT +2
✓ TM -0
✓ Initiate TRK

A6U
DAP: A/AUTO/VERN

014, ✓ RJD DRIVER (nine) - ON
015,
016
A6U
FLT_CNTL PWR - ON
EVENT TIMER MODE - UP
CNTL - STOP
TIMER - RESET

A7U ✓ Lighting - as reqd

When in attitude, then

CRT | GNC 33 REL NAV |
AVG G ON - ITEM 1 EXEC (*)

When PLT confirms CCTVs configured to monitor jettison, then proceed to 5-52
MNVR PL FOR JETTISON
Maneuver PL/RMS to optimum deploy attitude

BRAKES - ON (tb-ON)

CONFIGURE CCTV to MONITOR PL JETTISON

CCTV MON 1 - A
  2 - B

Point CCTV at EE
JETTISON

DAMP RATES

DAP ROT: DISC/DISC/DISC
TRANS: PULSE/PULSE/NORM

If VERN jets avail
| DAP: A/MAN/VERN
If VERN jets not avail
DAP: B/MAN/NORM

WAIT UNTIL RATES DAMPED, THEN FREE DRIFT
DAP ROT: PULSE/PULSE/PULSE
DAP: A/MAN/NORM
\(\checkmark\) SENSE - as reqd

NOTE
After JETT, initiate opening rate
ASAP. Minimize other THC/RHC inputs

JETT+ 0:01
WHEN RMS PILOT CONFIRMS JETTISON COMPLETE,
TRANSLATE AWAY
EVENT TIMER CNTL - START
THC \(+Z\), 2 sec (1 ft/sec)

(-X sense: THC dn)
(-Z sense: THC out)

DAP ROT: DISC/DISC/DISC

2:00
SECOND SEP BURN
SENSE - as reqd
THC \(+Z\), 2 sec (1 ft/sec)

(-X sense: THC dn)
(-Z sense: THC out)

Maintain visual contact with PL in OVHD
window using RHC

When PL no longer visible, then
When Orbiter is in free drift, then
BRAKES - OFF (tb-OFF)
MODE - END EFF, ENTER
During next step, as soon as OPEN tb-gray
  Maneuver: -XEE (out), clear fixture
EE MODE - AUTO
EE RELEASE sw - depress (mom)
After -18 sec (max)
CRT  |  GNC 33 REL NAV
    |  AVG G ON - ITEM 1 EXEC (no *)
    |  (Turns AVG G off)
    |  GNC UNIV PTG
    |  /START TIME in past
    |  /TGT ID +2
    |  BODY VECT +3
    |  /OM +0
    |  Initiate TRK
A6U  |  DAP: A/AUTO/VERN
014,  |  /All primary RJO DRIVER (eight) - as reqd
015,  |
016,  |
A7U  |  /Lighting - as reqd
PLT

CLEANUP
EE MODE - OFF
BRAKES - ON (tb-ON)

WHEN ORBITER PILOT CONFIRMS VERNIERS IN USE,
Stow arm via RMS POWERDOWN, steps 1-5
NOTE
For PL JETTISON procedure (5-56 thru 5-61), CDR activities are now on even numbered pages and PLT activities on odd numbered pages.

NOTE
Jettison between sunrise and noon if possible

CDR
AUTO MNVR TO -XLV

CRT
GNC UNIV PT6
START TIME at least 15 min prior to sunrise
TGT ID +2
BODY VECT +2
OM +0
Initiate TRK
A6U DAP: A/AUTO/VERN

014, RJD DRIVER (nine) - ON
015,
016
A6U FLT CNTLR PWR - ON
EVENT TIMER MODE - UP
CNTL - STOP
TIMER - RESET

A7U Lighting - as reqd

When in attitude, then

CRT
GNC 33 REL NAV
AVG G ON - ITEM 1 EXEC (*)

When PLT confirms CCTVs configured to monitor jettison, then proceed to 5-58
MNVR PL FOR JETTISON
Consult MCC for mode capability and joint configuration for PL jettison, also mode and joints to be used to back off grapple fixture after EE release, 5-59

PARAM sel - JOINT ANGLE

MODE -

Drive to:

<table>
<thead>
<tr>
<th>SY</th>
<th>SP</th>
<th>EP</th>
<th>WP</th>
<th>WY</th>
<th>WR</th>
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</thead>
</table>

√BRAKES - ON (tb-ON)

CONFIGURE CCTVs TO MONITOR PL JETTISON

A7U

CCTV MON 1 - A
2 - B

Point CCTVs at EE
JETTISON
DAMP RATES
DAP ROT: DISC/DISC/DISC
TRANS: PULSE/PULSE/NORM

If VERN jets avail
  DAP: A/MAN/VERN
If VERN jets not avail
  DAP: B/MAN/NORM

WAIT UNTIL RATES DAMPED, THEN FREE DRIFT
DAP ROT: PULSE/PULSE/PULSE
DAP: A/MAN/NORM
\SENSE - as reqd

NOTE
After JETT, initiate opening rate
ASAP. Minimize other THC/RHC inputs

JETT+
0:01
WHEN RMS PILOT CONFIRMS JETTISON COMPLETE,
TRANSLATE AWAY
EVENT TIMER CNTL - START
THC +Z, 2 sec (1 ft/sec)
  (-X sense: THC dn)
  (-Z sense: THC out)
DAP ROT: DISC/DISC/DISC

2:00
SECOND SEP BURN
SENSE - as reqd
THC +Z, 2 sec (1 ft/sec)
  (-X sense: THC dn)
  (-Z sense: THC out)

Maintain visual contact with PL in OVHD window using RHC

When PL no longer visible, then
JETTISON

When Orbiter is in free drift, then

BRAKES - OFF (tb-OFF)
EE MAN CONTR - DERIGID (hold until DERIGID
    tb-gray) (5 sec max)

EE RELEASE sw - depress (hold until OPEN
    tb-gray) (3 sec max)

Per MCC

MODE -
Joints to be driven to clear grapple
   fixture

EE MAN CONTR - DERIGID (hold until EXTEND
    tb-gray) (20 sec max)
CDR
CLEANUP

CRT  | GNC 33 REL NAV |
     | AVG G ON - ITEM 1 EXEC (no *) |
     | (Turns AVG G off) |

  | GNC UNTY PTG |
  | ✓START TIME in past |
  | ✓TGT ID  +2 |
  | ✓BODY VECT +3 |
  | ✓OM  +0 |
  | Initiate TRK |

A6U  | DAP: A/AUTO/VERN |

014,  | ✓All primary RJD DRIVER (eight) - as reqd |
015,  |
016,  |

A7U  | ✓Lighting - as reqd |
PLT

CLEANUP
EE MODE - OFF
BRAKES - ON (tb-ON)

WHEN ORBITER PILOT CONFIRMS VERNIERS IN USE
Stow arm via BACKDRIVE TECHNIQUE - JOINT
FREE, 5-35
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REFERENCE DATA
D & C STATUS

1  SUSPEND MODE
   RMS PWR  - PRI
   RMS SEL  - OFF
   I/O OFF  - ITEM 6 *

2  TEMP MODE
   RMS PWR  - PRI
   RMS SEL  - OFF
   I/O ON   - ITEM 5 *
## Temperature Data

### Note
To read temperatures:
- **PARAM sel** - PORT TEMP
- **JOINT sel** - as desired (see below)
  - 'LED' temps measured at joints
  - 'ABE' temps measured at electronics

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<tr>
<th>JOINT SW SEL</th>
<th>IND #1 TEMP OF</th>
<th>IND #2 TEMP OF</th>
<th>IND #3 JOINT ID</th>
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<tr>
<td>SY</td>
<td>SY LED</td>
<td>SP, SY ABE</td>
<td>101</td>
</tr>
<tr>
<td>SP</td>
<td>SP LED</td>
<td>SP, SY ABE</td>
<td>102</td>
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<td>WP LED</td>
<td>WP, WY ABE</td>
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<td>WY LED</td>
<td>WP, WY ABE</td>
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### Temperature Limits

**LED Limits**

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<th>ABE Limits</th>
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<tbody>
<tr>
<td>205</td>
<td>FAIL</td>
</tr>
<tr>
<td>172</td>
<td>C&amp;W</td>
</tr>
<tr>
<td>~</td>
<td>~</td>
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<td>-24</td>
<td>C&amp;W</td>
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<td>-42</td>
<td>FAIL</td>
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<td>JOINT LOCATION</td>
<td>MECHANICAL LOCATION</td>
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<tr>
<td>SINGULARITY LOCATION</td>
<td>-7.6</td>
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<tr>
<th>JOINT LIMIT LOCATIONS</th>
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<tbody>
<tr>
<td>SHOULDER YAW</td>
<td>175.60</td>
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<tr>
<td>SHOULDER PITCH</td>
<td>177.60</td>
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<tr>
<td>ELBOW PITCH</td>
<td>142.40</td>
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<td>WRIST PITCH</td>
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<td>WRIST YAW</td>
<td>157.60</td>
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<td>WRIST ROLL</td>
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## WRIST ROLL RANGE

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<td>$0 &lt; \phi &lt; 180$</td>
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<tr>
<td>5</td>
<td>$180 &lt; \phi &lt; 360$</td>
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<tr>
<td>6</td>
<td>$360 &lt; \phi &lt; 450$</td>
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## SINGULARITY ANNUNCIATION

1. When the wrist yaw joint is within 3 feet of a line drawn through the shoulder yaw axis

2. When wrist yaw joint is $\pm 75$ deg to $\pm 105$ deg

3. When elbow joint is less than 7.6 deg
ORBITER LOADED MODE PHASING

ORBITER LOADED MODE

6-9 ALL VEH/BAS
PAYLOAD MODE PHASING

---

PAYLOAD MODE
### MPM/MLL MOTOR CONTROL

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SCHEDULING OVERVIEW - NOMINAL
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<th>ACTIVITY</th>
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<tr>
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<td>RMS POWERUP</td>
<td>10</td>
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<td>AUTO MODE EVALUATION</td>
<td>25</td>
<td>/04:20</td>
</tr>
<tr>
<td>NOMINAL BERTH</td>
<td>25</td>
<td>/04:45</td>
</tr>
<tr>
<td>DIRECT DRIVE UNBERTH</td>
<td>25</td>
<td>/05:10</td>
</tr>
<tr>
<td>CONTROL SYSTEM EVAL</td>
<td>65</td>
<td>/05:35</td>
</tr>
<tr>
<td>DIRECT DRIVE BERTH</td>
<td>40</td>
<td>/06:40</td>
</tr>
<tr>
<td>RMS POWERDOWN</td>
<td>10</td>
<td>/07:20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>/07:30 (END)</td>
</tr>
<tr>
<td>ACTIVITY</td>
<td>DURATION (MIN)</td>
<td>MET (of start of activity)</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>----------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>RMS POWERUP</td>
<td>10</td>
<td>003/02:15</td>
</tr>
<tr>
<td>NOMINAL UNBERTH</td>
<td>20</td>
<td>/02:25</td>
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<tr>
<td>RMS/FCS - SIMULATED LDEF DEPLOY</td>
<td>45</td>
<td>/02:45</td>
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<tr>
<td>CONTROL SYSTEM EVAL</td>
<td>65</td>
<td>/03:30</td>
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<tr>
<td>RMS/PRCS INTERACTION</td>
<td>75</td>
<td>/04:35</td>
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<tr>
<td>ORBITER/RMS DYNAMIC INTERACTION</td>
<td>20</td>
<td>/05:50</td>
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<td>25</td>
<td>/06:10</td>
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<tr>
<td>NOMINAL BERTH</td>
<td>25</td>
<td>/06:35</td>
</tr>
<tr>
<td>RMS POWERDOWN</td>
<td>10</td>
<td>/07:00</td>
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<tr>
<td></td>
<td></td>
<td>/07:10 (END)</td>
</tr>
</tbody>
</table>
These activities are not scheduled in the CAP. An attempt will be made to schedule these activities in real time if conditions permit.

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>DURATION (MIN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIRECT DRIVE UNBERTH - GF 5</td>
<td>25</td>
</tr>
<tr>
<td>DIRECT DRIVE BERTH - GF 5</td>
<td>40</td>
</tr>
<tr>
<td>AUTO MODE EVALUATION - UNLOADED</td>
<td>20</td>
</tr>
</tbody>
</table>
NOMINAL UNBERTH
GRAPPLE PFTA GF 2 [GF 5]
GF 5 - Priority (1)

A7
CCTV - MDN 2 - RMS/Wrist (zoom out)
√ Target overlay attached
R11
VTR - √ Tape, audio

Config DAP: A9/AUTO/VERN

CRT
SM 94 PDRS CONTROL
PL ID - ITEM 3 +2 [5] EXEC

If unberthing to occur in darkness, disregard 16mm Camr ops

Take Spotmeter reading of white (sunlit) PFTA/RMS

BRAKES - OFF (tb-OFF)
MODE - ORB UNL, ENTER

Mnvr to grapple fixture
X = -1108 GF 2
X = -919 GF 5

When grapple fixture in view, 16mm Camr - on (for -1 min)

EE MODE - AUTO
MODE - END EFF, ENTER
Mnvr to grapple envelope
EE CAPTURE sw - depress (mom)

√ (23 sec max)

EE MODE - OFF
BRAKES - ON (tb-ON)

16mm Camr - off

W9

Record POS/ATT and JOINT ANGLES
TRUNKION RELEASE/UNBERTH

A7  CCTV - VTR RCD - MUX B&C, Alt with D. document unberth

R11  VTR pb - PLAY, RCD

R13  PL BAY MECH PWR SYS (two) - ON
     PL RETEN PL SEL - 1
     LOGIC PWR SYS (two) - ON

A6  Note any single motor times (> 30 sec)
     PL RETEN LAT 1,4 - REL (tb-REL), 60 sec max
     - OFF
     LAT 2,3 - REL (tb-REL), 60 sec max
     - OFF
     LAT 5 - REL (tb-REL), 60 sec max
     - OFF
     PL SEL - MON
     LOGIC PWR SYS (two) - OFF

R13  PL BAY MECH PWR SYS (two) - OFF

DAP ROT: PULSE/PULSE/PULSE
DAP: A9/MAN/VERN

✓ Exposure w/Spotmeter

RATE sw - VERN (RATE MIN tb-ON), until clear guides
BRAKES - OFF (tb-OFF)
MODE - ORB LD, ENTER

W9  16mm Camr - on (for -2 min, until bottom of PFTA visible)
    Mnvr PFTA to Z = -600
    BRAKES - ON (tb-ON)

R11  VTR pb - STOP

W9  16mm Camr - off
RMS/FCS TESTS
RMS/FCS TEST (Grapple Fixture 2)  WE'RE STARTING (ACIP/CMD)

1. SET UP IC - Priority

√DAP: A9/AUTO/VERN, if desired

CRT
| SM 94 PORS CONTROL |
| PL ID - ITEM 3 - 3 |
| PL INIT ID - ITEM 24 - 3 |

DAP ROT: PULSE/PULSE/PULSE
DAP: A9/MAN/VERN

OPR CMD to CONFIG A
-938, -7, -660, 0, 45, 0  GF 2

<table>
<thead>
<tr>
<th>SY</th>
<th>SP</th>
<th>EP</th>
<th>WP</th>
<th>WY</th>
<th>WR</th>
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<tbody>
<tr>
<td>-35.2</td>
<td>102.5</td>
<td>-93.8</td>
<td>-65.5</td>
<td>5.5</td>
<td>3.1</td>
</tr>
</tbody>
</table>

BRAKES - ON (tb-ON)

A7
√MADS RCDR PWR - PCM/WB ENA
WB/ACIP PCM - ON

if poss. let MCC know
**RATE sw - COARSE**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Config DAP:</strong> BXX/LVLH/VERN</td>
<td>87</td>
<td>87</td>
<td>88</td>
<td>88</td>
</tr>
<tr>
<td><strong>DAP ROT:</strong> DISC/DISC/DISC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pause until within DB</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BRAKES - OFF (tb-OFF)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MODE - ORB LD, ENTER</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Input 20 sec</strong></td>
<td>THC UP</td>
<td>THC LT</td>
<td>THC UP</td>
<td>THC LT</td>
</tr>
<tr>
<td><strong>Pause 60 sec</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OPR CMD to IC</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pause 60 sec</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Check complete</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

When test complete, BRAKES - ON (tb-0%)
3 I-LOAD SENSITIVITY TEST - Priority

✓ DAP: A9/AUTO/VERN, if desired

CRT

SM 94 PDRS CONTROL
✓ PL ID, ITEM 3 - 3
✓ PL INIT ID, ITEM 24 - 3

DAP ROT: PULSE/PULSE/PULSE
DAP: A9/MAN/VERN

OPR CMD to CONFIG A

-938, -7, -660, 0, 45, 0 GF 2

<table>
<thead>
<tr>
<th>SY</th>
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<th>EP</th>
<th>WP</th>
<th>WY</th>
<th>WR</th>
</tr>
</thead>
<tbody>
<tr>
<td>-35.2</td>
<td>102.5</td>
<td>-93.8</td>
<td>-65.5</td>
<td>5.5</td>
<td>3.1</td>
</tr>
</tbody>
</table>

BRAKES - ON (tb-ON)
A7  MADS WB/ACIP PCM - ON
014:E, cb AFT DDU (two) - c1
016:E

A6  SENSE - X ...
FLT CNTLR PWR - ON

(defaults to)
(BRAKES - OFF (tb-OFF))
(MODE - END EFF, ENTER)

Config DAP: BXX/MAN/VERN
DAP ROT: DISC/DISC/DISC
Pause until stable
DAP ROT: PULSE/PULSE/PULSE
Fire -P (TAIL DN), wait 5 sec then,
+Y (TAIL RT), wait 5 sec then,
-R (PORT WING UP), wait 5 sec then,
DAP ROT: DISC/DISC/DISC (simo)
Pause 2 min
Check complete

When test complete,
BRAKES - ON (tb-ON)
FLT CNTLR PWR - OFF
MADS WB/ACIP PCM - CMD

Tell MCC test complete
RMS/FCS TEST
SIMULATED LDEF DEPLOY
(Grapple Fixture S only)

1. SET UP IC

✓ DAP: A9/AUTO/VERN, if desired

CRT

<table>
<thead>
<tr>
<th>SM 94 PDRS CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>PL ID - ITEM 3 - 4</td>
</tr>
<tr>
<td>PL INIT ID - ITEM 24 - 4</td>
</tr>
</tbody>
</table>

DAP ROT: PULSE/PULSE/PULSE
DAP: A9/MAN/VERN

OPR CMD to CONFIG A

-995, +50, -580, 305, 330, 325 GF 5

\[
\begin{array}{ccccccc}
SY & SP & EP & WP & WY & WR \\
-35.2 & 102.5 & -93.8 & -65.5 & 5.5 & 3.1 \\
\end{array}
\]

BRAKES - ON (tb-ON)
2  SETUP FOR 3-AXIS MNVR TEST

Change DAP B to B14

CRT

| GNC UNIV PTG |
| TGT ID - 2 |
| BODY VECT - 5 |
| P - 35 |
| Y - 10 |
| OM - 170 |

DAP: B14/AUTO/VERN
Initiate TRK

When mnvr complete,

3  MNVR ORBITER TO 45° NOSE DOWN (YPOP)

| GNC UNIV PTG |
| TGT ID - 2 |
| BODY VECT - 5 |
| P - 45 |
| Y - 0 |
| OM - 180 |

DAP: B14/AUTO/VERN
Initiate TRK

When in attitude,
DAP ROT: DISC/DISC/DISC
DAP: B14/LVLH/VERN
MNVR RMS TO LDEF CONFIG

✓DAP ROT: DISC/DISC/DISC
Config DAP: B15/LVLH/VERN

CRT

<table>
<thead>
<tr>
<th>SM 94 PDNS CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>PL ID - ITEM 3 - 4</td>
</tr>
<tr>
<td>PL INIT ID - ITEM 24 - 4</td>
</tr>
</tbody>
</table>

OPR CMD to 'LDEF' position

-968, +203, -687, 296, 300, 176, GF5

-41.8  83.8  -71.6  -61.9  -20.6  -131.4
✓ BRAKES - OFF (tb-OFF) - position hold

When arm mnvr complete,
✓DAP ROT: DISC/DISC/DISC
Config DAP: B16/LVLH/VERN
5 ROT PULSE INPUTS

014:E, cb AFT DDU (two) - c1
016:E SENSE - X ..
A6 FLT CNTLR PWR - ON

(defaults to) UNLD POR

<table>
<thead>
<tr>
<th>MODE</th>
<th>END EFF, ENTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRAKES</td>
<td>OFF</td>
</tr>
</tbody>
</table>

Config DAP: BXX/LVLH/VERN B17 B18 B19

DAP ROT: DISC/DISC/DISC
Pause 2 min

DAP ROT: PULSE/PULSE/PULSE

Fire -P (TAIL DN), wait 10 sec then,
+Y (TAIL RT), wait 10 sec then,
-R (PORT WING UP), wait 10 sec then,

DAP ROT: DISC/DISC/DISC (simo)
Pause 2 min

Check complete

---

After last step,
BRAKES - ON, (tb-ON)
FLT CNTLR PWR - OFF

CONTINUED NEXT PAGE
RE-ESTABLISH NOMINAL ATTITUDE

✓DAP A set to A9

[|GNC UNIV PTG|
✓START TIME - (in past)
✓TGT ID - 2
BODY VECT - 3
OM - 180
DAP: A9/AUTO/VERN
Initiate TRK
CONTROL SYSTEM EVALUATION
CONTROL SYSTEM EVALUATION

1. MANUAL AUGMENTED (CONFIG A)

SETUP

✓ DAP: A9/AUTO/VERN, if desired

CRT

<table>
<thead>
<tr>
<th>SM 94 PDRS CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>PL ID - ITEM 3 +3 [4] EXEC</td>
</tr>
<tr>
<td>PL INIT ID - ITEM 24 +3 [4] EXEC</td>
</tr>
</tbody>
</table>

DAP ROT: PULSE/PULSE/PULSE
DAP: A9/MAN/VERN

OPR CMD to IC

-938, -7, -660, 0, 45, 0 GF 2

-995, +50, -580, 305, 330, 325 GF 5

<table>
<thead>
<tr>
<th>SY</th>
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<th>EP</th>
<th>WP</th>
<th>WY</th>
<th>WR</th>
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<tr>
<td>-35.2</td>
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<td>-65.5</td>
<td>5.5</td>
<td>3.1</td>
</tr>
</tbody>
</table>

BRAKES - ON (tb-ON)

A7

CCTV - VTR RCD - D, zoom in on EE

R11

VTR - √Tape

FS 3-2

STS-8/FIN
<table>
<thead>
<tr>
<th>VTR pb</th>
<th>PLAY, RCD</th>
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</thead>
<tbody>
<tr>
<td>RATE sw</td>
<td>COARSE</td>
</tr>
<tr>
<td>BRAKES</td>
<td>OFF (tb-OFF)</td>
</tr>
<tr>
<td>MODE</td>
<td>ORB LD, ENTER</td>
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</tbody>
</table>

**INPUT** 15 sec, then STOP arm while cmd in.

**PAUSE** 60 sec, then VTR pb - STOP

Reconfigure:

OPR CMD to IC (steps 1,2,3 only)

BRAKES - ON (tb-ON)

Check complete

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
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<tbody>
<tr>
<td>THC ON</td>
<td>THC LT, THC IN</td>
<td>RHC + YAW</td>
<td></td>
</tr>
<tr>
<td>BRAKES</td>
<td>RELEASE</td>
<td>SAFING</td>
<td>BRAKES</td>
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<tr>
<td></td>
<td>INPUT</td>
<td></td>
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<td></td>
<td>SAFING - CANCEL</td>
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<td>NOT REQD</td>
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**X**
SINGLE JOINT (CONFIG A)

SETUP

✓ DAP: A9/AUTO/VERN, if desired

CRT

SM 94 PDRS CONTROL
✓ PL ID, ITEM 3 - 3 [4]
✓ PL INIT ID, ITEM 24 - 3 [4]

DAP ROT: PULSE/PULSE/PULSE
DAP: A9/MAN/VERN

OPR CMD to IC

-938, -7, -660, 0, 45, 0 GF 2

-995, +50, -580, 305, 330, 325 GF 5

<table>
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<td>5.5</td>
<td>3.1</td>
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</tbody>
</table>

BRAKES - ON (tb-ON)

A7 CCTV - VTR RCD - D, zoom in on EE
R11 VTR - ✔Tape

FS 3-4

STS-8/FIN
**GF 2 - Priority**

**GF 5 - Priority**

**TEST**

RATE sw - COARSE
VTR pb - PLAY, RCD

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<tbody>
<tr>
<td></td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>BRakes - MODE -</td>
<td>SING</td>
<td>SING</td>
<td>SING</td>
<td>DIR</td>
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</table>

<table>
<thead>
<tr>
<th></th>
<th>SP</th>
<th>WY</th>
<th>WR</th>
<th>SP</th>
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</thead>
<tbody>
<tr>
<td>JOINT sel</td>
<td>---</td>
<td>BRAKES</td>
<td>ON</td>
<td>---</td>
</tr>
</tbody>
</table>

DRIVE '+' 15 sec, then
PAUSE 60 sec, then
VTR pb - STOP

Reconfigure:

BRakes - OFF (tb-OFF)

RETURN to IC (OPR CMD or SINGLE) (steps 1, 2, 3 only)

BRakes - ON (tb-ON)

Check complete

When test complete,

BRakes - ON (tb-ON)
MODE - MAN AUG or SINGLE
- (take out of DIRECT)
SETUP

DAP: [A9/AUTO/VERN], if desired

CRT

[SM 94 PORS CONTROL]

[PL ID, ITEM 3 - 3 [4]]

[PL INIT ID, ITEM 24 - 3 [4]]

DAP ROT: PULSE/PULSE/PULSE
DAP: A9/MAN/VERN

OPR CMD to IC

-1183, +226, -681 8, 53, 47 GF 2

-1272, +294, -697, 10, 323, 1 GF 5

SY | SP | EP | WP | WY | WR
-38 | 34 | -38 | 0 | 0 | 0

BRAKES - ON (tb-ON)

A7 CCTV - VTR RCD - B, zoom in on EE
R11 VTR - ✓Tape

FS 3-6
STS-8/FIN
<table>
<thead>
<tr>
<th>TEST</th>
</tr>
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<tbody>
<tr>
<td>VTR pb - PLAY, RCD</td>
</tr>
<tr>
<td>RATE sw - COARSE</td>
</tr>
<tr>
<td>BRAKES - OFF (tb-OFF)</td>
</tr>
<tr>
<td>MODE - ORB LD, ENTER</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAFING - SAFE (tb-bp)</td>
<td>BRAKES - ON (tb-ON)</td>
</tr>
<tr>
<td>SAFING - CANCEL (tb-gray)</td>
<td></td>
</tr>
<tr>
<td>OPR CMD to IC</td>
<td></td>
</tr>
<tr>
<td>BRAKES - ON (tb-ON)</td>
<td></td>
</tr>
</tbody>
</table>

Reconfigure:

Check complete
SINGLE JOINT (CONFIG C)

**SETUP**

\[ \sqrt{\text{DAP: A9/AUTO/VERN, if desired}} \]

**CRT**

\[ \frac{\sqrt{\text{SM 94 PDRS CONTROL}}}{\sqrt{\text{PL ID, ITEM 3 - 3}} [4]} \]

\[ \frac{\sqrt{\text{PL INIT ID, ITEM 24 - 3}} [4]}{\sqrt{\text{DAP ROT: PULSE/PULSE/PULSE}} \sqrt{\text{DAP: A9/MAN/VERN}}} \]

ORB LD or SINGLE to IC (monitor clearances)

\[ \begin{array}{cccccc}
-1322 & -181 & -650 & 1 & 275 & 212 \text{ GF 2} \\
-1431 & -190 & -677 & 14 & 5 & 359 \text{ GF 5} \\
\end{array} \]

<table>
<thead>
<tr>
<th>SY</th>
<th>SP</th>
<th>EP</th>
<th>WP</th>
<th>WY</th>
<th>WR</th>
</tr>
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<td>25</td>
<td>-10</td>
<td>0</td>
<td>0</td>
<td>180</td>
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</table>

BRAKES - ON (tb-ON)

A7 CCTV - VTR RCD - C, zoom in on EE
R11 VTR - \( \sqrt{\text{Tape}} \)
TEST [SINGLE - Priority①]

RATE sw - COARSE

JOINT - SP

R11

VTR pb - PLAY,RCD

BRAKES - OFF (tb-OFF)

MODE - SINGLE, ENTER

SINGLE DR '+' 15 sec, then
While cmd in: SAFING - SAFE (tb-bp)

Pause 60 sec

VTR pb - STOP

RATE sw - VERN (RATE min tb-ON) ..

SAFING - CANCEL (tb-gray)

SINGLE DR to IC:

<table>
<thead>
<tr>
<th></th>
<th>SP</th>
<th>EP</th>
<th>WP</th>
<th>WY</th>
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</tr>
</thead>
<tbody>
<tr>
<td>GF 2</td>
<td>25</td>
<td>-10</td>
<td>0</td>
<td>0</td>
<td>180</td>
</tr>
<tr>
<td>GF 5</td>
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<td>0</td>
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</tbody>
</table>

BRAKES - ON (tb-ON)

MODE - DIRECT (It-on)

JOINT - SP

R11

VTR pb - PLAY,RCD

DIRECT DR '+' 30 sec, then
RELEASE input

Pause 60 sec

VTR pb - STOP

BRAKES - ON (tb-ON)

MODE - MAN AUG or SINGLE
   (take out of DIRECT)

RATE sw - COARSE (as reqd)

CONTINUED NEXT PAGE
Reconfigure - GF 2 ONLY:
BRAKES - OFF (tb-OFF)
MODE - ORB LD, ENTER
Drive to $X = -1120$, then
$Y = 0$
MODE - SINGLE, ENTER
Drive WR = +60
BRAKES - ON (tb-ON)
RMS/PRCS INTERACTION
RMS/PRCS INTERACTION

1 SETUP (CONFIG E) - Priority 1

/DAP: A9/AUTO/VERN, if desired

CRT

[SM 94 PDRS CONTROL]
PL ID - ITEM 3 +3 [4]
PL INIT ID - ITEM 24 +3 [4]

DAP TRANS: PULSE/PULSE/PULSE
DAP ROT: PULSE/PULSE/PULSE
DAP: A9/MAN/VERN

Before OPR CMD,
MODE - SINGLE, ENTER
Drive SY = 0

OPR CMD to IC

-754, -333, -1080, 217, 65, 264 GF 2

-774, -370, -1185, 79, 19, 344 GF 5

<table>
<thead>
<tr>
<th>SY</th>
<th>SP</th>
<th>EP</th>
<th>WP</th>
<th>WY</th>
<th>WR</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>90</td>
<td>-10</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

BRAKES - ON (tb-ON)

A7    CCTV - VTR RCD - B, zoom in on EE
R11   VTR - /Tape

014:E,  /cb AFT DDU (two) - c1
016:E
016   ASA 4 - ON
A6    SENSE - -X ..
      FLT CNTLR PWR - ON

Change DAP B to B12
Priority

_TEST (CONFIG E)_

✓_BRAKES - ON (tb-ON)_

_DAP ROT: PULSE/PULSE/PULSE_

_DAP: B12/MAN/NORM_

R11

_VTR pb - PLAY,RCD_

Fire 1st pulse

Pause 2 min, then

Fire 2nd pulse

Pause 2 min, then

R11

_VTR pb - STOP_

✓_RMS IC (0,90,-10,0,0,0)_

_DAP: B12/MAN/VERN_

_DAP ROT: DISC/DISC/DISC (damp rates)_

Check complete

FS 4-3

STS-8/FIN
SETUP (CONFIG B) (Priority - See FS 4-6)

CRT

SM 94 PDRS CONTROL

PL ID, ITEM 3 - 3 [4]

PL INIT ID, ITEM 24 - 3 [4]

DAP ROT: PULSE/PULSE/PULSE

DAP: B12/MAN/VERN

If coming from config E

MODE - SINGLE, ENTER

DRIVE SY = -90

OPR CMD to IC

-680, -263, -1105, 357, 20, 145 GF 2

-680, -281, -1217, 90, 9, 70 GF 5

<table>
<thead>
<tr>
<th>SY</th>
<th>SP</th>
<th>EP</th>
<th>WP</th>
<th>WY</th>
<th>WR</th>
</tr>
</thead>
<tbody>
<tr>
<td>-90</td>
<td>90</td>
<td>-10</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

BRAKES - ON (tb-ON)

A7 CCTV - VTR RCD - 8, zoom in on EE

R11 VTR - √Tape
014:E, cb AFT DDU (two) - c1
016:E
016
ASA 4 - ON
SENSE - -X --
FLT CNTRLR PWR - ON

TEST (CONFIG B)

<table>
<thead>
<tr>
<th>BRakes</th>
<th>SAFING</th>
<th>MODE</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<tr>
<td>ON</td>
<td>CANCEL</td>
<td>--</td>
<td>OFF</td>
<td>SAFE</td>
<td>--</td>
<td>--</td>
<td>OFF</td>
<td>CANCEL</td>
</tr>
<tr>
<td>OFF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SINGLE</td>
</tr>
</tbody>
</table>

DAP ROT: PULSE/PULSE/PULSE
DAP: B12/MAN/NORM

VTR pb - PLAY, RCD

Fire 1st pulse
+P TAIL UP
-R PORT WING DN
Pause 2 min
Fire 2nd pulse
-P TAIL DN
-R PORT WING UP
Pause 2 min
VTR pb - STOP

√RMS IC (-90,90,-10,0,0,0)

DAP: B12/MAN/VERN
DAP ROT: DISC/DISC/DISC (damp rates)

Check complete

CONTINUED NEXT PAGE
After last step,
  BRAKES - ON (tb-ON)
  FLT CNTLR PWR - OFF
  ASA 4 - OFF

### GF 2

<table>
<thead>
<tr>
<th>Test</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<tr>
<td>Priority</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
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### GF 5

<table>
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<th>Test</th>
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<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priority</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>
LSS VIBRATION DAMPING TEST
LSS VIBRATION DAMPING TEST
(Grapple Fixture 2 only)

1  SETUP (CONFIG B)

✓DAP: A9/AUTO/VERN, if desired

CRT

- SM 94 PDRS CONTROL
- PL ID - ITEM 3 +3 EXEC
- PL INIT ID - ITEM 24 +3 EXEC

DAP TRANS: PULSE/PULSE/PULSE
DAP ROT: PULSE/PULSE/PULSE
DAP: A9/MAN/VERN

OPR CMD to IC

-680, -263, -1105, 357, 20, 145 GF 2

SY  SP  EP  WP  WY  WR
-90  90  -10  0   0   0

BRAKES - ON (tb-ON)

A7  CCTV - VTR RCD - B, zoom in on EE
R11  VTR - V/Tape

FS 5-2  STS-8/FIN
014:E, cb AFT DDU (two) - c1
016:E
ASA 4 - ON
SENSE - X
FLT CNTLR PWR - ON

Change DAP B to B13

Priority

<table>
<thead>
<tr>
<th>TEST (CONFIG B)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRAKES SAFING</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>MODE</td>
<td>CANCEL</td>
<td>CANCEL</td>
<td>SAFE</td>
<td>CANCEL</td>
</tr>
<tr>
<td>DAP ROT: PULSE/PULSE/PULSE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DAP: B13/MAN/NORM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R11 VTR pb - PLAY,RCD</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fire pulse</td>
<td>-R PORT WING UP</td>
<td>+R PORT WING ON</td>
<td>+R PORT WING ON</td>
<td>-R PORT WING UP</td>
</tr>
<tr>
<td>Pause 2 min, then</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R11 VTR pb - STOP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

√RMS IC (-90,90,-10,0,0,0) | NOT READ |

DAMP RATES AFTER TESTS 2,4 ONLY
DAP: B13/MAN/VERN
DAP ROT: DISC/DISC/DISC N/A
Check complete | | | |

After last step,
FLT CNTLR PWR - OFF

FS 5-3
STS-8/FIN
SETUP (CONFIG J)

CRT

SM 94 PDRS CONTROL
✓PL ID, ITEM 3 - 3
✓PL INIT ID, ITEM 24 - 3

DAP ROT: PULSE/PULSE/PULSE
✓DAP: B13/MAN/VERN

Before OPR CMD,
MODE - SINGLE, ENTER
Drive EP = -50
WR = +25

OPR CMD to IC

<table>
<thead>
<tr>
<th>SY</th>
<th>SP</th>
<th>EP</th>
<th>WP</th>
<th>WY</th>
<th>WR</th>
</tr>
</thead>
<tbody>
<tr>
<td>-82.6</td>
<td>94.0</td>
<td>-72.7</td>
<td>-41.0</td>
<td>-7.0</td>
<td>197.5</td>
</tr>
</tbody>
</table>

BRAKES - ON (tb-ON)

A7
CCTV - VTR RCD - B, zoom in on EE

R11
VTR - √ Tape
### TEST (CONFIG J)

<table>
<thead>
<tr>
<th>BRAKES SAFING MODE</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAP ROT: PULSE/PULSE/PULSE</td>
<td>OFF CANCEL SINGLE</td>
<td>OFF CANCEL SINGLE</td>
<td>OFF SAFE</td>
<td>ON CANCEL</td>
</tr>
<tr>
<td>DAP: B13/MAN/NORM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>R11 VTR pb - PLAY,RCD</th>
<th>-R PORT WING UP</th>
<th>+R PORT WING ON</th>
<th>+R PORT WING DN</th>
<th>-R PORT WING UP</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Pause 2 min, then R11 VTR pb - STOP</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>RMS IC (-82.6, 94.0, -72.7, -41.0, -7.0, 197.5)\</th>
<th></th>
<th></th>
<th>NOT REQD</th>
</tr>
</thead>
</table>

**DAMP RATES AFTER TESTS 2,4 ONLY**
- DAP: B13/MAN/VERN
- DAP ROT: DISC/DISC/DISC N/A
- N/A

Check complete

---

After last step,
- A6 FLT CNTLR PWR - OFF
- 016 ASA 4 - OFF

---

FS 5-5 STS-8/FIN
ORBITER/RMS DYNAMIC INTERACTION
(Grapple Fixture 5 only)
Priority 2

✓ DAP: A9/AUTO/VERN, if desired

CRT

<table>
<thead>
<tr>
<th>SM 94 PDRS CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>PL ID - ITEM 3 +4 EXEC</td>
</tr>
<tr>
<td>PL INIT ID - ITEM 24 +4 EXEC</td>
</tr>
</tbody>
</table>

DAP ROT: PULSE/PULSE/PULSE
DAP: A9/MAN/VERN

OPR CMD to IC

-608, +38, -1187, 91, 357, 90 GF 5

BRAKES - ON (tb-ON)

<table>
<thead>
<tr>
<th>SY</th>
<th>SP</th>
<th>EP</th>
<th>WF</th>
<th>WY</th>
<th>WR</th>
</tr>
</thead>
<tbody>
<tr>
<td>-103.2</td>
<td>75.3</td>
<td>-40.0</td>
<td>32.7</td>
<td>4.4</td>
<td>7.5</td>
</tr>
</tbody>
</table>
MADS RECVR PWR - PCM/WB ENA
WB/ACIP PCM - ON

BRAKES - OFF (tb-OFF)
MODE - ORB LD, ENTER
RATE sw - COARSE

THC IN for 15 sec, release input
Pause 30 sec

THC LEFT for 15 sec, release input
Pause 30 sec

BRAKES - ON (tb-ON)

MADS WB/ACIP PCM - CMD

tell MCC when through.
AUTO MODE EVALUATION (UNLOADED & LOADED)
LOADED & UNLOADED AUTO SEQUENCE
GF 2, GF 5 - Priority 1
UNLD - Priority 3

NOTE
Characters in boxes refer to unloaded auto sequence. For unloaded auto sequence, disregard 16mm Camera ops

A7
CCTV - document auto sequence
VTR - √Tape

√DAP: A9/AUTO/VERN, if desired

R11

CRT
SM 94 PDRS CONTROL
PL ID - ITEM 3 +2 [5] | 0 | EXEC
PL INIT ID - ITEM 24 +2 [5] | 0 | EXEC

DAP ROT: PULSE/PULSE/PULSE
DAP: A9/MAN/VERN

*GF2 - If coming from CONFIG J
Drive SY = -50 and WR = +130
before OPR CMD

Monitor direction of WR during OPR CMD
(√WR = -37.8 at INITIAL PT)

OPR CMD to pt 1, PL ID 2 [5] | 0 |

-802, -9, -699, 0, 0, 0 GF 2

-892, +7, -683, 270, 315, 270 GF 5

-892, -64, -754, 270, 315, 271 UNLD

CONTINUED NEXT PAGE
SY | SP | EP | WP | WY | WR
-29.6 | 96.2 | -77.7 | -95.3 | -22.0 | -37.8

BRAKES - ON (tb-ON)

CRT
SM 94 PDRS CONTROL
PL ID - ITEM 3 +1 EXEC
PL INIT ID - ITEM 24 +1 EXEC
AUTO MODE - ITEM 13 +1 EXEC

as desired

R11
VTR pb - PLAY, RCD
BRAKES - OFF (tb-OFF)
MODE - AUTO 1, ENTER (READY lt-on)

pt 1
-892, 0, -690, 0, 0, 0 (INITIAL)

\[ \text{AUTO SEQ - PRO (\checkmark IN PROG lt-on)} \]
\[ \checkmark \text{Moves: UP} \]

pt 2
-892, 0, -750, 0, 0, 0 (PAUSE)

\[ \text{AUTO SEQ - PRO (\checkmark IN PROG lt-on)} \]
\[ \checkmark \text{Rotation only} \]

pt 3
-892, 0, -750, 0, 0, 45 (PAUSE)

\[ \text{AUTO SEQ - PRO (\checkmark IN PROG lt-on)} \]
\[ \checkmark \text{Moves: FWD, STBD, UP} \]

pt 4
-792, +100, -850, 270, 0, 45 (PAUSE)

\[ \checkmark \text{Exposure w/Spotmeter} \]

W9
16mm Camr - on (for -2 min) during RMS motion (next step)

\[ 4.00 \]
AUTO SEQ - PRO (√IN PROG lt-on)
√Moves: AFT, PORT, UP thru FLYBY

pt 5  -892, 0, -900, 0, 0, 45 (FLYBY)

then,
√Moves: DOWN thru FLYBY

pt 6  -892, 0, -750, 0, 0, 45 \( \{3.00(FLYBY) \) 

then,
√Rotation only

pt 7  -892, 0, -750, 0, 0, 0 (FLYBY)

then,
√Moves: DOWN 200

pt 8  -892, 0, -690, 0, 0, 0 (FINAL)

√AUTO SEQ lts - off
Pause 30 sec, then

R11  VTR pb - STOP
BRAKES - ON (tb-ON)
W9   16mm Camr - off
NOMINAL BERTH
1 SETUP

A7 CCTV - VTR RCD - MUX B&C, Alt with D document berth
R11 VTR - Tape, audio
   ✓DAP: A9/AUTO/VERN, if desired

CRT
   ✓SM 94 PDRS CONTROL
   ✓PL ID, ITEM 3 - 2 [5]
   ✓PL INIT ID, ITEM 24 - 2 [5]
   DAP ROT: PULSE/PULSE/PULSE
   DAP: A9/MAN/VERN

Mnvr to above berthed position

-1018, 0, -600, 0, 0, 0

BRAKES - ON (tb-ON)

2 BERTH/LATCH PFTA

R11 VTR pb - PLAY,RCD
RATE sw - VERN (RATE MIN tb-ON), near guides
BRAKES - OFF (tb-OFF)
MODE - ORB LD, ENTER

A6 PL RETEN PL SEL - 1
✓Exposure w/Spotmeter
W9 16mm Camr - on (till end of film)
   Berth PFTA
   ✓PL RETEN RDY 1,2,3,4 tb - gray

....IF NEXT ACTIVITY IS DIRECT DRIVE UNBERTH....

   BRAKES - ON (tb-ON)
   Go to DIR DR UNBERTH, Step 3, UNBERTH PFTA
PL BAY MECH PWR SYS (two) - ON
PL RETEN LOGIC PWR SYS (two) - ON
Note any single motor times (> 30 sec)
PL RETEN LAT 5 - LAT (tb-LAT), 60 sec max - OFF
√RDY 1,2,3,4,5 (five) tb - gray
LAT 1,4 - LAT (tb-LAT), 60 sec max - OFF
LAT 2,3 - LAT (tb-LAT), 60 sec max - OFF
PL SEL - MON
LOGIC PWR SYS (two) - OFF

PL BAY MECH PWR SYS (two) - OFF
VTR pb - STOP
16mm Camr - off

3 RELEASE PFTA

CCTV - MON 2 - RMS/Wrist (zoom out)

EE MODE - AUTO
RATE sw - VERN (RATE min tb-ON)

BRAKES - OFF (tb-OFF)
MODE - END EFF, ENTER

When OPEN tb - grav, mnvr arm away from grapple fixture
EE RELEASE sw - depress (mom)

√

(23 sec max)

Mnvr arm clear of Orbiter, payload

BRAKES - ON (tb-ON)
EE MODE - OFF
This Page Intentionally Blank
DIRECT DRIVE UNBERTH
GF 2 - Priority 1
GF 5 - Priority 2

1. GRAPPLING PFTA GF 2 [5]

A7 CCTV - MON 2 - RMS/Wrist (zoom out) ..
✓Target overlay attached to MON 2
R11 VTR - ✓Tape, audio
✓DAP: A9/AUTO/VERN

CRT

SM 94 PDRS CONTROL
PL ID - ITEM 3 +2 [5] EXEC

BRAKES - OFF (tb-OFF)
MODE - ORB UNL, ENTER
Mnvr to grapple fixture
X = -1108 GF 2
X = -919 GF 5

When grapple fixture in view,
EE MODE - AUTO
MODE - END EFF, ENTER
Mnvr to grapple envelope
EE CAPTURE sw - depress (mom)
✓ (23 sec max)

EE MODE - OFF ..
BRAKES - ON (tb-ON)

Record POS/ATT and JOINT ANGLES
TRUNNION RELEASE

A7 CCTV - VTR RCD - MUX B&C, Alt with D document unberth
R11 VTR pb - PLAY,RCD
R13 PL BAY MECH PWR SYS (two) - ON
A6 PL RETEN PL SEL - 1
LOGIC PWR SYS (two) - ON

Note any single motor times (> 30 sec)
PL RETEN LAT 1,4 - REL (tb-REL), 60 sec max
- OFF
LAT 2,3 - REL (tb-REL), 60 sec max
- OFF
LAT 5 - REL (tb-REL), 60 sec max
- OFF
PL SEL - MON
LOGIC PWR SYS (two) - OFF
R13 PL BAY MECH PWR SYS (two) - OFF
UNBERTH PFTA

DAP ROT: PULSE/PULSE/PULSE
DAP: A9/MAN/VERN

**BRAKES - ON (tb-ON)
MODE - DIRECT (1t-on)**

Mnvr PFTA to -5 ft above guides, using the control scheme below

<table>
<thead>
<tr>
<th>Desired PL Motion</th>
<th>GF 2 Input</th>
<th>GF 5 Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>+XORB</td>
<td>-WP</td>
<td>-EP</td>
</tr>
<tr>
<td>+YORB</td>
<td>-SY</td>
<td>-SY</td>
</tr>
<tr>
<td>-ZORB</td>
<td>+SP, +EP</td>
<td>+SP</td>
</tr>
<tr>
<td>-PORB</td>
<td>-WP</td>
<td>-WP</td>
</tr>
<tr>
<td>+YORB</td>
<td>+WR</td>
<td>+WY</td>
</tr>
<tr>
<td>+RORB</td>
<td>-WY</td>
<td>+WR</td>
</tr>
</tbody>
</table>

When PFTA is 5 ft above guides,

**IF NEXT ACTIVITY IS DIRECT DRIVE BERTH**

- BRAKES - OFF (tb-OFF)
- MODE - ORB LD, ENTER
- Input position/attitude deltas
- BRAKES - ON (tb-ON)
- Go to DIR DR BERTH, Step 2 BERTH/LATCH PFTA

- BRAKES - OFF (tb-OFF)
- MODE - ORB LD, ENTER
- Mnvr to Z = -600
- BRAKES - ON (tb-ON)

R11 VTR pb - STOP
DIRECT DRIVE BERTH
1 SETUP

A7 CCTV - VTR RCD - MUX B&C, Alt with D, ELBOW
  document berth

R11 VTR - Tape, audio

/DAP: A9/AUTO/VERN

CRT

<table>
<thead>
<tr>
<th>SM 94 PDRS CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>/PL ID, ITEM 3 - 2 [5]</td>
</tr>
<tr>
<td>/PL INIT ID, ITEM 24 - 2 [5]</td>
</tr>
</tbody>
</table>

DAP ROT: PULSE/PULSE/PULSE
DAP: A9/MAN/VERN

OPR CMD to above berthed position

-1018, 0, -600, 0, 0, 0,

Mnvr to approx 5 ft above guides (Z = -485)

BRAKES - OFF (tb-OFF)
MODE - ORB LD, ENTER
Input position/attitude deltas
BRAKES - ON (tb-ON)

2 BERTH/LATCH PFTA

A6 VTR pb - PLAY, RCD
PL RETEN PL SEL - 1
MODE - DIRECT (lt-on)
Berth PFTA using the control scheme below

<table>
<thead>
<tr>
<th>Desired PL Motion</th>
<th>GF 2 Input</th>
<th>GF 5 Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>-XORB</td>
<td>+WP</td>
<td>+EP</td>
</tr>
<tr>
<td>-YORB</td>
<td>+SY</td>
<td>+SY</td>
</tr>
<tr>
<td>+ZORB</td>
<td>-SP,-EP</td>
<td>-SP</td>
</tr>
<tr>
<td>+PORB</td>
<td>+WP</td>
<td>+WP</td>
</tr>
<tr>
<td>-YORB</td>
<td>-WR</td>
<td>-WY</td>
</tr>
<tr>
<td>+RORB</td>
<td>-WY</td>
<td>+WR</td>
</tr>
</tbody>
</table>

A6

\( \sqrt{4} \) PL RETEN RDY 1,2,3,4 (five) tb - gray
BRAKES - OFF (tb-OFF)
MODE - TEST, ENTER

R13

PL BAY MECH PWR SYS (two) - ON
PL RETEN LOGIC PWR SYS (two) - ON

Note any single motor times (> 30 sec)
PL RETEN LAT 5 - LAT (tb-LAT), 60 sec max - OFF
\( \sqrt{5} \) RDY 1,2,3,4,5 tb - gray
LAT 1,4 - LAT (tb-LAT), 60 sec max - OFF
LAT 2,3 - LAT (tb-LAT), 60 sec max - OFF
PL SEL - MON
LOGIC PWR SYS (two) - OFF

R13

PL BAY MECH PWR SYS (two) - OFF
BRAKES - ON (tb-ON)

R11

VTR pb - STOP
RELEASE PFTA

CCTV - MON 2 - RMS/Wrist (zoom out)

EE MODE - AUTO
RATE sw - VERN (RATE min tb-ON)

BRAKES - OFF (tb-OFF)
MODE - END EFF, ENTER

When OPEN tb - gray, mnvr away from grapple fixture
EE RELEASE sw - depress (mom)

✓ [ underwent process ] (23 sec max)

Mnvr arm clear of Orbiter, payload
BRAKES - ON (tb-ON)
EE MODE - OFF
OFF-NOMINAL OPERATIONS
PFTA GRAPPLE FIXTURE 2 BACKOFF - SINGLE JOINT
(Motion of target on CCTV monitor)

√OPEN tb - gray

A7  CCTV - MON 2 - RMS/Wrist (ZOOM OUT) ..

Drive joints in order indicated until end effector is clear of grapple fixture
PPTA GRAPPLE FIXTURE 5 BACKOFF - SINGLE JOINT
(Motion of target on CCTV monitor)

✓ OPEN tb - gray

A7 CCTV - MON 2 - RMS/Wrist (ZOOM OUT) .

Drive joints in order indicated until end effector is clear of grapple fixture
### Positions/Attitudes for Backed Off - End Effector

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*End effector is backed off 16 in. from rigidized position*
HIGH PRIORITY MENU

The order of tests listed below represents the relative priority.
OPR CMD to IC is not verified for this sequence.

GF 5

1  NOMINAL UNBERTH, FS 1-1 (20 min)

2  RMS/PRCS INTERACTION (40 min)
   Step 1, SETUP (CONFIG E), FS 4-2 thru FS 4-3
   TEST (CONFIG E), FS 4-3
   Step 2, SETUP (CONFIG B), FS 4-4 thru FS 4-5
   TEST (CONFIG B), TEST # 1, 2 ONLY, FS 4-5

3  CONTROL SYSTEM EVALUATION (35 min)
   Step 4, SINGLE JOINT (CONFIG C), FS 3-8 thru
   FS 3-9
   Step 2, SINGLE JOINT (CONFIG A), FS 3-4
   TEST # 1, 2, 4 ONLY, FS 3-5

4  RMS/FCS TESTS (25 min)
   Step 4, MNVR RMS TO LDEF CONFIG, FS 2-9
   Step 5, ROT PULSE INPUTS, FS 2-9

5  NOMINAL BERTH, FS 8-1 (25 min)

GF 2

6  DIRECT DRIVE UNBERTH, FS 9-1 (25 min)

If time permits, proceed with the following tests.
Else at RMS POWERDOWN minus 40 min.
   Go to DIRECT DRIVE BERTH

7  RMS/PRCS INTERACTION (20 min)
   Step 1, SETUP (CONFIG E), FS 4-2 thru FS 4-3
   TEST (CONFIG E), FS 4-3

CONTINUED NEXT PAGE
CONTROL SYSTEM EVALUATION (20 min)

Step 4, SINGLE JOINT (CONFIG C), FS 3-8 thru FS 3-10

RMS/FCS TESTS (30 min)

Step 1, SETUP IC, FS 2-2
Step 2, LOADED ARM MOTION, TEST # 2,4 ONLY, FS 2-3
Step 3, I-LOAD SENSITIVITY TEST FS 2-4 thru FS 2-5

DIRECT DRIVE BERTH, FS 10-2 (40 min)
GF 2

1. NOMINAL UNBERTH, FS 1-1
2. RMS/FCS TESTS, FS 2-1

3. RMS/PRCS INTERACTION
   Step 1, SETUP (CONFIG E), FS 4-2 thru FS 4-3
   TEST (CONFIG E), FS 4-3
   Step 2, SETUP (CONFIG B), FS 4-4 thru FS 4-5
   TEST (CONFIG B),
   TEST # 1,2,4,6 ONLY, FS 4-5

4. LSS VIBRATION DAMPING TEST
   Step 1, SETUP (CONFIG B), FS 5-2 thru FS 5-3
   TEST (CONFIG B), TEST # 1,2 ONLY, FS 5-3
   Step 2, SETUP (CONFIG J), FS 5-4 thru FS 5-5
   TEST (CONFIG J), TEST # 1,2 ONLY, FS 5-5

5. AUTO MODE EVALUATION - LOADED, FS 7-1

6. NOMINAL BERTH, FS 8-1

7. DIRECT DRIVE UNBERTH, FS 9-1
   \[\text{CNTL SYS EVAL} \quad \text{STEP 4, Single joint (CONFIG C)}\]
   FS 3-8 thru 3-10

8. DIRECT DRIVE BERTH, FS 10-1

Delete CONTROL SYSTEM EVALUATION
Delete AUTO MODE EVALUATION - UNLOADED

*35D DEPLOY MENU (FD 3 ONLY)

GF 2

Perform above menu, except
3 RMS/PRCS INTERACTION
   Step 2, TEST (CONFIG B)
   TEST 1,2 ONLY, FS 4-5
4 LSS VIBRATION DAMPING TEST - DELETE

FS 11-7

STS-8/FIN 2
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W0, W1, W2, W3, W4, W5

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W6, W7, W8

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FS 12-3  STS-8/FIN
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