

Payload Powerdown

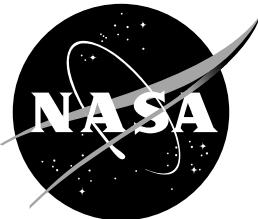
STS-130

**Mission Operations Directorate
Operations Division**

**Final, Rev A
January 15, 2010**

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas



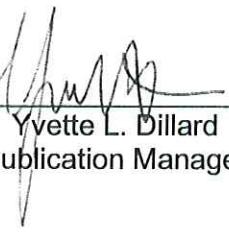
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MISSION OPERATIONS DIRECTORATE

**PAYLOAD POWERDOWN
STS-130**

FINAL, REVISION A
January 15, 2010

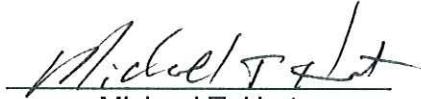
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PL PWR/130/FIN A

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NOTES

1. Section 1 of this book is inserted at the back of the Ascent Pocket Checklist.
2. Sections 2 and 3 of this book are inserted at the back of the Orbit Pocket Checklist.
3. Section 4 of this book is inserted at the back of the Entry Pocket Checklist.

PAYLOAD POWERDOWN
STS-130

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REV A	01/15/10

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* – Omit from flight book

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PL PWRDN
ASC

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PL 1-1

PL PWR/130/A/FIN A

**PL PWRDN
ASC**

PL PWRDN MATRIX

PROCEDURE	ACTION
PWRDN FOR LOSS OF:	
2 CAB FANS	A
CAB PRESS	
(MINOR PWRDN; from step 4)	A
(MAJOR PWRDN; from step 5)	A
AV BAY COOLING/AV BAY FIRE	A (AV BAY 1 only)
2 H ₂ O LOOPS	
[PLT PWRDN, SYS AOA, <u>2 H₂O LOOPS (AOA);</u> (CDR/PLT PWRDNS)]	A
(POST OMS-2)	A
1 FREON LOOP	N/A
2 FREON LOOPS	
[PLT PWRDN, SYS AOA, <u>2 FREON LOOPS (AOA);</u> (CDR/PLT PWRDNS)]	A
(POST OMS-2)	A
HI LOAD EVAP	N/A
FES/1 FC	N/A
2nd FC	A
MN BUS UNDERVOLTS/FC VOLTS	
(from step 6; permanent loss of PL PRI)	N/A
(from step 14; temporary loss of PL PRI)	N/A

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PL 1-2

PL PWR/130/A/FIN A

ACTION

A	PWRDN	PWRUP
MIDDECK PAYLOADS	<p><u>NOTE</u></p> <p>When orbiter power removed, science degradation or loss will occur to GLACIER (120 min)</p> <p><u>GLACIER</u></p> <p>MF28E/G 1. √BATTERY – ON (lt on) 2. cb POWER – op (lt off) ML86B:E 3. cb MNB MAR 1 – op</p>	N/A

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PL 1-3

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PL PWRDN
ORB

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PL 2-1

PL PWR/130/O/FIN A

**PL PWRDN
ORB**

PL PWRDN MATRIX

PROCEDURE	ACTION
PWRDN FOR LOSS OF:	
HI LOAD EVAP	N/A
1 FREON LOOP	PP3A,PP3B (on MCC call) as required*
AV BAY COOLING (from MAL GPC FRP-7)	B
1 FC	PP3A*, PP3B* (on MCC call) as required until ORB kW < 17
FES (ON ORBIT)	PP3A*,PP3B** (on MCC call) as required*
(DEORBIT PREP)	A
MN BUS UNDERVOLTS/FC VOLTS (from step 6; permanent loss of PL PRI)	N/A
(from step 14; temporary loss of PL PRI)	N/A
AV BAY FIRE	B (AV BAY 1 only)
PRIORITY PWRDN GROUP 3	PP3A,PP3B (on MCC call) as required*

*PRIORITY PWRDN 3A (PP3A) contains recoverable Payload Operations Powerdown steps

**PRIORITY PWRDN 3B (PP3B) is a total Payload Powerdown that may cause Payload Operations to be nonrecoverable

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PL 2-2

PL PWR/130/O/FIN A

ACTION

PP3A	PRIORITY PWRDN (Recoverable) (On MCC call only)	PWRUP
<u>PCS</u>	1. Exit programs, power off PCS L11(PDIP 2) 2. DC PWR 2 – OFF	✓MCC
<u>APCU</u>	If APCU 1 is powering NODE 3 LTA Heaters, on MCC GO: A15 3. APCU 1 CONV – OFF OUTPUT – OFF	
<u>OIU</u>	L12U 4. OIU PWR – OFF (tb-bp) (SSP1)	
	If additional powerdown required: 5. Go to PRIORITY PWRDN 3B (PP3B)	

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PL 2-3

PL PWR/130/O/FIN A

PP3B	PRIORITY PWRDN (Non-Recoverable) (On MCC call only)	PWRUP
<u>MIDDECK PAYLOADS</u>		
	<p><u>NOTE</u></p> <p>When orbiter power removed, science degradation or loss will occur to GLACIER (120 min)</p> <p><u>GLACIER</u></p> <p>MF28E/G</p> <ol style="list-style-type: none"> 1. pb Left (MENU) → Press (one time) QUICK STATUS 1/5 2. pb Left (NEXT) → Press (four times) SHUTDOWN 5/5 3. pb Center (SELECT) → Press (one time) SHUTDOWN 1/2 4. pb Center (SELECT) → Press (one time) Confirm Shutdown 5. pb Left (APPLY) → Press (one time) Shutting Down Please Wait 6. √Display Shutdown Complete TURN POWER OFF 7. √BATTERY – ON (lt on) 8. cb POWER – op (lt – off) 9. cb MNB MAR 1 – op <p>ML86B:E</p>	

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PL 2-4

PL PWR/130/O/FIN A

PP3B (Cont)	PRIORITY PWRDN (Non-Recoverable) (On MCC call only)	PWRUP
<u>OBSS¹</u>	10. LCC DEACT (Cue Card, <u>LCS</u>) LCH DEACT (Cue Card, <u>LCS</u>) LDRI/ITVC DEACT (Cue Card, <u>LDRI/ITVC</u>)	
<u>PL BUS DEACT</u>	R1 11. PL CAB – OFF AUX – OFF	

¹ APCU 2 provides power to OBSS and NODE 3 LTA heaters
(string 2)

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PL 2-5

PL PWR/130/O/FIN A

A	PWRDN (to reduce internal cabin heat loads)	PWRUP
<u>ORBITER</u>	Exit software programs, powerdown all non-essential PGSCs and orbiter equipment (OCAC, Ergometer, Battery Chargers, etc)	✓MCC

B	PWRDN	PWRUP
<u>MIDDECK REAR-BREATHER PAYLOADS</u>	<u>NOTE</u> When orbiter power removed, science degradation or loss will occur to GLACIER (120 min) <u>GLACIER</u> MF28E/G 1. ✓BATTERY – ON (It on) 2. cb POWER – op (It off) ML86B:E 3. cb MNB MAR 1 – op	N/A

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PL PWR/130/O/FIN A

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PL SAFING
ORB

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PL 3-1

PL PWR/130/O/FIN A

PL SAFING MATRIX

PROCEDURE	ACTION
9.101 JOINT EXPEDITED UNDOCKING AND SEPARATION, from step 18b (SODF: JOINT OPS, <u>EMERGENCY RESPONSE</u> ; JEUS)	PL SAFING
PWRDN FOR LOSS OF:	
2 CAB FANS	PL SAFING
2 H2O LOOPS	PL SAFING
CAB PRESS	PL SAFING
2nd FC (TIG < 4 hr) (from step 5) (TIG > 4 hr) (from step 15)	PL SAFING PL SAFING
2 FREON LOOPS	PL SAFING

PL SAFING
ORB

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PL 3-2

PL PWR/130/O/FIN A

ACTION	
PL SAFING	
<u>MIDDECK TRANSFER (IF NOT ALREADY PERFORMED)</u>	
If transfer hardware in ODS: 1. Complete transfer to ISS Else: 2. Stow in Middeck	
<u>MIDDECK PAYLOADS</u>	
<u>GLACIER</u>	
MF28E/G	If Glacier Door Captive Locks (two) are unlocked perform:
MA16D	3. Unstow Tools 3/16" Hex Head, 1/4" Drive 4" Ext, 1/4" Drive (40-200 in-lbs) Trq Wrench, 1/4" Drive
MF28E/G	4. ✓Door Latch – Locked (Finger latches fully spread apart and locking flap positioned between finger latches)
	5. Fasten Glacier Door Captive Locks (two), torque to 75 in-lbs using 3/16" Hex Head, 1/4" Drive, 4" Ext, 1/4" Drive, (40-200 in-lbs) Trq Wrench, 1/4" Drive
MA16D	6. Stow tools as required, to original locations
ML86B:E	7. cb MNB MAR 1 – op

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PL 3-3

PL PWR/130/O/FIN A

PL SAFING (Cont)	
<u>SPINAL ELONGATION</u>	
If Spinal Elongation ops in progress:	
8. Remove Spinal Elongation hardware from CDR Seat	
9. Re-install Head Rest and Seat Cushion to nominal config	
10. Return Shoulder harness and lap belt to nominal config	
11. Remove D2X Camera and Multi-use arm, stow	
If ISS hatch still open:	
12. Return Spinal Elongation hardware to ISS	
Else:	
13. Stow Spinal Elongation hardware on Shuttle	
<u>PAYLOAD BUSES</u>	
R1	
14. √PL PRI MNB,FC3,MNC – OFF (tb-OFF)	
15. AUX – OFF	
16. CAB – OFF	
17. √AFT MNB – OFF √MNC – OFF	
Once PL SAFING completed, return to calling procedure, if required	
Once calling procedure completed, stow all non-essential orbiter equipment (OCAC,Cycle Ergometer,Battery Chargers, etc)	

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PL PWR/130/O/FIN A

PL PWRDN – ENTRY

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PL PWRDN
ENT

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PL 4-1

PL PWR/130/E/FIN A

PL PWRDN MATRIX

PROCEDURE	ACTION
PWRDN FOR LOSS OF:	
2 CAB FANS	A
2 H2O LOOPS (ENTRY)	A
CAB PRESS	A
AV BAY COOLING (ENTRY)	A (AV BAY 1 only)
1 FREON LOOP/HI LOAD EVAP (ENTRY)	N/A
FES	N/A
1 FC (ENTRY)	N/A
2 FREON LOOPS (ENTRY)	A
2nd FC (ENTRY)	A
MN BUS UNDERVOLTS/FC VOLTS (from step 6; permanent loss of PL PRI) (from step 14; temporary loss of PL PRI)	N/A N/A

ACTION

A	PWRDN	PWRUP
<u>MIDDECK REAR-BREATHER PAYLOADS</u>		N/A
<u>NOTE</u> When orbiter power removed, science degradation or loss will occur to GLACIER (120 min)		
<u>GLACIER</u> MF28E/G 1. √BATTERY – ON (lt on) 2. cb POWER – op (lt off) ML86B:E 3. cb MNB MAR 1 – op		

PL PWRDN
ENT

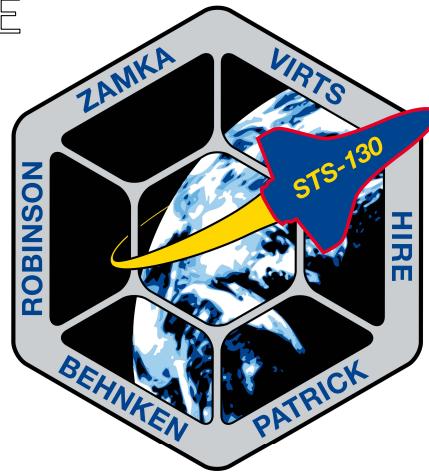
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PL 4-2

PL PWR/130/E/FIN A

Space Shuttle Program
FLIGHT DATA FILE

JSC-48097-130
FINAL, REV A



**PAYLOAD
POWERDOWN**

**STS
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Flight Cover (trim bottom to expose tabs)