

# All Vehicle D&C Procedural Nomenclature

## STS-121 (ULF1.1) Flight Supplement

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**APCU/OIU/MPLM**

**Mission Operations Directorate  
Operations Division**

**Final  
May 5, 2006**

National Aeronautics and  
Space Administration

Lyndon B. Johnson Space Center  
Houston, Texas



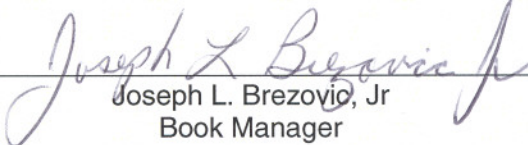


MISSION OPERATIONS DIRECTORATE

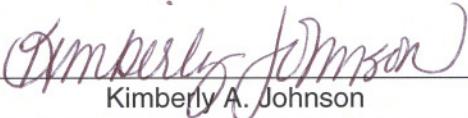
**ALL VEHICLE D&C PROCEDURAL NOMENCLATURE  
PANEL CONFIGURATION  
STS-121 (ULF1.1) FLIGHT SUPPLEMENT**

Final  
May 5, 2006

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Book Manager

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281-244-8325

## NOTES CONCERNING THE STRUCTURE AND PURPOSE OF THIS DOCUMENT

1. This flight supplement provides a standard nomenclature reference source for writing payloads-related crew procedures.
2. This publication addresses STS-121 panel configurations and locations along with the corresponding procedural nomenclature. The format in this flight supplement is analogous to that found in the All Vehicle D&C Procedural Nomenclature.
3. The reader should also reference the notes section of the baseline All Vehicle D&C Procedural Nomenclature for other information pertinent to the use of this supplement.
4. The sources of panel information in this document are
  - Spacecraft Operator Training Group and United Space Alliance Engineering Group “Spacecraft Operators Reference Manual (SORM).”  
<http://usago1.ksc.nasa.gov/usago/orgs/VP005/Sorm1/tocvol1.cfm>. February 16, 2005.
  - Flight Requirements Document (NSTS 17462-121 Rev 013 11-30-2005)
  - Crew Compartment Config DWG STS-121, DWG NO SGD32104444, Engineering Design Control Center.  
<http://edcc.isc.nasa.gov/edccsearch/>

Comments concerning this document should be submitted via email to DO3/J. Brezovic, International Operations Procedures Branch, telephone 281-244-8325.

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## CONTENTS

### SWITCH IDENTITY LEGEND

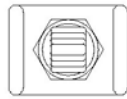
### FLIGHT DECK AFT CONFIGURATION

- L10      Digital Television (DTV)/Shuttle Downlink Data Multiplexer (MUX)  
          Video Input Panel (VIP)  
          Video Tape Recorder (VTR)
  
- L11      Payload Data Interface Panel (PDIP 2)
  
- Standard Switch Panels (SSPs)
- L12      Combined SSP  
          Assembly Power Converter Unit (APCU)/Orbiter Interface Unit (OIU)/Multi Purpose  
          Logistics Module (MPLM)  
          SSP 2 MPLM Keel Cam  
          Payload Data Interface Panel (PDIP 1)
  
- R12      Wireless Video Combined Panels  
          Video Processing Unit (VPU)  
          Wireless Video System  
          Orbiter Space Vision System (OSVS) Patch Panel (OPP)  
          Orbiter Boom Sensor System (OBSS)

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## SYMBOL IDENTITY LEGEND



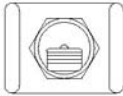
- THREE-POSITION SWITCH (SW)



- THREE-POSITION TALKBACK (TB)



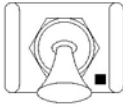
- INDICATORS FOR MOMENTARY SWITCH POSITION



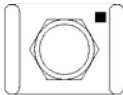
- TWO-POSITION SWITCH (SW)



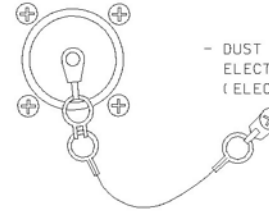
- TWO-POSITION TALKBACK (TB)



- TWO-POSITION LEVER LOCK (LL)  
\* ■ \* INDICATES LOCKED POSITION ON BOTTOM



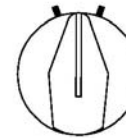
- THREE POSITION LEVER LOCK (LL)  
\* ■ \* INDICATES LOCKED POSITION ON TOP



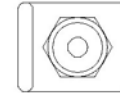
- DUST CAP WITH LANYARD COVERING ELECTRICAL CONNECTOR (ELECT CONN)



- CIRCUIT BREAKER (CB) (PUSH TO CLOSE)



- ROTARY SELECT SWITCH (SEL)



- THREE POSITION TOGGLE (SW)



- TWO-POSITION TOGGLE SWITCH (SW)



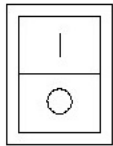
- PUSH BUTTON INDICATOR LIGHTS UP WHEN IN 'ON' POSITION



- 3-WAY SOLENOID VALVE

19409F\_SWIL. ART# 2

## SYMBOL IDENTITY LEGEND (Cont)



- TWO POSITION ROCKER SWITCH



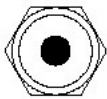
- LED LIGHT



- PHONE CONNECTOR JACK



- CONNECTOR (PIN HOLES NOT SPECIFIC)



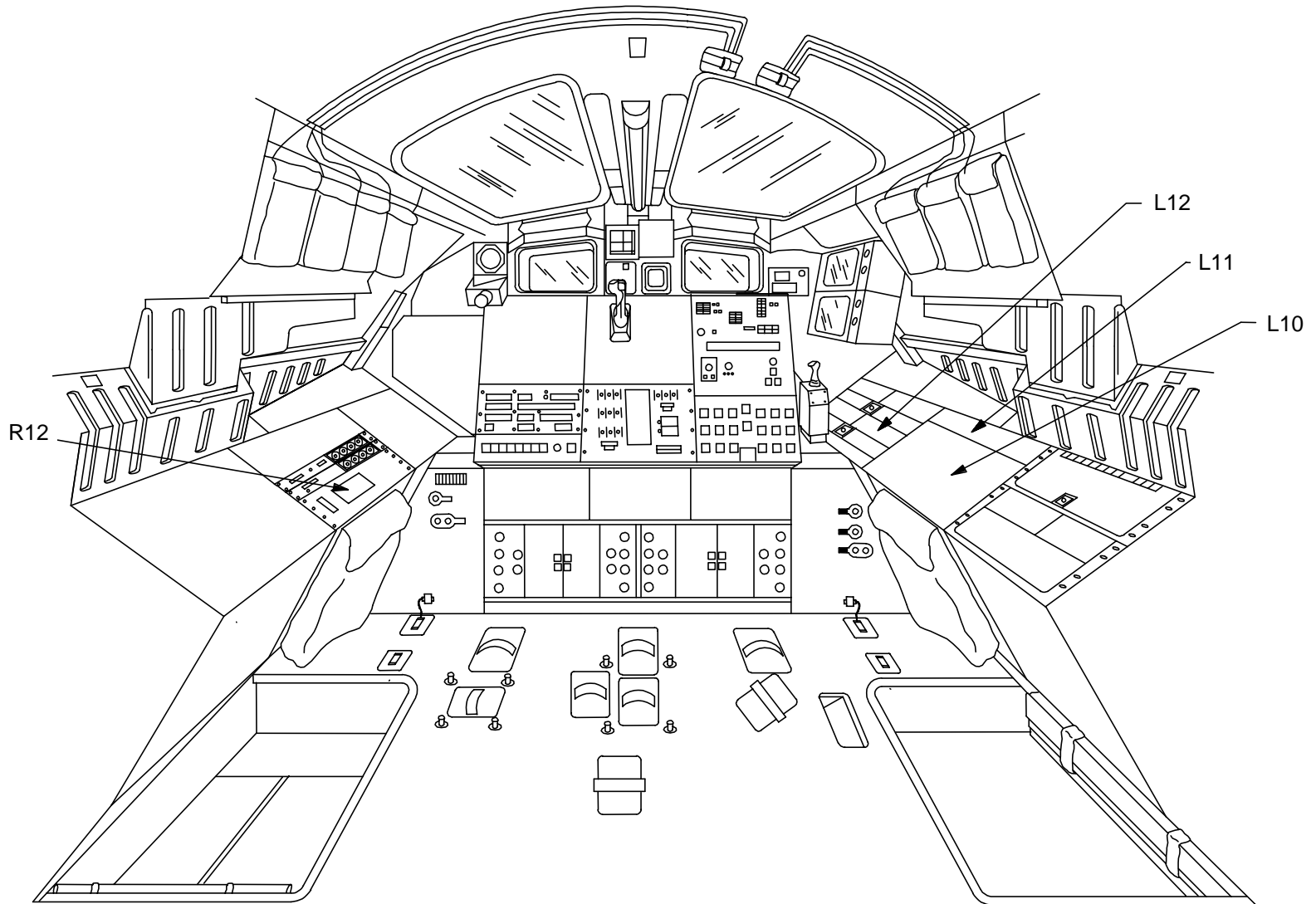
- COAXIAL CONNECTOR



- REMOTE SENSOR

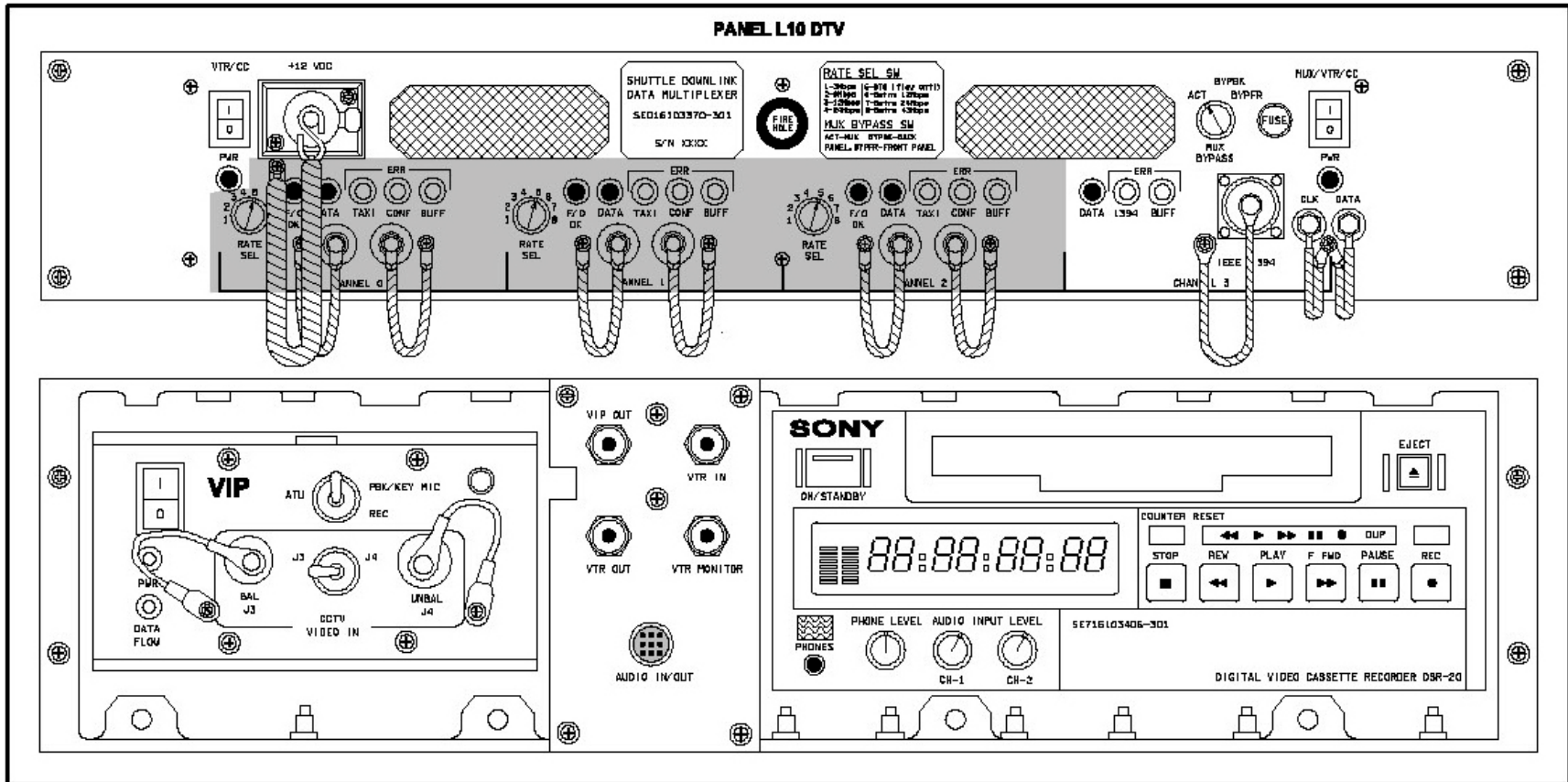
19409F016\_121. ART: 1

# FLIGHT DECK AFT CONFIGURATION



19409001\_121.PNL, 1

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19409F002\_121.PNL\_1

■ Note: This area not applicable for STS-121

PANEL NOMENCLATURE

L10

DTV/SHUTTLE DOWNLINK DATA MULTIPLEXER

VTR/CC PWR – |  
– O

VTR/CC PWR – (LED It)

+12 VDC connector

MUX BYPASS – ACT  
– BYPBK  
– BYPFR

FUSE

MUX/VTR/CC – |  
– O

CHANNEL 3 DATA – (LED It)

CHANNEL 3 ERR 1394 – (LED It)

CHANNEL 3 ERR BUFF – (LED It)

CHANNEL 3 IEEE 1394 connector

CHANNEL 3 MUX/VTR/CC PWR – (LED It)

CHANNEL 3 CLK connector

DATA connector

PROCEDURE NOMENCLATURE

L10

DTV/MUX

VTR/CC PWR – on  
– off

VTR/CC PWR LED – LED on  
– LED off

+12 VDC conn

MUX BYPASS – ACT  
– BYPBK  
– BYPFR

FUSE

MUX/VTR/CC PWR – on  
– off

CH 3 DATA – LED on  
– LED off

CH 3 ERR 1394 – LED on  
– LED off

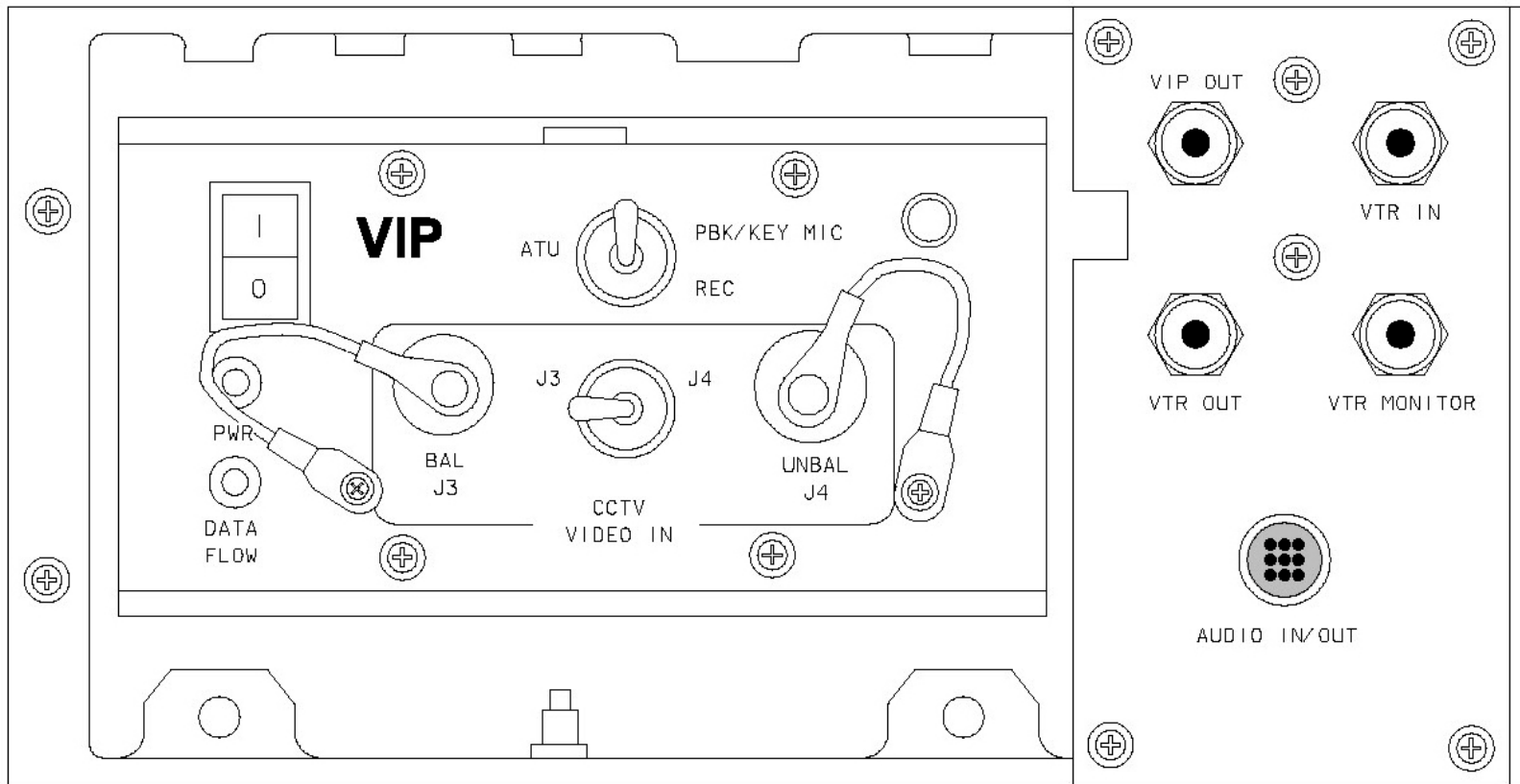
CH 3 ERR BUFF – LED on  
– LED off

CH 3 IEEE 1394 conn

CH 3 MUX/VTR/CC PWR – LED on  
– LED off

CH 3 CLK conn

DATA conn



19409F009\_121. PNL 1

PANEL NOMENCLATURE

L10 (Cont)

VIP

VIP – |  
– O

ATU – PBK/KEY MIC  
– REC

PWR – (LED It)

DATA FLOW – (LED It)

CCTV VIDEO IN BAL – J3

CCTV VIDEO IN – J3  
– J4

CCTV VIDEO IN UNBAL – J4

VIP OUT coaxial connector

VTR IN coaxial connector

VTR OUT coaxial connector

VTR MONITOR coaxial connector

AUDIO IN/OUT connector

PROCEDURE NOMENCLATURE

L10 (Cont)

VIP

VIP PWR – on  
– off

ATU – PBK/KEY MIC  
– REC

PWR – LED on  
– LED off

DATA FLOW – LED on  
– LED off

BAL conn

CCTV VIDEO IN – J3  
– J4

UNBAL conn

VIP OUT conn

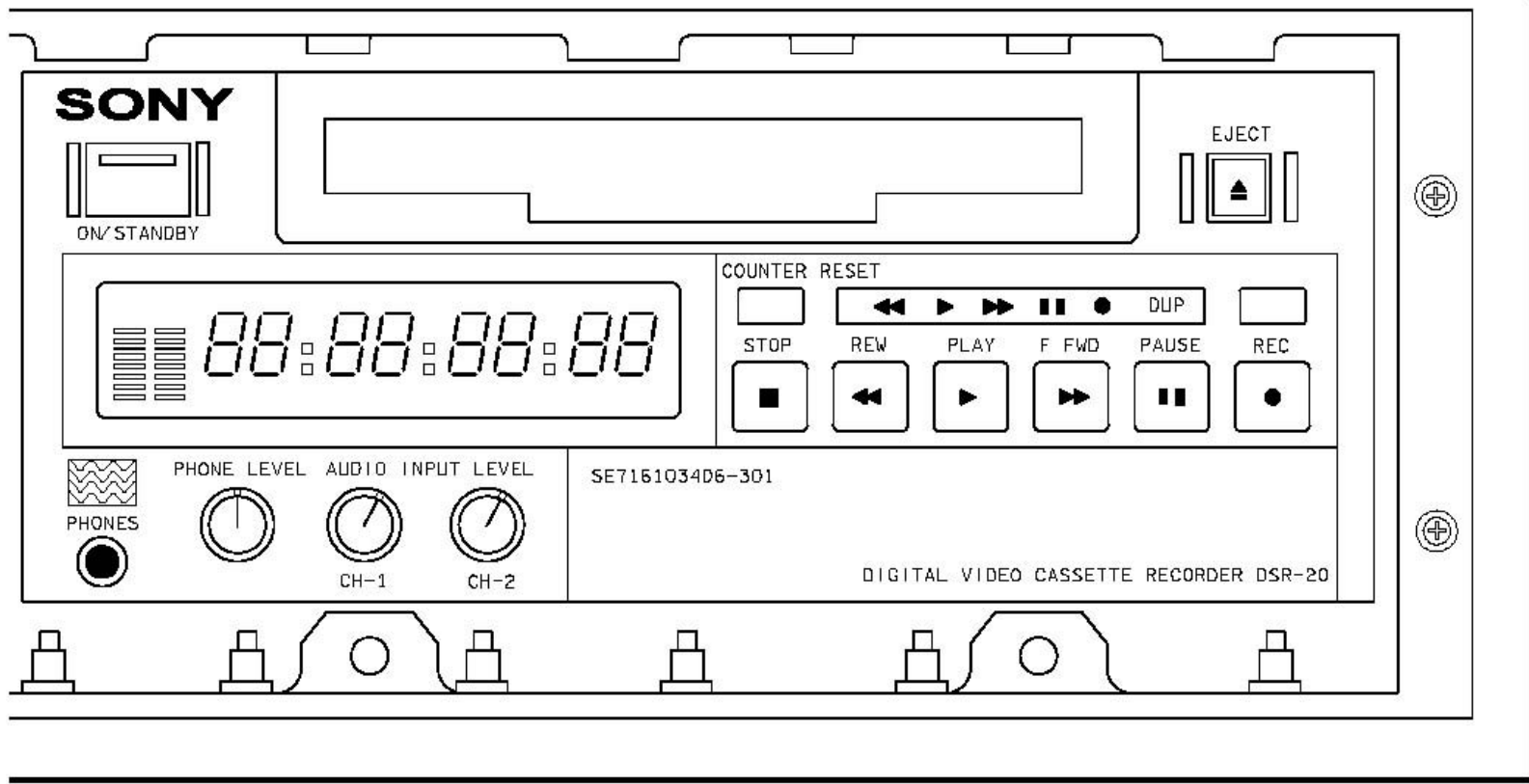
VTR IN conn

VTR OUT conn

VTR MONITOR conn

AUDIO IN/OUT conn





19409F013\_121.PNL; 1

## PANEL NOMENCLATURE

L10 (Cont)

VTR

ON/STANDBY – (pb)

EJECT – (pb)

Display – (LED level Its two columns: left Audio Channel 1,  
right Audio Channel 2)

Timer – (LED Its numbers)

COUNTER RESET – (pb)

STOP – (pb)

REW – (pb)

PLAY – (pb)

F FWD – (pb)

PAUSE – (pb)

REC – (pb)

DUP – (pb) N/A

PHONES connector jack

PHONE LEVEL select

AUDIO INPUT LEVEL CH-1 select

AUDIO INPUT LEVEL CH-2 select

## PROCEDURE NOMENCLATURE

L10 (Cont)

VTR

ON/STANDBY pb – push (LED on)  
– push (LED off)

EJECT pb – push

Display – (LED channel level on)

Timer – (LED numbers)

COUNTER RESET pb – push (display numbers go to 0)

STOP pb – push (LED indicators off)

REW pb – push (LED double left arrow on)

PLAY pb – push (LED right arrow on)

F FWD pb – push (LED double right arrow on)

PAUSE pb – push (LED double vertical arrows on)

REC pb – push (LED dot on)

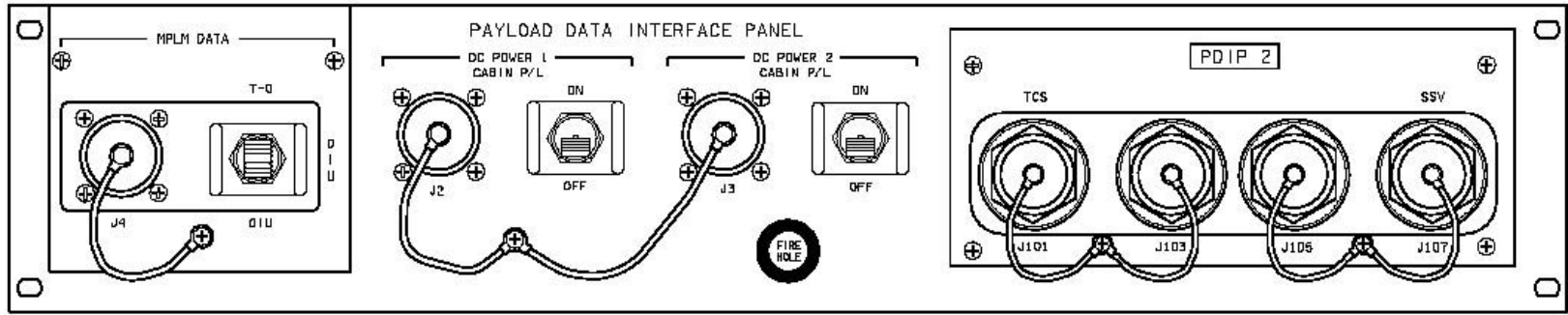
DUP pb – N/A

Phones jack

PHONE LEVEL sel – as reqd

AUDIO INPUT LEVEL CH-1 sel – as reqd (display left column)

AUDIO INPUT LEVEL CH-2 sel – as reqd (display right column)



19409F007\_121. PNL, 1

PANEL NOMENCLATURE

L11

PAYLOAD DATA INTERFACE PANEL

MPLM DATA outlet

MPLM DATA – T-O  
– OIU  
– OIU

DC POWER 1 CABIN P/L outlet

DC POWER 1 CABIN P/L – ON  
– OFF

DC POWER 2 CABIN P/L – outlet

DC POWER 2 CABIN P/L – ON  
– OFF

TCS connector

SSV connector

PROCEDURE NOMENCLATURE

L11

PDIP 2

MPLM DATA outlet

MPLM DATA – T-O  
– OIU  
– OIU

DC PWR 1 outlet

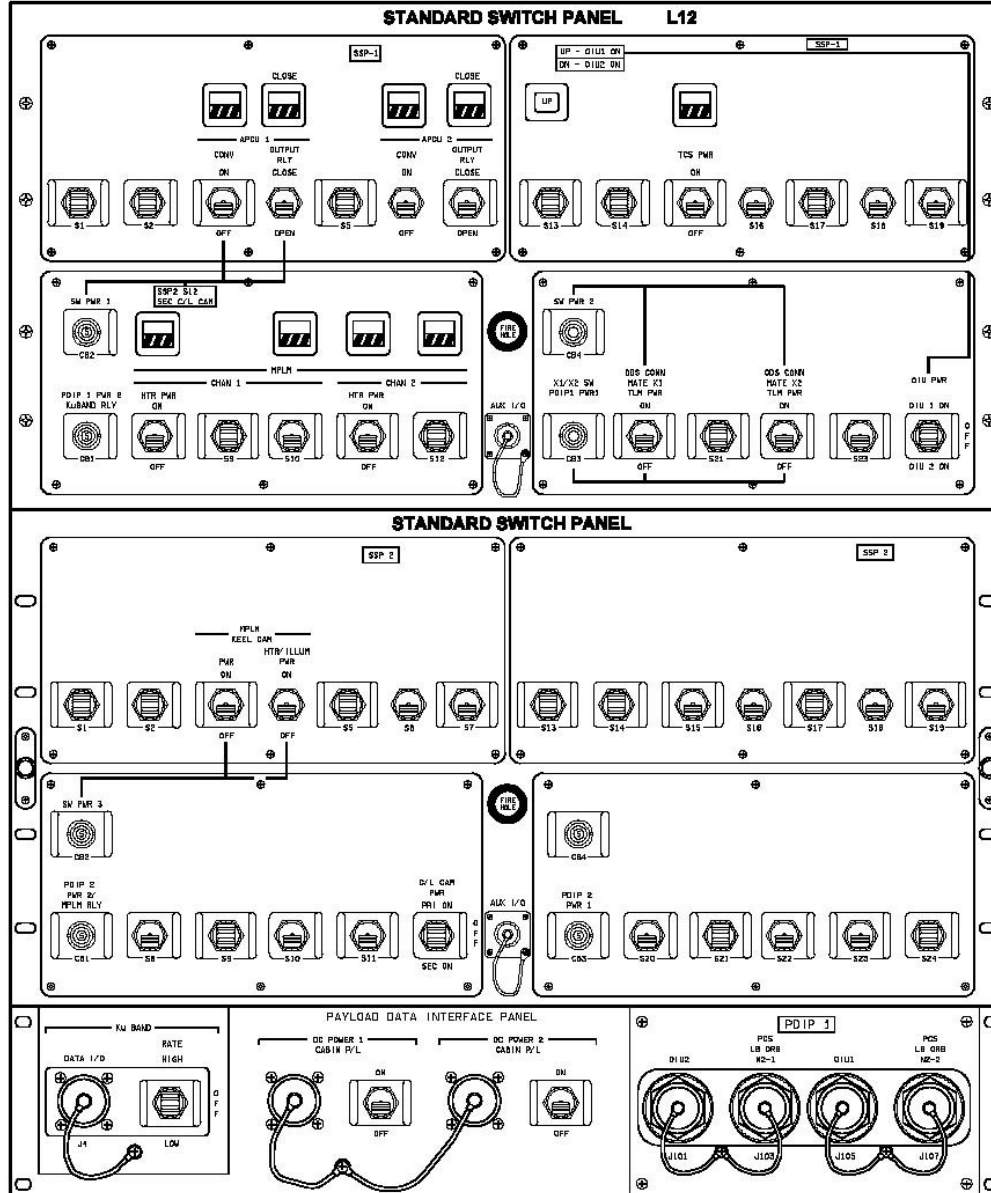
DC PWR 1 – ON  
– OFF

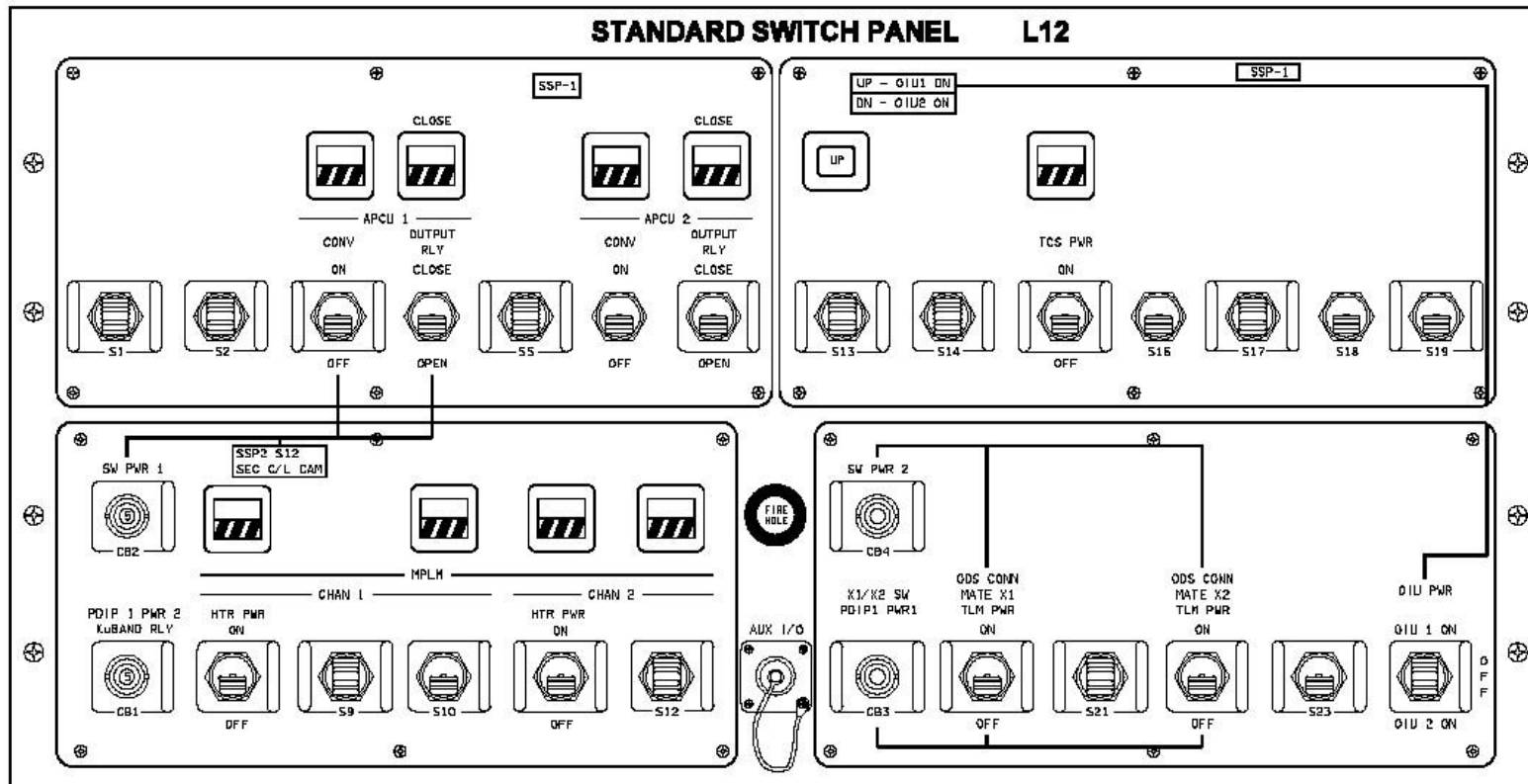
DC PWR 2 outlet

DC PWR 2 – ON  
– OFF

TCS conn

SSV conn





19409F004\_121. PNL 1

PANEL NOMENCLATURE

L12

APCU/OIU/MPLM

APCU 1 CONV – ON  
– OFF

APCU 1 CONV – (tb)

APCU 1 OUTPUT RLY – CLOSE  
– OPEN

APCU 1 CLOSE – (tb)

APCU 2 CONV – ON  
– OFF

APCU 2 CONV – (tb)

APCU 2 OUTPUT RLY – CLOSE  
– OPEN

APCU 2 CLOSE – (tb)

OIU PWR – (tb)

TCS PWR – ON  
– OFF

TCS PWR – (tb)

SW PWR 1 – (cb)

MPLM CHAN 1 HTR PWR ON – (tb)

MPLM CHAN 2 HTR PWR ON – (tb)

PDIP 1 PWR 2 KuBAND RLY – (cb)

PROCEDURE NOMENCLATURE

L12

APCU/OIU/MPLM

APCU 1 CONV – ON  
– OFF

APCU 1 CONV tb – gray  
– bp

APCU 1 OUTPUT RLY – CL  
– OP

APCU 1 CLOSE tb – gray  
– bp

APCU 2 CONV – ON  
– OFF

APCU 2 CONV tb – gray  
– bp

APCU 2 OUTPUT RLY – CL  
– OP

APCU 2 CLOSE tb – gray  
– bp

OIU PWR tb – UP (OIU 1 ON)  
– bp  
– DN (OIU 2 ON)

TCS PWR – ON  
– OFF

TCS PWR tb – gray  
– bp

cb SW PWR 1 – op  
– cl

MPLM CHAN 1 HTR PWR ON tb – gray  
– bp

MPLM CHAN 2 HTR PWR ON tb – gray  
– bp

cb PDIP 1 PWR 2/KuBAND RLY – op  
– cl

PANEL NOMENCLATURE

L12 (Cont)

APCU/OIU/MPLM

SW PWR 2 – (cb)

X1/X2 SW PDIP1 PWR1 – (cb)

ODS CONN MATE X1 TLM PWR – ON  
– OFF

ODS CONN MATE X2 TLM PWR – ON  
– OFF

OIU PWR – OIU 1 ON  
– OFF  
– OIU 2 ON

PROCEDURE NOMENCLATURE

L12 (Cont)

APCU/OIU/MPLM

cb SW PWR 2 – op  
– cl

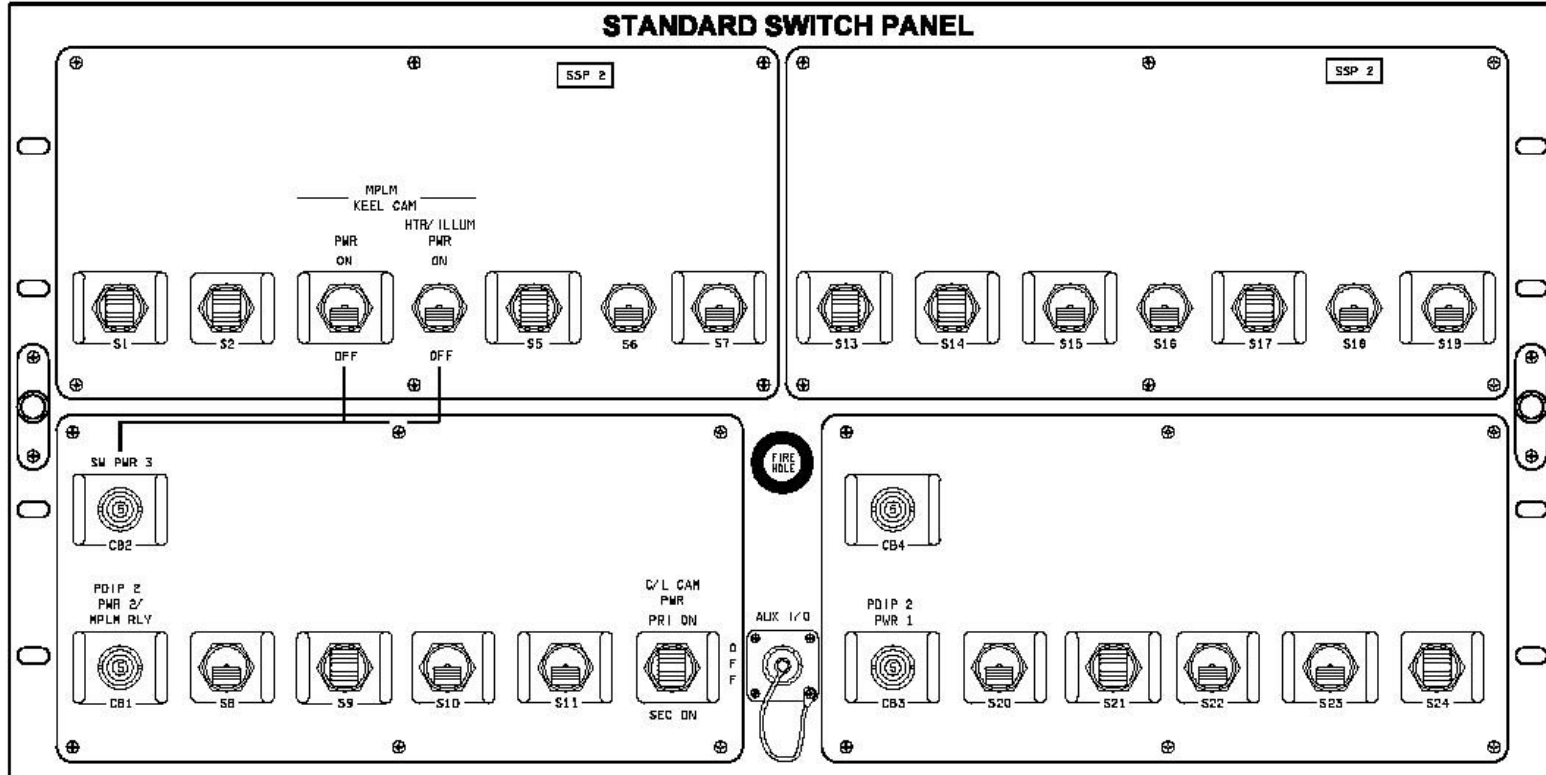
cb X1/X2 SW PDIP1 PWR1 – op  
– cl

ODS CONN MATE X1 TLM PWR – ON  
– OFF

ODS CONN MATE X2 TLM PWR – ON  
– OFF

OIU PWR – OIU 1 ON  
– OFF  
– OIU 2 ON





19409F005\_121. PNL 1

PANEL NOMENCLATURE

L12 (Cont)

STANDARD SWITCH PANEL SSP 2 MPLM KEEL CAM

KEEL CAM PWR – ON  
– OFF

KEEL CAM HTR/ILLUM PWR – ON  
– OFF

SW PWR 3 – (cb)

PDIP 2 PWR 2/MPLM RLY – (cb)

C/L CAM PWR – PRI ON  
– OFF  
– SEC ON

PDIP 2 PWR 1 – (cb)

PROCEDURE NOMENCLATURE

L12 (Cont)

MPLM KEEL CAM

KEEL CAM PWR – ON  
– OFF

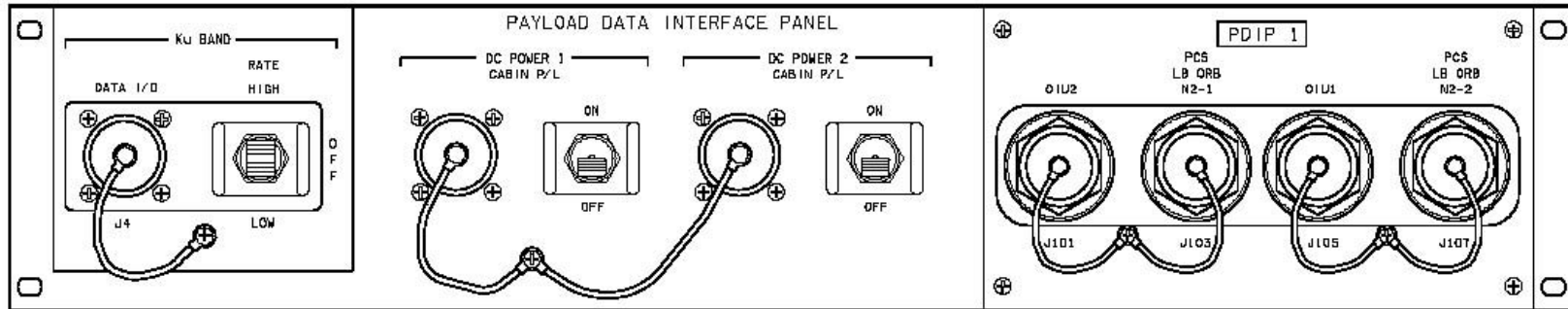
KEEL CAM HTR/ILLUM PWR – ON  
– OFF

cb SW PWR 3 – op  
– cl

cb PDIP 2 PWR 2/MPLM RLY – op  
– cl

C/L CAM PWR – PRI ON  
– OFF  
– SEC ON

cb PDIP 2 PWR 1 – op  
– cl



19409F006\_121. PNL, 1

PANEL NOMENCLATURE

L12 (Cont)

PAYLOAD DATA INTERFACE PANEL

Ku BAND DATA I/O connector

Ku BAND RATE – HIGH  
– OFF  
– LOW

DC POWER 1 CABIN P/L – outlet

DC POWER 1 CABIN P/L – ON  
– OFF

DC POWER 2 CABIN P/L – outlet

DC POWER 2 CABIN P/L – ON  
– OFF

OIU2 connector

PCS LB ORB N2-1 connector

OIU1 connector

PCS LB ORB N2-2 connector

PROCEDURE NOMENCLATURE

L12 (Cont)

PDIP 1

Ku BAND DATA I/O conn

Ku BAND RATE – HI  
– OFF  
– LO

DC PWR 1 outlet

DC PWR 1 – ON  
– OFF

DC PWR 2 outlet

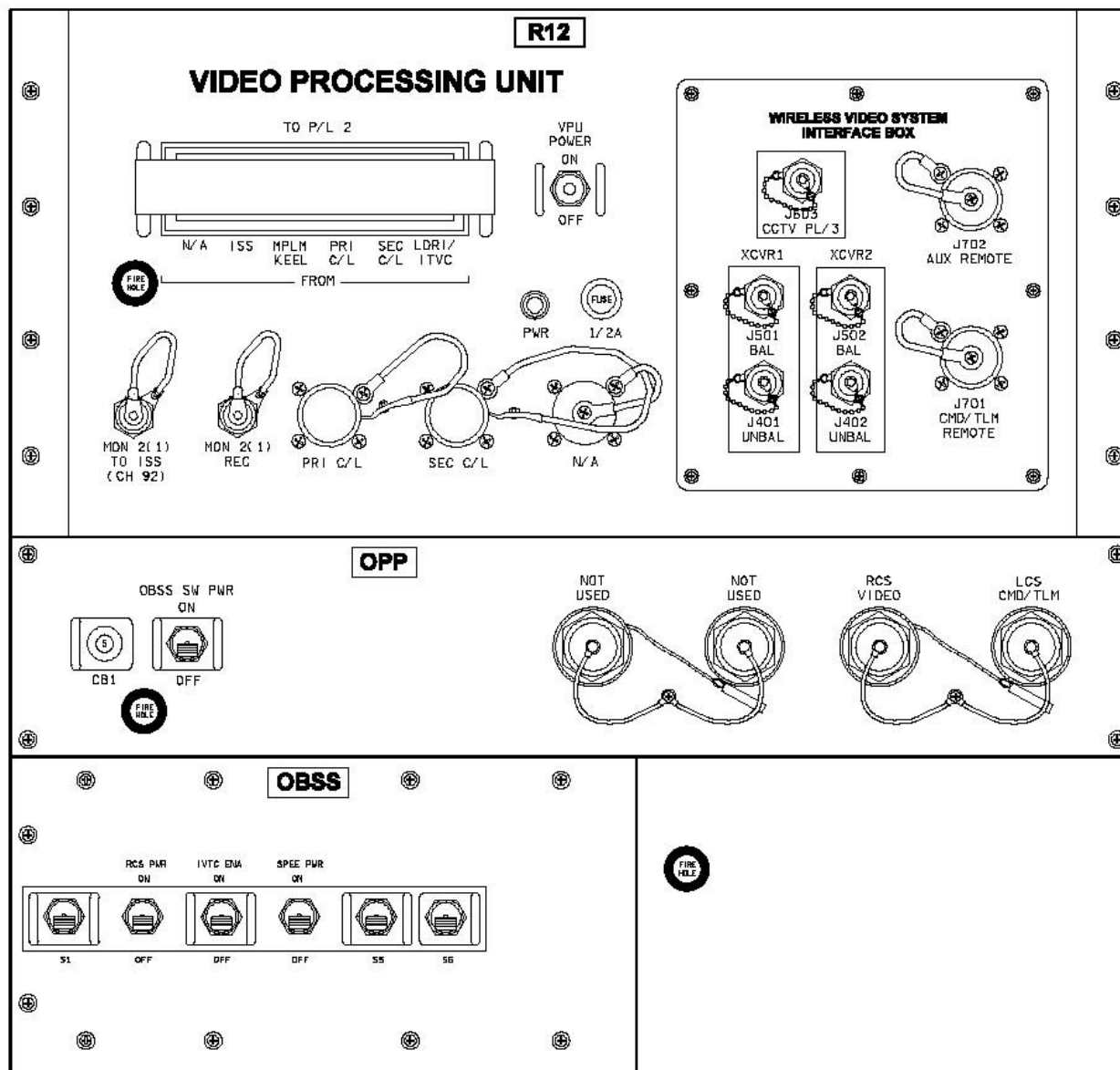
DC PWR 2 – ON  
– OFF

OIU2 conn

PCS LB ORB N2-1 conn

OIU1 conn

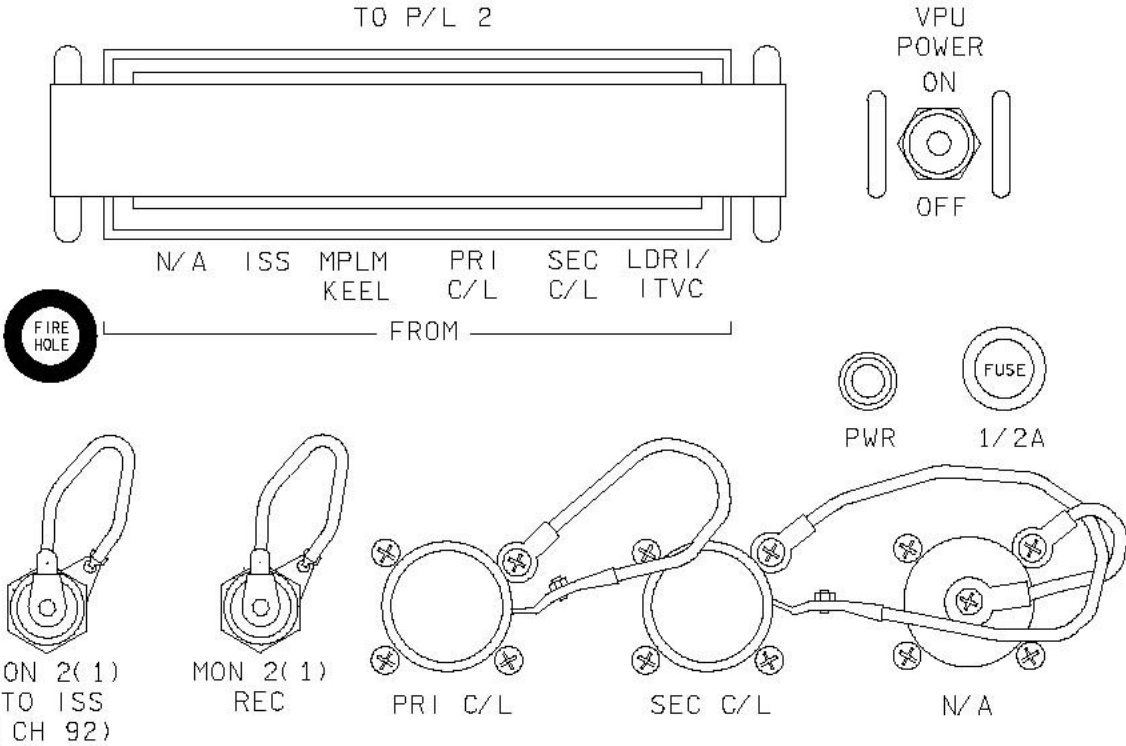
PCS LB ORB N2-2 conn



19409F008\_121\_PNL 1

**R12**

# VIDEO PROCESSING UNIT



19409F010\_121. PNL; 1

PANEL NOMENCLATURE

R12

VIDEO PROCESSING UNIT

(Velcro strap covers jumper plugs)

- jumper – N/A
- ISS
- MPLM KEEL
- PRI C/L
- SEC C/L
- LDRI/ITVC

VPU POWER – ON  
– OFF

PWR – (LED It)

1/2A fuse

MON 2(1) TO ISS (CH 92) connectors

MON 2(1) REC connectors

PRI C/L connectors

SEC C/L connectors

PROCEDURE NOMENCLATURE

R12

VPU

(Velcro strap covers jumper plugs)

- jumper – N/A
- ISS
- MPLM KEEL
- PRI C/L
- SEC C/L
- LDRI/ITVC

VPU PWR – ON  
– OFF

PWR – LED on  
– LED off

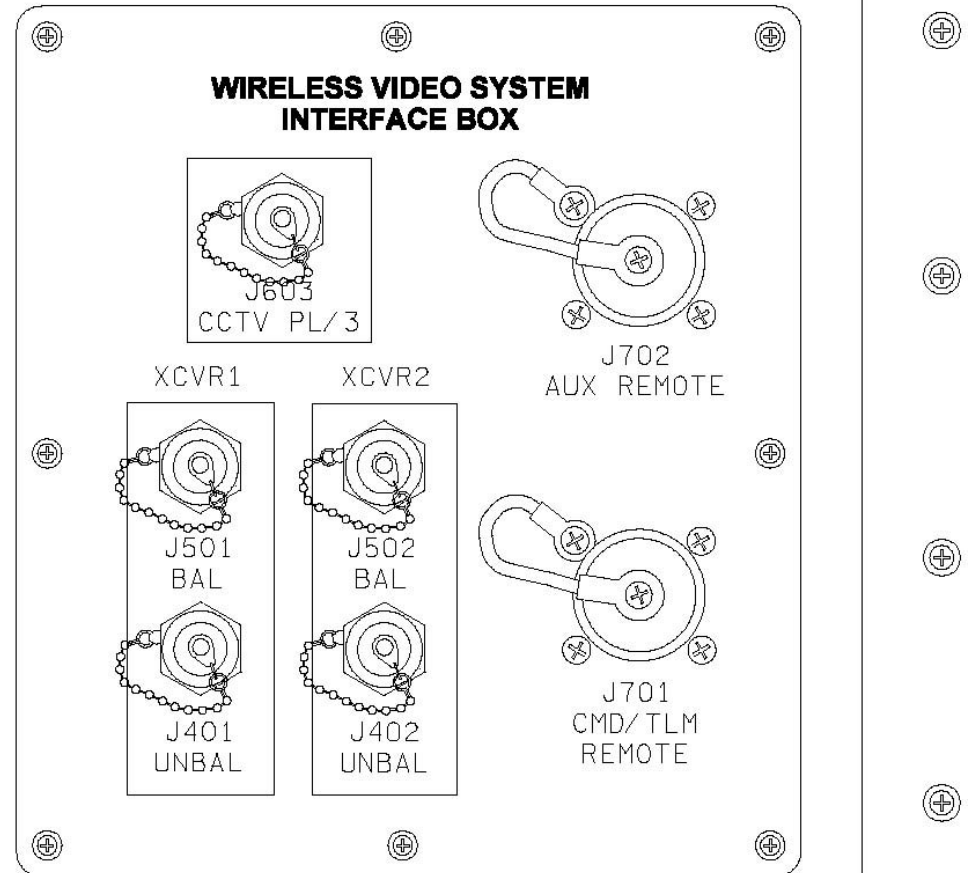
1/2A fuse

MON 2(1) to ISS (CH 92) conn

MON 2(1) REC conn

PRI C/L conn

SEC C/L conn



19409F011\_121.PNL# 1



PANEL NOMENCLATURE

R12 (Cont)

WIRELESS VIDEO SYSTEM

J603 CCTV PL/3 connector

J702 AUX REMOTE connector

XCVR1 J501 BAL connector

XCVR1 J401 UNBAL connector

XCVR2 J502 BAL connector

XCVR2 J402 UNBAL connector

J701 CMD/TLM REMOTE connector

PROCEDURE NOMENCLATURE

R12 (Cont)

WIRELESS VIDEO SYSTEM

CCTV PL/3 conn

AUX REMOTE conn

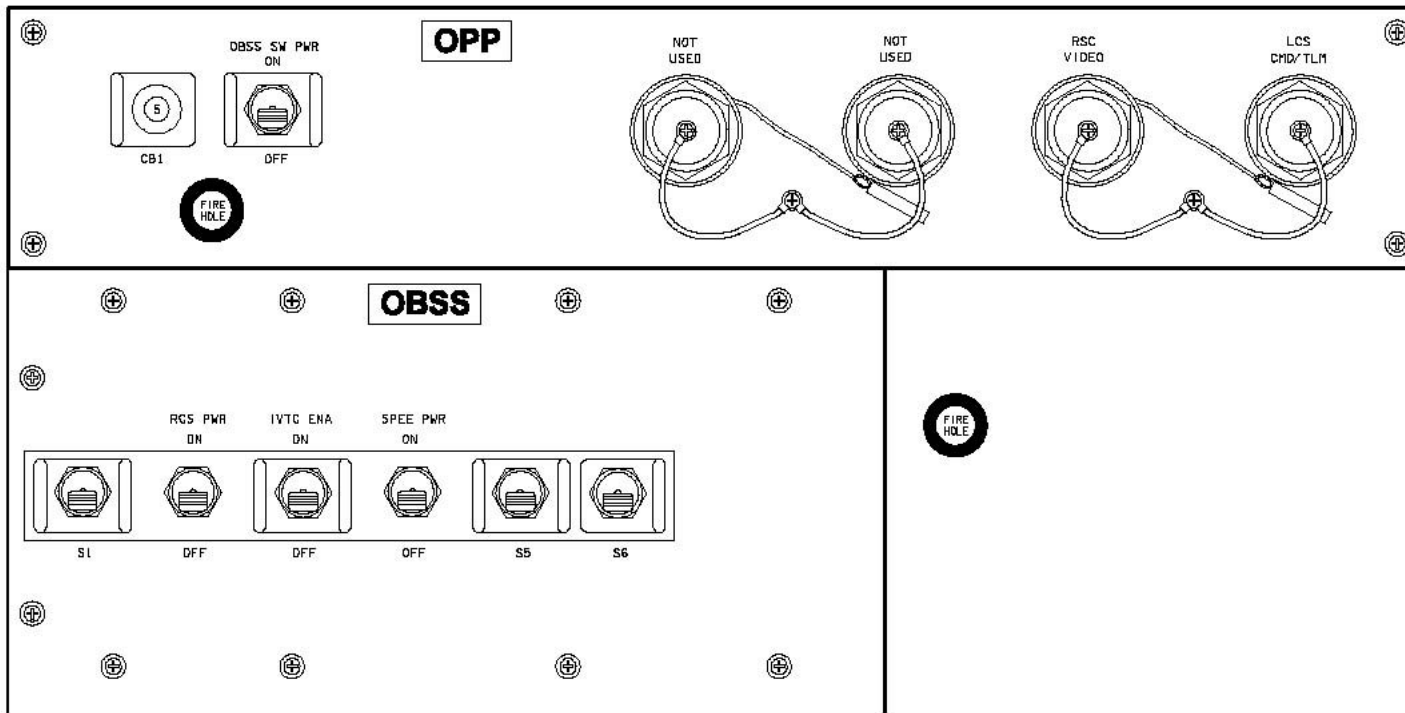
XCVR1 BAL conn

XCVR1 UNBAL conn

XCVR2 BAL conn

XCVR2 UNBAL conn

CMD/TLM REMOTE conn



19409F015\_121. PNL# 1

PANEL NOMENCLATURE

R12 (Cont)

OPP

OBSS SW PWR – (cb)

OBSS SW PWR – ON  
– OFF

RCS VIDEO connector

LCS CMD/TLM connector

OBSS

RCS PWR – ON  
– OFF

ITVC ENA – ON  
– OFF

SPEE PWR – ON  
– OFF

PROCEDURE NOMENCLATURE

R12 (Cont)

OPP

cb OBSS SW PWR – op  
– cl

OBSS SW PWR – ON  
– OFF

RCS VIDEO conn

LCS CMD/TLM conn

OBSS

RCS PWR – ON  
– OFF

ITVC ENA – ON  
– OFF

SPEE PWR – ON  
– OFF

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