

Signal Processor Upgrade, Build 17

For Training Use Only

For Actual Servicing of the 88D use the latest Engineering Handbook
from the RADAR Operation Center

Purpose:

To provide the field tech with a basic understanding of the changes to the 88D from the installation of Modification Note 183.

Assumptions:

You have the following EHBs in hard or soft copy: 513, 518

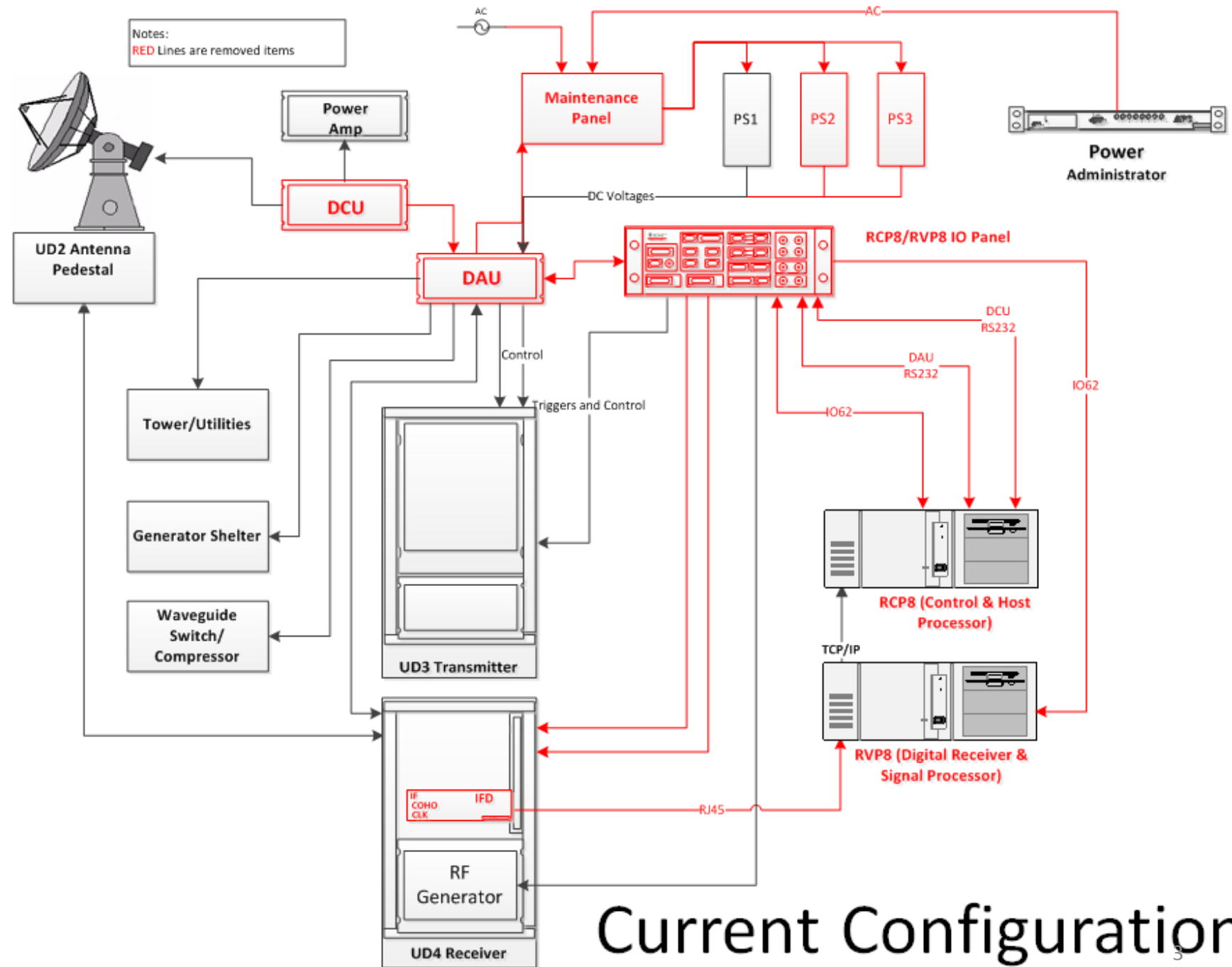
This will allow you to look at documents that are too small to read on the screen

You have been trained on the 88D before viewing this and viewed the component familiarization video at <http://www.roc.noaa.gov/WSR88D/SLEP/SLEP.aspx>

Version 20161229

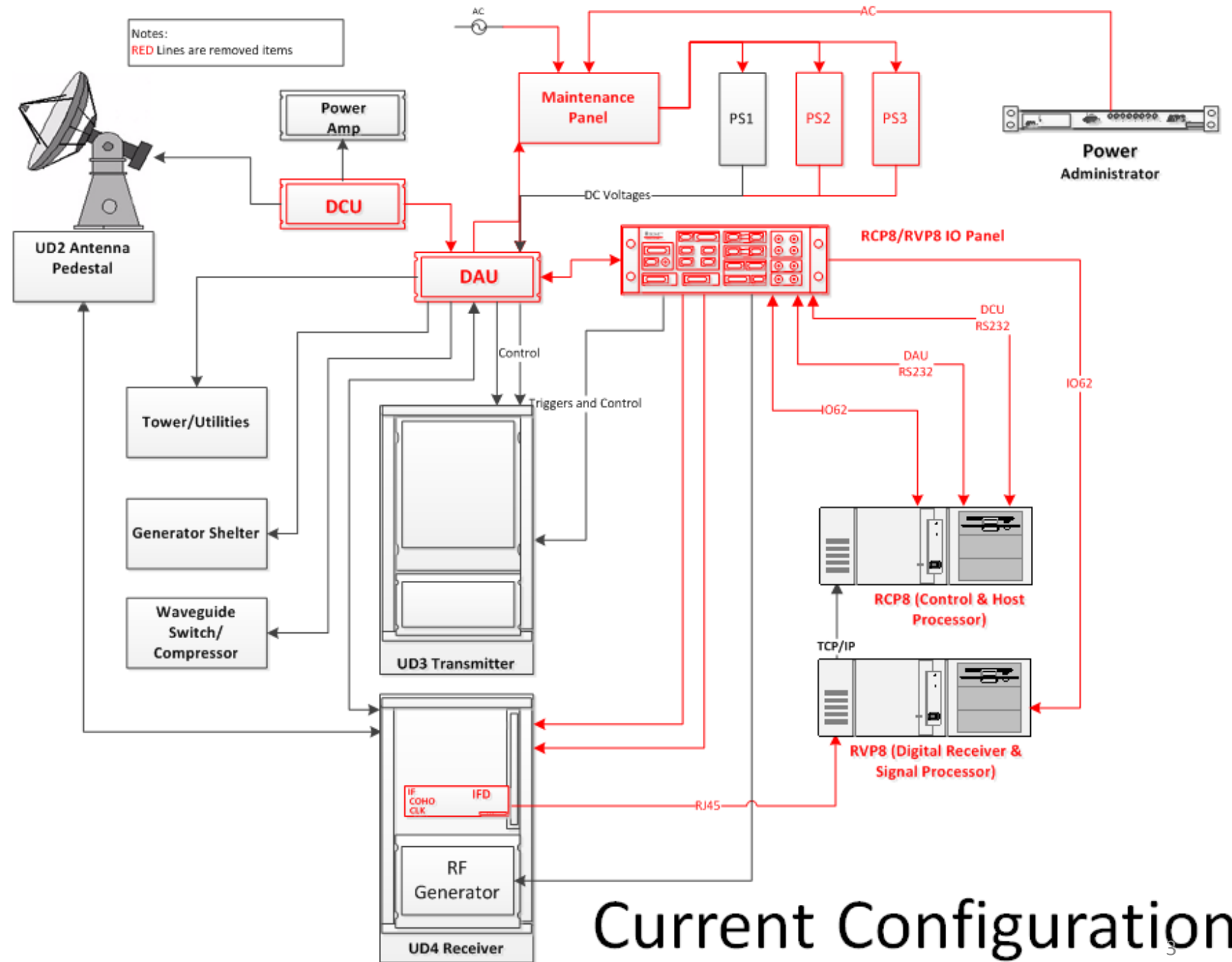
Pre-mod, the DCU controlled the antenna.

The DAU & IO panel interfaced with external devices.



The IFD fed the receiver card in the RVP which fed the RCP.

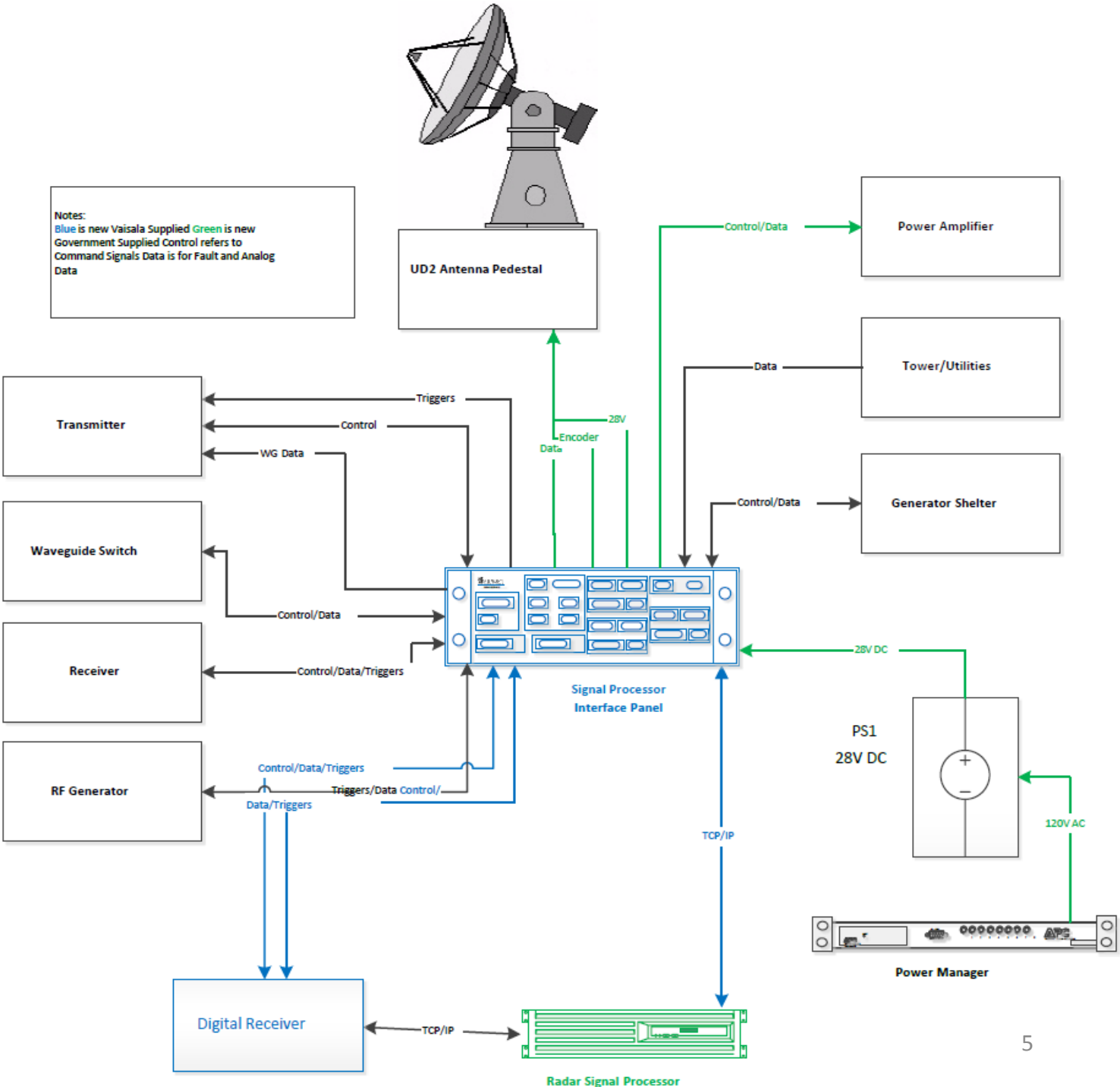
The maintenance panel provided basic maintenance control functions.



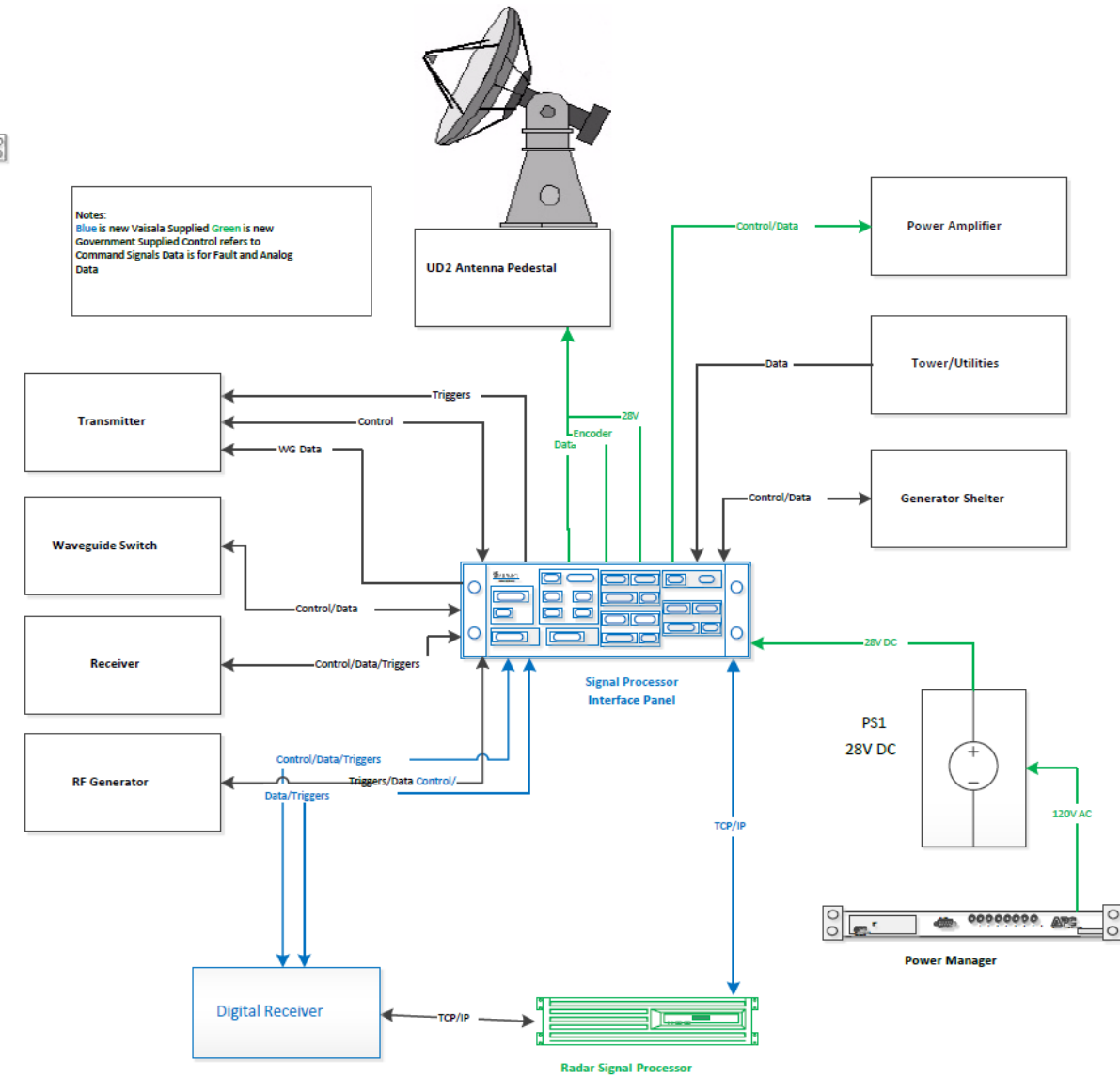
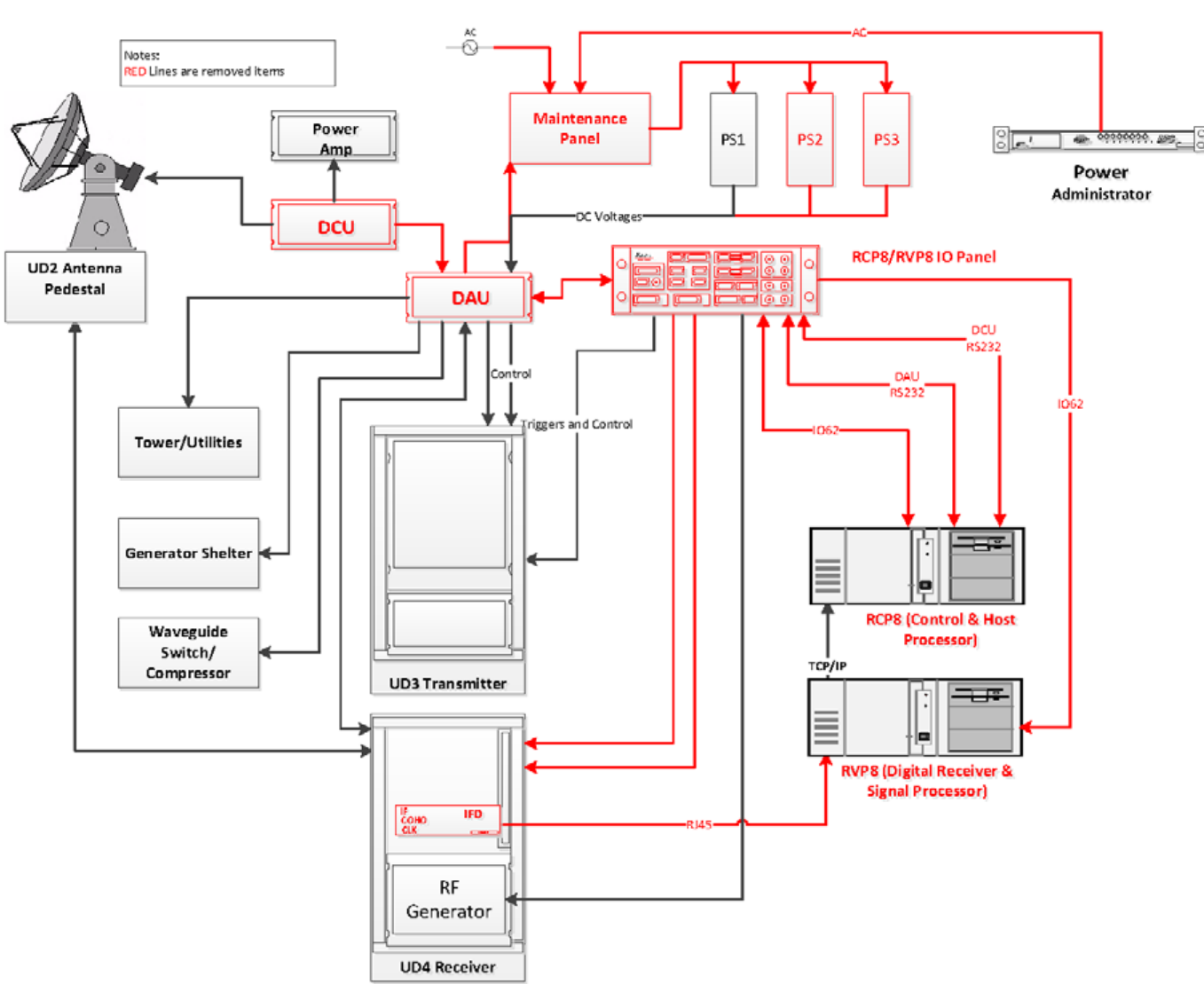
The **S**ignal **P**rocessor Interface **P**anel replaces the DCU, DAU & Maintenance Panel.

The Intermediate **F**requency **D**igital **R**eceiver replaces the IFD, and RVP receiver card.

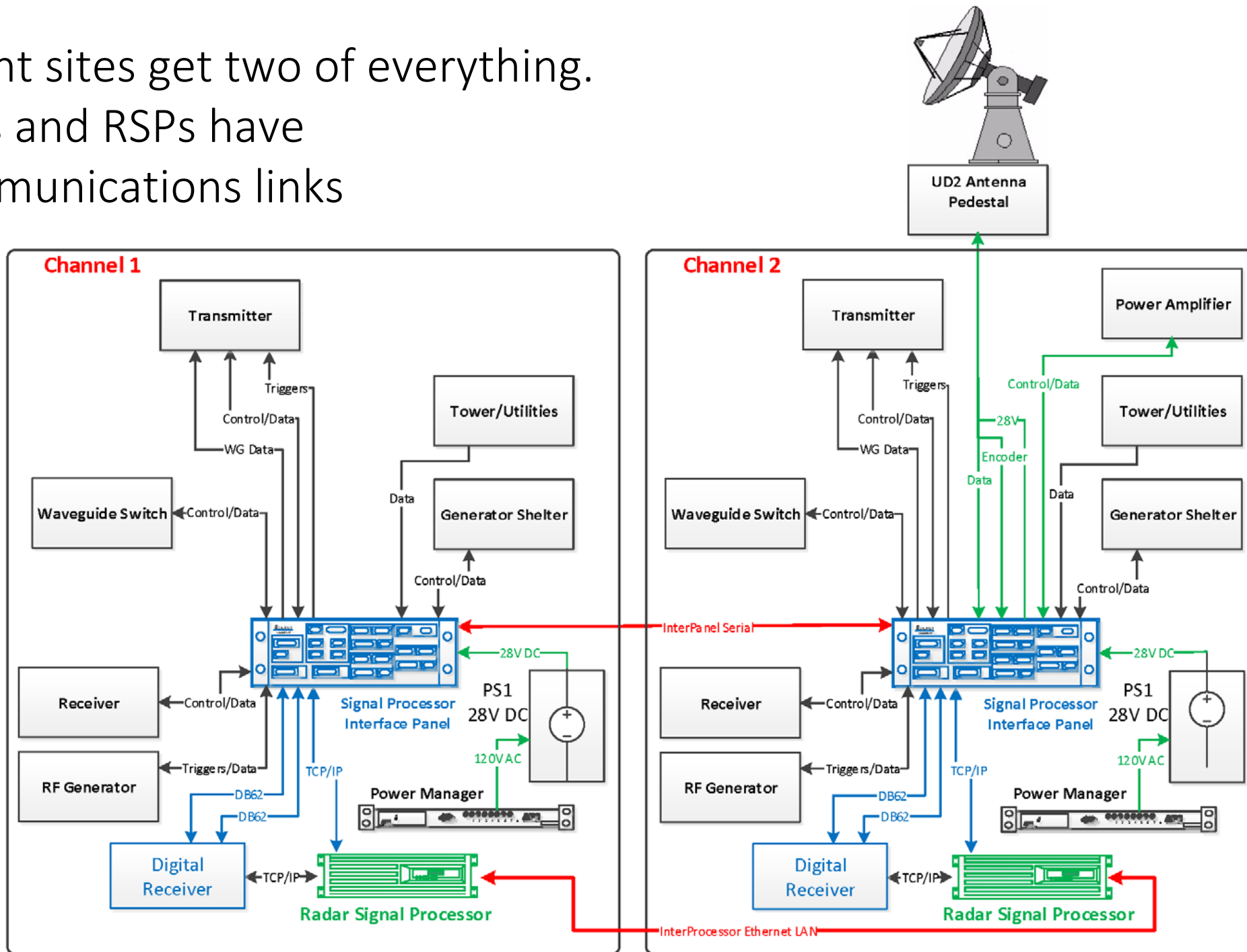
The **R**ADAR **S**ignal **P**rocessor replaces the RVP & RCP



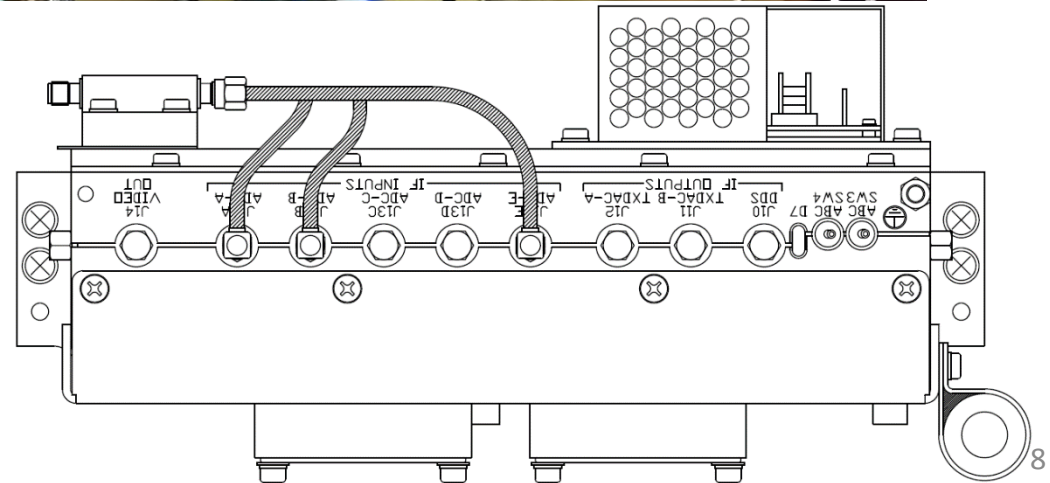
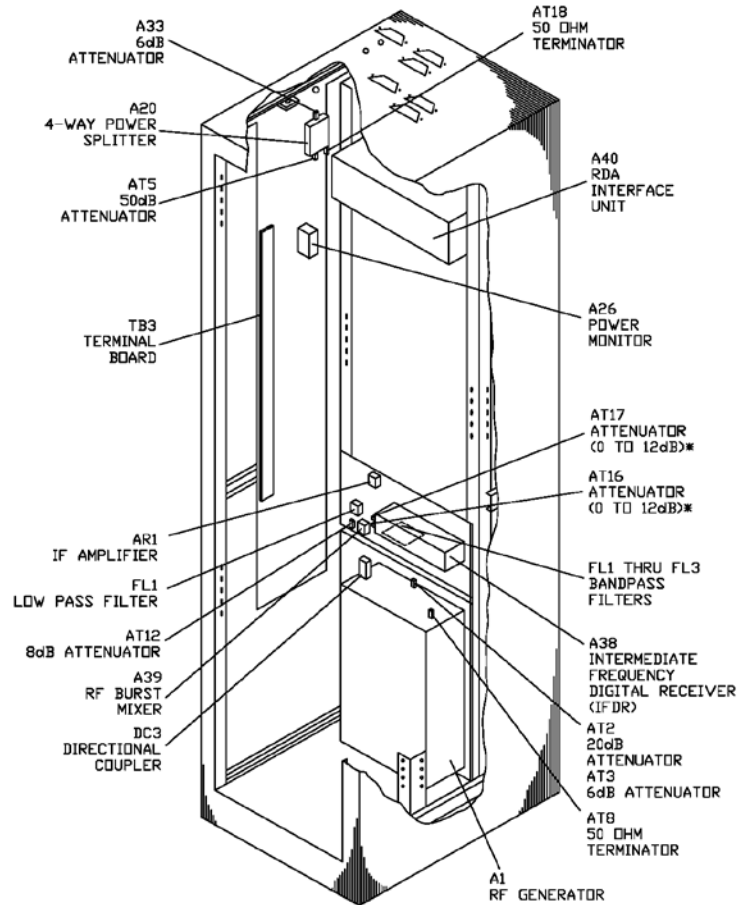
We get a much simpler system to maintain.



Redundant sites get two of everything.
The SPIPs and RSPs have
intercommunications links



In UD 4 the IFD is replaced by the IFDR which is an IFD and Digital Receiver in one package.



UD90 Processor Cabinet

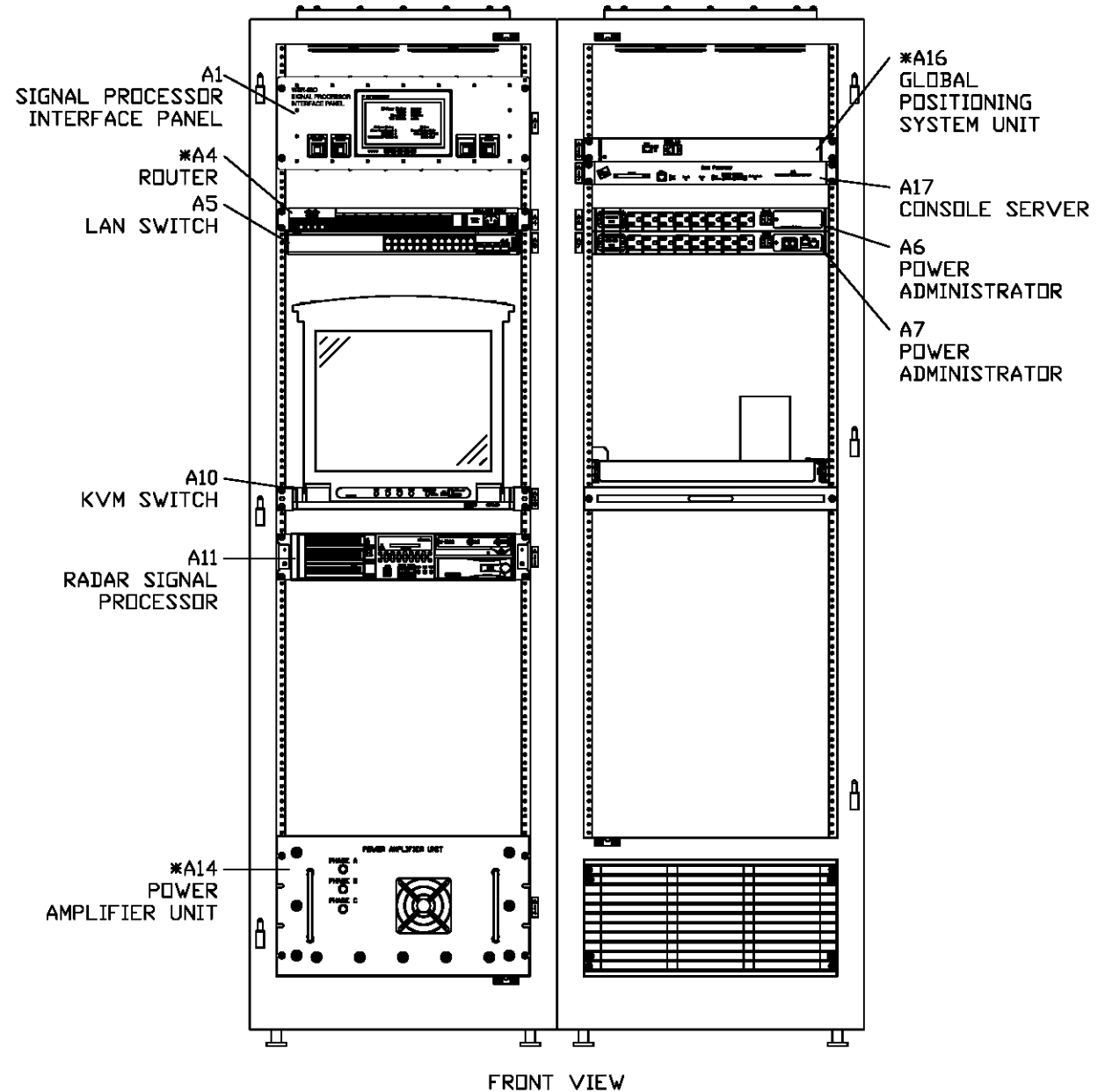
The A1 Signal Processor Interface Panel (SPIP) is installed in the upper left

Below the KVM, the RADAR Signal Processor (RSP) is installed.

The DCU is gone and now the SPIP drives the A14 Power Amplifier Unit.

The Power Administrators move to the right rack .

Two of the DAU power supplies go away leaving only the 28V power supply that now powers the SPIP.



The Signal Processor Interface Panel

The SPIP front panel has 4 mechanical push button switches Data ACQ, Pedestal, Blank and Power. The Data ACQ, Pedestal and Blank are also software controllable.

The “Data ACQ” switch is similar to the original DAU power switch. The Data ACQ provides DC power to external switches and sensors

The “Pedestal Power” switch provides power to the pedestal encoders, pedestal sensors, and the Power Amplifier control circuitry.

Pedestal Power and Date ACQ can be controlled by the System Test Software (STS).

The blank switch is currently not used.

The “Panel” switch controls the 28V that powers the Signal Processor Interface Panel (SPIP) itself.

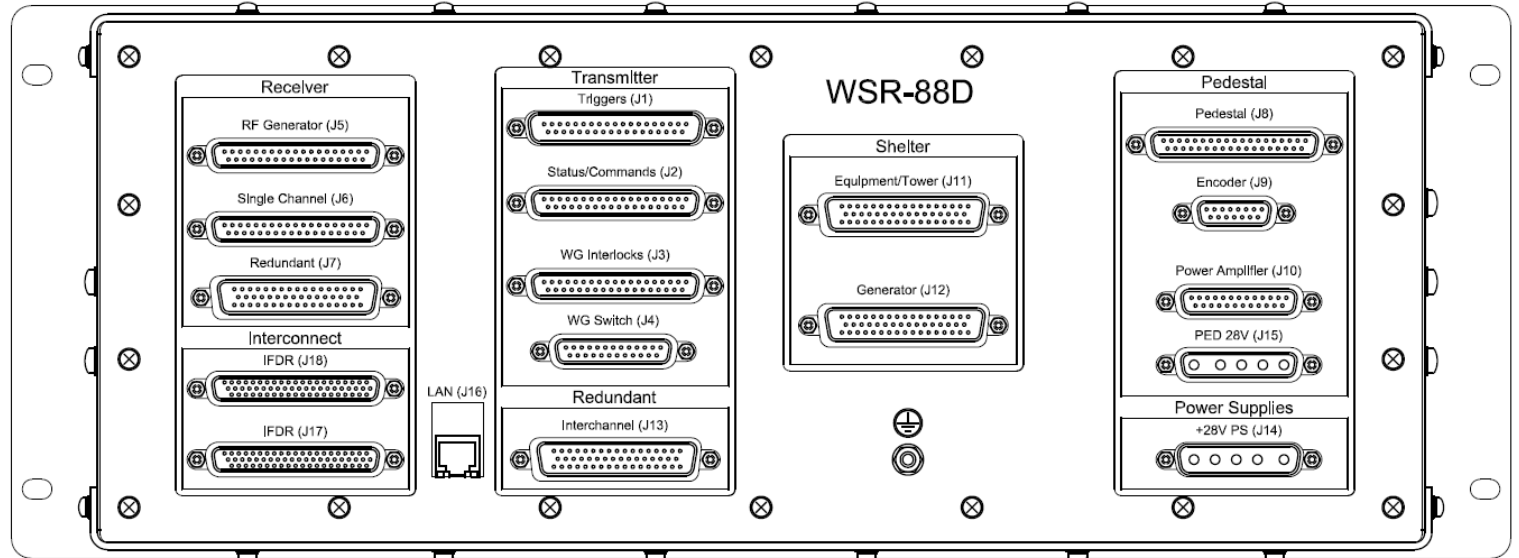
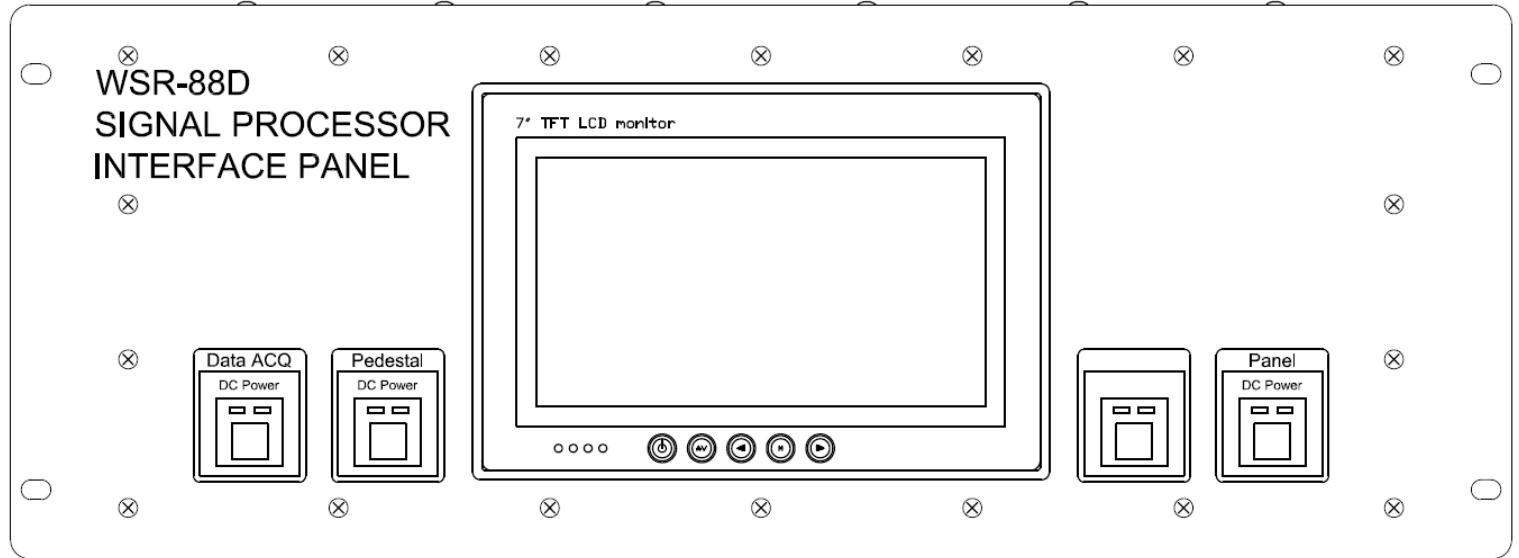
The rear of the panel provides interface connections to the Receiver, Transmitter, Shelter, Pedestal and Redundant Channel.

The SPIP auto-configures itself based upon what cables are connected

See par 5.7.3.1 in the 6-513 for more information

J16 is a Gigabit Ethernet communication interface link between the RSP and the SPIP.

See par 5.7.1.3 in the 6-513 for more information



The SPIP Display

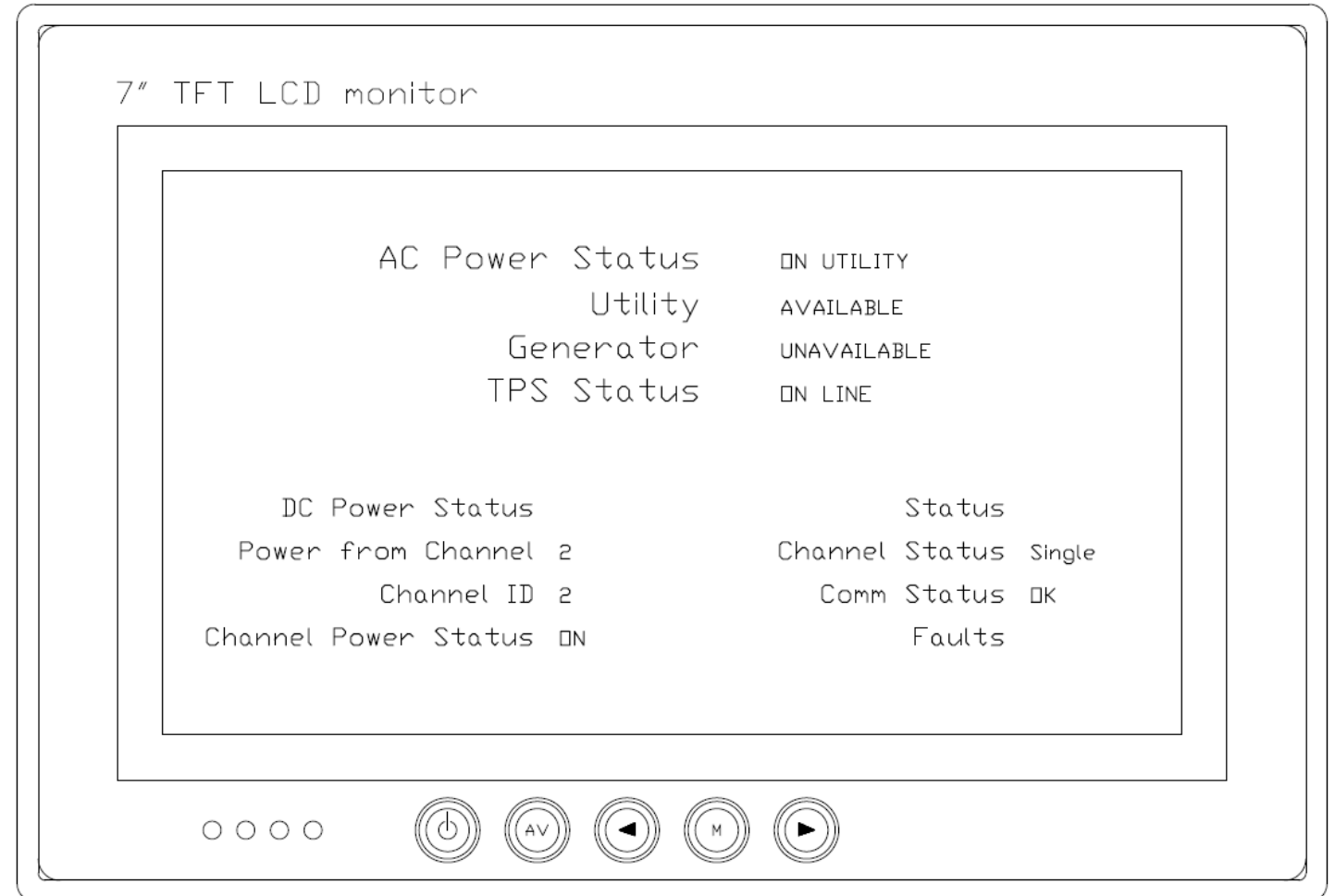
The "**AC Power Status**" identifies who is providing the AC power, what is the status of the AC Sources and the status of the TPS.

The "**DC Power Status**" identifies who is providing +28v. In a single channel the +28v is coming from the single channel power supply. The Power from Channel and the Channel ID will display a 2 and Channel Power Status will display ON.

In a redundant configuration the Power from Channel will display channel 1 or 2 as the provider of the +28v, also the Channel ID will display what channel the SPIP is connected too 1 or 2. The Channel Power Status will display either ON or OFF.

The "**Status**" displays the Channel Status as a Single or a Redundant. The Comm Status in single channel will display OFF LINE and in a redundant channel will display OK if the inter-panel link is good or OFF LINE for a failure on the inter-panel link.

The "**Faults**" area is not currently being used.



See Figure 4-9 and Table 4-9 in the 6-513 for more information

RADAR Signal Processor

The RSP ingests data from the IFDR and the SPIP to create base data, which is sent to the RPG.

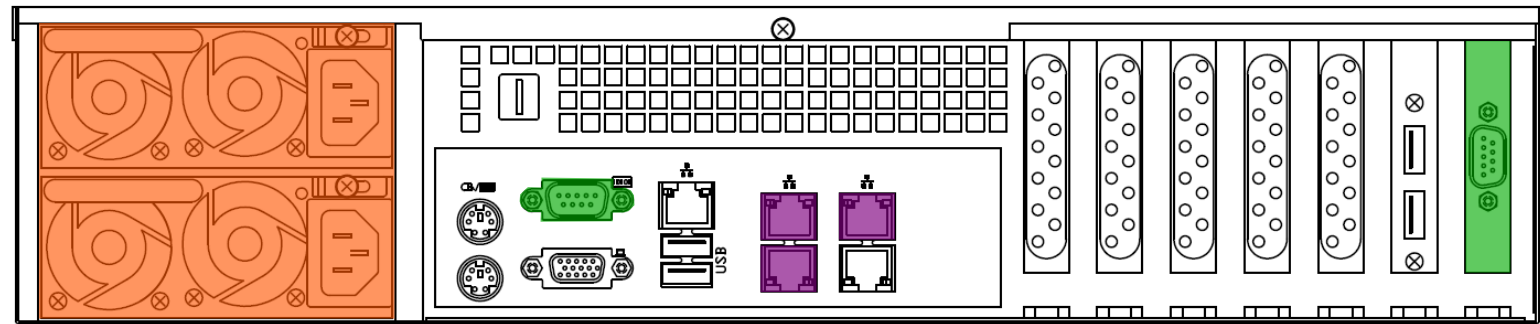
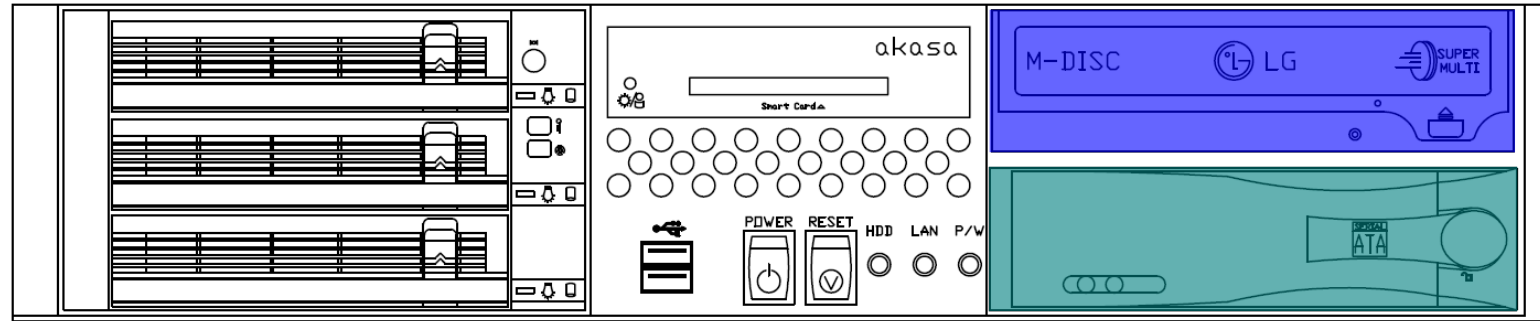
Backups can be saved to a **hot swappable hard drive** as well as a **CD/DVD disk drive** for remote storage.

The unit has **redundant hot swappable power supplies**. An audible alarm indicates failure.

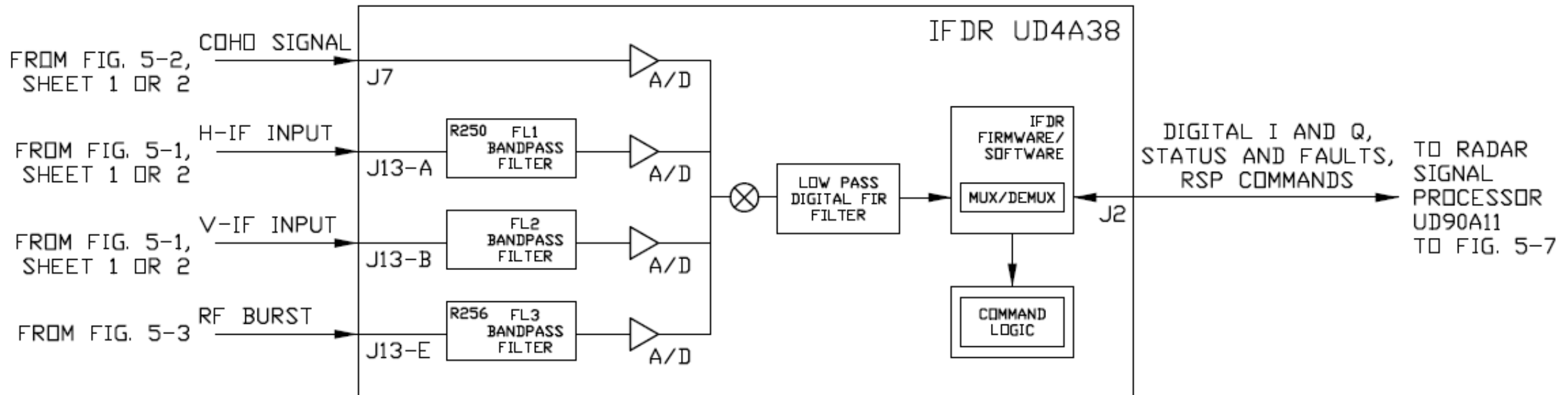
Three of the five RJ45 connections are used. One for the LAN, one for the SPIP and one for the IFDR

There are serial connections for the AME and the console server.

See figure 4-14 in the 6-513 for more information



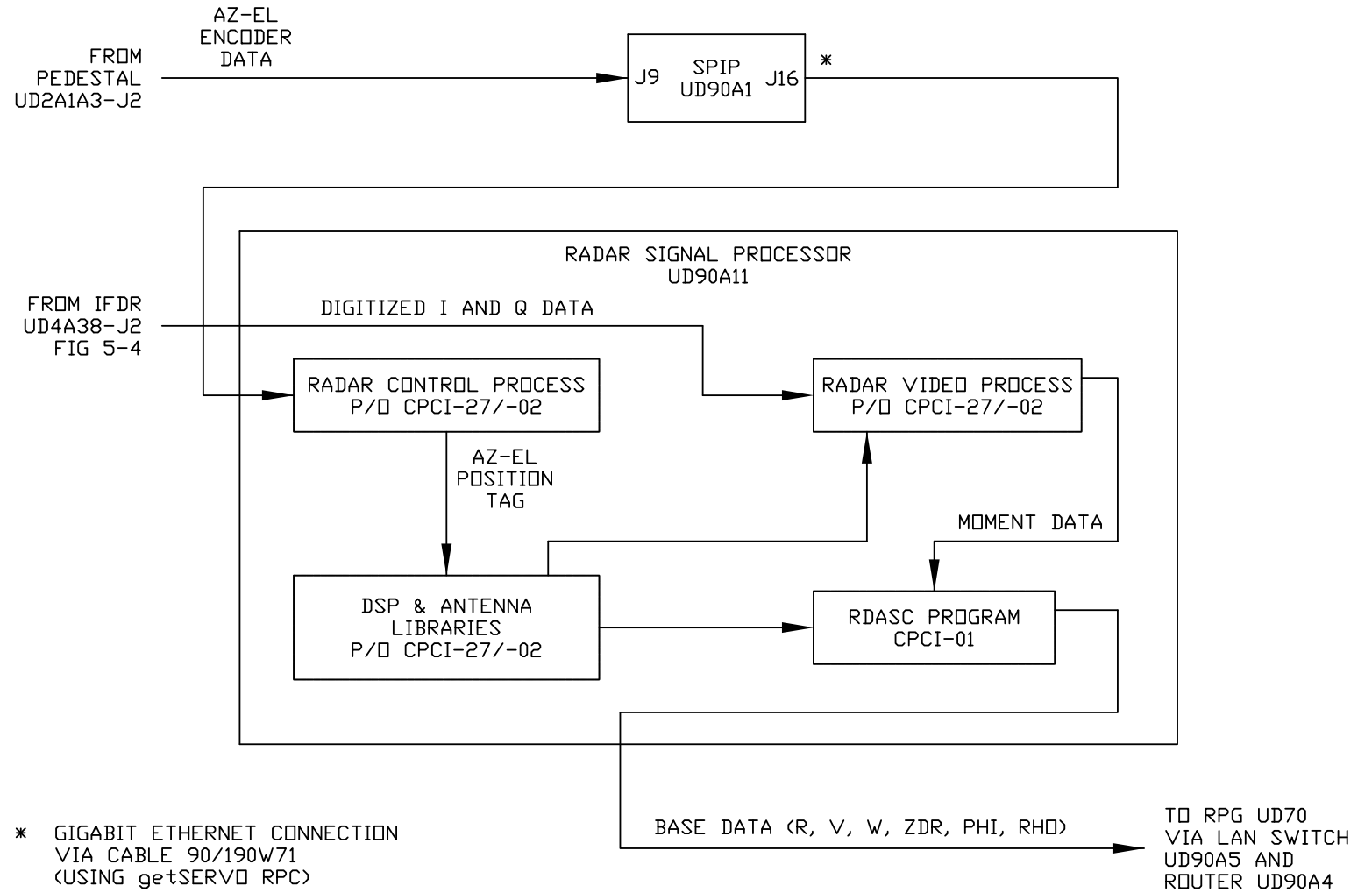
The IFDR combines the hardware of the IFD and receiver card and outputs to the RSP. Transmitter triggers are generated in the IFDR and passed to the SPIP for transmission to the transmitter.



Position data, digitized return data and base data

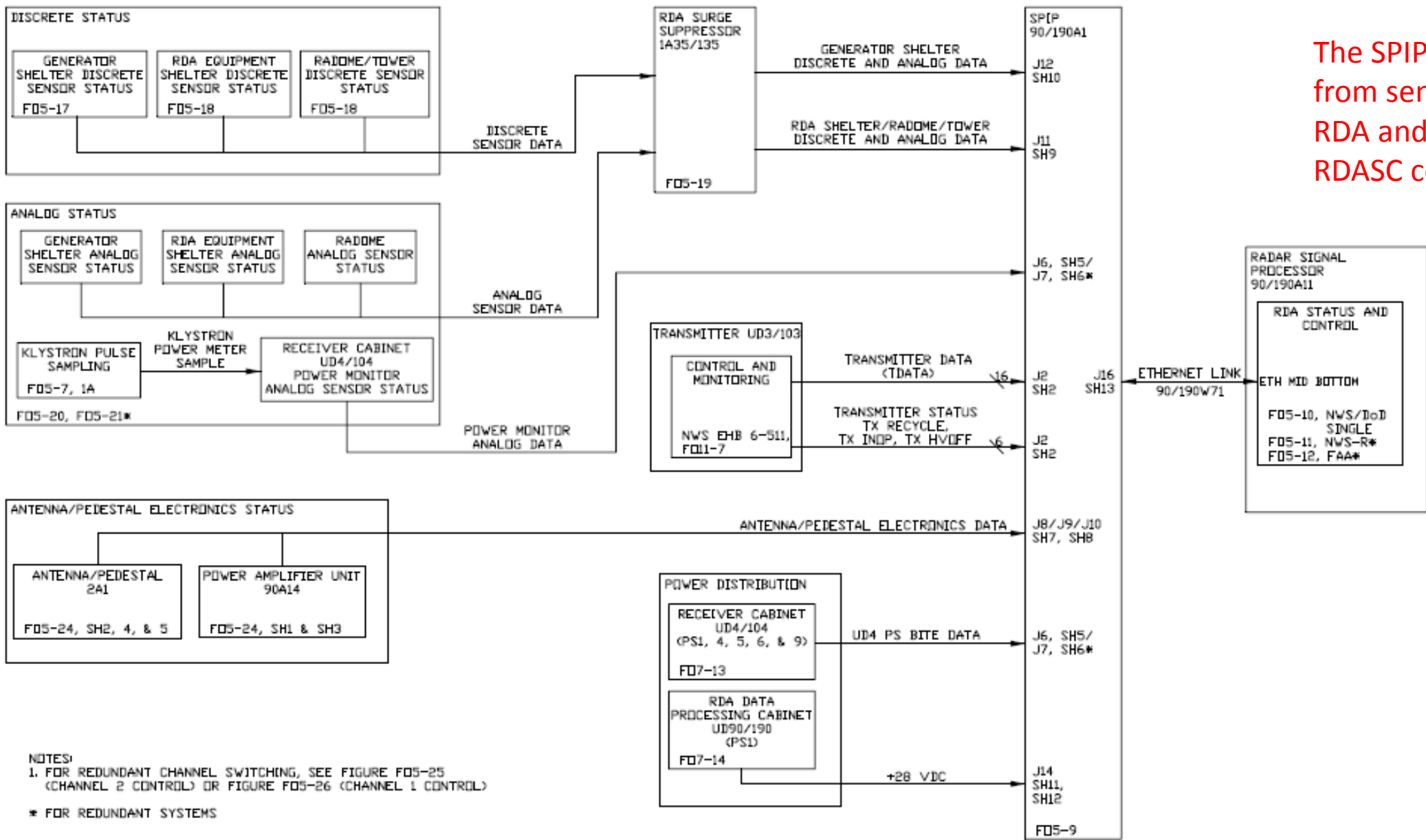
Pedestal position information from the encoders is sent to the SPIP and then to the RSP to be synchronized with (position tag) the returns from the IFDR.

The RADAR Signal Processor then processes the information and outputs base data to the RPG via the network devices.



NX3802-E

The SPIP receives status signals from sensors and devices in the RDA and passes them to the RDASC computer (RSP).



NOTES:
1. FOR REDUNDANT CHANNEL SWITCHING, SEE FIGURE FO5-25 (CHANNEL 2 CONTROL) OR FIGURE FO5-26 (CHANNEL 1 CONTROL)

* FOR REDUNDANT SYSTEMS

Figure FO5-13. RDA Status and Control Interface Functional Block Diagram (Sheet 1 of 2)

Control commands are sent from the RDASC computer (RSP) to the SPIP for distribution.

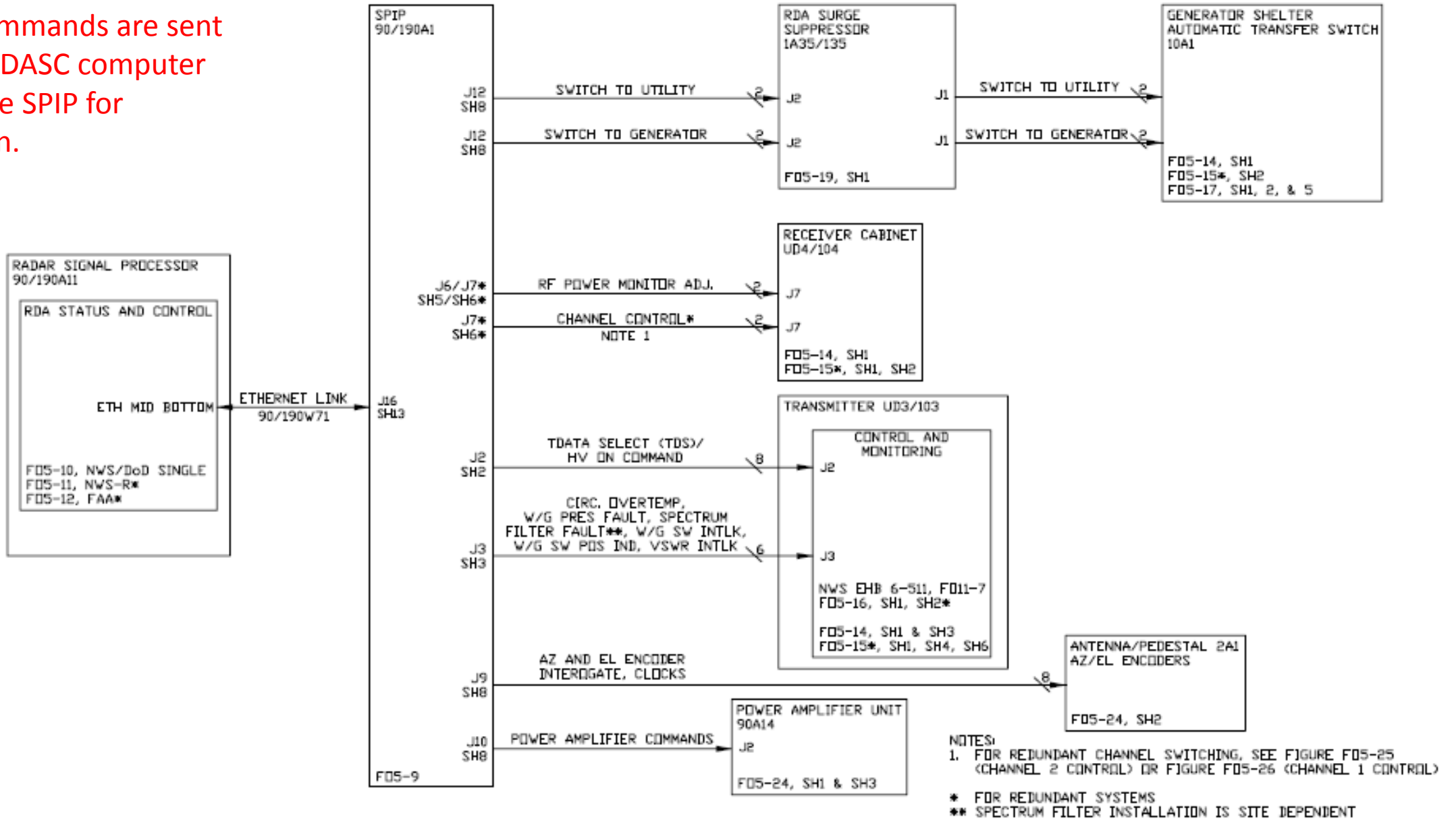


Figure F05-13. RDA Status and Control Interface Functional Block Diagram (Sheet 2 of 2)

Power Monitor Zero

Transmitter Power Meter Zero mV

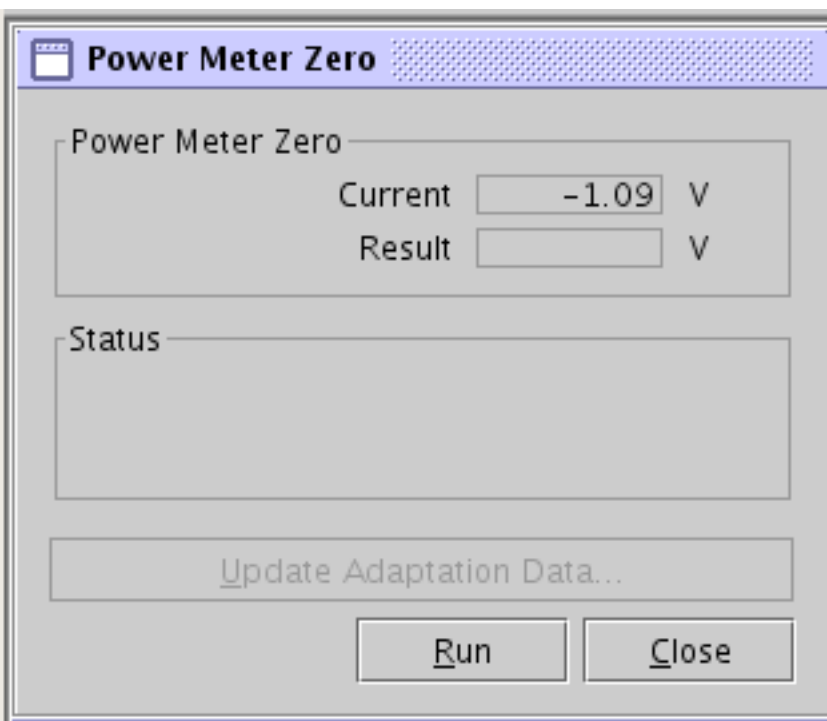
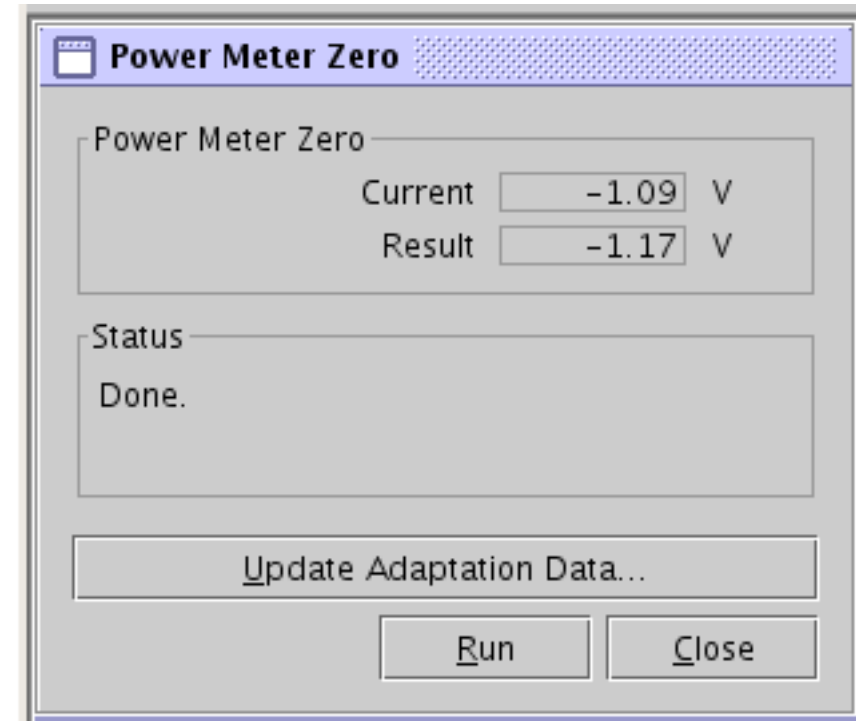
The SPIP biases the transmitter power meter by keeping its range positive and maximum. If the power meter does not zero to within limits (as set by adaptation data), the XMTR POWER METER ZERO OUT OF LIMIT alarm is displayed. This alarm activates when power meter zero is less than the low limit of 0.1 mV or greater than the high limit of 7.9 mV.

Transmitter power meter zero check measures the transmitter power monitor bias during online calibrations.

The power monitor zero is no longer a potentiometer adjustment. A calibration is run from STS to set the power meter output to 2.0 mV. The system monitors the zero adjustment and will alarm if the voltage is outside of 0.1mV to 7.9mV.

Status message sequence example:

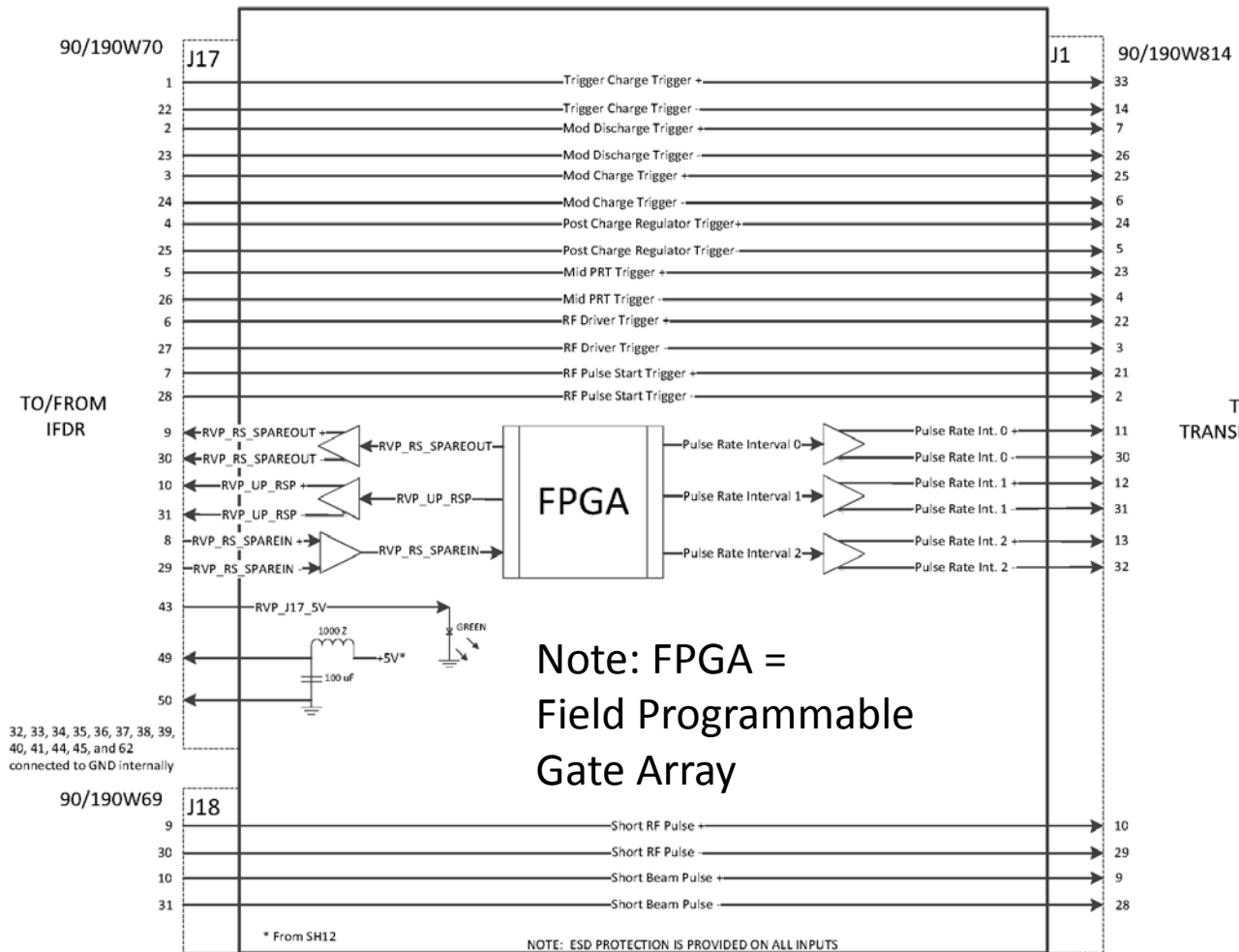
Sampling power with offset set at -5.00
Sampling power with offset set at 5.00
Sampling power with offset set at 0.00
Sampling power with offset set at -2.50
Sampling power with offset set at -1.25
Sampling power with offset set at -0.62
Sampling power with offset set at -0.94
Sampling power with offset set at -1.09
Sampling power with offset set at -1.17
Done



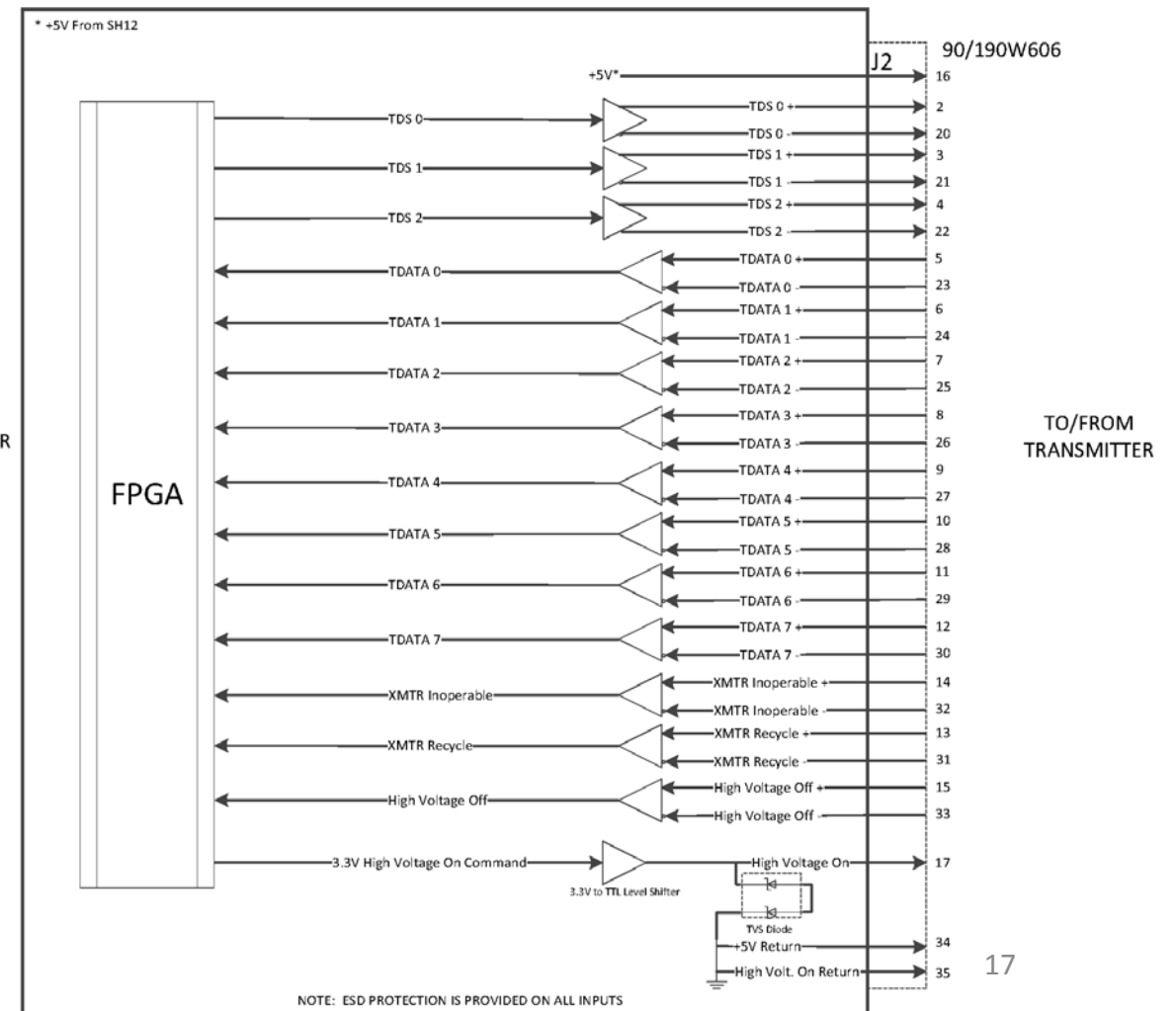
More detailed information of signals to and from the SPIP may be found in Figure FO5-9 of the 513

p/o Figure FO5-9. Signal Processor Interface Panel Signal Flow Diagram

TRANSMITTER AND IFDR INTERCONNECTS – J1, J17, J18



TRANSMITTER – J2



Additional details of signals from the RSP to the SPIP may be found in Tables 5-4 of the 513

Table 5-4. RSP-to-SPIP Commands

COMMAND	ALARM	CODE	CONFIGURATION	DESTINATION	SPIP PINS	OUTPUT
Pedestal Power Button	SPIP PED POWER BUTTON OFF	258	All	SPIP	N/A	LED Indicator Green: ON LED Indicator Red: OFF
Data ACQ Power Button	SPIP DAQ POWER BUTTON OFF	257	All	SPIP	N/A	LED Indicator Green: ON LED Indicator Red: OFF
SPIP J2 Transmitter Status/Commands						
High Voltage On	XMTR HV SWITCH FAILURE	96	All	Transmitter	J2-17 ref. to J2-35	0V: Off +5V: On
SPIP J3 Transmitter/WG Interlocks						
Circulator Overtemp	N/A	N/A	All	Transmitter	J3-2 ref. to J3-8	0V: Fault +28V: OK
Antenna Position Indicator	N/A	N/A	All	Transmitter	J3-3 ref. to J3-8	0V: Fault +15V: OK
Spectrum Filter/Pressure Fault	N/A	N/A	All	Transmitter	J3-4 ref. to J3-8	0V: Fault +15V: OK
Waveguide Pressure Fault	N/A	N/A	All	Transmitter	J3-5 ref. to J3-8	0V: Fault +15V: OK
Waveguide Switch Transitioning	N/A	N/A	All	Transmitter	J3-6 ref. to J3-8	0V: Fault +15V: OK
VSWR Circuitry	N/A	N/A	All	Transmitter	J3-7 ref. to J3-8	0V: Fault +15V: OK
SPIP J4 WG Switch						
Waveguide Switch to Antenna ¹	N/A	N/A	All	Microwave Distribution	J4-1/9 ref. to J4-2/10	0V: Dummy Load +28V: Antenna
Antenna Command	N/A	N/A	All	Microwave Distribution	J4-12 ref. to J4-2/10	0V: Dummy Load +5V: Antenna
SPIP J6 Single Channel Receiver						
Power Monitor Adjustment	XMTR POWER BITE FAIL	88	All	Receiver	J6-24 ref. to J6-27	Voltage between -5V and +5V

1. Requires jumpers between pins J4-4 and J4-11/13 (WG SW Transition Interlock); and J11-9 and J11-42 (Radome Hatch SW #1) before SPIP allows command. Not required if using breakout boards.

Additional details of signals from the SPIP to the RSP may be found in Tables 5-5 of the 513

Table 5-5. SPIP-to-RSP Status

SIGNAL	ALARM NAME	ALARM CODE	FIGURE FO/ TABLE REF	SIGNAL TYPE	SPIP PINS	PMD STATUS
SPIP Auto-Config Channel Assignment	N/A	N/A		3.3V Logic****	N/A	0V: Chan. 1 3.3V: Chan. 2
SPIP Pedestal Power Button	See Table 5-4		FO5-9, Sheet 2 Table 6-2 (PED)			
SPIP Data ACQ Power Button	See Table 5-4		FO5-9, Sheet 2 Table 6-2 (PED)			
SPIP J2 Transmitter Status/Commands						
Transmitter Recycle	XMTR RECYCLING	97	FO5-9, Sheet 2 Table 6-3 (XMT)	RS422 TTL	J2-13 ref. to J2-31	0V: Normal +5V: Recycling
Transmitter Inoperable	XMTR INOPERATIVE	98	FO5-9, Sheet 2 Table 6-3 (XMT)	RS422 TTL	J2-14 ref. to J2-32	0V: OK +5V: Inoperable
Transmitter High Voltage Status	N/A	N/A	FO5-9, Sheet 2	RS422 TTL	J2-15 ref. to J2-33	0V: On +5V: Off
Filament Power Supply Status	FILAMENT POWER SUPPLY OFF	40	FO5-9, Sheet 2 Table 6-3 (XMT)	RS422 TTL	TDATA (J2-5 thru 12 ref. to J2-23 thru J2-30)	0V: On +5V: Off
Klystron Preheat (Warmup)	N/A	N/A	FO5-9, Sheet 2	RS422 TTL	TDATA (J2-5 thru 12 ref. to J2-23 thru J2-30)	0V: Normal +5V: Preheat
Transmitter Available	XMTR UNAVAILABLE	46	FO5-9, Sheet 2 Table 6-3 (XMT)	RS422 TTL	TDATA (J2-5 thru 12 ref. to J2-23 thru J2-30)	0V: Yes +5V: No
Waveguide Switch Position	WAVEGUIDE SWITCH FAILURE	43	FO5-9, Sheet 2 Table 6-3 (XMT)	RS422 TTL	TDATA (J2-5 thru 12 ref. to J2-23 thru J2-30)	0V: Antenna +5V: Dummy Load
WG/PFN Transition Interlock	WAVEGUIDE/PFN TRANSFER INTERLOCK	44	FO5-9, Sheet 2 Table 6-3 (XMT)	RS422 TTL	TDATA (J2-5 thru 12 ref. to J2-23 thru J2-30)	0V: OK +5V: Open
Control Status	XMTR IN MAINTENANCE MODE	45	FO5-9, Sheet 2 Table 6-3 (XMT)	RS422 TTL	TDATA (J2-5 thru 12 ref. to J2-23 thru J2-30)	0V: No +5V: Yes
Transmitter Status	XMTR MAINTENANCE REQUIRED	62	FO5-9, Sheet 2 Table 6-3 (XMT)	RS422 TTL	TDATA (J2-5 thru 12 ref. to J2-23 thru J2-30)	0V: No +5V: Required
PFN Switch Position	PFN/PW SWITCH FAILURE	47	FO5-9, Sheet 2 Table 6-3 (XMT)	RS422 TTL	TDATA (J2-5 thru 12 ref. to J2-23 thru J2-30)	0V: Short Pulse +5V: Long Pulse
PS6 (+5V)	XMTR +5VDC POWER SUPPLY 6 FAIL	48	FO5-9, Sheet 2 Table 6-3 (XMT)	RS422 TTL	TDATA (J2-5 thru 12 ref. to J2-23 thru J2-30)	0V: OK +5V: Fail

Additional Information may be found in Section 5.7 of the 513

5.7.1 INTRODUCTION

This section discusses the RDASC interface functions of the data acquisition interface at the functional block diagram level. The data acquisition interface functions and reference diagrams discussed in this section are listed as follows:

- [Figure FO5-8](#) Signal Processor Interface Panel Functional Block Diagram
- [Figure FO5-9](#) Signal Processor Interface Panel Signal Flow Diagram
- [Figure FO5-13](#) RDA Status and Control Interface Functional Block Diagram
- [Figure FO5-14](#) RDASC/SPIP Command Data Interface Functional Block Diagram
- [Figure FO5-15](#) Redundant RDASC/SPIP Command Data Interface Functional Block Diagram
- [Figure FO5-16](#) SPIP/RDASC Status Data Interface Functional Flow Diagram
- [Figure FO5-17](#) Generator Discrete Status Data Monitoring (Onan/Kohler) Functional Flow Diagram
- [Figure FO5-18](#) RDA Discrete Status Data Monitoring Functional Flow Diagram
- [Figure FO5-19](#) RDA Surge Suppression Assembly Interconnect Diagram
- [Figure FO5-20](#) Single Channel Analog Status Data Monitoring Flow Functional Block Diagram
- [Figure FO5-21](#) Redundant Analog Status Data Monitoring Functional Block Diagram

These functions are discussed in the following paragraphs. On-line performance monitoring and off-line diagnostic testing and are discussed in paragraphs [5.8.3](#) and [5.8.4](#), respectively.

NOTE

This section refers to the RDADP as UD90, the Receiver Cabinet as UD4, the Transmitter as UD3, and the Waveguide Pressurization Unit as UD6. Unless otherwise specified, the information also applies to redundant systems UD190, UD104, UD103, and UD106.

5.7.1.1 Data Acquisition Interface Overview. The data acquisition interface function is a full duplex communication link between Radar Signal Processor (RSP) UD90A11 and Signal Processor Interface Panel (SPIP) UD90A1. Fault alarms and status data from the transmitter, antenna/pedestal position-

Pedestal Control

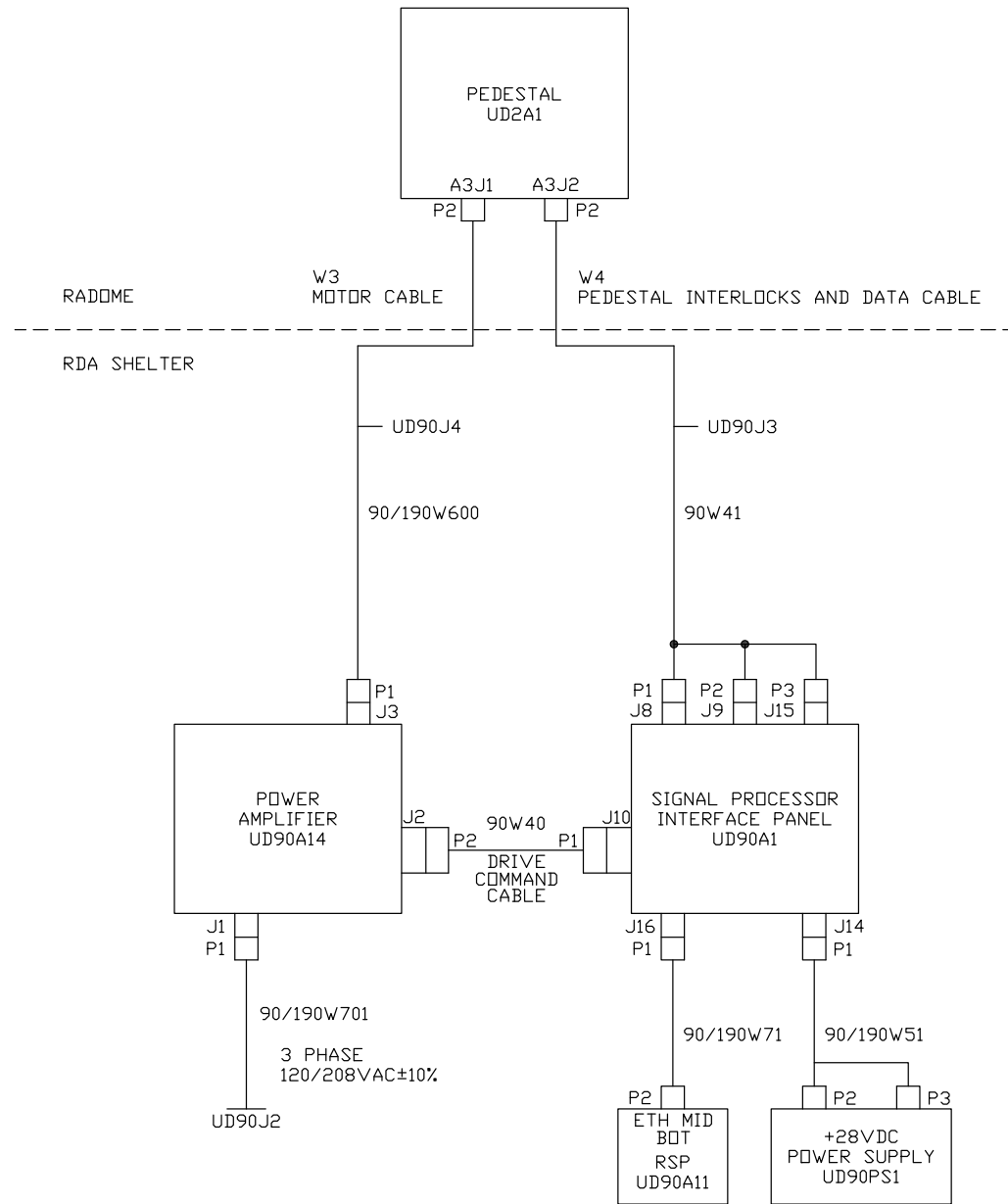
- The SPIP replaces the Digital Control Unit's (DCU) functionality
 - Encoder power comes from the SPIP to a DC to DC converter (+28V -> +5V)
 - Encoder data is read by the SPIP
 - Tach feed back goes to the SPIP, but is not used.
 - The "Drive Command" +/- 10V is provided by the SPIP (not manually adjusted)
 - Power Amplifier K1 is controlled by the SPIP
 - Faults from the Power Amplifier are collected by the SPIP
- Manual alignment of the drive voltage is no longer required. The Pedestal Calibration does not replace the DCU alignment, it is more about the characteristics of the actual pedestal and the servo loop.

Pedestal Interconnect Single Channel RDA

As shown on the right, the cable that went to the DCU now feeds the SPIP.

The SPIP Drive Command Cable feeds the Power Amplifier.

The SPIP connects to the RSP via cable W71



Single Channel

NX3146-D

Pedestal Interconnect Redundant RDA

This drawing adds an Interchannel/interpanel link between the two SPIPs.

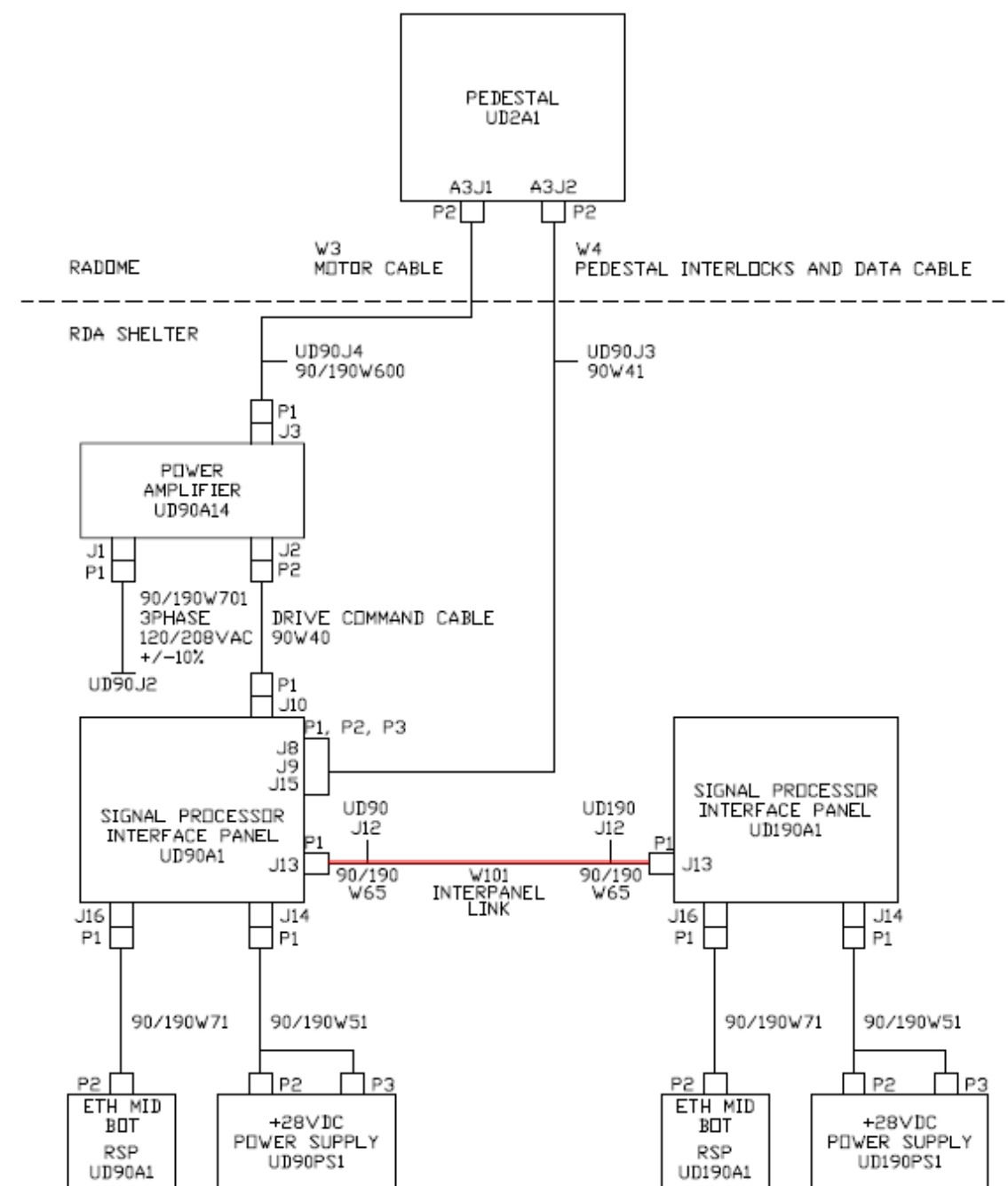
When running on channel 1, the commands and status to and from channel 1's RSP are sent to channel 2's SPIP via channel 1's SPIP to drive the pedestal. "Channel 2's SPIP drives the power amplifier.

Only channel 2's SPIP is connected to the encoders.

Power for the SPIPs is provided locally by the 28V power supply PS1 for each SPIP.

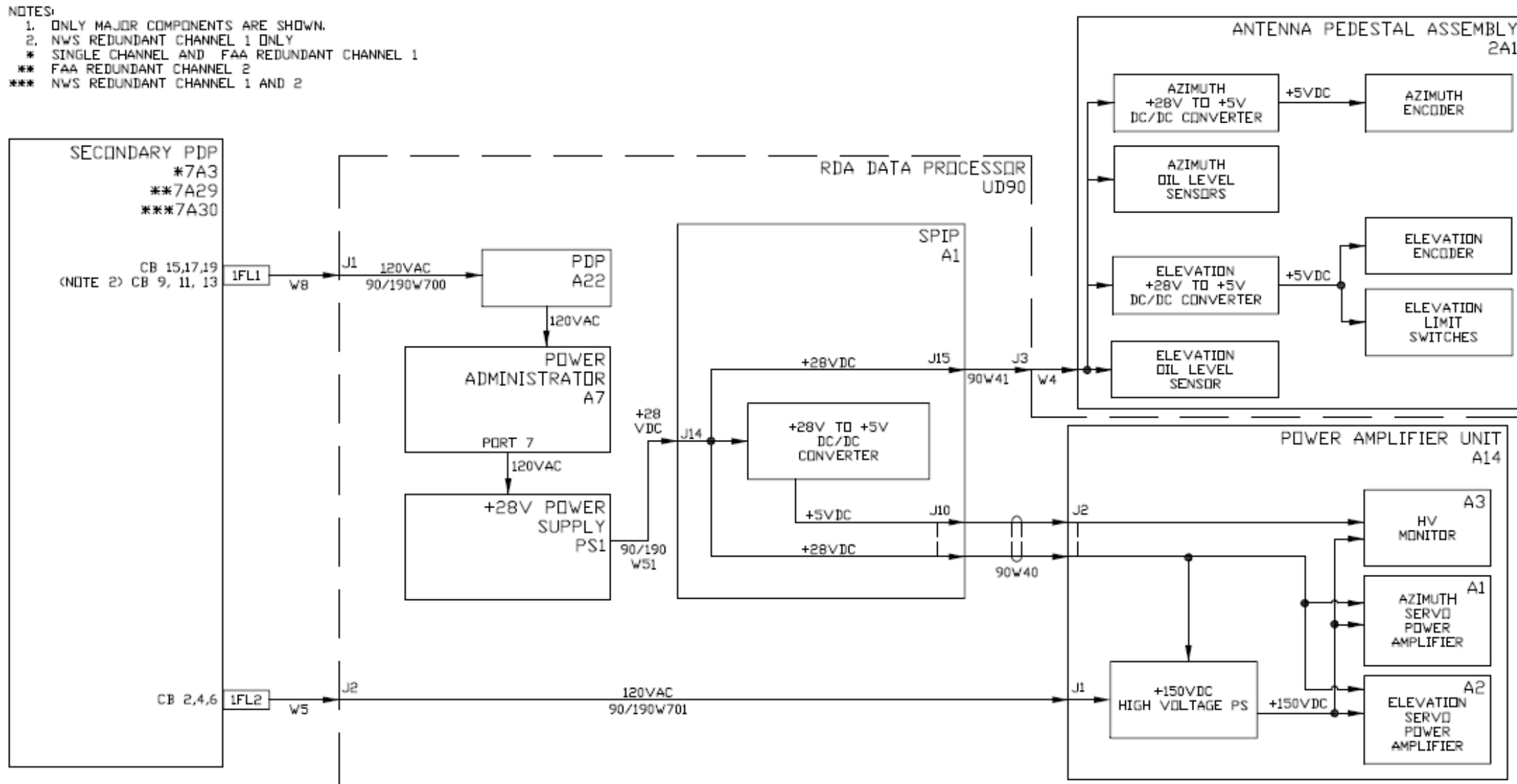
Redundant power is supplied across W101 the Interchannel/Interpanel link. This is why the SPIP display shows where the SPIP is getting its power.

The SPIPs read the cables connected to it to determine what type of system it is in (single, Channel 1 or Channel 2).



6-518 Figure 1-9. Pedestal System Interconnecting Diagram (Redundant Systems) 23

Figure 2-12 of the 518 shows the +28V PS providing power to the SPIP which is then sending 28V to the pedestal for the DC to DC converters for the encoders and power for sensors, which provide 5V to the encoders and limit switches. 28V is used for other pedestal sensors (e.g. oil level sensors).



The DC to DC converter converts 28V to 5V. It has LED's to indicate power on the input and output. A sample of the elevation encoder's 5V power is sent back to the SPIP for status.

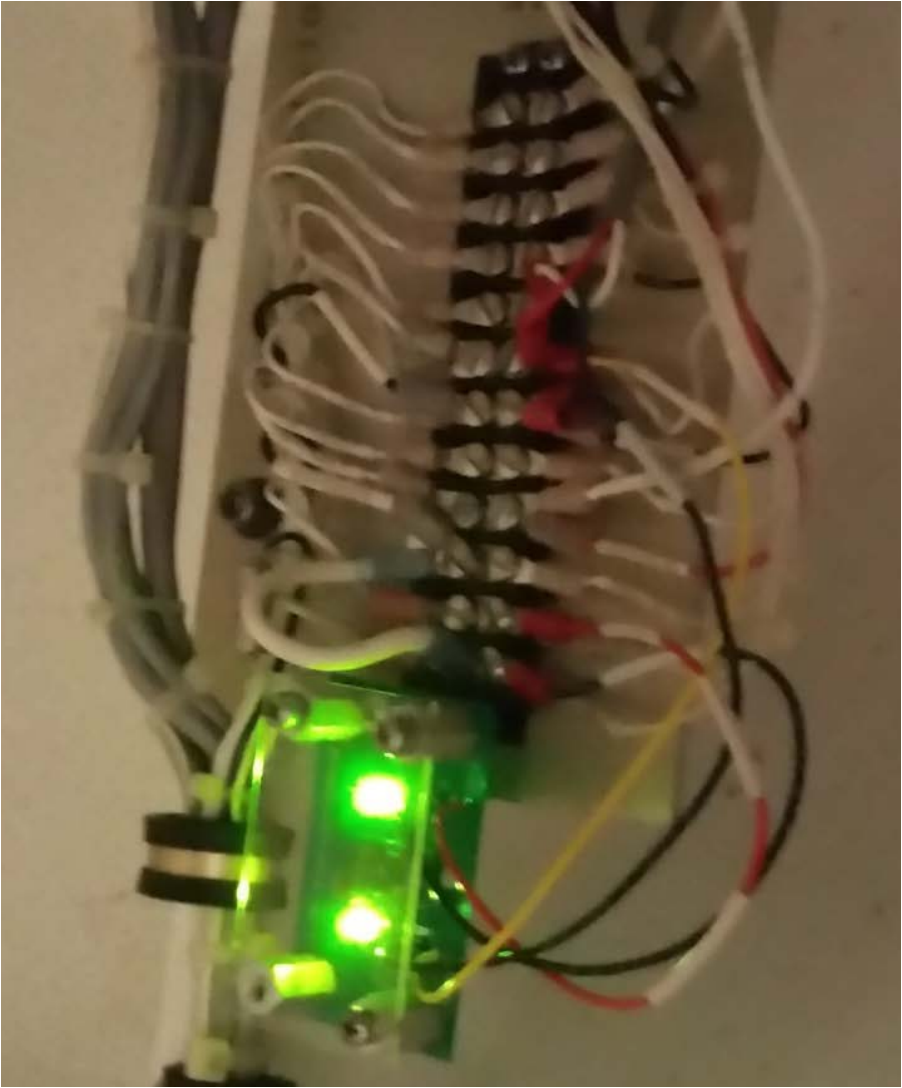
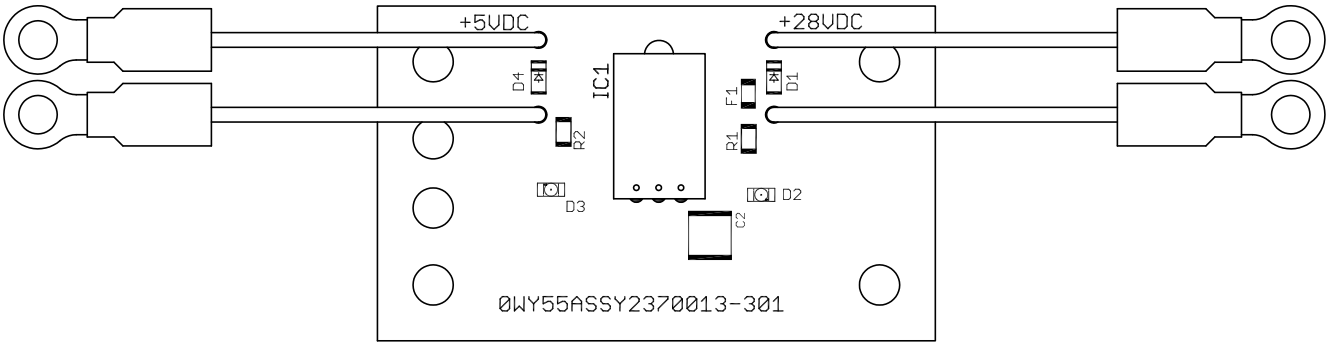
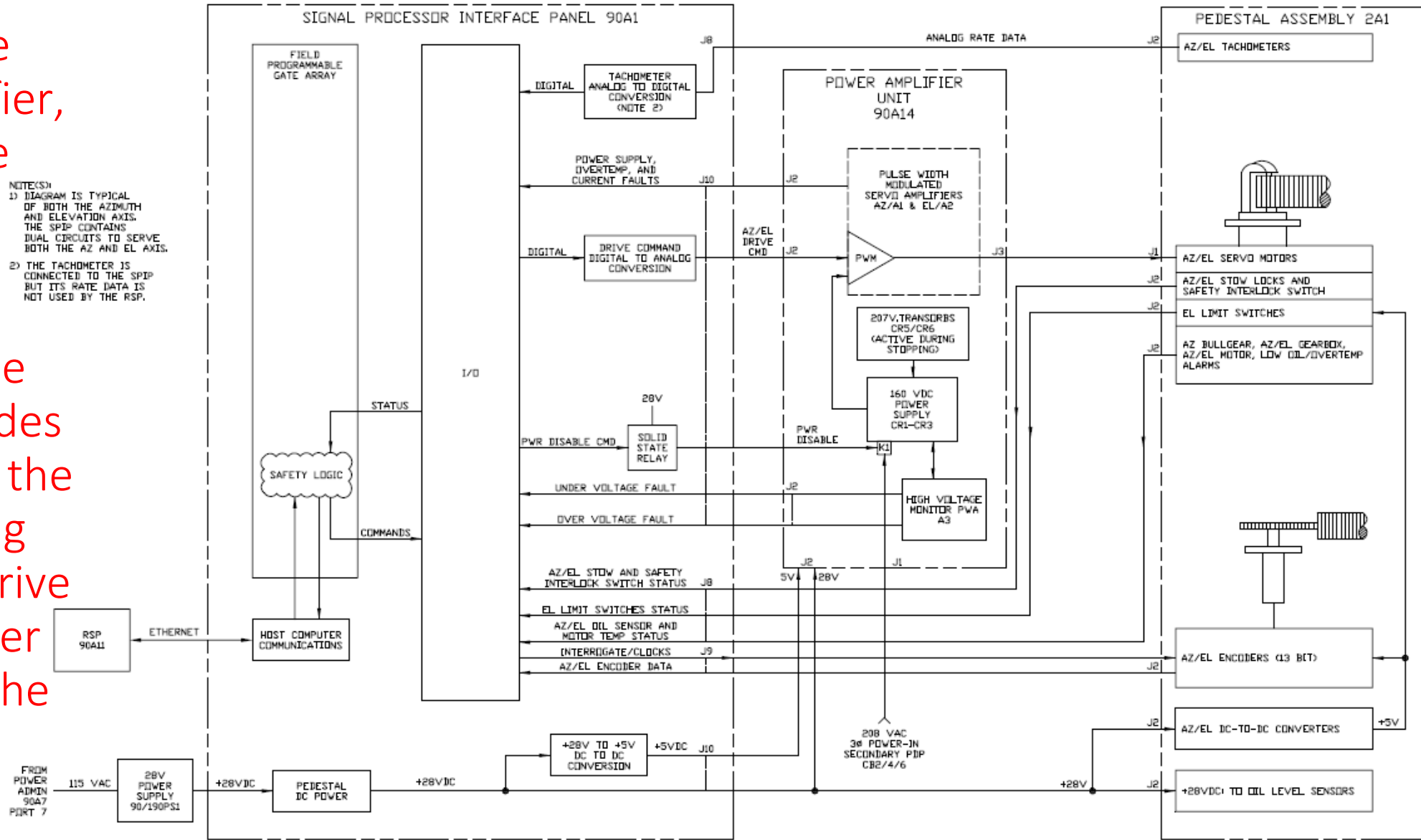


Figure 2-11 in the 518 shows the relationships of the SPIP, Power Amplifier, Encoders and Drive motors.

The Field Programmable Gate Array (FPGA) provides the safety logic for the pedestal positioning and provides the drive voltage to the Power Amplifier to drive the antenna

- NOTES:
 1) DIAGRAM IS TYPICAL OF BOTH THE AZIMUTH AND ELEVATION AXIS. THE SPIP CONTAINS DUAL CIRCUITS TO SERVE BOTH THE AZ AND EL AXIS.
 2) THE TACHMETER IS CONNECTED TO THE SPIP BUT ITS RATE DATA IS NOT USED BY THE RSP.



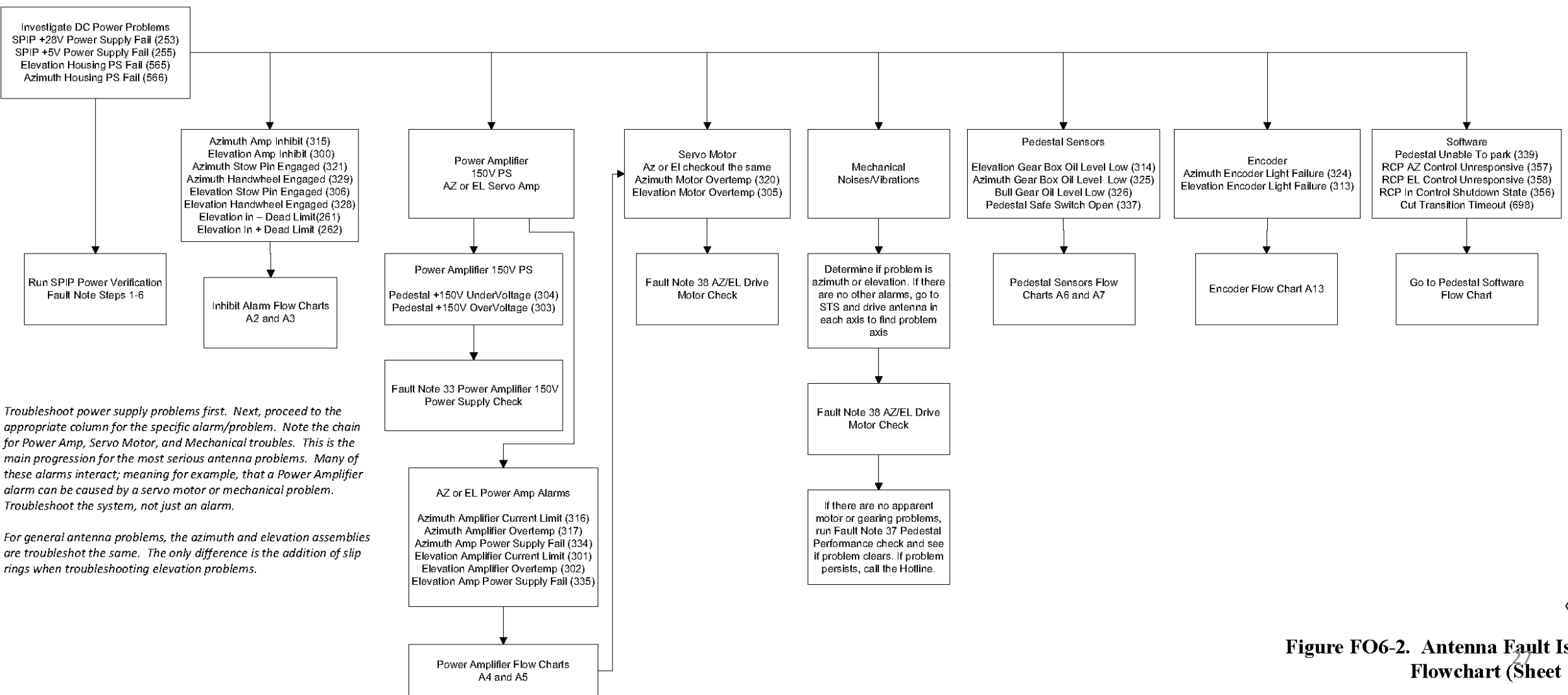
6-518 Figure 2-11. Pedestal System Functional Flow Diagram (Sheet 1 of 2)

Antenna Troubleshooting Order Of Precedence

Note:

This flowchart provides a fundamental order in which various Antenna Alarms and faults should be resolved. Most alarms have basic troubleshooting in Alarm Table 6-2 (Ped Alarms). Many antenna problems have multiple alarms associated with them, often alarms that appear unassociated with the primary cause. Several antenna problems do not have associated alarms; those symptoms are noted where appropriate.

There is now an order of precedence for troubleshooting the pedestal.



Troubleshoot power supply problems first. Next, proceed to the appropriate column for the specific alarm/problem. Note the chain for Power Amp, Servo Motor, and Mechanical troubles. This is the main progression for the most serious antenna problems. Many of these alarms interact; meaning for example, that a Power Amplifier alarm can be caused by a servo motor or mechanical problem. Troubleshoot the system, not just an alarm.

For general antenna problems, the azimuth and elevation assemblies are troubleshoot the same. The only difference is the addition of slip rings when troubleshooting elevation problems.

Figure FO6-2. Antenna Fault Isolation Flowchart (Sheet 1 of 13)

Table 6-30. Fault Note Index - Continued

There are Fault Notes and Flowcharts for the SPIP and Pedestal Positioning

Fault Note	Title
⑳	TRANSMITTER PEAK POWER OUT (measured at UD1AT4)
㉑	INITIATE STS FROM RDA HCI
㉒	RF POWER MONITOR CHECK
㉓	LAN SWITCH PORT FAILURE
㉔	RDA CONTROL PROCESSOR-RDA SIGNAL PROCESSOR ETHERNET LINK
㉕	RPG LINK RED ALARM
㉖	RF GENERATOR PHASE SHIFTER
㉗	WAVEGUIDE SWITCH CHECKOUT
㉘	SPIP POWER VERIFICATION
㉙	SPIP PEDESTAL SENSOR TEST
㉚	POWER AMPLIFIER OUTPUT
㉛	ANTENNA DRIVE VOLTAGE
㉜	POWER AMPLIFIER 150V POWER SUPPLY
㉝	AZIMUTH/ELEVATION HOUSING DC-TO-DC CONVERTER CHECKOUT
㉞	ENCODER CHECKOUT
㉟	R1 - RECEIVER POWER SUPPLY LOAD CHECK
㊱	PEDESTAL PERFORMANCE CHECK/CALIBRATION
㊲	AZ/EL DRIVE MOTOR CHECK
㊳	R4 - RF BURST PATH, IFDR, RSP COMPONENT CHECK
㊴	R5 - RF BURST MIXER UD4/104A39 AND 6 dB DIRECTIONAL COUPLER UD4/104DC3

There is a performance check and calibration note.

The note has you run a diagnostic, then run a VCP to verify no faults or alarms.

If pedestal performance appears to operate normally after a major antenna drive component replacement, then a pedestal calibration is not advised.

Calibrating a normally functioning pedestal drive system will not improve performance and may introduce antenna control problems.

Pedestal calibration is not designed to fix hardware problems. Running it with system problems may mask problems, and will be a temporary fix that is likely to fail as the problem degrades.

If you're going to run a pedestal calibration, backup first! Backing up to the removable drive is quick and easy.

37	PEDESTAL PERFORMANCE CHECK/CALIBRATION
Step	Operator Action
1	<p>At the Main RDA HCI, place the system in Standby. Standby displays in the State: field.</p> <p style="text-align: center;">NOTE</p> <p>At NWS sites, the following task requires coordination with personnel at the WFO. DoD and FAA sites can perform this task at the RPG inside RDA shelter.</p> <p>Disabling AVSET when testing the pedestal calibration will ensure a full VCP will run.</p>
2	<p>If AVSET is already disabled, skip to step 3, otherwise, complete this step. At the MSCF or RPG HCI, disable AVSET by clicking on the AVSET Enable button, and then click Yes at the Warning Popup window.</p>
3	<p>Perform the following steps at the Main RDA HCI to assess azimuth or elevation drive performance:</p> <ol style="list-style-type: none"> a. Click on the System Test Software button. Then click Yes on the Confirm Maintenance Mode pop-up window. The System Test Software window opens. b. On the menu bar of the System Test Software window, click Diagnostics ► Pedestal... to open the Pedestal Diagnostics window. c. In the Pedestal Diagnostics window, click None, select 4 (Velocity/Acceleration Test), and then click Run. Observe the results for any anomalies. d. In the Pedestal Diagnostics window, click Close. e. Close the System Test Software window by clicking File then Exit and Yes to confirm. Click OK on the Elapsed Time pop-up window.

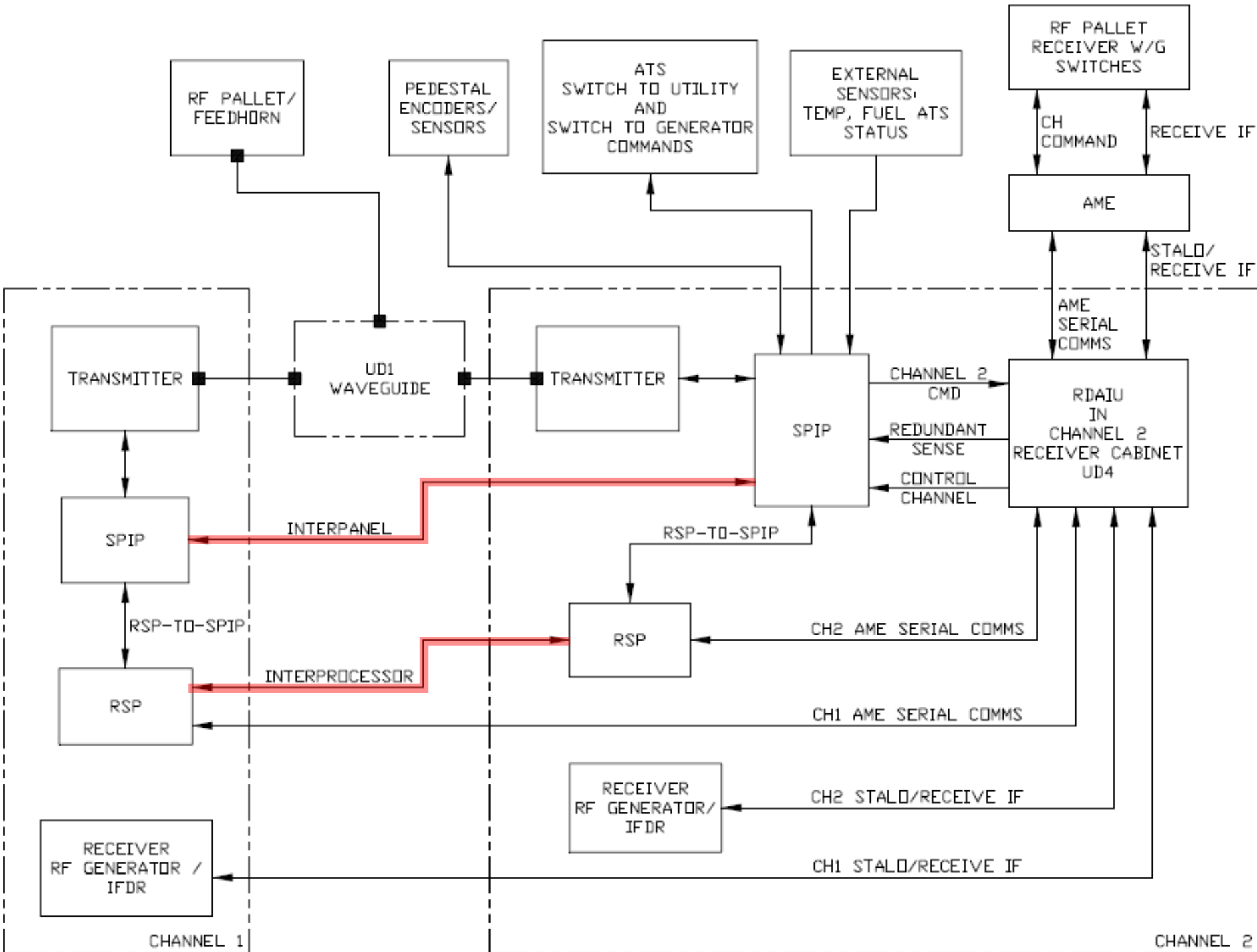
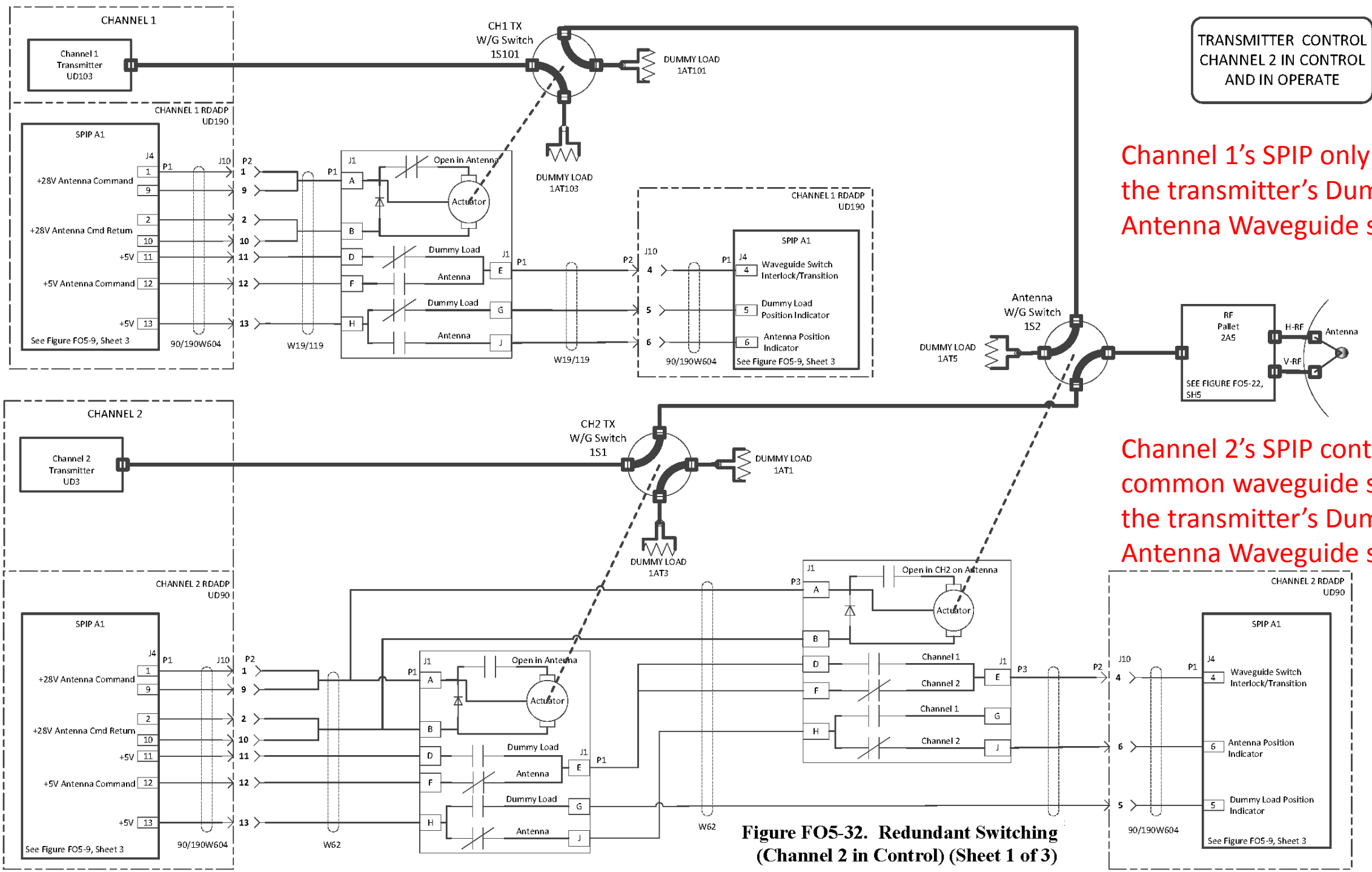


Figure 5-21 of the 513 shows the SPIPs relationship to the waveguide switches and RDA Interface Unit (RDAIU)

Notice the RSPs communicate over the network forming an Interprocessor link. The SPIPs have an Interpanel link.

Only the SPIP in channel 2 commands the RDAIU.

SPIPs receive power from local 28VDC PS or from the interpanel link.



TRANSMITTER CONTROL
CHANNEL 2 IN CONTROL
AND IN OPERATE

Channel 1's SPIP only controls the transmitter's Dummy Load / Antenna Waveguide switch

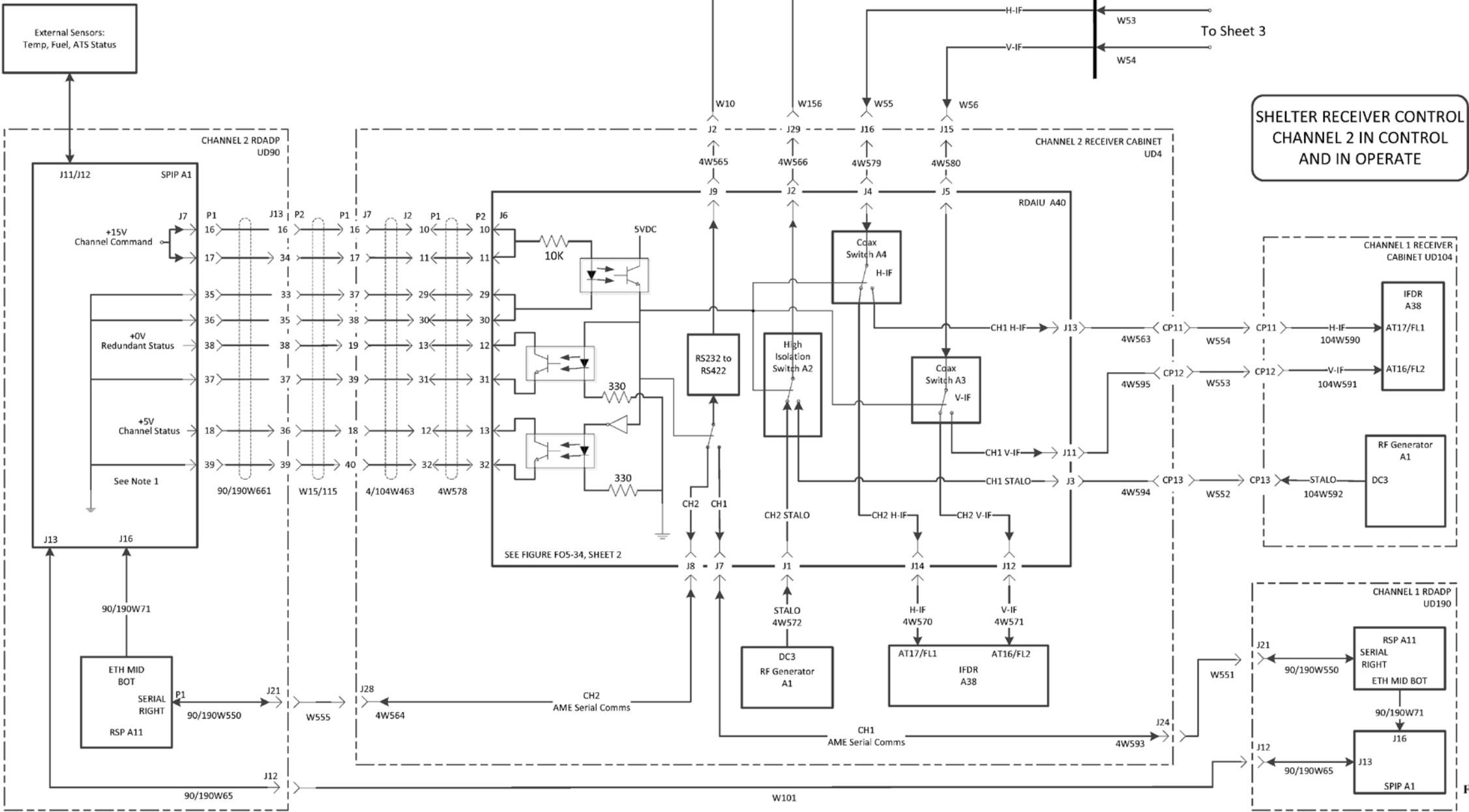
Channel 2's SPIP controls the common waveguide switch and the transmitter's Dummy Load / Antenna Waveguide switch

Figure FO5-32. Redundant Switching (Channel 2 in Control) (Sheet 1 of 3)

NOTE:
 1. The voltages for Channel Command, Redundant Status, and Channel Status represent the voltage levels sent and returned for Channel 2 in control. The Channel 2 SPIP generates all these voltages and reports status to both SPIP's. The Channel Command +15V drives the Opto-Isolator in the RDAIU. The Redundant Status and Channel Status voltage shows if the Opto-Isolator outputs in the RDAIU are open (+5V) or shorted (0V).

2. See Section 5.12 for Redundant Switching Theory.

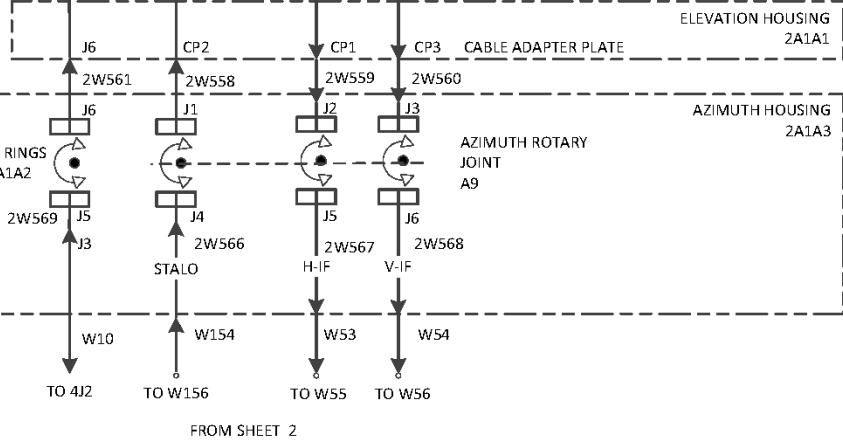
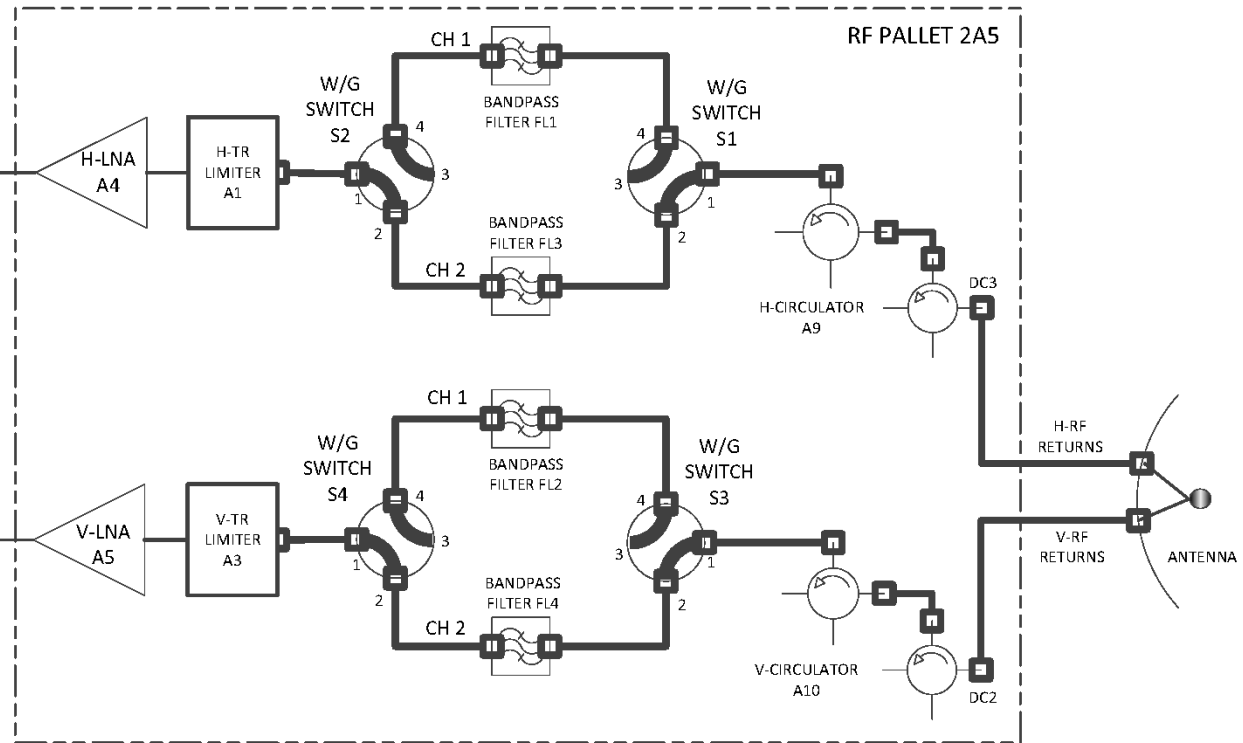
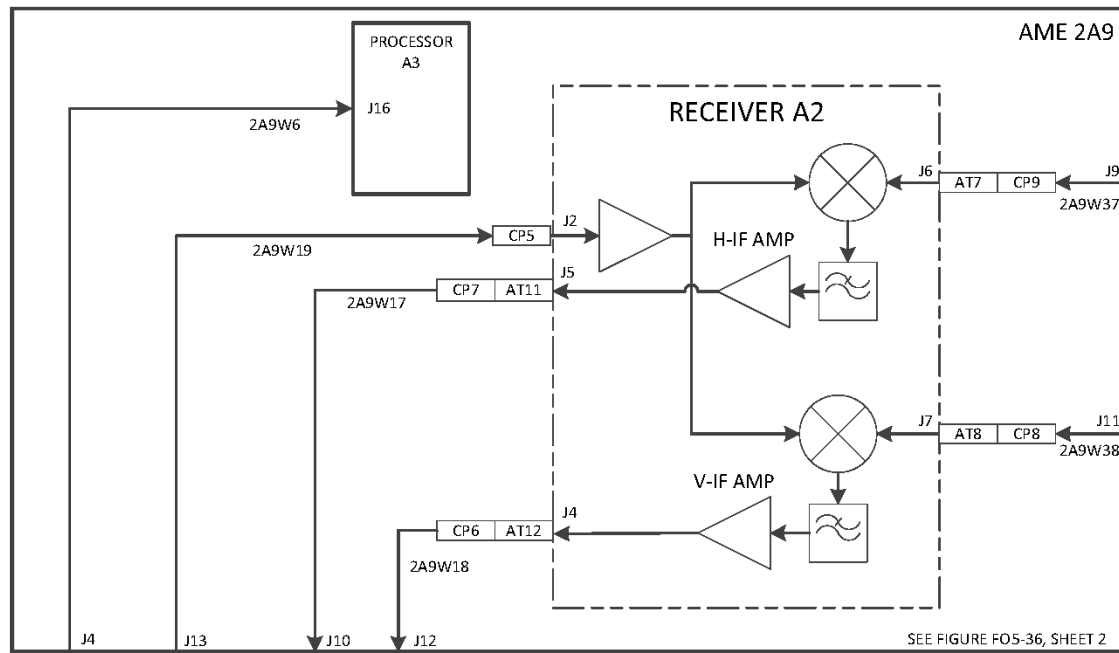
Channel 2's SPIP directly controls the RDAIU.



**SHELTER RECEIVER CONTROL
 CHANNEL 2 IN CONTROL
 AND IN OPERATE**

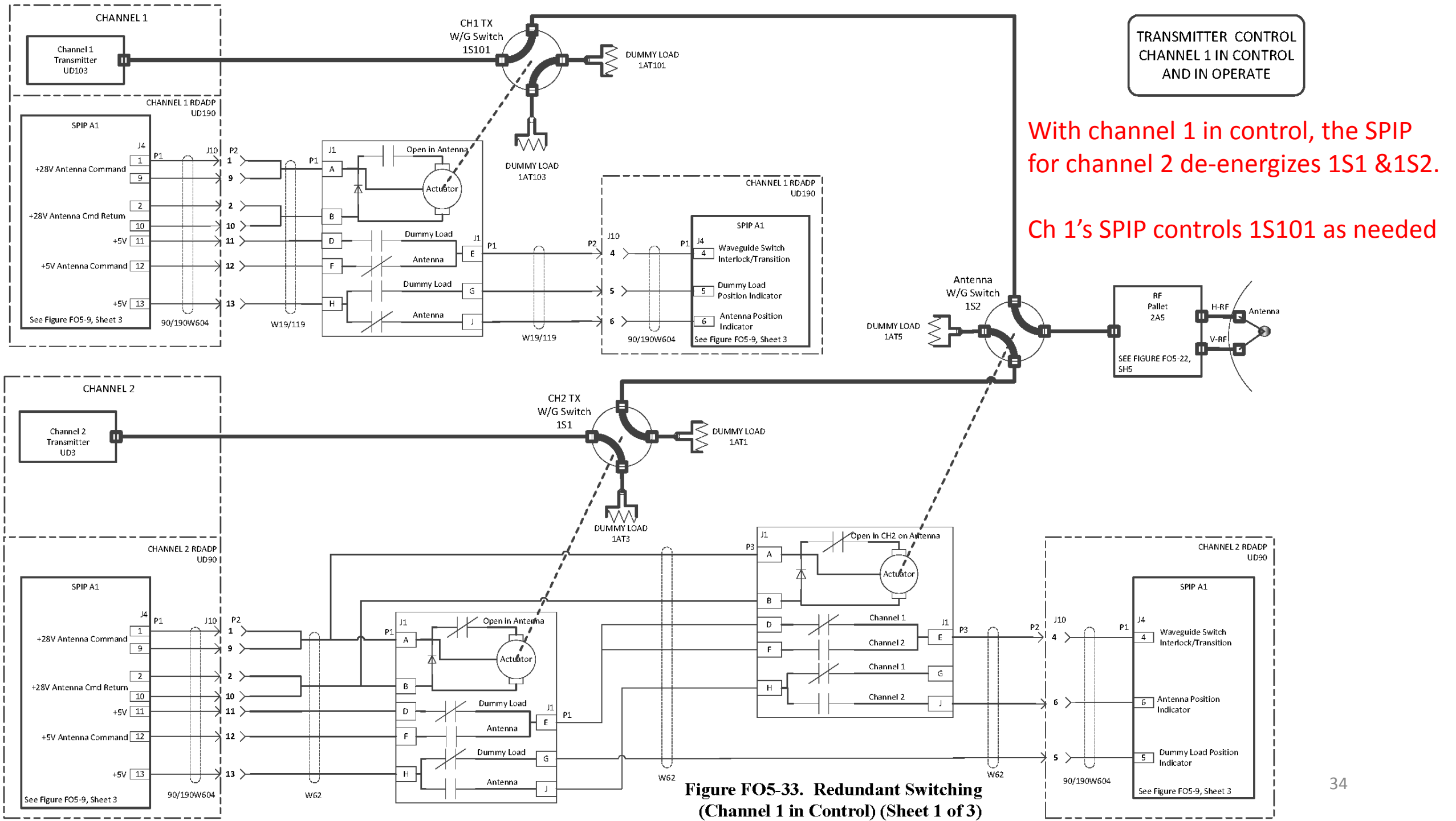
32
 Figure FO5-32. Redundant Switching (Channel 2 in Control) (Sheet 2 of 3)

ANTENNA RECIEVER CONTROL
CHANNEL 2 IN CONTROL AND IN OPERATE

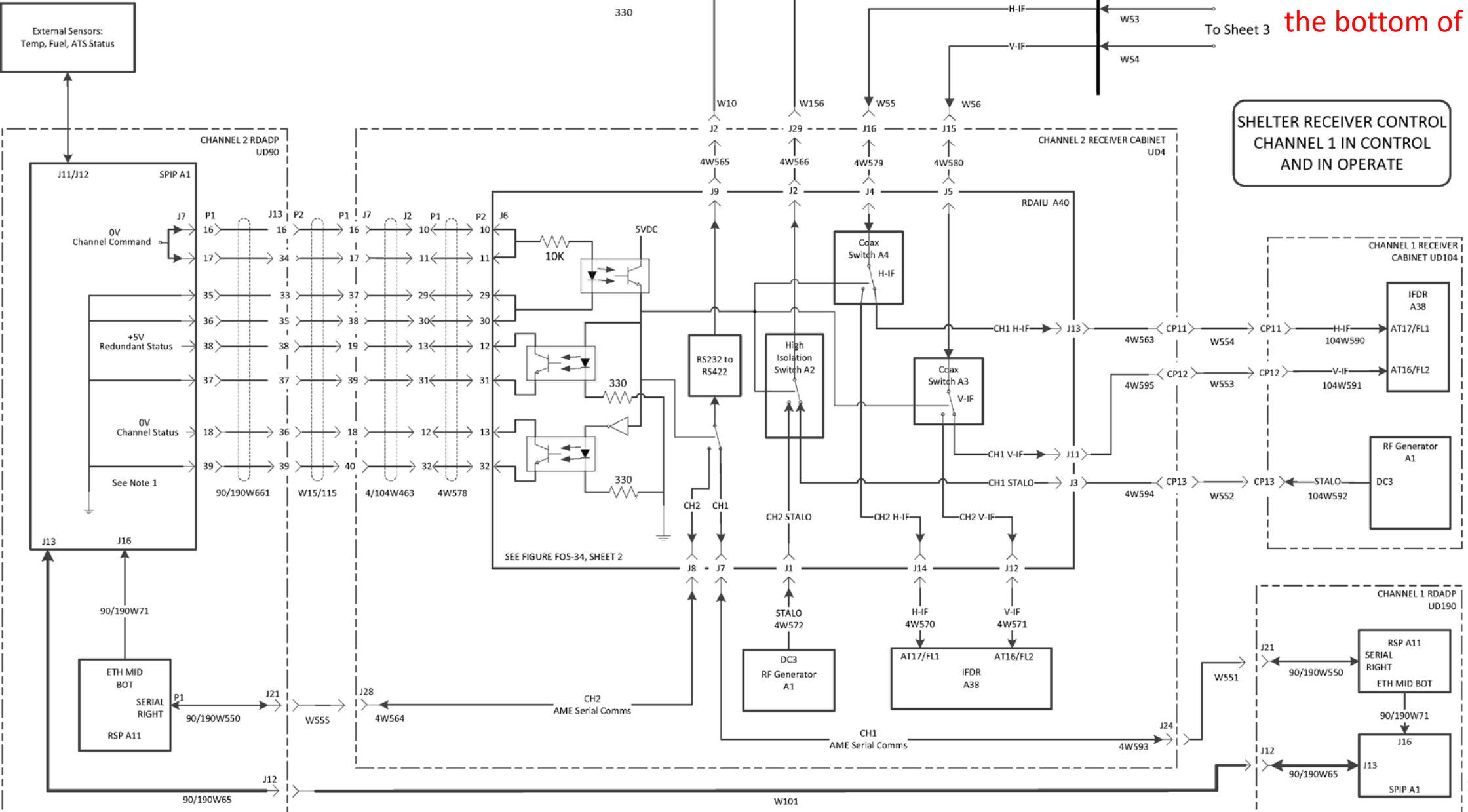


The pallet waveguide switches remain unchanged.

Figure FO5-32. Redundant Switching
(Channel 2 in Control) (Sheet 3 of 3)



- NOTE:
1. The voltages for Channel Command, Redundant Status, and Channel Status represent the voltage levels sent and returned for Channel 1 in control. The Channel 2 SPIP generates all these voltages and reports status to both SPIP's. The Channel Command 0V turns off the Opto-Isolator in the RDAIU. The Redundant Status and Channel Status voltage shows if the Opto-Isolator outputs in the RDAIU are open (+5V) or shorted (0V).
 2. See Section 5.12 for Redundant Switching Theory.



Channel 1's SPIP communicates with channel 2's SPIP via W101 (the Inter-Panel link) shown on the bottom of this drawing.

SHELTER RECEIVER CONTROL
CHANNEL 1 IN CONTROL
AND IN OPERATE

35
Figure FO5-33. Redundant Switching (Channel 1 in Control) (Sheet 2 of 3)

Nothing is changed on the pallet.

ANTENNA RECIEVER CONTROL
CHANNEL 1 IN CONTROL AND IN OPERATE

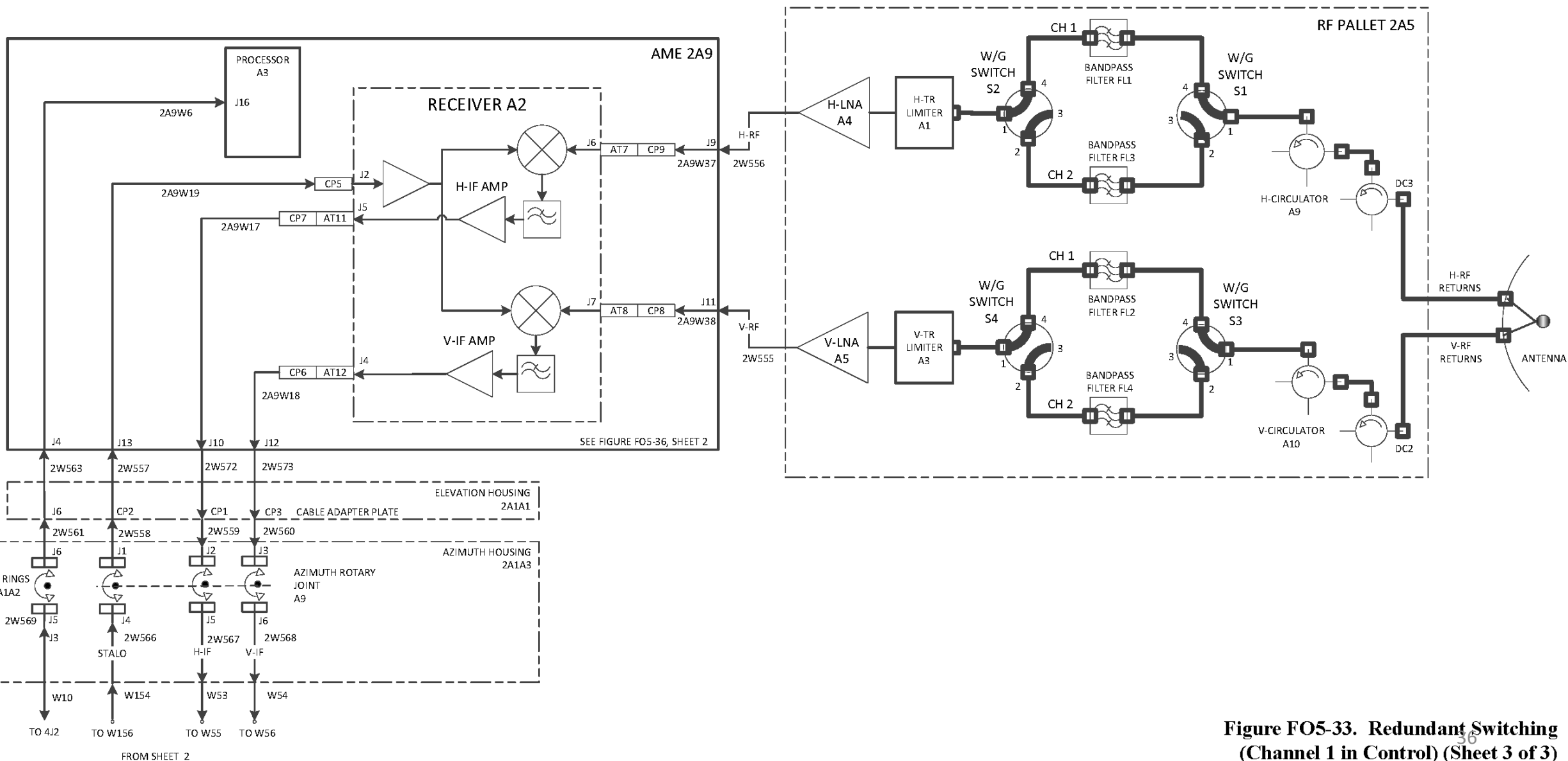


Figure FO5-33. Redundant Switching (Channel 1 in Control) (Sheet 3 of 3)

Miscellaneous Points

- IFDR power is now powered/controlled by a Power Administrator
- RSP has 200GB set aside for backups, 2TB unallocated.
- RSP has a CAC reader that is not configured with deployment
- Better Surge protection on new equipment
- DAU current limited 28V goes away as well as DAU PS2 and PS3
- SPIP outputs -15V, +28V, +15V and +5V as needed by sensors or switches
- IFDR provides transmitter triggers, PFN switching and RF phase control
- Pedestal speed/feedback is based on encoder values, not servo tach feedback
- SPIP safety logics function independently of the RSP software safeties.
- On startup or loss of RSP, SPIP goes to defaults (dummy load, HV off & servo off)
- STS can be used to move antenna from dead limit.
- In a redundant system, Ch 1's SPIP is dependent on Ch2's SPIP for multiple functions