



NEXRAD

**Service Life Extension Program
(SLEP)**

Update: Summer 2016

Radar Operations Center

Outline

- **Build 17.0 & Signal Processor Suite: Status/Deployment**
- **Signal Processor Suite Expectations...**
 - **For maintenance?**
 - **For operators?**
- **Introducing PedCal**
- **Next for SLEP...Transmitter**

Build 17.0 & Signal Processor Suite

- **Signal Processor Suite Upgrade is part of RDA/RPG Build 17.0 Install**
- **6 Beta sites completed (April – July 2016)**
- **Full deployment: Sept 2016 – June 2017**
- **Schedule:**
<http://www.roc.noaa.gov/WSR88D/SLEP/SLEP.aspx>

Build 17.0 & Signal Processor Suite

- **Signal Processor Suite (maintainers):**
informational sheets to detail the changes available from NWSTC:
<http://www.nwstc.noaa.gov/NEXRAD/modifications/modifications.html>
- **Traditional Build 17.0 operator training from WDTD**
 - Several new items of interest (hail, precip)
 - Available prior to full deployment
<http://www.wdtb.noaa.gov/buildTraining/build17/index.php>

Expectations: Prior to Install

- 60 days prior to install:
 - Complete Maint Note 77
 - Archive logs, run Sun Check, return CDs to ROC for analysis
- 2 weeks prior to install:
 - Complete Mod Note 183
 - Verify site kit, verify all passwords (RDA & RPG) and reset if necessary



Verification of completion of 77 and 183 required prior to Build 17 install

Expectations: Prior to Install

- FAA sites have separate pre-installation checklist
- Sites migrating from Frame Relay will require additional Mod Note



- Do not load RPG Build 17.0 before RDA is taken down – this configuration has not been tested

Expectations: During Install



- 2 ROC technicians on-site
- 20-25 hours “on-site” per channel

Expectations: During Install



- **Site ET: Load the RPG**
- **Site ITO/AWIPS admin: Copy NDM file to increase collection of ASP (status) messages**
 - Increased to every 3 hours
 - Reminder in kit
 - NCF will answer AWIPS questions

Expectations: During Install

Uncalibrated data will not be disseminated

In some situations, SLEP install may be complete but calibrations cannot be performed (Sun Check), so data flow will remain disconnected overnight



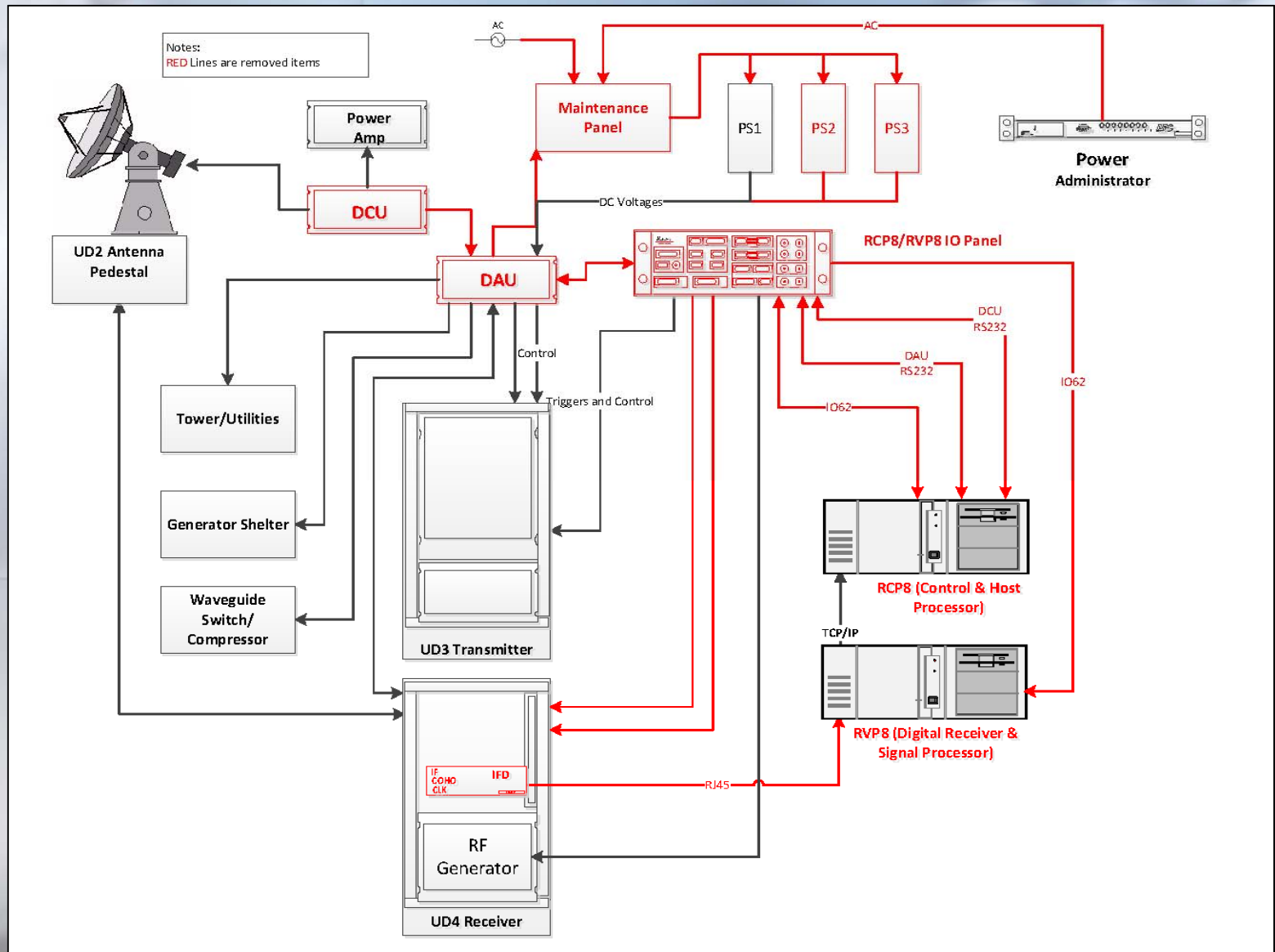
Expectations: What does this mean?

What does the new signal processor suite mean for maintainers?

- **Substantially less hardware**
- **Electronic control of the antenna**
- **Improved “targeting” of elevation angles**

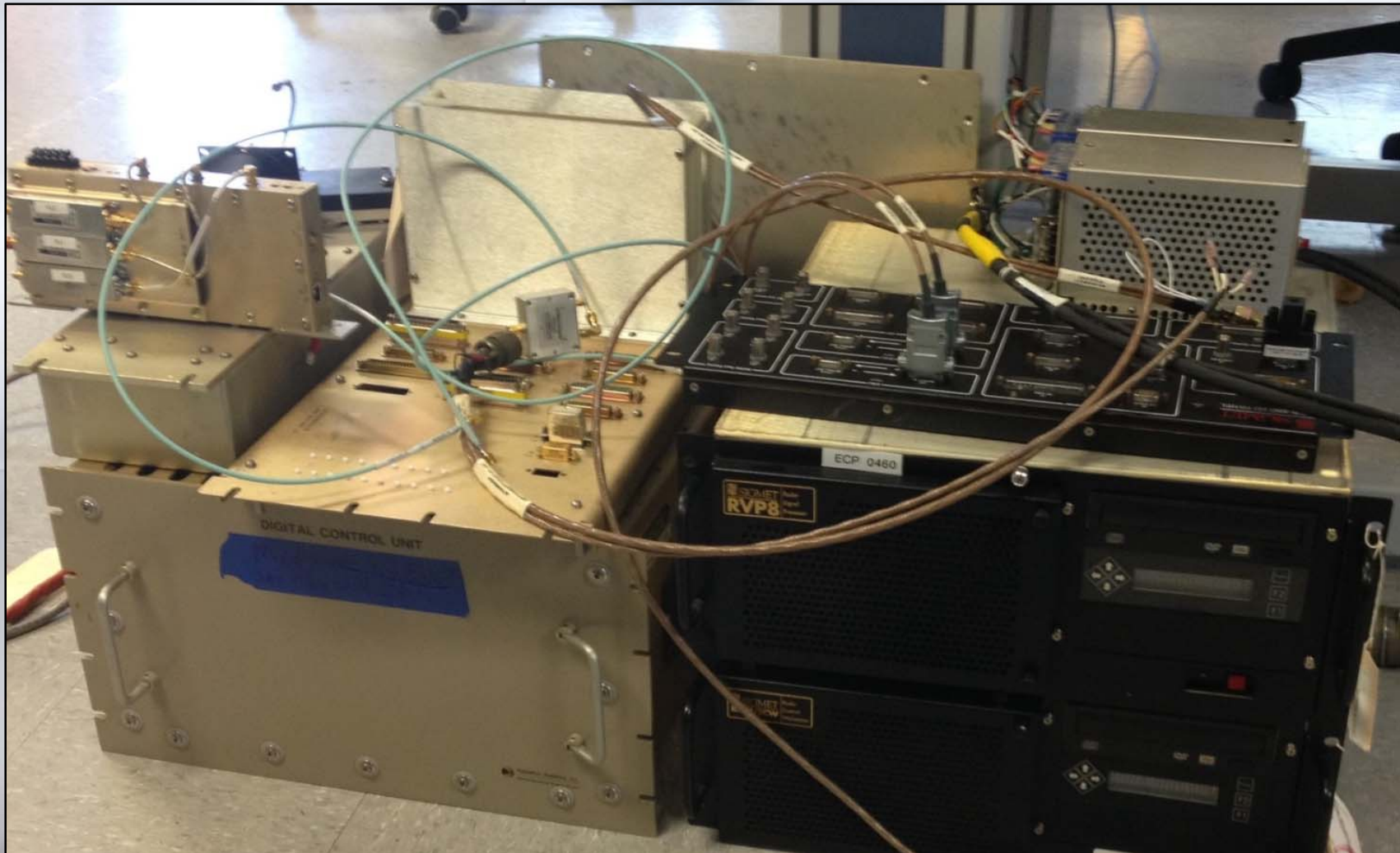
Expectations: What does this mean?

Legacy:



Expectations: What does this mean?

Before

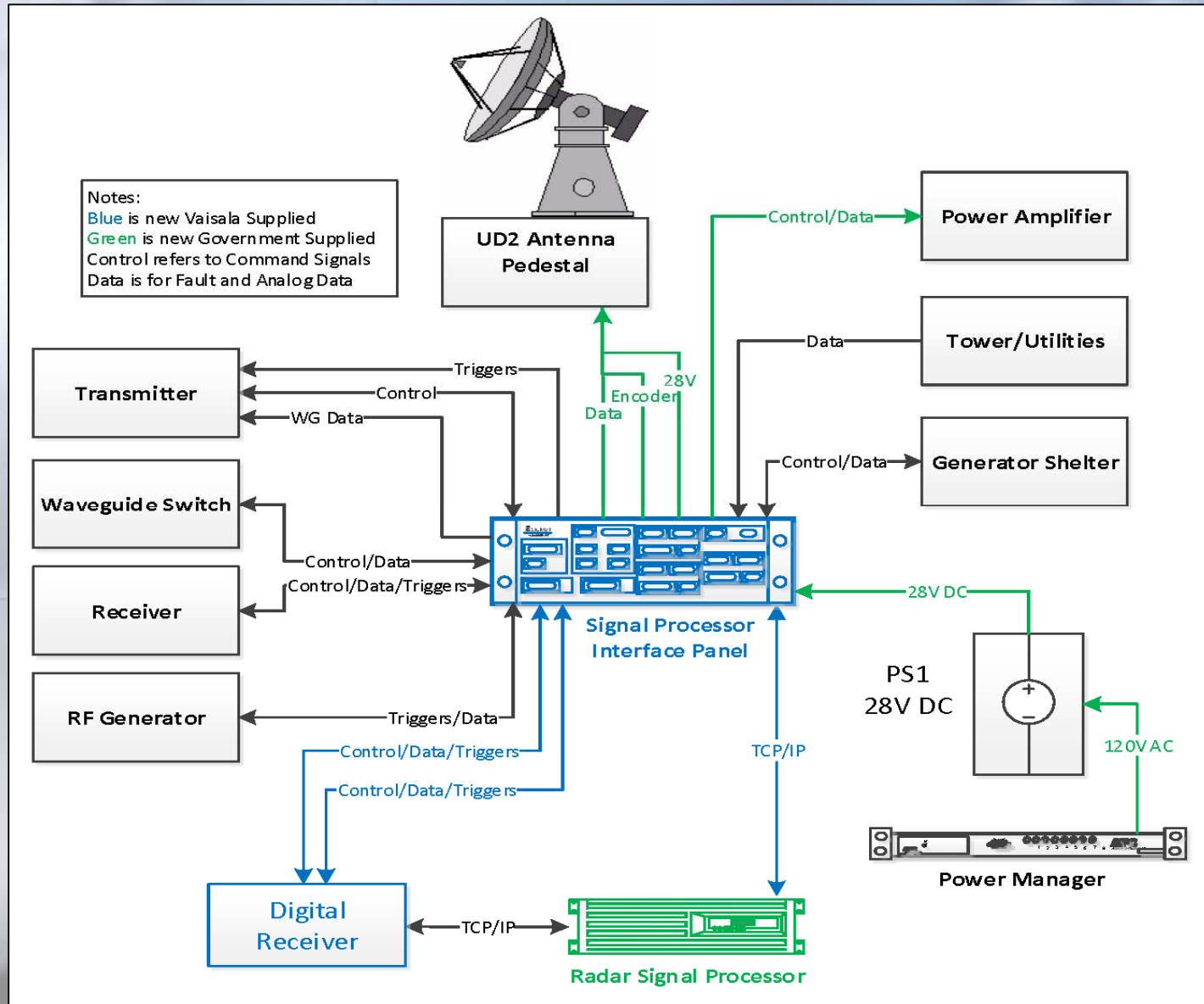


Expectations: What does this mean?



Expectations: What does this mean?

SLEP:



Expectations: What does this mean?

After



Expectations: What does this mean?

What does the new signal processor suite mean for operators?

- **Faster, more precise data processing**
- **Paves the way for future advancements in:**
 - **Data quality**
 - **Data collection**
 - **New products**
- **Advantages will be seen over time**



PedCal: New with SLEP

PedCal or Pedestal Calibration is a new routine to automatically tune the pedestal parameters for NEXRAD operations

Pedestal parameters are part of the new electronic drivers with the signal processor suite

- **Driving loop helps pedestal hold position with more stability than before**

PedCal: New with SLEP

With PedCal:

- **Consistent pointing accuracy**
- **Increased elevation stability**
- **Fewer elevation tolerance exceeded messages**

PedCal is somewhat analogous to the DCU alignment. With SLEP, there are no more manual pedestal alignments. Whereas the DCU alignment took a couple of hours to perform, PedCal takes approximately 20 minutes.

PedCal: New with SLEP

PedCal is run:

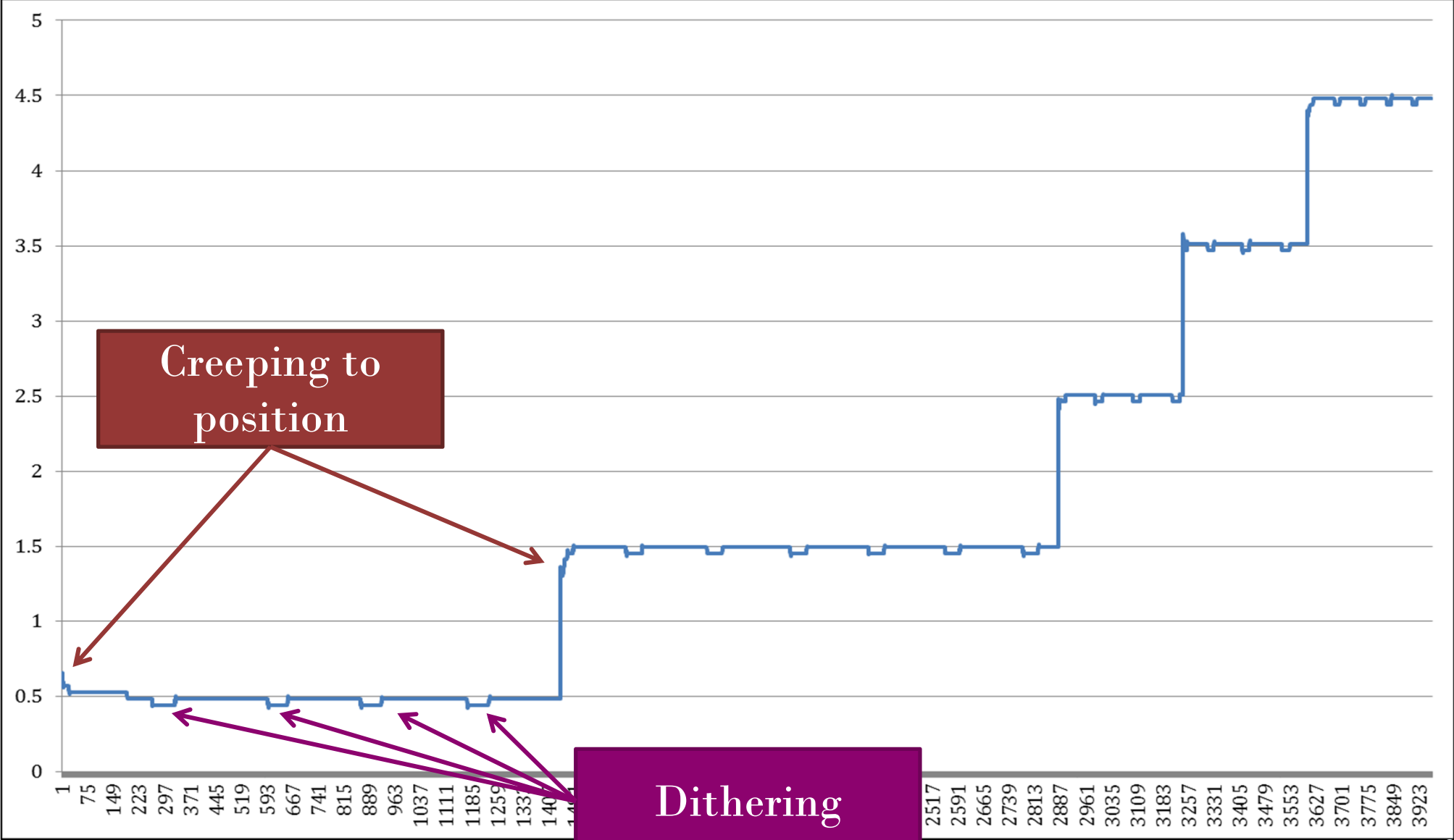
- **At SLEP installation**
- **Mod of major component (weights, bull gear)**
- **After installing new Az or El motors**
- **When Az/El warnings appear, but is only a temporary fix – hardware must be replaced**

- **More guidance in EHB 6-513**

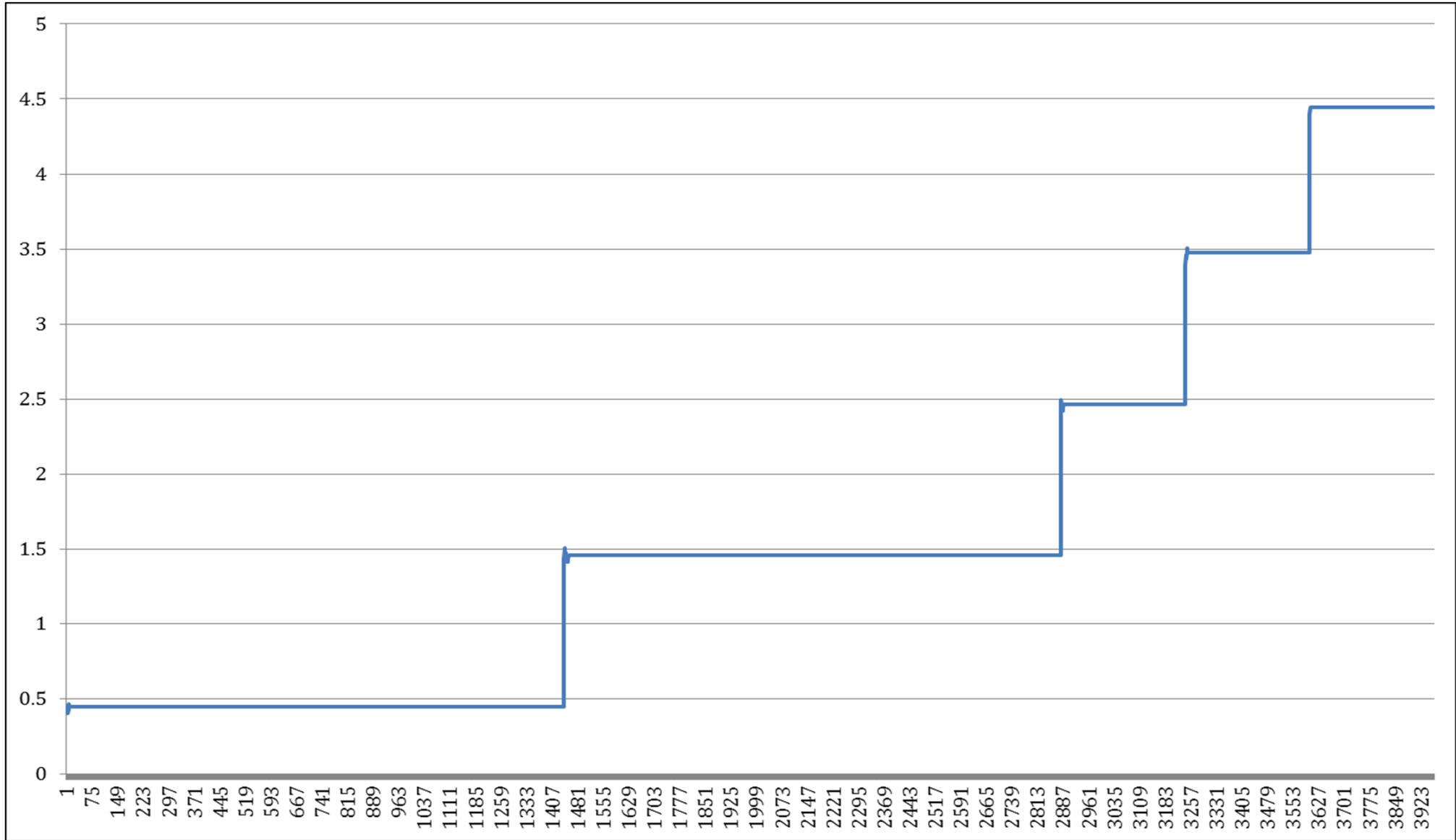
PedCal: Field Examples



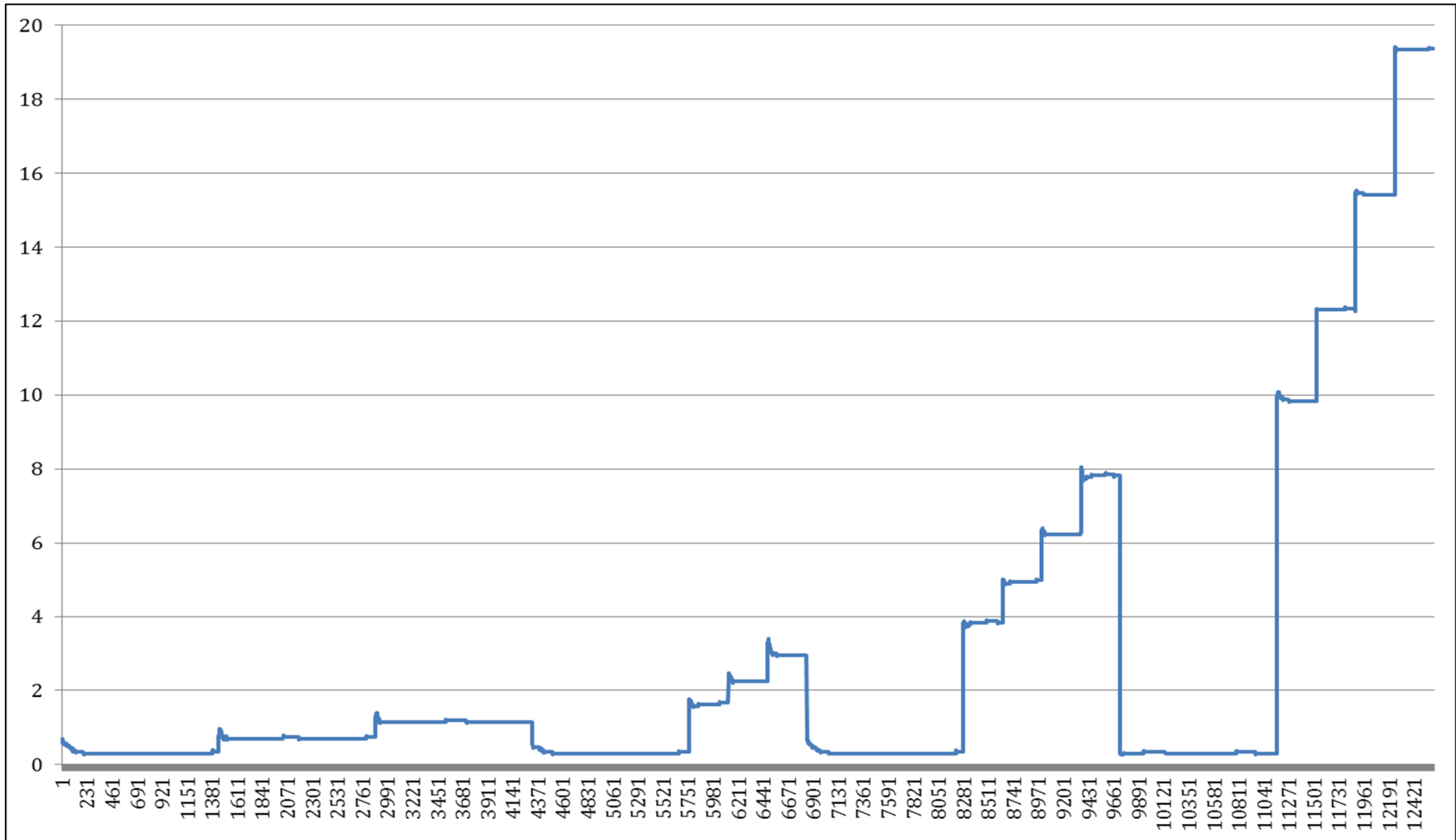
KICT VCP 32 Pre-SLEP



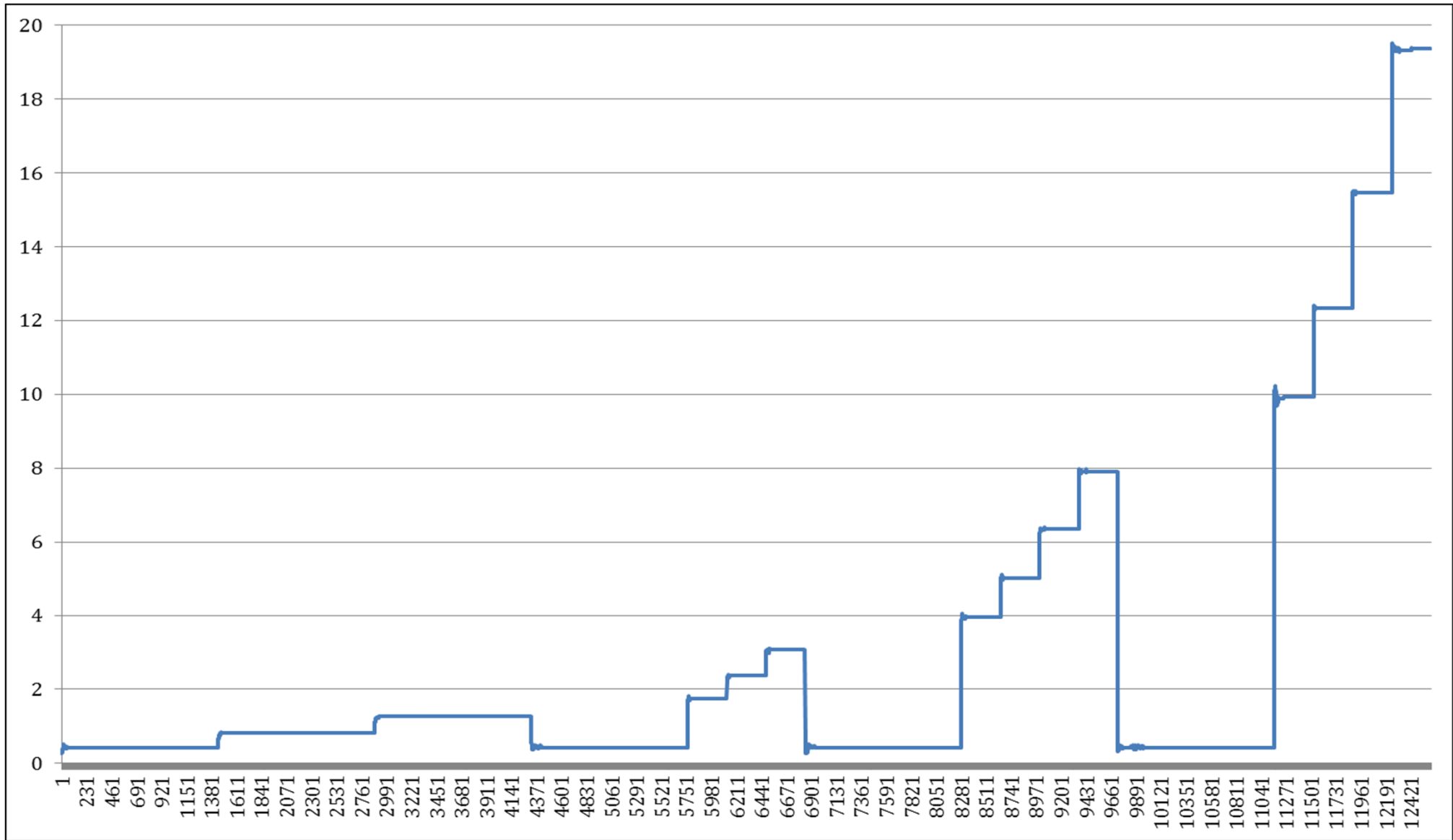
KICT VCP 32 Post-SLEP



KICT VCP 212 (MESO-SAILS) Pre-SLEP



KICT VCP 212 (MESO-SAILS) Post-SLEP



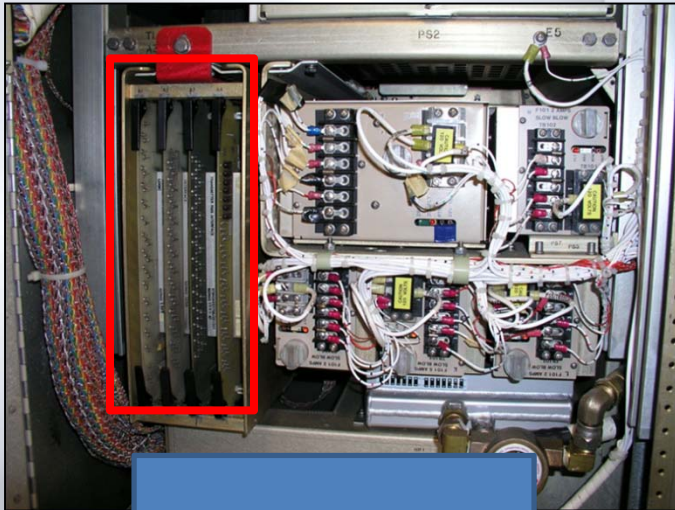
Next SLEP Project: Transmitter

Consists of 3 sub-projects:

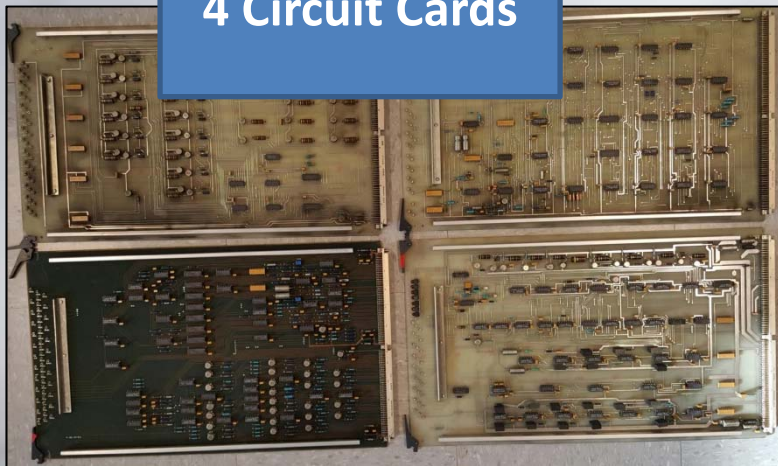
- **Backplane Modernization**
- **Pulse Modulator Upgrade**
- **Chassis Refurbishment**

Next SLEP Project: Transmitter

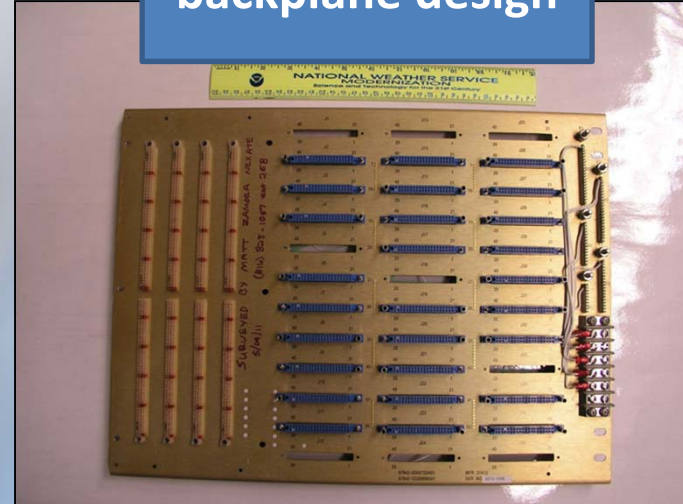
Backplane Modernization: Legacy



4 Circuit Cards

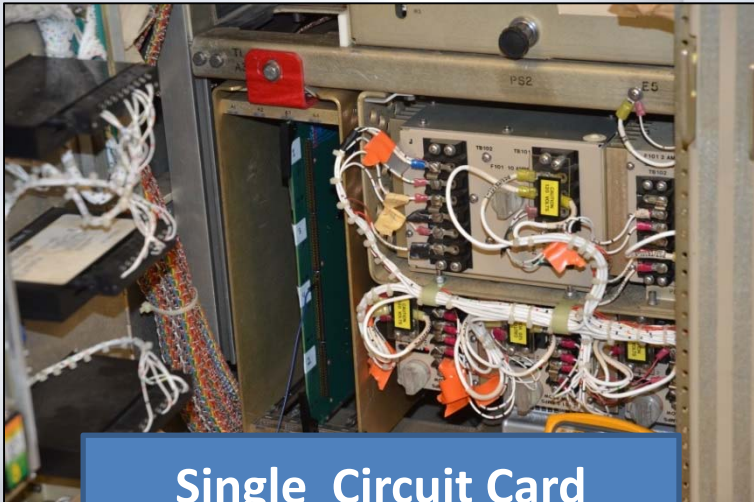


“Wire Wrap”
backplane design

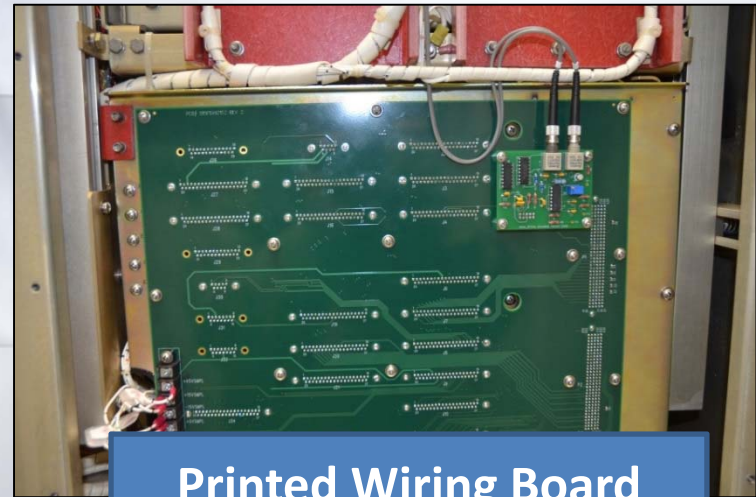


Next SLEP Project: Transmitter

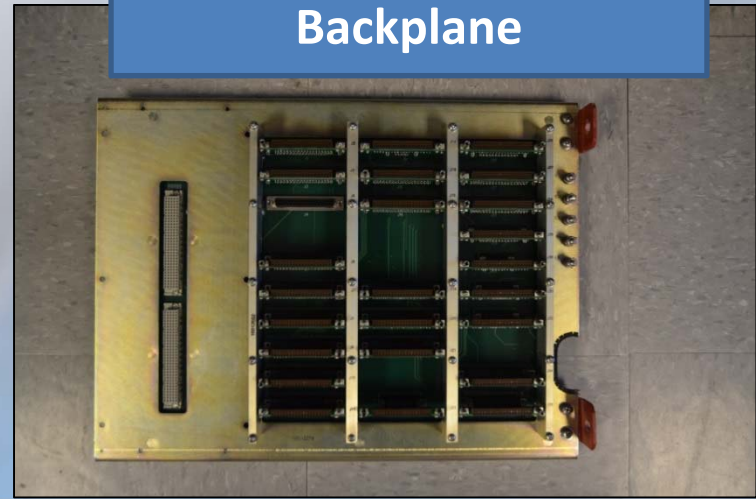
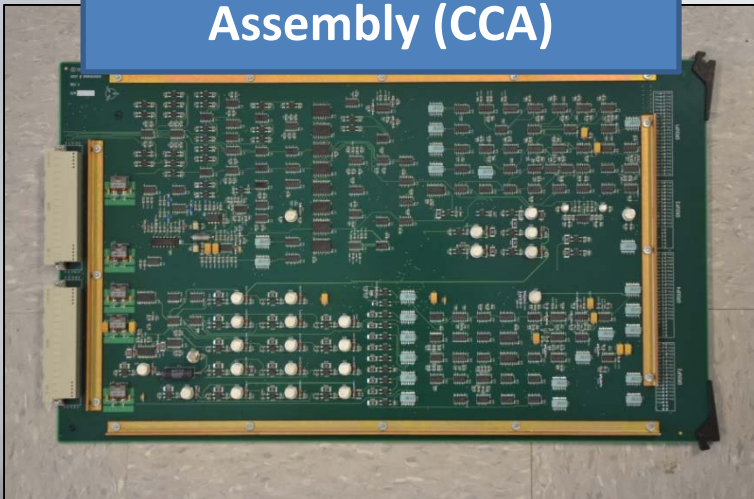
Backplane Modernization: SLEP



Single Circuit Card
Assembly (CCA)



Printed Wiring Board
Backplane



Next SLEP Project: Transmitter

Backplane Modernization:

- Implemented by site personnel as a Mod Note
 - No associated software
- Tentatively scheduled for late 2016
- Prerequisite for Pulse Modulator Upgrade
- Independent of Build 17.0

- *Report completion in your agency's maintenance reporting system in order to receive next upgrade, Pulse Modulator*



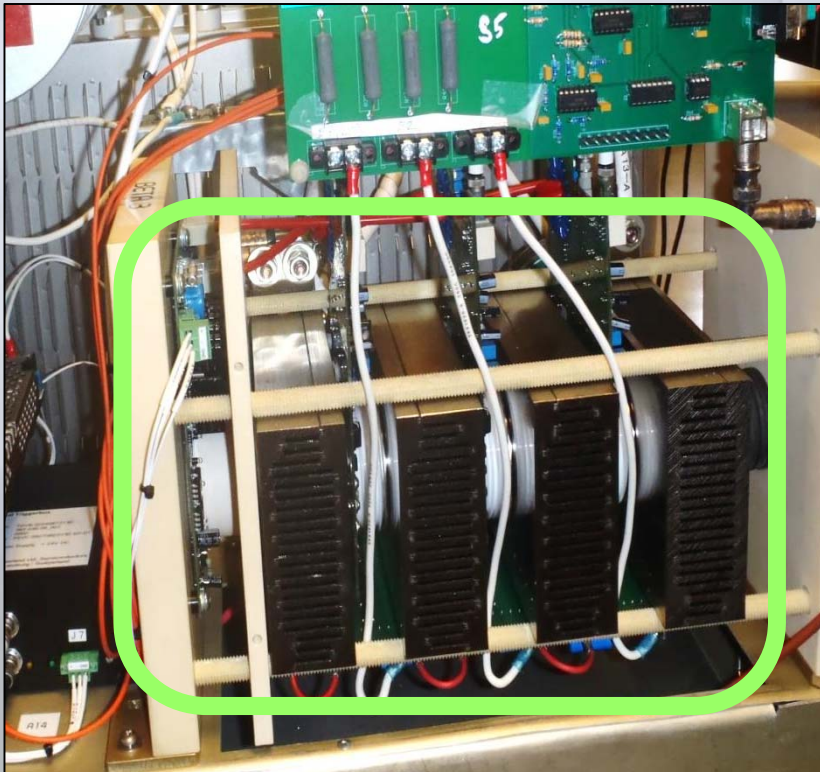
Next SLEP Project: Transmitter

Pulse Modulator Upgrade:

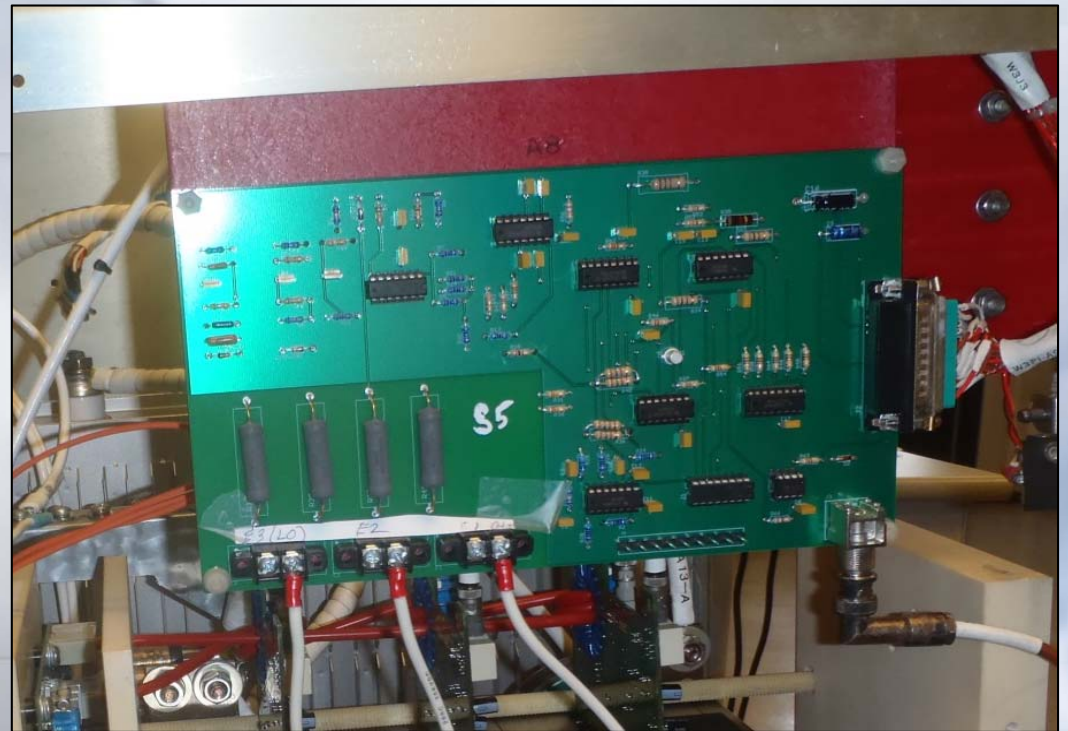
- **Eliminates Top 3 Failure Items**
 - **RBDT Switch Assembly**
 - **Trigger Amplifier**
 - **Remains installed for airflow and built-in test**
 - **Backswing Diode Stack**
- **Includes new:**
 - **High Speed Fiber Optic Switch Assembly**
 - **Stack Monitor CCA**

Next SLEP Project: Transmitter

Pulse Modulator Upgrade:



**High-Speed Fiber Optic
Modulator Switch**



Stack Monitor CCA

Next SLEP Project: Transmitter

Pulse Modulator Upgrade:

- **Implemented by site as Mod Note**
- **NRC will refurbish modulator chassis**
 - **Sites will receive upgraded modulator unit and return legacy for refurbishment and re-issue**
 - **Limited “seed stock”:** Important for modulator to be replaced and returned as quickly as possible to facilitate “round-robin” approach
- **Tentatively scheduled for 2017-2019**

Next SLEP Project: Transmitter

Transmitter Chassis Refurbishment:

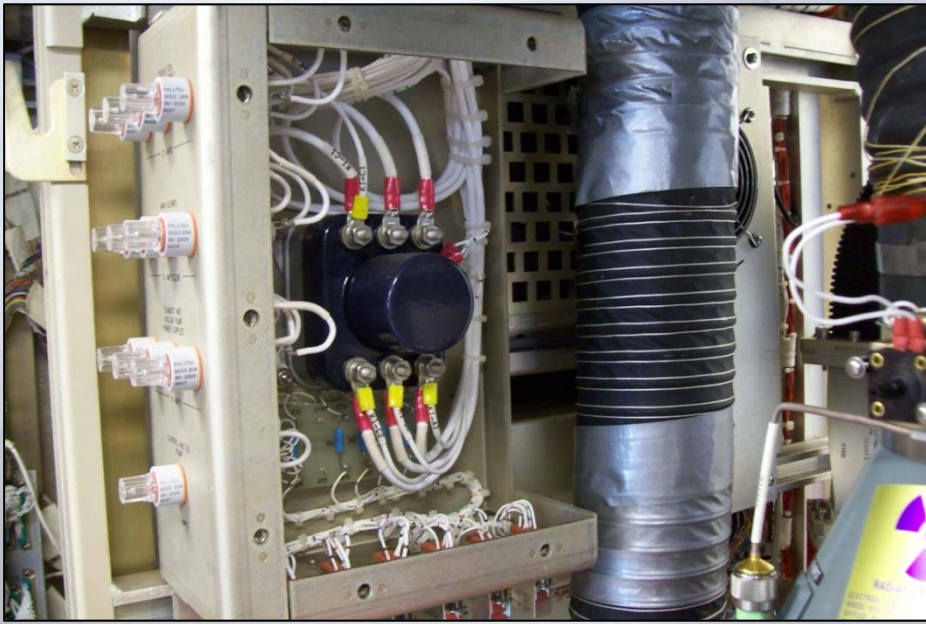
- **Infrastructure Power/Communication (ribbon) Cable Replacement**
- **Component Replacement**
 - **LRU Power Connectors (cabinet mounted)**
 - **Power Filters**
 - **Main Breakers**
- **Fuse Box Replacement**

Deployment accomplished by contractors 2017-2019

Expect one week of downtime

Next SLEP Project: Transmitter

Transmitter Chassis Refurbishment:



Legacy: 3N3



SLEP: A16

SLEP Projects

Two other future SLEP Projects

- **Pedestal Refurbishment (2017-2022)**
- **Shelter Refurbishment (2017-2020)**

Questions?

