



**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?**

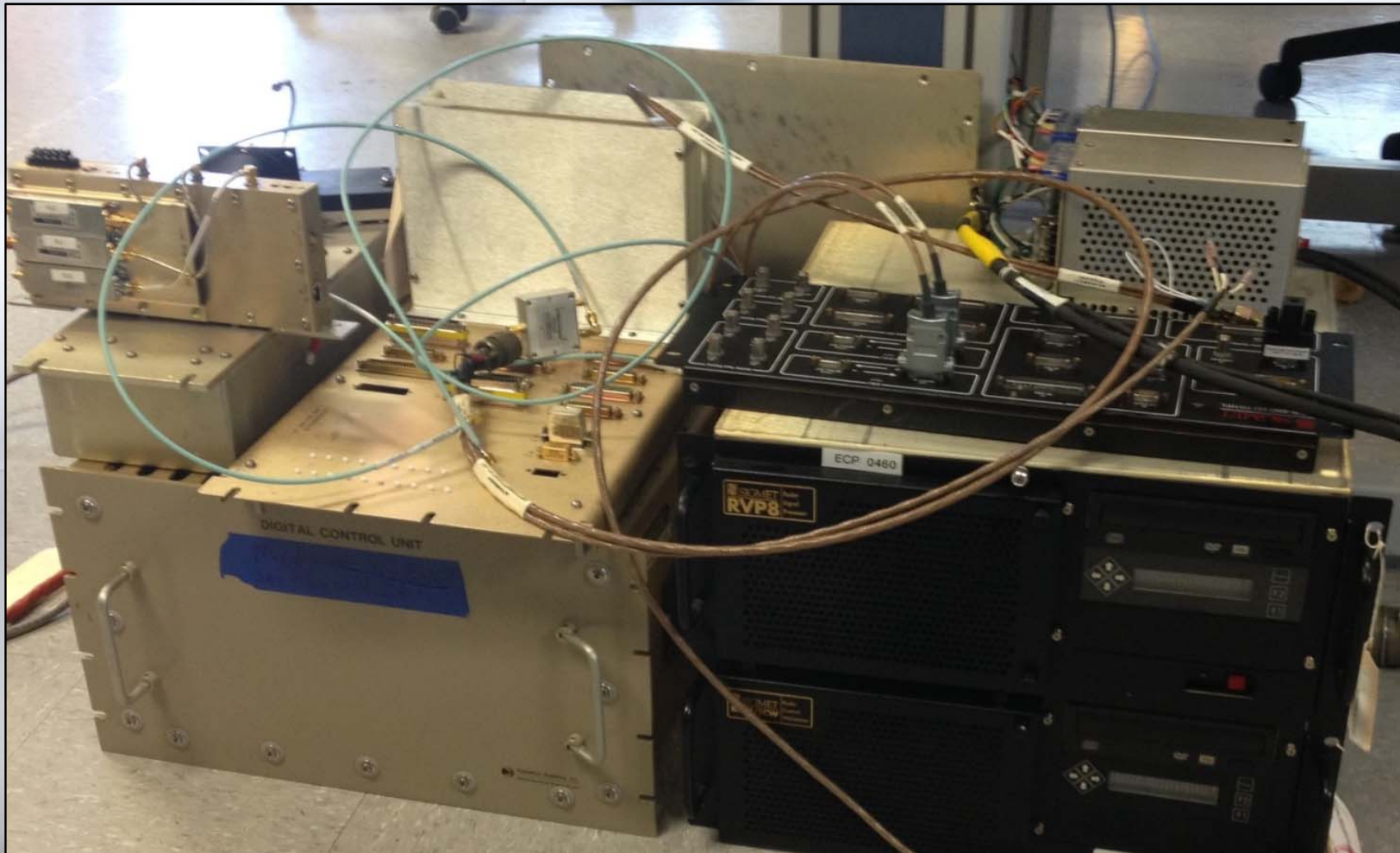
**What does the new signal processor suite mean for maintainers?**

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



# Expectations: What does this mean?

Before

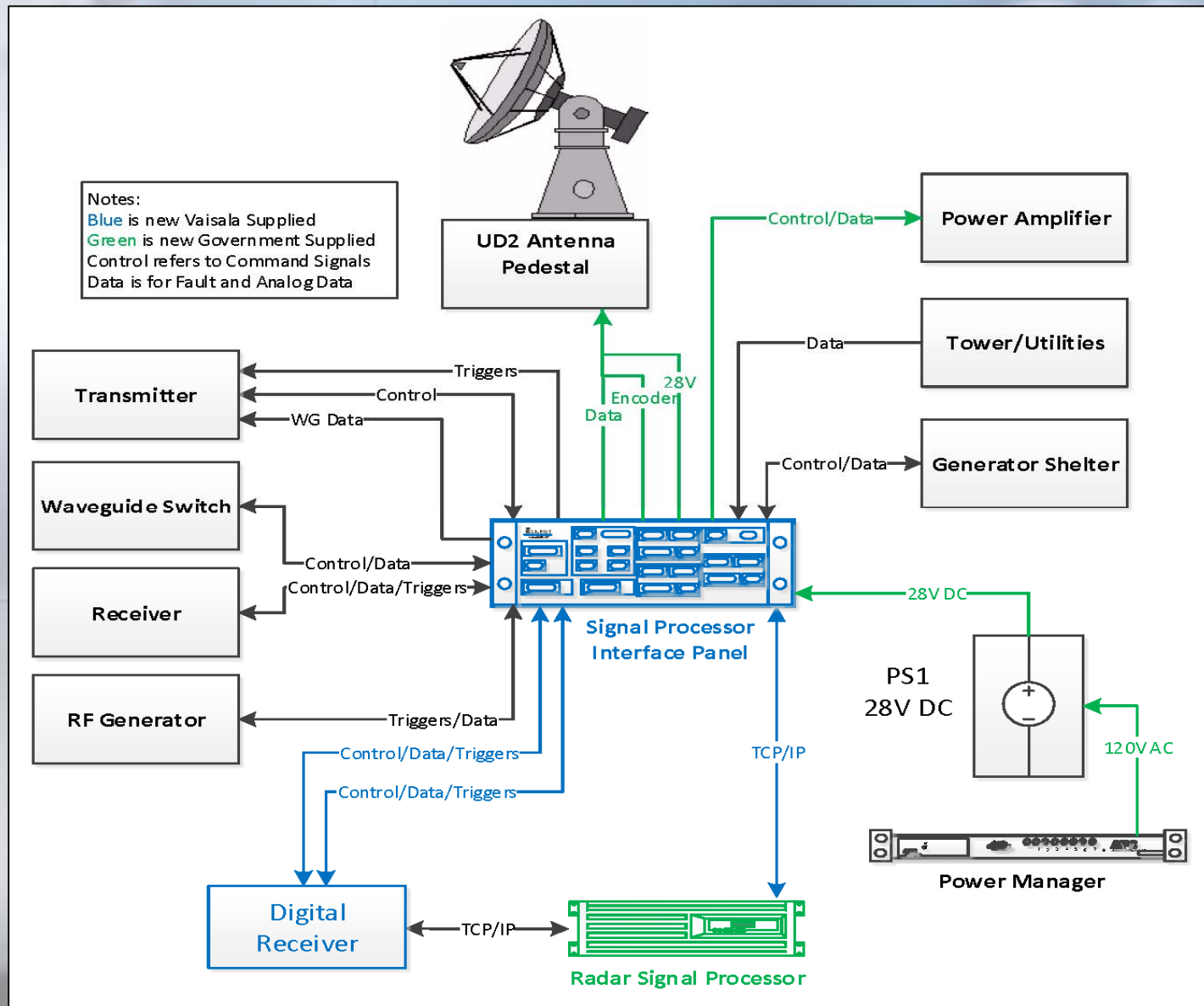


# Expectations: What does this mean?



# 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**

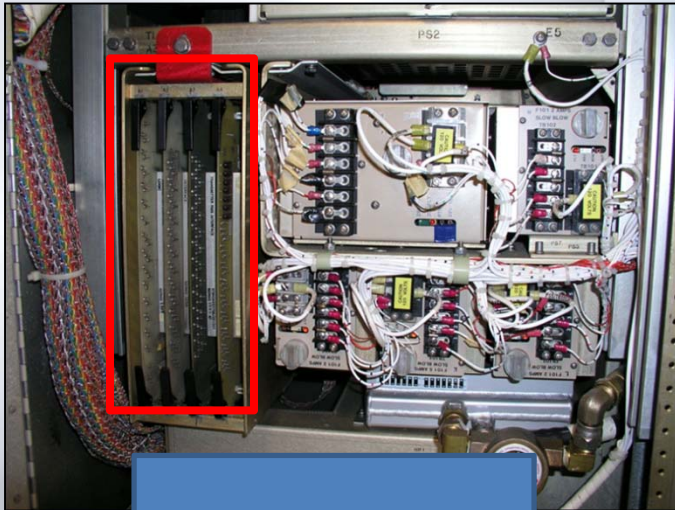
# Next SLEP Project: Transmitter

**Consists of 3 sub-projects:**

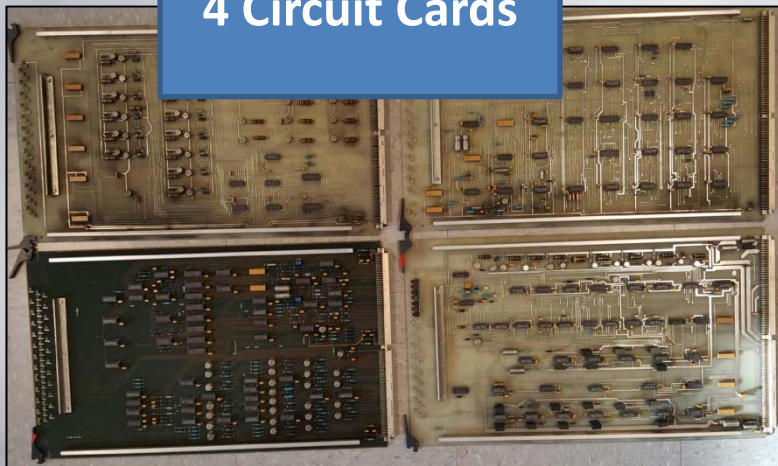
- **Backplane Modernization**
- **Pulse Modulator Upgrade**
- **Chassis Refurbishment**

# Next SLEP Project: Transmitter

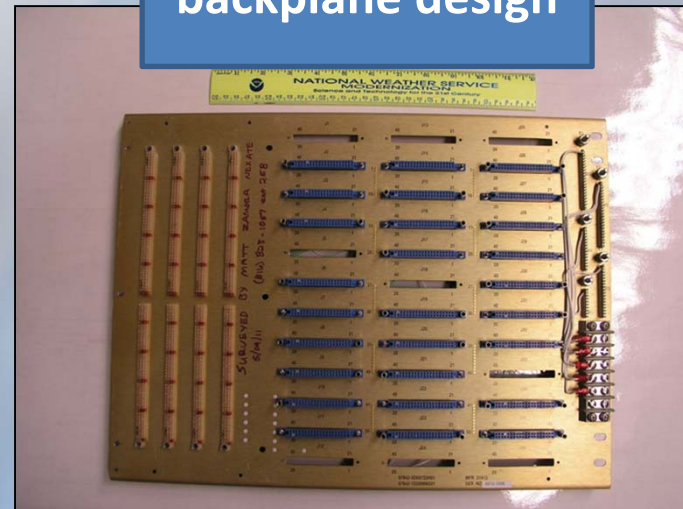
## Backplane Modernization: Legacy



4 Circuit Cards

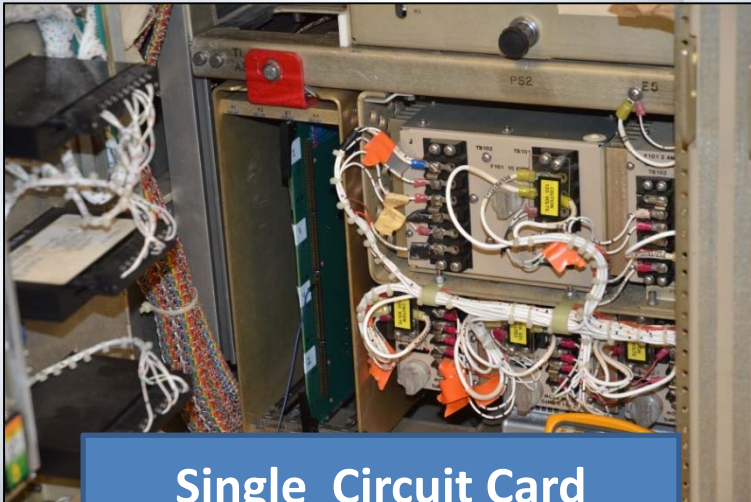


“Wire Wrap”  
backplane design

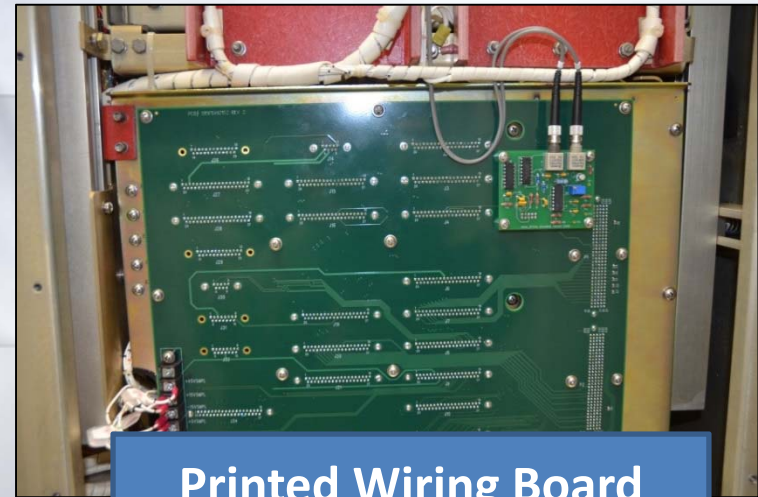


# Next SLEP Project: Transmitter

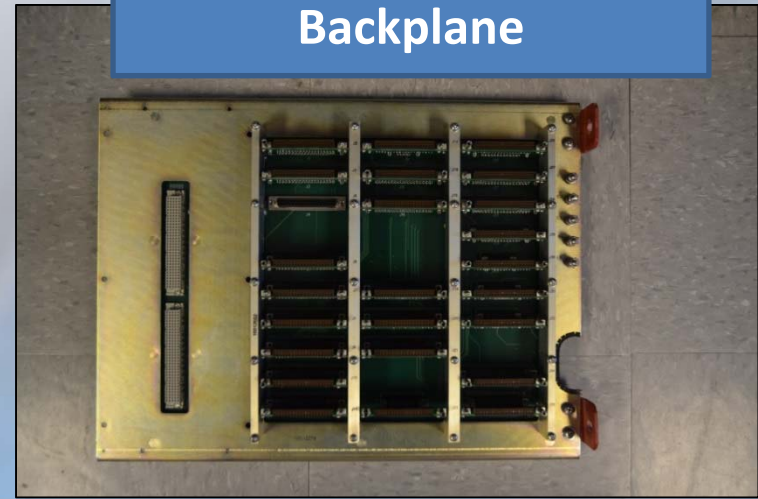
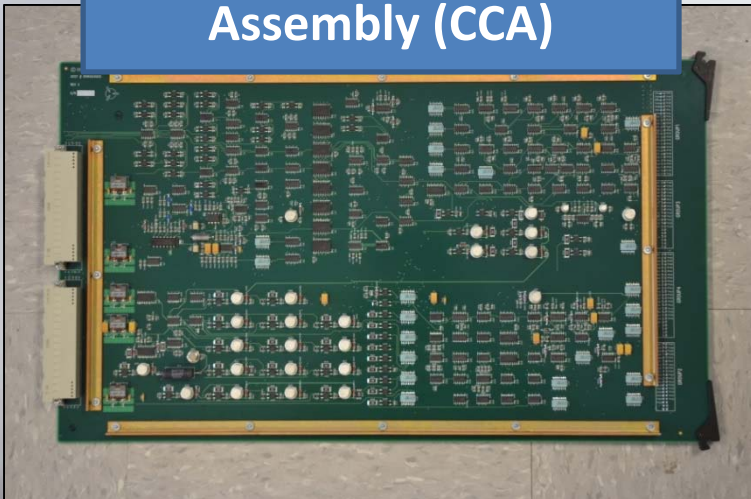
## Backplane Modernization: SLEP



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

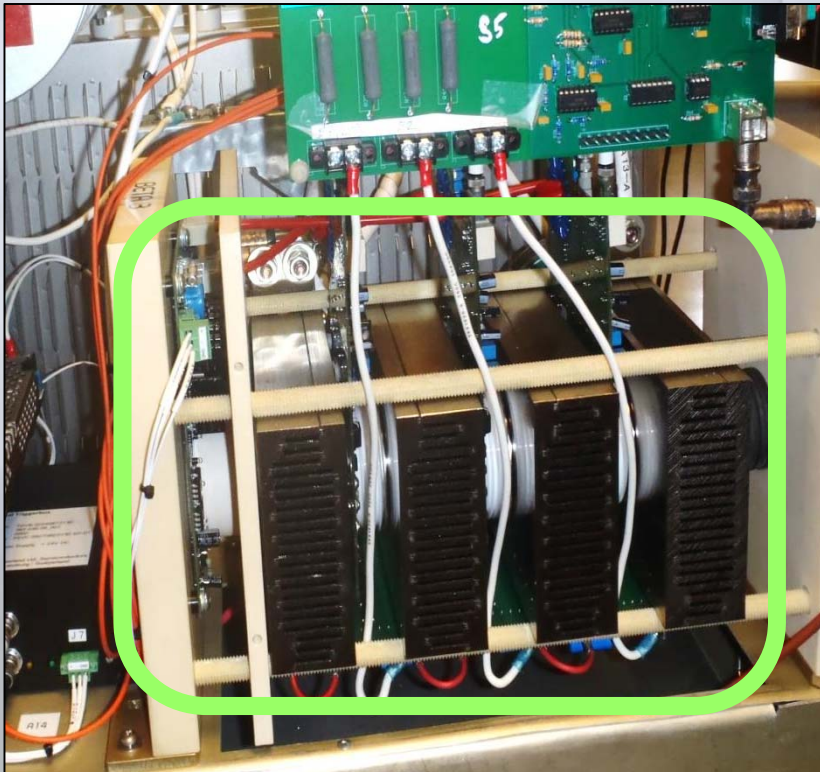
## Pulse Modulator Upgrade:

- **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**

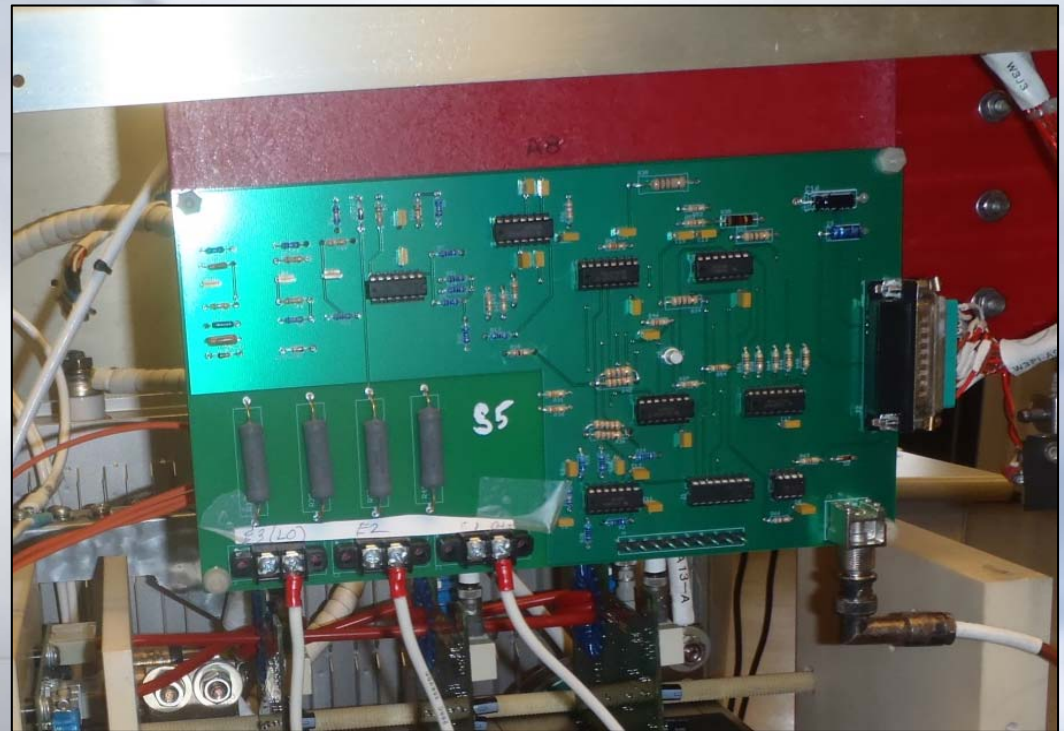


# Next SLEP Project: Transmitter

## 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:**

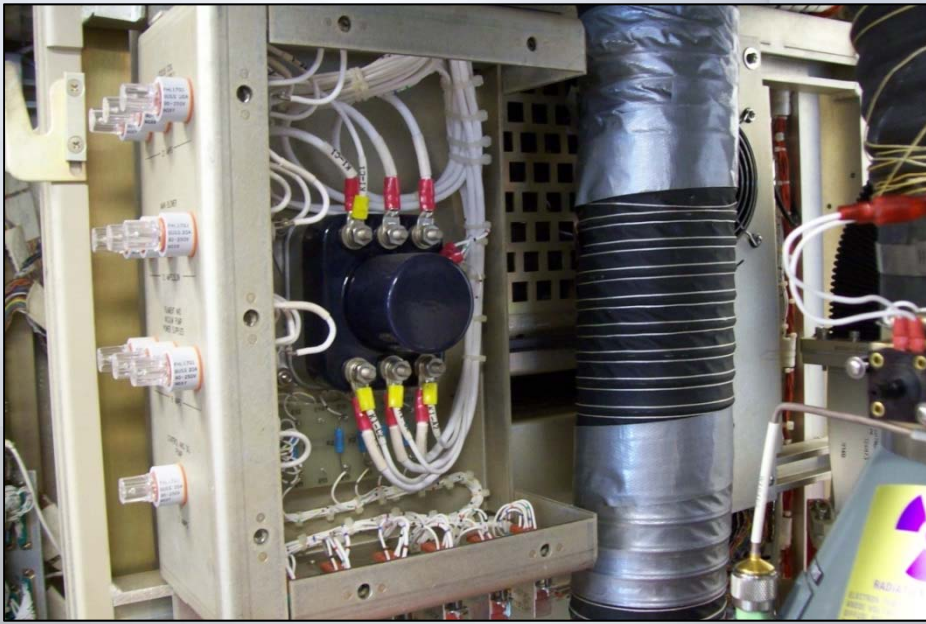
- **Infrastructure Power/Communication (ribbon) Cable Replacement**
- **Component Replacement**
  - **LRU Power Connectors (cabinet mounted)**
  - **Power Filters**
  - **Main Breakers**
- **Fuse Box Replacement**

**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?

