Wright Laboratory

Yale University


# Yale CRP Assembly Site PRR prep

Yale DUNE Team

# Yale CRP Assembly Site PRR Prep

Questions to be answered by the US project:

What are the defined deliverables for a US CRP factory's PRR?

- Documentation requirements
- Approvals requirements
- Final CRP components
  - Installation of Btm CRUs affect Btm CRU handling at factories
- Parts/HWDB verification
- Space allocation
  - Space needed for stored CRUs, ready to be shipped (and its frequency)

Sample charge of PRR?

# Yale CRP Assembly Site PRR Prep

Questions to be answered by the US project:

What sub-milestones needed for our PRR?

Example:

- Assembly team established
- Defined receiving/storage protocols for all sub-components
- Logistics and procedure fully defined for shipping completed CRUs
- Successful Anode/CF/AB/EC (CRU) assembly
  - What does this entail?
  - QA/QC?
- Successful CE installation (full ½ CRP)
  - What does this entail?
  - QA/QC?
- Cryocycle test of ½ CRP
- Packaging of a ½ CRP

# Yale CRP Assembly Site PRR Prep

Expanding on Receiving and Shipping:

Need to define plan/timelines for following:

- RECEIVING:
  - CFs
  - Anodes
  - ABs/ECs
  - CEs
  - Shipping boxes
- STORAGE:
  - Of all components
  - Of fully packed CRPs
- Delivering:
  - “Correct way to package for shipping”
  - Delivering process (lead time, qty.)

# Yale CRP Assembly Site PRR Prep

Defining cleanliness standards for CRP assembly sites:

Existing Yale clean tents are ISO 8 rated.

Space will be positively pressurized, tents serving as internal filtering.

Well defined cleaning procedures and intervals.

- Tack-mopping of assembly floor, biweekly?
- Wipe down of flat surfaces with isopropyl or similar prior to use.

Purge and fill packed CRPs with dry nitrogen before sealing (creating an inert environment).

Related questions:

Are there established cleanliness standards for other VD component sites?

Are any of them applicable to CRP construction?

Will there be an attempt to limit cardboard within the assembly space given the shipping crates are also cardboard?

Is there a humidity requirement for the assembly space? I.e. 35% < X < 75%?

# Yale CRP Assembly Site PRR Prep

ESD mitigation plan (First Order):

All assembly stations will be equipped with grounding points (tethered to ground bars).

- CE station (pre-installation)
- CRU stations
  - CE installation table
  - Cantilever racks
  - Packing area
  - Cold box

Once cold electronics are involved, all personal handling CEs/CRU MUST wear ESD grounding straps.

When moving between stations, the CRUs will be kept electrically isolated from the pallet stacker and/or personnel moving them.

# Yale CRP Assembly Site Timeline