

Space at FNAL for Cassettes

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TMS Engineering Meeting

Nov 22, 2024



Discussions with Rich Ford



- Carrie felt that Rick Ford of PPD was the person to talk to about space and she could not think of anybody else.
 - According to the PPD org chart, Rick Ford is the interm head of Detector Operations and Support Services.
 - Note that it looks like almost all the subdivision heads are interm.
 - When dealing with PPD labs, I dealt with Rick Ford.
- I made an appointment with Rick Ford and saw him on Weds, and I had to completely write my talk.
- He had not heard of DUNE/TMS and had not heard about the future scintillator request, although he was head Detector Operations.
 - In addition, he is a Level 3 manager for NSCF
- I explained the scintillator request and he would inquire about it.



Discussions with Rick Ford



- I explained the TMS project
- I explained what we wanted to do at Fermilab
 - Ship the scintillator panels to Fermilab
 - Using both Fermilab techs and university people to assemble the panels into a cassette.
 - The Fermilab techs are needed for the crane operations
 - University people assemble the cassettes after the panels are put in place with the crane.
 - University people will QC the planes.
 - University people and Fermilab techs will be involved in sealing up the cassette, there may be some heavy pieces
 - Rick said university people and techs worked well together in SBND
 - The Fermilab techs, who are also riggers, may deal with getting the cassette to ND hall, but this is part of I & I
 - I & I needs to accept the cassette, to start work on new cassette
 - Rich said they just got a big vacuum lifting fixture so this might help



Discussion with Rich Ford



- I gave the time ~ 2029-2030
- Rich was enthusiastic about the project and gave feed back.
- Time scale.
 - All the projects in the PPD labs should be finish by our time we need Lab space.
 - Therefore, consideration on where we go is determined by what our requirement are.
 - However, ~ 2029 is when these Labs may start filling up, so it is important to make our request now, we claim early to get what we need.
 - One example he gave: The DOE wants to close all the Labs in the village and move all the stuff to the Fermi site (where?). Carrie told me this too.
 - Rich said TMS claiming Lab space prevents DOE from taking over that Lab, (or at least we hope).
 - He did not tell me what were the other claims on the Labs were.
- He said using Fermilab techs makes it easier to claim space.
- In addition, he says he would prefer to allocate space in Lab which techs are already working in, such as Lab E, F, DAB (D0 Assembly Hall), there may be more
- MINERvA used Wide Band, & the Fermilab techs worked on MINERvA in Wide Band along with university people and university techs



Requests



- Request from Rich
 - We need to describe our plan as it relates to Fermilab, i.e. space, techs,, size of Modules, whatever he need
 - He say it will be useful to discuss certain parts of the plan with the Fermilab engineers such as Dave Pushka. Note that Fermilab that is in charge with safety.
 - Wants information on the project especially pictures
 - Some of the pictures I have seen are not completely transparent.
 - I was trying to describe TMS, but might not have been too successful.
 - Maybe a short writeup about TMS which gives the relevant information, not a 400 page document, with the parts that he would be interested in.



Cassettes



- As we know the cassettes are big 7.3m by 3.6m
- They are so wide 3.6 m that they may be wider than the loading dock doors of some or all Labs.
- So we need to know how wide they cassettes are, so Rich can see of any of the Lab space can accommodate them.
 - If not, then the cassettes would have to be tilted in the truck to get them out of the Lab
 - Hence, we need a well designed procedure to get the cassette out of the production Lab.
- What is the height of the crane?
 - The cranes are all ~ 10 tons so weight is not a problem
 - But the cassettes are 7.3m long so this may influence the high of the crane
 - As he said if we used the D0 assembly pit, this would not be an issue.
 - Need to understand the crane issues enough to pick out a lab.



Production Plan



- To define the space we need we need to define a production plane
 - Just in time production
 - Produce cassettes and store them.
 - This is more complicated.
- The dominate factor is the size cassette assembly table, 7.4m by 3.6m,
 - We call single space
 - Once you put it the cassette tables, there is probably space left to put in everything else, of course needs be checked
- If we were to make a cassette on the table and slide into something to store somewhere, the space would be $\sim 7.4\text{m}$ by $2 \times 3.6\text{m} = 8\text{ m}$ by 8m
 - We call double space
- If we assembly the cassette in robust structure, we pick structure with a crane. We need a single space.
- A storage rack of cassettes would take 8m by 8m at least, double space
 - You need to get the cassette in the rack.
 - Could possibly be 8m by 4 m if you put the cassette in from the top



Lab E, F & G



- Lab E, F, G are in the area called BEG, where SiDet is.
 - Lab E and F are connected with a wall of air between them.
 - Lab E has a temp controlled room at the north end
- Help from UR grad student Nimmy Sarah Alex for measuring Lab E & F
- Space , PPD, All with crane coverage
 - Lab G - 23.1m by 9.2m
 - Lab E - without temp controlled room – 38 m by 10m.
 - 4 double spaces or 6 single spaces
 - Lab E - with temp controlled room 24.5m by 10m
 - 2 double spaces and 1 single space
 - Lab F - 35m by 11.3 m
 - Wide Band – have not measured
 - DAB – have not measured, where SBND was constructed
 - There is an east side area for Lab F – 35m x 6.2m



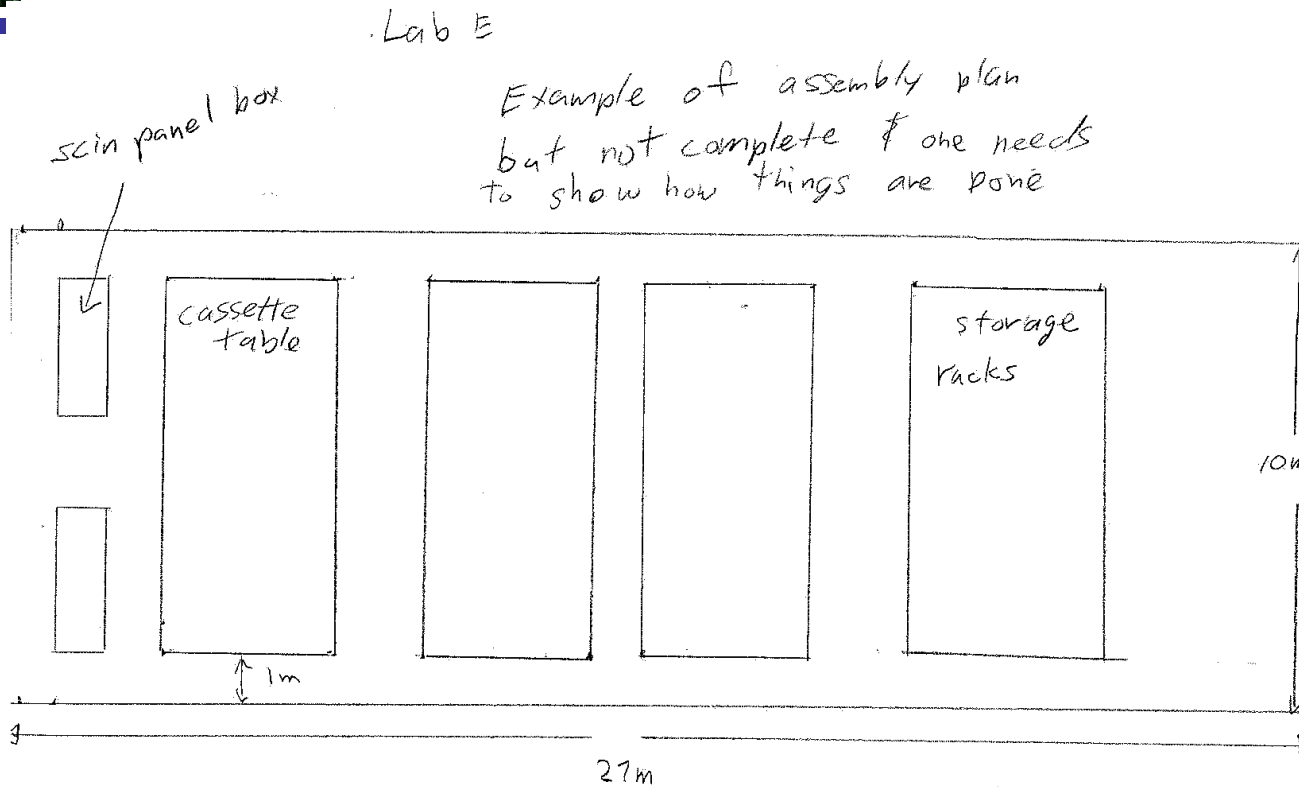
Lab E



- Lab E - without temp control room – 38 m by 10m.
 - 4 double spaces or 6 single spaces
- Lab E - with temp control room 24.5m by 10m
 - Carrie says people reluctant to remove clean rooms.
 - 2 double spaces and 1 single space



Incomplete Sketch of Assembly Plan in Lab E to Show Space as Example



Lab E with temp controlled room 24"

- Shows 3 tables, 2 boxes of scintillator panels, and a shelf.
- Not enough room, how to get cassettes from table to shelf?
- How would one get the cassette out of the shelf
- No QC station, but how would QC station access all the cassette tables



Lab E



- A complete plan would discuss those things to get the space that is needed.
- My view is our initial planning is for both just in time and for using shelves.
- Using shelves should reduce the standing army problem if there is one, there may not be one if students are used and the Fermilab Techs have other things to do
- In CMS we had a standing army problem when Kuraray produced bad scintillator.



Lab F



- Lab F = 35m by 11.3 m, slightly wider
 - About the same space as Lab E without the temp controlled room
 - It is the space techs work in as you can see at the end of Lab F, but there is still some free space
 - In the near future some of this space will be used by CMS, but free for us



Steel



- I did not discuss the steel with Rich as I don't know what the plan is
- I knew enough about the cassettes to make specific requests.
- The same process will have to take place for the steel.
- Will require Fermilab techs for crate operations.
- A steel plan need to be formulated: what measurements, how many plates, how much space. What do we need to store onsite and where
- These need to be defined soon so that the space at Fermilab space can be allocated.
- PIP was looking for offsite storage, but they found some onsite storage.
- Space has become valuable at Fermilab especially at the time we need it.
- Maybe PPD space is not available to we would have to look elsewhere.



Offsite Storage



From: Brian K. Niesman <bniesman@fnal.gov>
Sent: Wednesday, November 13, 2024 1:01 PM
To: Howard S Budd <hbudd@fnal.gov>
Subject: RE: Space for DUNE/TMS

Howard,

Yes I have been working on space, but I believe we have it figured out without needing to go offsite. I had found 3 locations off-site, but they have been leased now. However, as spaces close, others open. The contact below is the person I was working with for leasing warehouse space. If you just go to a couple warehouse leasing websites, you can find stuff near the lab.

<https://www.loopnet.com/search/industrial-space/batavia-il/for-lease/?sk=7f78fa9254d12f7910df1ffb9c219eae>

<https://www.propertyshark.com/cre/industrial/us/il/batavia/?IncludeCoworking=false&CoworkingWorkspaceTypes=0&MapView=True&Zoom=15&Viewport=-88.29047357979245,41.840947700228014,-88.25000441017575,41.86690362313934&GeopickerType=viewport>

- Brian Niesman was looking for offsite storage for PIP II, but managed to find something onsite
- What he found offsite had no crate, no heat and no AC.



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