



NOvA Project Status & Proposal for Review Schedule

July 31, 2007

John Cooper

Ron Ray

Nancy Grossman



The Basics

- In my mind we need to demonstrate 4 basic items at a Director's Review prior to a DOE CD-2/3a Review
 - A RLS with cost matching the \$ 260 M cap and at least 15 kt mass
 - BOEs for the RLS
 - Risk Analysis at Level 3
 - A start on statusing the RLS for the TPC
 - Which means statusing from May 1, 2007
- Next Slides talk about our progress on these items



RLS in Open Plan

- We fixed the errors in the June 4 schedule and saved ~ \$ 2.7 M
- We have just loaded in the ~ \$ 22 M of cost savings ideas
 - First pass shows a net savings of only ~ \$ 12.3 M
 - Checking for errors, probably takes all week?
 - Some of savings evaporated, see next two pages
- Once “cost savings” version is stable,
we trim kt to match cap
 - My guess is this will take all of next week
 - Will not make 16 kt unless we can find and correct errors in the “cost savings” version this week.



“Cost Savings” version details

- **ANU savings \$ 3.6 M, not \$ 7.0 M**
 - Exposed another error of ~ \$ 0.45 M from June 4
 - Refurbished magnets had zero contingency, should be 450%
 - Changed plan to new magnets with 30% contingency
 - Cost us another ~ \$ 0.45 M
 - Other effects still not understood
- **Building savings \$ 1.1 M, not \$ 5.5 M**
 - Still not understood
- **Detector R&D savings nil, not \$ 0.5 M**
 - Added contingency to IPND tasks since no scope reduction left
- **Scintillator savings \$ 1.8 M, not \$ 1.4 M**
 - Quantity discount effect less than first estimated
- **Fiber savings \$ 2.5 M, not \$ 1.9 M**
 - Less fiber required than in first estimate, QA costs go down also



“Cost Savings” version details

- **PVC Extrusions cost \$ 2.2 M more**

- This was an expected increase.
- Specified profile requires more PVC mass
- Now storing Extrusions at vendor on this task and doing more QA testing

- **PVC Modules save \$ 4.2 M, not \$ 2.7 M**

- Less labor gluing 16 to 16 than in cost benefit analysis once restrictions of WideBand Lab removed, reduced contingency since less movement of parts
- Moved storage task and testing task to Extrusion WBS
- Reduced storage at the one remaining factory, 8 week buffer → 3 weeks

- **Electronics save \$ 0.2 M, not \$ 0.9 M**

- Because we reduced the channel count from 16,000 (not 16,500) to 14,500

- **Near Detector Assembly costs \$ 0.5 M more instead of saving \$ 0.175.**

- Reasons not yet understood

- **Far Detector Assembly saves \$ 1.9 M as estimated**



Basis of Estimate Status

- **We expect ~ 500 documents**
 - 175 for ANU
 - 320 for the Detector
 - 100 of these on R&D
 - 220 on the Construction Project
- **Current Status**
 - 175 ANU BOEs in place
 - 20 Detector R&D BOEs done
 - 173 Detector Construction BOEs done (79%)
 - We are converging more quickly during the last week, but not yet there
 - All BOEs will need to be re-checked when mass changes



Risk Analysis Status

- WBS **1.0** **2.0** ANU
- **1.1** **2.1** Building
- **1.2** **2.2** Scintillator
- **1.3** **2.3** Fiber
- **1.4** **2.4** Extrusions
- **1.5** **2.5** Modules (close, need Nancy)
- **1.6** **2.6** Electronics
- **1.7** **2.7** DAQ
- **1.8** **2.8** Near Assembly
- **2.9** Far Assembly
- **1.9** **2.10** Management



Progress on statusing after May 1

- We will status May, June, and July for the July Monthly Report
 - This is Bill's next task
 - Will concentrate on Scintillator and Modules first



Review Plan

- Had thought to do drill-downs Aug 6 – 17 taking one Level 2 at a time
 - Using consultants
- Ed & I have discussed instead doing these without consultants
 - Ed, Dean, me, Ron, Nancy, Bruce, Greg, Bill, Suzanne, Harry, Ken
 - Focused via a talk by each Level 2 Manager
 - This will be in the nature of a Ph.D. oral exam
 - We push down the following list until they fail, then move to the next item
 - NO ONE will pass
 - But they will understand the bar being set by Lehman



Level 2 Talk Outline

We do not want to see any technical slides.

Slide 1 (+however many it takes)

How many lines are there in your part of the schedule (# of R&D, # of Construction)

What number of those lines have you checked?

Have you checked the predecessor links for your tasks?

Do you have any tasks without predecessors?

Why? (defend)

Do you have any tasks without successors?

Why? (defend)

Do you have any tasks with Target Dates as start dates?

Why? (defend)

Do you have any leads or lags in your part of the schedule?

Why? Are they documented? Where?

Do you have any tasks in your part of the schedule with durations longer than 6 months?

Why? (defend why you can't break them down into shorter tasks)

How many Milestones of each level are in your WBS?

How are they distributed in time? Plot

Are they defined in a dictionary? Show examples.



More L2 talk

Slide 2

Show us the list of Design Review tasks in your part of the schedule

What Design Reviews have you done so far?

These could be “30% level TDR reviews”

How were they documented?

e.g. show us a list of docdb notes

Slide 3

Does every line of your part of the schedule have a BOE?

If not, how many are left to do and when will they be done?

At what level(s) of the WBS are the BOEs? Why?

Slide 4+

Show us the list of BOEs

WBS#, docdb #, Title of BOE

Slide 5+

Show us the full text of your largest cost BOE

Slide 6+

Show us the full text of another BOE

(and we will drill down on some others later in the meeting)



Even more L2 talk

Slide 7+

Have you documented all your risks at Level 3?

Show us the list of risks (Name of risk, ordered by severity: high, medium, low)

What mitigation plans came out of the risk analysis?

Slide 8+

Show us the full text on all high risks, one per slide

Slide 9

Has your chapter in the TDR been revised to match the new # kt & other cost savings measures?

What other revisions to your TDR chapter are required?

When will your part of the TDR be completed?

Slide 10

Have you defined the Performance Management Technique for each of the R&D tasks in your schedule?

Describe the types used and why they were chosen.

Have you statused the schedule for May and June?

Is there a variance analysis from that status operation? What does it say?



And more....

Slide 11

Have you defined the PMTs for the Construction Schedule?

Describe the types used and why they were chosen.

Show us an example of a “unit” PMT. Discuss the unit.

How many “% complete” PMTs do you have?

Defend them, since you know from the EVMS review that this method is disfavored

How many “Level of Effort” PMTs do you have?

Defend them, since you know from the EVMS that this method is disfavored

Slide 12

List the recommendations from the Director’s CD-2/3a Review of June 4 for your part of the schedule and comment on the status of addressing each such recommendation.

Slide 13

Do you have draft MOUs for each institution involved in your part of the construction schedule?

Show the list of MOUs needed and those with existing drafts.



Proposed schedule for L2s:

- Work around Stuart Mufson (scint) leaving 6/9
- Work around Ken Heller (modules) leaving 6/9
- Work around Bruce Baller here next week, then gone

- So do Stuart, Ken, Nancy next week
 - Propose to use the WGM time slot next Tuesday if one of them can be here
 - Will have to “review” 18 kt version of schedule,
next version will be in flux

- Leaves Carl Bromberg (fiber),
Rich Talaga (extrusions),
Leon Muallem (Electronics & DAQ),
Dave Ayres (Detector Assembly)
for the week of August 13



Then on August 21

- All day review with consultants, Ed's schedule
 - 2 talks
 - Mostly breakouts and drill-downs
 - No technical information presented
- Close out Aug 22, 2 PM
during NOvA Collaboration Meeting



Propose to delay Lehman

- Mike and Pepin have explored Oct 2-4
 - This would require documentation in place
~ September 17
 - Gives Project ~ 4 weeks after August 21 to get all the details done
 - We need those four weeks
 - So September 11 is not realistic



Cooperative Agreement Status

- Chicago Operations says going well, seem about ready to send the package to the Business Review, recall schedule as of July 1:
 - 1 month to negotiate
 - Several weeks for “Business Review” in DC
 - Should complete all by September 1
- Marvin Marshak (U of Minn) believes he has submitted everything Chicago needs
- Fermilab – U of Minn MOU on CA
 - Marvin did a first draft back in June
 - He and I have talked about other details to add
 - Organization charts
 - Possible higher level board to resolve disputes short of DOE
 - How to phase in the CA Operations personnel
 - I want to keep Detector Constructors focused on detector and have a Building Manager + ES&H person for the U of Minn Operations to start
 - Would modify once the detector has been constructed and we reduce to a small crew.
 - Ball is in my court



EA Status

- July 19 Meeting: DOE NEPA team + Project & EG&G
 - Seemed to go well
- DOE provided list of comments on July 20 & 23
 - Still ~ 75 comments
 - EG&G group unhappy
- Sally and I met for 2 hours on July 27
 - Went over the longest list of comments
 - I asked Sally to ask the NEPA Compliance Officer to rule on each comment
 - We can no longer go around and around with 3 people's separate individual comments
- EAW missed the publication deadline of July 23
 - Now looks like they will publish on August 13
 - EA not likely to be ready by then
 - 30 day EA comment period would not be finished by a 9/11 Lehman visit.