



NOvA Project Status

John Cooper & Ron Ray

June 21, 2006



Interactions with DOE

- June 12: provided FY07 budget requirements to Mick Procaro
 - Next slide
- June 22 meeting with Jon Cooper + others scheduled for “NEPA Scoping”.
 - Keith Schuh, John Cooper to attend



FY07 funding required

NOvA FY07 Funding		
FY07 R&D	5,650	From CD-1 Cost & Schedule. This R&D covers basic R&D designed to get us to a sharply defined CD-2 level and the R&D to put together the Integration Prototype Near Detector. These two categories of R&D are each about half of the total.
R&D NOT FUNDED IN FY06	830	In schedule as FY06 M&S, but was not in budget
TOTAL FY07 R&D	6,480	
CONTINGENCY	250	the 6,480K\$ above has ZERO contingency in it. Our philosophy is that if we need to do more of the basic R&D, we will build less of an Integration Prototype. In our Cost & Schedule we do have a small amount of contingency: 25% on the building preliminary design effort in FY07 since that work must get done to keep the project on schedule.
PROGRAM SUPPORT	615	This is the new G&A piece at Fermilab that goes into effect in FY07
TOTAL FY07 R&D FUNDING NEEDED	7,345	
		FYI: There will be a little more R&D in FY08 to finish the prototype so that it can begin testing in FY08.
OTHER FY07 ITEMS		
30% BUILDING DESIGN	990	There is an item from the construction side of our CD-1 Cost & Schedule called "Develop Design/Build Criteria" which gets a document ready for a design/build bid cycle early in calendar 2007. This item is \$575K. We now are thinking it is best to pursue a "30% design" so we have a TDR-level design in place for a CD-2 Review in early 2007. This 30% design is estimated to cost more like \$990K. If we elect with the Cooperative Agreement Recipient to pursue design/build, then we use this work as the basis for the design/build criteria. If we elect with the Cooperative Agreement Recipient to pursue design-bid-build instead, then we have a 30% design as the first step. Since the Cooperative Agreement Recipient is not in place this fall, this looks like a Fermilab R&D effort? During the PED era, we were thinking of the \$575K as PED at Fermilab.



FY07 funding required, continued

Full design of Access Road	315	We would push this design process further to achieve a biddable package for the Access Road by the end of calendar 2006. Likely before a Cooperative Agreement Recipient is in place?
Build Access Road	2,185	Keeping the project on schedule requires doing some actual building during FY07. The Cooperative Agreement Recipient should be doing work during Q4 FY07 to hit the summer 2007 weather window. Doing the Access Road would allow additional work to occur during the following fall and winter (in FY08). If we miss the weather window, then my estimate is that there will be a project delay of about 6 months. We miss the 3 months of work in summer 2007 and delay any work in following fall and winter, thinking perhaps the builder would only accomplish 3 months of additional work in that initial 6 month "poor weather" period in FY08. Using the complete design done above, we believe work can be done on the access road during this summer 2007 weather window. Our CD-1 Cost & Schedule shows a total of \$2,185,141 for the access road to get it to a "usable construction road" level. Paving would occur later in the project. This is of course a site specific cost estimate.
Design section of DESIGN/BUILD	2,800	Our CD-1 Construction Cost & Schedule has a section called "Design/Build" with a procurement and design (only) phase costing \$3,165K. Now we save a few hundred K\$ on this amount because we have a 30% design above and a full access road design above. Presumably this is the part we would now aim to do during the second half of FY07 inside the Cooperative Agreement.
SITE UTILITIES	430	Temp power, well, sanitary system, storm sewer. Our schedule shows this work beginning in FY07, but continuing in FY08. The start could be put off until FY08. This item is nominally in the Cooperative Agreement following the design phase.
ELECTRICAL SERVICES UPGRADE	1,430	Recall we need a power upgrade done from 30 miles away. Our schedule shows this beginning in late FY07, but this could be put off until FY08. This item is nominally in the Cooperative Agreement following the design
TOTAL FUNDING REQUIRED	15,495	
w/o UTILITIES & ELECTRICAL	13,635	



Status of Documents

	Critical Decision Prerequisites	Current Status	Notes
CD-1	Conceptual Design Report	Done	
	Acquisition Strategy	In progress	went to OEMC on June 16
	Baseline range & Cost Estimates and Resource Loaded Schedule	Done	Done at CD1 level.
	Draft Configuration Management Document	Done	Done at CD1 level. CM manager identified.
	Preliminary Project Management Plan (PMP)	Done	Done at CD1 level. Some funding profile details still needed.
	Preliminary Hazard Analysis Report & NEPA	Done	
	Preliminary Project Execution Plan (PEP)	Done	Sent to S. Webster & M. Procaro., Steve has some questions, we haven't met yet.
	Preliminary Risk Management Plan	Done	Uploaded to docdb
	Project Data Sheet for design	Done	OHEP
	Verification of mission need (NuSAG?)	Done	Positive report from NuSAG
	PARS Reporting		Project Office working on a May narrative summary
	CD-2	Preliminary Design (Detector TDR)	
Advanced Preliminary Design (Building)			part of TDR, now aiming at a 30% design
Baseline Cost Estimates and Resource Loaded Schedule			Will move to 20 kt version after Kuraray visit. Have a preliminary budget profile from DOE. 15kt cost exercise (see last WGM) indicates 20kt should be affordable under \$200M Next goal is to produce a 20kt version as the first step for CD-2
Final configuration Management Document			need to finalize preliminary
Final Project Management Plan (PMP)			need to finalize preliminary
National Environmental Policy Act documentation			from Project, Keith Schuh will take lead, slide coming
Draft Preliminary Safety Analysis Report			Harry Ferguson has a draft, Keith is looking at it
Final Design & Procurement Pack., Long Lead Time Items			no LLP, therefore no packages
Performance Management System Document (EVMS)			Suzanne Pasek is writing this LCLS & BTeV documents as examples
Review of contractor project management system			Ed's timeline shows this in May
Final Project Execution Plan (PEP) & performance baseline			need to finalize preliminary which is still draft at CD-1
Final Risk Management Plan			need to finalize preliminary
Independent cost estimate (part of EIR?)			This is part of the EIR process
Project Data Sheet for construction			not needed unless a Line Item
Verification step?			P5 report in Sept probably part of process (Procaro) Indications that P5 will have positive report on NOvA at July 7 HEPAP meeting
Performance Baseline External Independent Review		in October, but could slide a couple of months	



Status of formal EA process

- First, Keith's list of things he doesn't control:

	Status	Milestone date	Finish Date
Write Fermilab Environmental Evaluation Notification Form	Done	5 / 06	5 / 06
Concurrence	Waiting	6 / 06	
Determine Cooperative Agreement Recipient.	Waiting	?	
Determine Responsible Government Unit	Waiting	?	
Select Site	Waiting	?	
Prepare Environmental Assessment Worksheet	Waiting	?	
Tritium Issues resolved	Mike Martens of Steve Holmes task force will provide information for EA	10/ 06	



Status of formal EA process

	Status	John/Ron read draft	Final Draft	Milestone date	Finish Date
Write NOVA EA					
1. Introduction	Drafted	6-Jun-06		6 / 06	
2. Purpose and Need for Action	Drafted	6-Jun-06		6 / 06	
3. Description of Proposed Action, Including the Alternatives	Writing			6 / 06	
3.1 Proposed Action	Writing			6 / 06	
3.2 Range of Reasonable Alternatives	Writing			6 / 06	
3.3 No Action Alternative				6 / 06	
3.4 Describing Alternatives				6 / 06	
4. Affected Environment				8 / 06	
5. Environmental Impacts (Effects)				8 / 06	
5.1 Impact Identification and Quantification				8 / 06	
5.2 Human Health Effects				8 / 06	
5.3 Biological Impacts				8 / 06	
5.4 Transportation Impacts				8 / 06	
5.5 Accident Analysis				8 / 06	
5.6 Environmental Justice				8 / 06	
5.7 Cumulative Impacts				8 / 06	
5.8 Compliance with Other Requirements				8 / 06	
5.8.1 Endangered Species Act				8 / 06	
5.8.2 Clean Air Conformity Requirements				8 / 06	
5.8.3 Floodplain and Wetland Environmental Review Requirements				8 / 06	
5.8.4 National Historic Preservation Act				8 / 06	
5.9 Mitigation				8 / 06	
5.10 Comparison of Impacts				8 / 06	
5.11 Conclusions in EAs and EISs				8 / 06	
6. List of Preparers, List of Agencies and Persons Consulted, and Distribution List				9 / 06	
7. Appendices, References, and Index				9 / 06	
8. Glossary				9 / 06	



A different list: What do we need for CD-2 Review

NOvA Work List for CD-2		Early Finish Date	Possible Late Finish Date	Actual Finish Date
Cooperative Agreement				
	Recipient Selected = Site Selection	1-Nov-06	15-Dec-06	
	Negotiations concluded (needed or cost estimate is uncertain?)	15-Jan-07	1-Apr-07	
NEPA				
Minnesota Part				
	RGU (Responsible Government Unit) in place	15-Jan-07		
	Minnesota EAW (site specific) (after comment period?)	15-Jan-07	1-Mar-07	
	Wetland Permit Processing by USACE (needed?)		1-Dec-07	
Fermilab NOvA Part				
	Integration Prototype on surface			
	Near Detector in MINOS access tunnel			
	Scintillator Blending & Storage			
	Module Factory			
	adhesive ventillation			
	Block Raiser construction & testing			
	Full scale prototype construction & test			
	Full flat prototype for time & motion is at ANL			
Fermilab Tritium Part				
	Water Task Force report	21-Sep-06		
Site and Building				
Ash River Site				
	EAW update	1-Nov-06		
	Wetland Permit Application prepared	1-Dec-06		
Other Sites				
	EAW	1-Jul-07		
Building				
	Independent Cost Review	15-Oct-06		
	30% Drawings	15-Dec-06		



A different list:

What do we need for CD-2 Review, page 2

NOvA Work List for CD-2		Early Finish Date	Possible Late Finish Date	Actual Finish Date
Liquid Scintillator				
	Fermilab blending model description & cost			
	issue RFP for off-site blending	1-Aug-06		
	RFP responses for off-site blending	1-Sep-06		
	evaluate waveshifter concentration			
	evaluate pseudocumene concentration			
	decide waveshifter/pseudocumene to match fiber diameter	9-Aug-06		
Wavelength Shifting Fiber				
	Updated Kuraray quote	1-Jun-06		
	evaluate fiber diameter	1-Aug-06		
	decide fiber diameter	9-Aug-06		
PVC Extrusions				
	Choose die proof resin (NOvA-2)	5-May-06		5-Jun-06
	Proof 16 cell die	26-Jun-06		
	Tune 16 cell die	14-Jul-06		
	Issue RFP for 70,000 lb test resin + full detector option	5-Jun-06		?
	RFP responses for resin	10-Jul-06		
	Produce 4000 m of 16 cell material	4-Aug-06		
	Measure mechanical properties of NOvA-2 in 16 cells	30-Sep-06		
	React to measurements of 16-cell extrusions	31-Oct-06		
	Still would have vertical die to go			
	Still would have anatase vs. rutile hanging?			
	Still would not have final 16 vs 32 cell decision			



A different list:

What do we need for CD-2 Review, page 3

NOvA Work List for CD-2		Early Finish Date	Possible Late Finish Date	Actual Finish Date
PVC Modules				
	final endplate design			
	final manifold design			
	final overflow tank design			
	Time & Motion studies with 16 cell, 53 ft objects			
Electronics				
	Receive 1st 10 APDs from Hamamatsu			
	Get updated "target price" of APDs from Hamamatsu			
	completed studies of front end ASIC	10-Aug-06		
	Front End Board prototype II testing	6-Oct-06		
Data Acquisition				
	prototype Data Concentrator tests complete	15-Dec-06		
Near Assembly				
	Initial design of mechanical structure			
	Initial design of mechanical systems			
Far Assembly				
	Validation of plane adhesive choice	16-May-06		
	Validation of installation procedures	27-Jul-06		
	Validation of structural design	17-Aug-06		
	Initial designs of mechanical systems (access,light tightening,cooling,filling)	30-Sep-06		
	Designs of mechanical systems & tooling	8-Jan-07		



A different list:

What do we need for CD-2 Review, page 4

NOVA Work List for CD-2		Early Finish Date	Possible Late Finish Date	Actual Finish Date
Project Management				
	final Project Execution Plan			
	final Project Management Plan			
	final Configuration Management Document			
	draft Performance Management System Document (EVMS)	21-Jul-06		
	final Performance Management System Document (EVMS)			
	draft PSAD			
	final Risk Management Plan			
	Outside Review Mechanical Structure: Creep Mitigation	1-Sep-06		
	1st draft Technical Design Report (blanks identified)	1-Oct-06		
	2nd draft Technical Design Report (50% blanks filled)			
	final Technical Design Report			
	draft 20 kt Cost & Schedule matching funding profile	10-Aug-06		
	final Cost & Schedule			



Sufficient Project Personnel?

- Some identified needs
 - **Administrative support high level full time**
 - Req almost in system? (Elaine Phillips was aiming for Strait signature last Friday)
 - **Help for monthly report startup**
 - Could be admin person
 - **More engineering on Block Raiser**
 - Final design, staged design allowing test phase?
 - Dave Pushka & Vic Guarino taking a few weeks to go back to basics before proceeding -- Still talking, not yet agreeing
 - More PPD effort
 - likely will want FEA to confirm hand calculations
 - **More engineering & help on Near Detector**
 - Leon Beverly? John Voirin? Both familiar with shaft & tunnel.
 - Installation transport, containment, fire protection, mobility
 - Have Karen Kephart, lost Rob Plunkett, have ANL engineers
 - Peter Lucas is new L3, Vic Guarino looking at issues



Sufficient Project Personnel?

- More identified needs
 - **Scintillator Blending**
 - Visit to Renkert Oil April 27: possible blending in Minneapolis
 - Still a **long** way from concluding this could work without substantial risk to performance
 - Starting to put together an RFP for outside blending to test the waters
 - **Then** work on structure, containment, pump skid specification if in house
 - Thinking about prototype mix for early 2007 in house
 - Involve PPD process control group?
 - **\$ for FESS on “design–build”**
 - **QA person, part time probably OK for now.....**
 - No progress
 - **Electronics infrastructure and Slow Controls**
 - Italy for Slow controls, but when?, Leon Beverly for infrastructure?
 - Craig Dukes (Univ of Virginia) as new L3
 - understands Italians eventually, already working with them
 - I’ve asked John Oliver and Dave Pushka to look harder at the power and cooling issues across L2 boundaries