First Executive Session
Director's CD-1/Trial CD-2 Review
of the
MINERvA Project

December 13-15, 2005

L. Edward Temple, Jr.

Agenda for Exec Session

- Charge to Reviewers
- Review Agenda
- MINERvA's Timeline for Critical Decisions
- Technical – Design Maturity
- Cost/Schedule Review Guidance
- Report Structure
  - Table of Contents
    - Findings, Comments, and Recommendations
- Assignments
  - Technical Reviewer Assignments
  - Breakout Groupings
- Cost / Contingency Table
- Discussion

Charge

This charge is for the Committee to conduct a Director's CD-1 / Trial CD-2 Review of the proposed MINERvA project at Fermilab. The review is to assure that all the requirements have been met for DOE to approve CD-1 and to assess and comment on the level of readiness of the project to meet the CD-2 requirements. As part of this assessment the questions listed in Attachment 1 of this charge should be addressed. Additionally the review committee is to review and comment on Project's response and actions taken on the recommendations from the Director's Preliminary Review of MINERvA on January 10-11, 2005. Constructive comments on presentation content, format, and style are also requested.

Approval of CD-1 by DOE officials is based on a ***Conceptual Design*** for the project, a ***cost and schedule baseline range***, and some additional project management documents. The technical part of the review will focus on the conceptual designs for the Detector. It will answer the questions, **will these designs meet the requirements and specifications** and **are the designs sound**. ***The cost and schedule ranges are usually based on a detailed WBS – Work Breakdown Structure, WBS Dictionary, BOE – Basis of Estimate documentation, risk and contingency analyses, RLS – Resource Loaded Schedule, and time phased funding and cost profiles. The committee is asked to review each of these items, for quality, completeness, and accuracy***. Furthermore, the committee is asked to ***review and assess the quality of and comment on the additional formal project management documentation required for CD-1 approval***.

Charge (continued)

Fermilab and MINERvA are planning for CD-2/3 approval to allow construction to start the first quarter of FY2007. To achieve this goal MINERvA will need a DOE CD-2/3 Review in the summer of 2006. Therefore, the committee is asked to *comment as appropriate on MINERvA's status regarding readiness to "establish a baseline budget.*" Again, appropriate constructive comments on what remains to be done are requested.

Finally, the committee should present findings, comments, and conclusions at a closeout meeting with MINERvA's and Fermilab's management and provide a written report soon after the review.

Charge for the Director's CD-1/(2) Review of the MINERvA Project
Attachment 1

Technical

- Are the physics requirements clearly stated and documented?
- Have these physics requirements been translated into technical performance requirements / specifications?
- Have alternative designs been considered and reasons for selecting one alternative over anther documented and deemed reasonable?
- Can the design be built? Does the design meet the technical specifications? Is it a reasonable design?

Charge (continued)

Cost

- Is the Work Breakdown Structure (WBS) appropriate for the project scope?
- Do the cost estimates for each WBS (or cost) element have a sound documented basis and are they reasonable?
- Does an obligation profile exist?

Schedule

- Is the schedule well developed and resource loaded?
- Are the activity durations reasonable for the assumed resources?
- Is the schedule duration feasible for the resources assigned to accomplish the tasks?
- Does the schedule contain appropriate levels of milestones, sufficient quantity of milestones for tracking progress and do they appear to be achievable?
- Does the schedule include activities for design reviews, which include assessment of the designs readiness for procuring prototypes, preproduction and production materials?

Charge (continued)

Management

- Is there an appropriate management organizational structure in place to accomplish the design and construction?
- Is the organization structure well documented, responsibilities defined and appropriate for the scope of work?
- Are there adequate staffing resources available or planned for this effort?
- Is there a funding plan available or proposed to meet the resource requirements to realize the project?
- Has a Risk Assessment been performed, mitigations identified, actions taken and do they seem appropriate?

Agenda

Tuesday, December 13, 2005 – Presentations are in the Racetrack (WH7X)

8:00 – 8:45 AM		Executive Session (Comitium-WH2SE)	Ed Temple
9:00 – 9:15 AM	15	Introduction	Hugh Montgomery
9:15 – 9:45 AM	30	Physics Requirements Overview	Jorge Morfin
9:45 – 10:15 AM	30	Detector Overview	Kevin McFarland
10:15 – 11:00 AM	45	Project Overview	Debbie Harris
11:00 – 11:15 AM	15	BREAK	
11:15 – 11:45 AM	30	WBS 1: Scintillator Extrusions	Anna Pla-Dalmau
11:45 – 12:15 PM	30	WBS 2 & WBS 4: WLS Fiber and Clear Fiber Cables	Howard Budd
12:15 – 12:45 PM	30	WBS 3: Scintillator Plane Assembly	Jeff Nelson
12:45 – 1:45 PM	60	LUNCH (WH2X)	
1:45 – 2:15 PM	30	WBS 6: PMT Acquisition and Testing	Ioana Niculescu
2:15 – 2:45 PM	30	WBS 5: PMT Boxes and Light Injection	Tony Mann
2:45 – 3:15 PM	30	WBS 7: DAQ and Electronics	Vittorio Paolone
3:15 – 3:30 PM	15	BREAK	
3:30 – 4:00 PM	30	WBS 8: Outer Detector Frame, Absorbers, Stand	Jim Kilmer
4:00 – 4:30 PM	30	WBS 9: Module Assembly	Robert Bradford
4:30 – 5:00 PM	30	(WBS 11): Installation & Infrastructure	Jim Kilmer
5:00 – 6:30 PM	90	Executive Session	

Agenda (continued)

Wednesday, December 14, 2005 (Morning break will be available outside Comitium at 10:30)

8:00 – 8:30 AM	30	Cost & Schedule Executive Session (Comitium – WH2SE)	Ed Temple
		Breakout Sessions	
8:30 – 12:30 PM		• WBS 1, 2 & 4 Scintillator & Fiber (Snake Pit – WH2NE)	Anna Pla-Dalmau, Howard Budd
8:30 – 12:30 PM		• WBS 3, 8 & 9 Module/Plane, Detector Parts Assembly (Black Hole – WH2NW)	Jeff Nelson, Jim Kilmer, Robert Bradford, Ron Ransome
8:30 – 12:30 PM		• WBS 5, 6 & 7 PMT's, PMT Boxes and Electronics & DAQ (Racetrack – WH7X)	Ioana Niculescu, Tony Mann, Casper, Paolone
9:30 – 12:30 PM		• WBS 10 Management/Cost/Schedule/ WBS 11 I&I (Comitium WH2SE)	Debbie Harris, Nancy Grossman, TJ Sarlina, Sheri Landrud
12:30 – 1:30 PM		LUNCH (WH2X)	
1:30 – 2:30 PM		MINERvA's response to review committees questions (Comitium – WH2SE)	Debbie Harris, Nancy Grossman
2:30 – 4:00 PM		Executive Session	Ed Temple
4:00 PM		Report Writing	

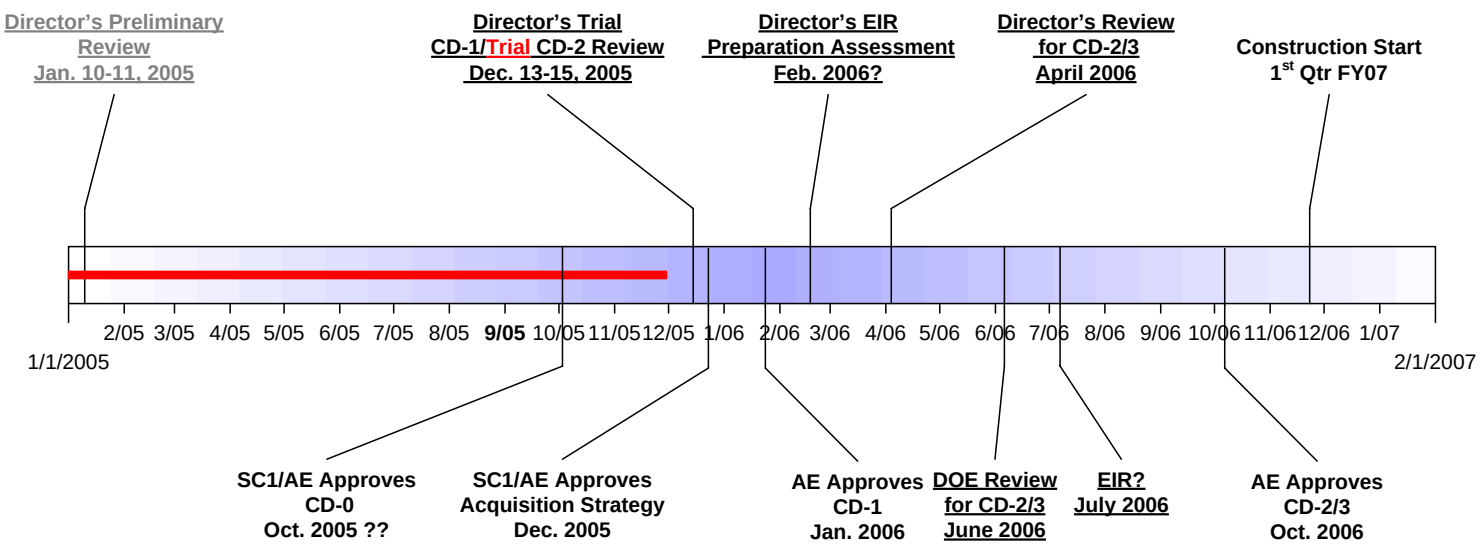
Thursday, December 15, 2005

8:00 – 10:00 AM	Continue Report Writing	
10:00 – 2:30 PM	Closeout Dry Run with working lunch (Comitium – WH2SE)	
2:30 PM	Closeout (Racetrack – WH7X)	

DRAFT MINERvA Project Timeline for Critical Decisions & Reviews

Updated 30-Nov-05

Fermilab



Note:
Items marked in Red indicates change from prior version

Technical – Design Maturity

- Assess the stage of design maturity for
  - MINERvA Detector *CDR*

TDR Outline

These are CD-2 Requirements.

Now at CD-1.

We should use as a guide for assessing a baseline "range" or appropriate contingency.

Cost / Schedule Review Guidance

Project Technical, Cost, and Schedule Baseline Development

To Succeed in Cost / Schedule Arena

Estimate must be

- **Complete**
  - Scope well understood and defined
    - Technical goal must be clear
    - Technology to be used to meet this goal known
    - Designate how technical systems will be acquired
      - I.e. buy, have fabricated, self fabricated
      - Buy parts / fabricate / assemble
    - How will this be accomplished
      - Self fabricate / assemble – lab or university(ies)
      - How will person power requirements be met
        - And paid for
  - All tasks defined and specified in a work breakdown structure
  - WBS dictionary
- **Documented** at lowest level of WBS and include
  - M&S – materials and services
  - SWF – salaries, wages, & fringes
  - Accompanied by schedule showing appropriate durations
  - Adders – overheads / G&A (general & administrative)
  - Escalated – shown both with and without escalation with funding profile based on laboratory/DOE/Federal budget/appropriation guidance
- **Reviewable**
  - Estimate must "roll-up" from the lowest level to the total and reviewers must be able to drill down from the top to the lowest level
- **Credible**
  - Basis of estimate must be specified
    - Catalog prices
    - Similar work, where cost is documented
    - Engineering estimates
    - WAG – wild ass guess

This material forms basis for DOE approving a baseline, for Fermilab/Collaboration Project Management to measure performance and take appropriate corrective actions during execution and for Laboratory Management and DOE to monitor progress.

Report Outline and Reviewer Assignments

Executive Summary	Ed Temple
1.0 Introduction	Dean Hoffer
2.0 Science	Heidi Schellman
3.0 Scintillator Extrusions, WLS Fiber and Clear Fiber Cables	Dmitri Denisov, Heidi Schellman
4.0 Plane Assembly, Outer Detector Frame, Absorbers, Stand and Module Assembly	Mike Crisler, Joe Howell
5.0 PMT's and PMT Boxes	Karol Lang, Hogan Nguyen
6.0 Electronics & DAQ	Hogan Nguyen, Karol Lang
7.0 Installation and Infrastructure	Mike Lindgren, Marc Kaducak, Dean Hoffer
8.0 Cost and Schedule	Marc Kaducak, Jeff Simms, Dean Hoffer
9.0 Management	Jeff Sims, Mike Lindgren, Ed Temple

Report Outline and Reviewer Assignments
(continued)

10.0 Charge Questions	
10.1 Are the physics requirements clearly stated and documented?	Heidi Schellman, Dmitri Denisov, Hogan Nguyen, Joe Howell, Karol Lang, Mike Crisler, Mike Lindgren
10.2 Have these physics requirements been translated into technical performance requirements / specifications?	
10.3 Have alternative designs been considered and reasons for selecting one alternative over anther documented and deemed reasonable?	
10.4 Can the design be built? Does the design meet the technical specifications? Is it a reasonable design?	
10.5 Is the Work Breakdown Structure (WBS) appropriate for the project scope?	Dean Hoffer, All
10.6 Do the cost estimates for each WBS (or cost) element have a sound documented basis and are they reasonable?	
10.7 Does an obligation profile exist?	

* Note underlined names are the primary writer.

Report Outline and Reviewer Assignments
(continued)

	10.8 Is the schedule well developed and resource loaded?	Marc Kaducak, All
	10.9 Are the activity durations reasonable for the assumed resources?	
	10.10 Is the schedule duration feasible for the resources assigned to accomplish the tasks?	
	10.11 Does the schedule contain appropriate levels of milestones, sufficient quantity of milestones for tracking progress and do they appear to be achievable?	
	10.12 Does the schedule include activities for design reviews, which include assessment of the designs readiness for procuring prototypes, preproduction and production materials?	

* Note underlined names are the primary writer.

Report Outline and Reviewer Assignments
(continued)

	10.13 Is there an appropriate management organizational structure in place to accomplish the design and construction?	Jeff Sims, All
	10.14 Is the organization structure well documented, responsibilities defined and appropriate for the scope of work?	
	10.15 Are there adequate staffing resources available or planned for this effort?	
	10.16 Is there a funding plan available or proposed to meet the resource requirements to realize the project?	
	10.17 Has a Risk Assessment been performed, mitigations identified, actions taken and do they seem appropriate?	

* Note underlined names are the primary writer.

Reviewer Assignments for Breakouts

WBS 1, 2 & 4 Scintillator & Fiber (Snake Pit – WH2NE)	Dmitri Denisov, Heidi Schellman
WBS 3, 8 & 9 Module/Plane, Detector Parts Assembly (Black Hole – WH2NW)	Joe Howell, Mike Crisler
WBS 5, 6 & 7 PMT's, PMT Boxes and Electronics & DAQ (Racetrack – WH7X)	Karol Lang, Hogan Nguyen
WBS 10 Management/Cost/Schedule/ WBS 11 I&I (Comitium WH2SE)	Marc Kaducak, Jeff Sims, Mike Lindgren, Dean Hoffer, Ed Temple

Reporting Out & Report Structure

- Review findings, assessments, and recommendations should be presented in writing at a closeout with the Collaborations and Fermilab management.
- Separate Section for each “Level 2” WBS plus Cost and Schedule sections.
- Written with
  - Findings
  - Comments and
  - Recommendations

Findings, Comments, and Recommendations

- Findings
  - Findings are statements of fact that summarize noteworthy information presented during the review.
- Comments
  - Comments are judgment statements about the facts presented during the review. The reviewers' comments are based on their experiences and expertise.
  - The comments are to be evaluated by the project team and actions taken as deemed appropriate.
- Recommendations
  - Recommendations are statements of actions that should be addressed by the project team.
  - A response to the recommendation is expected and that the actions taken would be reported on during future reviews.

Project's Cost & Contingency Estimate

	WBS	Items	MINERvA's Estimate AY$									
			Base w/Indirects			Contingency %			Contingency $			Total Base w/Indirects and Cont.
			M&S	Labor	Total	M&S	Labor	Total	M&S	Labor	Total	
MIE	1.0	Scintillator Extrusion	$ 41,237	$ 206,691	$ 247,928	27%	21%	22%	$ 11,009	$ 44,095	$ 55,103	$303,031
	2.0	WLS Fibers	$ 406,771	$ 163,583	$ 570,354	41%	21%	35%	$ 167,622	$ 34,016	$ 201,638	$ 771,992
	3.0	Scintillator Plan Assembly	$ 232,706	$ 712,406	$ 945,112	48%	40%	42%	$ 110,616	$ 284,963	$ 395,578	$ 1,340,690
	4.0	Clear Fiber Cables	$ 334,136	$ 605,394	$ 939,530	39%	38%	38%	$ 129,351	$ 230,247	$ 359,597	$ 1,299,127
	5.0	Photomultiplier Tube Boxes	$ 465,103	$ 305,971	$ 771,074	40%	34%	38%	$ 184,666	$ 104,805	$ 289,471	$ 1,060,545
	6.0	Photomultiplier Tubes	$ 1,068,174	$ 127,635	$ 1,195,809	30%	33%	30%	$ 319,108	$ 42,120	$ 361,228	$ 1,557,037
	7.0	Electronics and DAQ	$ 474,204	$ 22,830	$ 497,034	35%	34%	35%	$ 165,489	$ 7,685	$ 173,174	$ 670,207
	8.0	Frames, Absorbers, Coil and Detector Stand	$ 524,120	$ 134,728	$ 658,849	26%	50%	31%	$ 137,154	$ 67,364	$ 204,518	$ 863,367
	9.0	Module and Veto Wall Assembly & Installatior	$ 55,556	$ 220,341	$ 275,897	44%	89%	80%	$ 24,251	$ 195,316	$ 219,567	$ 495,464
	10.0	Project Management	$ -	$ 584,097	$ 584,097		30%	30%	$ -	$ 175,229	$ 175,229	$ 759,326
		Total MIE:	**$ 3,602,007**	**$ 3,083,676**	**$ 6,685,683**	**35%**	**38%**	**36%**	**$ 1,249,265**	**$ 1,185,839**	**$ 2,435,103**	**$ 9,120,786**
OPC		**R&D**	$ 1,018,693	$ 1,776,276	$ 2,794,969	36%	37%	37%	$ 362,029	$ 658,166	$ 1,020,195	$ 3,815,165
		Total OPC:	**$ 1,018,693**	**$ 1,776,276**	**$ 2,794,969**	**36%**	**37%**	**37%**	**$ 362,029**	**$ 658,166**	**$ 1,020,195**	**$ 3,815,165**
		TPC:	**$ 4,620,700**	**$ 4,859,952**	**$ 9,480,652**	**35%**	**38%**	**36%**	**$ 1,611,294**	**$ 1,844,005**	**$ 3,455,299**	**$ 12,935,951**
	11.0	Installation and Infrastructure	$ 174,194	$ 424,019	$ 598,213	34%	41%	39%	$ 58,604	$ 174,737	$ 233,341	$ 831,553

Reviewer Write-ups

- Write-ups are to be sent to Terry Erickson at terickson@fnal.gov prior to 9:30 AM on Thursday, December 15 for the Closeout Dry Run

Discussion

- Questions and Answers