



Fermilab

SSC DETECTOR SOLENOID DESIGN NOTE #177

TITLE: PAC Presentation

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DATE: May 11, 1992

SUMMARY: This design note contains a description of the PAC Review Process and the viewgraphs presented to the PAC Superconducting Solenoid Review Subpanel by the SDC Superconducting Magnet Working Group at the SSCL on May 5th and 6th.

REVIEW OF MAJOR SSC EXPERIMENTS

PURPOSE OF REVIEW:

The Technical Design Report (TDR) and associated documents will be the basis for a detailed evaluation of the proposed experiment by the SSC Laboratory, in consultation with the Program Advisory Committee (PAC), and by the DOE. The purpose of this evaluation is to ascertain that the scientific goals stated in the Letter of Intent can be accomplished, that the proposed detector is technically feasible, and that the collaboration has the resources and organization to build the detector according to specifications, on schedule and within the available budget.

The evaluation of a major SSC experiment will proceed in two stages:

STAGE I

The first stage will be primarily the responsibility of the Laboratory with the advice of the PAC, augmented by a number of advisors with expertise in specific technical systems, engineering, fabrication, costing, and project management. It is the purpose of this first round to evaluate the scientific merit, the technical feasibility, the collaboration resources and management, as well as the proposed cost and schedule. The review will be based on the TDR and drafts of the associated documents. A satisfactory review will result in approval of the scientific, technical, cost and schedule goals necessary for the project baseline and a recommendation that the collaboration proceed to draft agreements among the collaborating institutions.

STAGE II

The second stage follows agreement between the SSCL and the collaboration on a proposed baseline and a credible funding plan, and will involve primarily representatives of the Department of Energy. It will consist of a detailed analysis of the proposed technical, cost, schedule, and management baseline of the project. The review will examine the TDR, the detector-specific Project Management Plan (including the quality implementation and advanced acquisition plans), the status of plans and agreements for institutional assignments, the Cost and Schedule (by WBS), and the Conceptual Safety Analysis Report. A satisfactory review of the project will result in the acceptance of the baseline of the project by the DOE to enable the start of fabrication of the detector.

CONTENT OF TECHNICAL DESIGN REPORT

The Technical Design Report (TDR) for a major detector at the SSC should include:

- A description of the physics goals of the proposed experiment and a demonstration of the capabilities of the proposed detector to address those physics goals.
- A description of the proposed detector, including the overall layout and choice of technologies. Major SSC detector projects can be divided into the following subsystems:
 - a) tracking systems;
 - b) calorimeter systems;
 - c) muon systems;
 - d) superconducting magnet(s);
 - e) electronics and trigger systems; and
 - f) data acquisition and computing (on-line and off-line).

For each of these subsystems, the TDR and accompanying Cost and Schedule (including WBS dictionary) and detector-specific Project Management Plan (including plans for quality implementation, advanced acquisition, and configuration management) should contain details on:

- design requirements and performance goals,
- selection of technology and potential risks,
- performance and cost optimization
- options for staging and upgrades,
- performance of similar systems and R&D results
- future R&D and prototyping,
- electronics and readout
- calibration/alignment schemes, and monitoring,
- fabrication methods,
- assembly and installation,
- procedures for maintenance and repairs,
- test beam needs at SSCL and elsewhere,
- costs, schedule, and funding profile
- potential environmental and safety issues, and
- responsibilities of individual institutions for this subsystem and subsystem management and leadership.

In addition, the documents should include:

- A list of individual members of the collaboration by institution, indicating the contact persons at each institution.
- A description of the organization and management of the collaboration, as well as interactions with the SSCL.
- A description of the resources of the collaboration in terms of equipment, engineering and fabrication facilities, research scientists and financial support. The distribution of responsibilities among the members of the collaboration.
- A description of the requirements for the interaction hall, the needs for surface facilities and other resources required from the SSCL.
- An overall plan for assembly, installation, and commissioning of the detector, including resources required and their source.
- A list of the Environment, Safety, and Health (ES&H) considerations.
- The projected total project cost, including a WBS dictionary, a funding profile, and the project schedule with major milestones. The cost should be expressed in FY1992 dollars, using "U.S. accounting methods," and should include all detector-specific R&D/engineering costs.
- A summary of the financial resources of the collaboration, broken out by WBS in FY1992 dollars, for each fiscal year.
- An Appendix with a list of associated technical notes and publications.

SCHEDULE AND ORGANIZATION OF SDC REVIEW

TDR REVIEW: May 4-9, 1992

During the week-long review of its TDR, the Solenoidal Detector Collaboration (SDC) will be given ample time to present the project and to interact with the committee members. The first day will be reserved for an overview of the project presented by the collaboration in a plenary (and public) session.

This will be followed by three days of work in parallel sessions during which the committee members will be given more detailed presentations and have a chance to clarify issues not addressed in the summary. The remaining two days of the review will be reserved for preparation of the summary reports and to prepare a list of issues that need further attention or clarification. Oral reports by the subcommittees will be presented and discussed on day five of the meeting, followed by drafts for written reports to the SSCL on day six.

The members of the review committee (PAC plus experts) will be grouped into two sets of subcommittees with overlapping membership. The first set of subcommittees will meet on days two and three and will focus on the physics potential and the subsystems listed above. The second set of subcommittees will meet on day four to address more global issues:

- a) interaction hall, facility requirements, and installation plan;
- b) system integration and operation, quality assurance;
- c) cost and schedule;
- d) collaboration management and resources; and
- e) environment, safety and health issues.

With the overlap in membership of the two sets of subcommittees, detailed information concerning specific subsystems can be transferred to the sessions addressing global detector issues; in particular, cost, schedule, and ES&H issues. The evaluation of the cost and schedule is a very important step towards the preparation of a credible baseline plan for the project.

PAC MEETING: JULY 10-15, 1992

During the week-long meeting in July, the PAC will review the status of the SDC TDR evaluation and address any issues left unresolved from the earlier meeting. The SDC spokespersons and key personnel are expected to be available for brief presentations and interactions with PAC members. It is hoped that at this meeting, the PAC, after reviewing the SDC TDR and the overall initial experimental program, will be able to recommend that SDC proceed with the Laboratory to formulate the baseline to be presented to DOE and to draft agreements with the collaborating institutions.

DOE REVIEW: September 14-20, 1992

Following a positive recommendation by the PAC and the approval by the SSCL director to proceed towards the establishment of the baseline in detail, the Laboratory and collaboration will prepare and submit the following documents:

- Updated Technical Design Report;
- Cost and Schedule, including WBS dictionary;
- SDC Project Management Plan, including plans for quality implementation and advanced acquisitions;
- Safety Analysis Report; and
- Funding Plan, including status of agreements

The DOE will organize a thorough review of these documents. An evaluation of resources realistically available to the U.S. and foreign institutions combined with assessment of the management, cost and technical risks will form the basis of the review. It is anticipated that the process of arriving at an approved SDC baseline will take several months.

A summary of the proposed schedule and the projected results for the evaluation of the SDC project is appended below.

SUMMARY SCHEDULE FOR REVIEW OF SDC

- April 1, 1992 Deadline for TDR, Cost and Schedule, and drafts of Project Management Plan and Conceptual Safety Analysis Report
- May 4-9 Review of TDR and draft plans (at SSCL)
Focus: - Scientific merit
 - Technical feasibility
 - Collaboration resources, organization, management
 - Cost and schedule
- Projected Results: - Detailed evaluation of SDC project
 - Action items for further study/clarification
 - Cost and schedule goals established for SDC baseline
- July 10-15 PAC Meeting (at Woods Hole, Massachusetts)
Focus: - Closure on action items from May review
 - SDC in context of total program (GEM, ...)
- Projected Results: - Recommendation to formulate SDC baseline and to draft agreements with participating institutions

If the July review results in the Laboratory and SDC formulating a baseline, time-early for the next stage is:

- Sept. 1 Deadline for proposed baseline Cost and Schedule and final versions of SDC Project Management Plan and Conceptual Safety Analysis Report
- Sept. 14-20 DOE project review (at SSCL)
Focus: - Detailed review of SDC baseline
 - Management plan (in-depth review)
 - Status of agreements & plan for institutional assignments (including foreign)
 - Operations (plans for QA, safety, acquisitions, detector operating procedures, etc.)
- Projected Results: - Report to DOE/ER Management
 - SDC baseline presented by Laboratory approved by DOE

A	B	C	D	E	F	G	H	I	
S/C	Chg Part	EM/Had	Muons	Elec/DAQ	Int. Hall	Perf/Trig	Cost	Collab/	
Solenoid	Tracking	Calorim	Toroids	Compute	Fac/Inst	Integ/Op	Schedule	Resources	
		Sandweiss						Sandweiss	
			Altarelli			Altarelli			
				Breidenbach			Breidenbach		
	Danilov							Danilov	
	Dawson					Dawson			
				Dydak	Dydak				
		Eisele *			Eisele *				
			Froidevaux *			Froidevaux *			
Gross								Gross	
			Jackson				Jackson		
			Kamae					Kamae	
			Marciano					Marciano	
	Olsen						Olsen		
		Pauss				Pauss			
		Pilcher					Pilcher		
Smith							Smith		
	Witherell					Witherell			
				Zeller		Zeller			
		Albrow						Albrow	
			Becker *				Becker *		
			Bell		Bell				
	Bowden						Bowden		
Desportes					Desportes				
			Dosselli			Dosselli			
	Haller						Haller		
				Hartill			Hartill		
				Haynes		Haynes			
				Heijne			Heijne		
		Hoffmann			Hoffmann				
		Iwata				Iwata			
	Karchin							Karchin	
	McDonald				McDonald				
Mulholland							Mulholland		
Palmer								Palmer	
				Pordes	Pordes				
	Sauli					Sauli			
				Schalk				Schalk	
		Schindler					Schindler		
				Sippach			Sippach		
		Takasaki						Takasaki	
S/C	Chg Part	EM/Had	Muons	Elec/DAQ	Int. Hall	Perf/Trig	Cost	Collab/	
Solenoid	Tracking	Calorim	Toroids	Compute	Fac/Inst	Integ/Op	Schedule	Resources	
5	9	8	8	9	7	10	13	9	40
	Chair		* not confirmed						

1/12

1/2

1/6

SDC Review Schedule

May 4-9, 1992

	MONDAY 4-May	TUESDAY 5-May	WEDNESDAY 6-May	THURSDAY 7-May	FRIDAY 8-May	SATURDAY 9-May
8:30 AM						
9:00 AM	PLENARY	A - E	B - E		F - I	
10:30 AM	Break	Break	Break		Break	
11:00 AM	PLENARY	A - E	B - E		F - I	
12:30 PM	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
2:00 PM	PLENARY	A - E		F - I		
4:00 PM				Break		
5:00 PM				F - I		
6:00 PM						

Open

Closed