Addendum

to the

Project Management Plan

for the

Run IIb D-Zero Detector Project

at

Fermi National Accelerator Laboratory

V6.0
November 25, 2003

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1 INTRODUCTION

This document is an addendum to the Project Management Plan (PMP) for the Run IIb D-Zero Detector Project at Fermi National Accelerator Laboratory, dated December 10, 2002. Any and all changes or additions to that document are contained in this addendum, and as such supersede any corresponding elements of the PMP. This addendum contains no information other than changes and/or additions to the PMP. The two documents taken together now constitute the full and current Project Management Plan for the Run IIb D-Zero Detector Project at Fermi National Accelerator Laboratory.

Section numbers below refer to the document dated December 10, 2002.

2 JUSTIFICATION OF MISSION

Section 2.2, fourth paragraph, first bullet should be replaced with the following:

- The current silicon tracker must be augmented in order to be capable of handling the radiation associated with the integrated luminosity that is expected in Run II.

3 PROJECT DESCRIPTION

Section 3.1 “Silicon Detector.” Since the silicon detector design has been descoped, this section should be replaced with the following text:

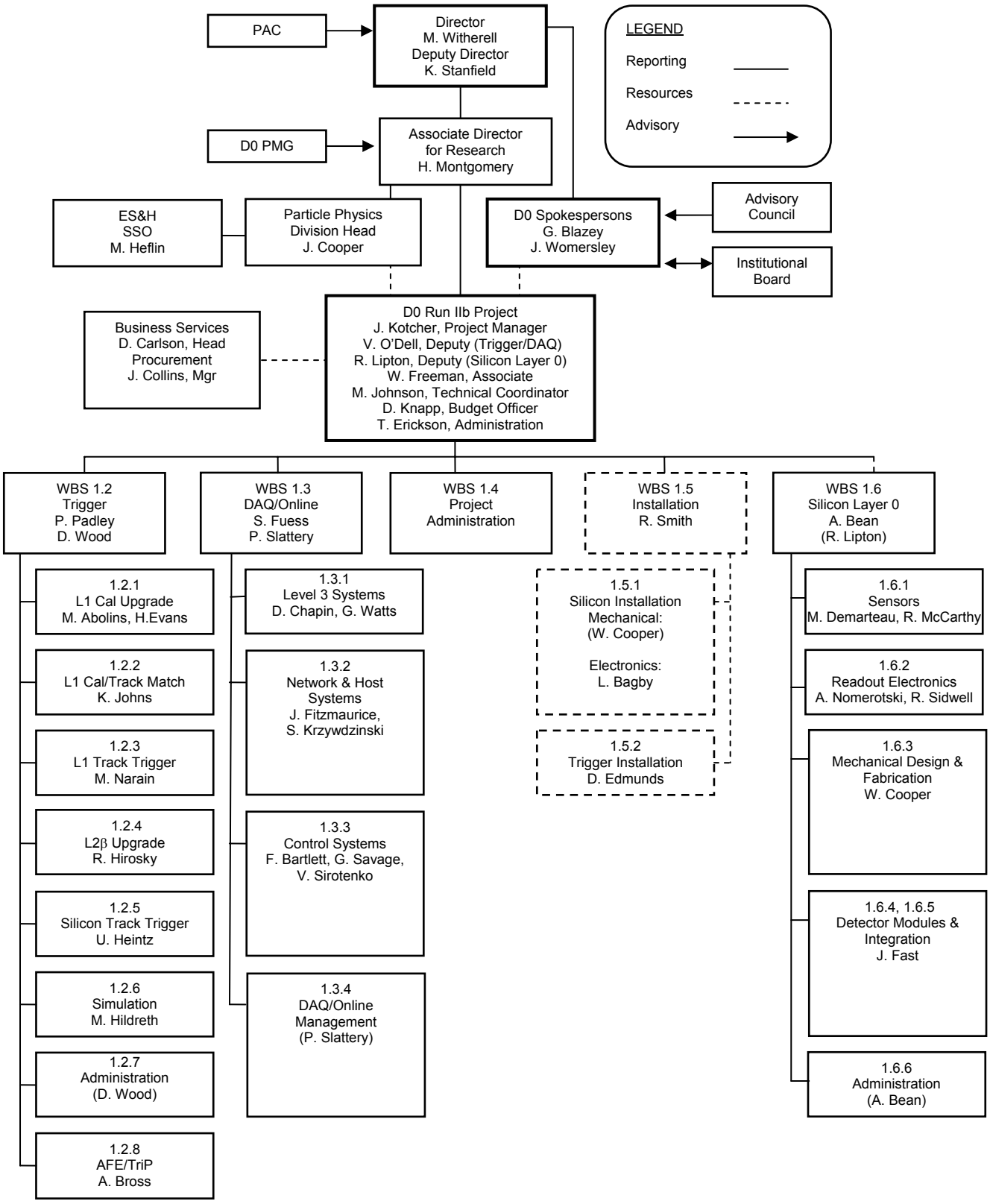
The current DØ silicon detector was built to withstand the 2-4 fb^{-1} of integrated luminosity originally projected for Run II. The higher integrated luminosity expected in Run IIb will render the inner layers of the present detector inoperable due to radiation damage. In order to maintain good track-finding performance, we are constructing a new inner silicon layer (“Layer Ø”) that will fit inside the existing detector and will provide an additional, radiation-hard, tracking layer. The new detector will be assembled at Fermilab from commercially produced silicon microstrip sensors, hybrids, and readout electronics. The current plans call for a tracker having six azimuthal segments, with a simple modular design and a minimum number of different part types. The proposed baseline detector has 48 silicon sensors, 96 SVX4 readout chips, and a total of 12288 channels. Its length has been chosen to permit its insertion into the bore of the fiber tracker without the need to move the DØ detector from the Collision Hall, a feature that is desired because of the relatively short shutdown that is currently planned between Runs IIa and IIb.

Section 3.2 “Trigger system” add the following paragraph:

The existing electronics for the Central Fiber Tracker, based on the SVX2 chip, will be replaced. The replacement makes use of a new readout chip, called a TRIP chip, developed specially for this purpose. The readout upgrade is required given the increased reliance on the fiber tracker, caused by the descoping of the silicon detector upgrade.

4 MANAGEMENT, ORGANIZATION AND RESPONSIBILITIES

Figure 1 should be replaced with the following modified organizational chart. Note that WBS 1.1 is not included in this revised chart since it only includes closeout items associated with the original scope of the silicon detector.



5 WORK BREAKDOWN STRUCTURE

To accommodate the descoped silicon detector, WBS 1.1 is reduced to containing only closeout items associated with the original scope. For convenience, a new WBS item is added to cover the descoped detector:

WBS 1.6 Layer Ø Silicon

This element covers the inner silicon layer designed to fit inside the existing D-Zero silicon detector, together with the new detector's readout and mechanical structure.

A new WBS item, 1.2.8, is added for upgrades to the fiber tracker electronics.

WBS 1.2.8 Fiber Tracker electronics upgrade

This element covers a replacement and upgrade for the existing readout of the central fiber tracker. The upgrade is based on the "TRIP" chip and a simplified replacement for the analog front-end boards ("AFE II").

7 TECHNICAL, SCHEDULE AND COST BASELINES

Table 1, Level 2 milestones, is to be replaced with the following table:

No.	Milestone	Date
	Silicon	
2.1	Freeze Mechanical Parameters	1/6/04
2.2	Release Sensors for Production	5/26/04
2.3	Release Analog Cables for Production	6/4/04
2.4	Release Hybrids for Production	6/4/04
2.5	All Analog Cables Delivered and Tested	3/11/05
2.6	All Sensors Delivered And Tested	5/23/05
2.7	All L0 Hybrids Delivered, Stuffed, and Tested	8/25/05
2.8	All Adapter Cards Delivered and Tested	10/17/05
2.9	Silicon L0 Module Production Complete	11/29/05
2.10	Silicon Ready To Move To DAB	5/25/06
	Trigger	
2.11	L1 Calorimeter Trigger TAB/GAB Prototyping Complete	5/3/04
2.12	L1 Trigger Cal-Trk Match Production and Testing Completed	9/23/04
2.13	Start Production TAB Fabrication	2/25/05
2.14	L2 Silicon Track Trigger Production and Testing Complete	10/17/05
2.15	L1 Calorimeter Trigger Production And Testing Complete	1/5/06
2.16	L2 Beta Trigger Production And Testing Complete	1/5/06
2.17	L2 Trigger Upgrade Production and Testing Complete	1/5/06
2.18	L1 Central Track Trigger Production And Testing Complete	1/10/06
2.19	L1 Trigger Upgrade Production and Testing Complete	4/10/06
	Online	
2.20	Online System Production and Testing Complete	10/7/05

Section 7.3.4, Cost Summary, is to be replaced with the following text:

The Total Project Cost (TPC) for the Run IIb D-Zero Detector Project in AY dollars is $19.926k, including $3,124k in contingency. An obligation profile showing the anticipated obligations by fiscal year is extracted from the schedule. The table below shows the obligation profile for the project at WBS level 2 with R&D and contingency broken out from the subsystem costs.

Obligation Profile (AY dollars in thousands)							
Source	**FY01**	**FY02**	**FY03**	**FY04**	**FY05**	**FY06**	**Total**
Silicon	17	1326	440	3,892	267	0	5,942
Trigger	0	330	716	1,516	2,392	40	4,994
Online Systems	0	0	64	311	377	311	1,062
Administration	0	0	274	217	225	207	924
Sub Total	17	1,656	1,494	5,935	3,261	558	12,921
R&D	0	1,361	2,519	0	0	0	3,881
Contingency	0	0	0	1,582	1,354	188	3,124
Total Project Cost	**17**	**3,017**	**4,014**	**7,518**	**4,615**	**746**	**19,926**

10 PROJECT CONTROLS SYSTEM

Section 10.2 "Guidelines and Policies" - Replace the fifth bullet with the following text:

- A project management system that features performance measurement based on cost accounting and scheduling is used to control the project and to provide forecast and feedback information to management. An effort will be made to continue formal earned-value analysis for use within the project, although such analysis is not required since the Total Project Cost is less than $20M.

Section 10.5.3 "Performance Measurement and Analysis" is to be replaced with the following text:

The principle functions of performance measurement and analysis are to identify, quantify, analyze, and rectify significant deviation from the plan as early as possible. A combination of the monthly analysis of the updated project schedule and its variances and a review of the monthly financial reports will be used to analyze the project's performance. Even though not formally required, an effort will be made to continue with a monthly earned-value analysis for use within the project using the COBRA software package, to the extent that the effort required to do so does not outweigh the benefit to the project, and it is considered useful, in the judgment of the project management.