CDMS II Baseline Budget

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Contents

Notes:

**** Not included in summary version of this document***
All amounts shown in $K.
All costs fully loaded - overhead,benefits, tuition included.

1. Introduction

1.1. CDMS II funding history

The CDMS II project is conducted by a collaboration of 10 groups at 7 universities and 3 National Laboratories. Funding for the project is provided by the Department of Energy and the National Science Foundation in a number of separate grants or allocations. Of these funds, three provide the primary project funds for the experiment's construction costs. These are: a major grant from the NSF, a project construction award from the DOE HEP University Program, and a project construction allocation from Fermilab. These funds are coordinated by the Project Managers.

There are in addition eight others funds used for the project, primarily providing support for scientific personnel. These are administered by the various university groups.

A proposal for the CDMS II project was submitted jointly to the NSF, DOE, and FNAL management in April 1999. This proposal included a bottom-up 5-year cost estimate. This was soon thereafter revised to contain a 6-year cost estimate in order the allow adequate operating time to reach the experiment's scientific goals. The proposal with the 6-year cost estimate was approved and Fermilab and the DOE provided the startup funding in 1999. The NSF grant started in January 2000.

With the funding in place, the Project Managers used the proposal cost estimate to establish the project budget. Some revisions were necessary to reflect the actual start date and also some actual costs for first year expenses were available. The project construction schedule was developed and we have attempted to coordinate this budget to be consistent with that.

This document provides a baseline budget for the major project funds. It includes a proposed allocation to the various institutions. Budgets are established to WBS level 3 and this is what is used for cost tracking. However, this document also includes estimates to WBS level 4 in order to provide justification for the level 3 numbers.

1.2. Revision History

June 2001 v 1.0	This document supercedes all budget-related documents for CDMS II.

For reference, previous budget information was provided in:

Oct 2000	CDMS II financial plan (preliminary version of v1. Baseline.)
June 1999	Budget book – details to WBS 5
April 1999	Proposal

2. CDMS II Funding

2.1. Overview

The funds used for the CDMS II project are:

Fund No.	Grant or Alloc.	Description	Agency	Lead Inst.	FY start	Approval Status
PROJECT FUNDS						
1	NSF	NSF main grant	NSF	UC Berkeley	1-Jan	Approved
2	DOE_Proj	Project Funds	DOE Univ	FNAL	1-Oct	Approved
3	FNAL_Proj	FNAL Eqpt & Operating	DOE Lab	FNAL	1-Oct	Approved
OTHER FUNDS						
3.1	FNAL_Base	FNAL Personnel	DOE Lab	FNAL	1-Oct	Annual App.
4	UCSB_Base	UCSB Base	DOE Univ	UC Santa Barbara	1-Apr	Annual App.
4.1	UCSB_Oper	UCSB Oper Supplement	DOE Univ	UC Santa Barbara	1-Apr	to be requested
5	SU_Base	SU Base	DOE Univ	Stanford	1-Jan	Annual App.
5.1	SU_Oper	SU Oper Supplement	DOE Univ	Stanford	1-Jan	to be requested
6	LBNL_Base	LBNL Base	DOE Lab	LBNL	1-Oct	Annual App.
6.1	LBNL_Oper	LBNL Oper Supplement	DOE Lab	LBNL	1-Oct	to be requested
7	NSF_Career	Career Grant	NSF	CWRU	1-Aug	Approved
8	NSF_ARI	ARI grant	NSF	Stanford	1-Sep	Approved in ’95

INSTITUTIONS

CWRU	Case Western Reserve University
FNAL	Fermilab
LBNL	Lawrence Berkeley National Laboratory
NIST	National Institute of Standards and Technology
PU	Princeton University
SCU	Santa Clara University
SU	Stanford University
UCB	Univ. of California, Berkeley
UColD	Univ. of Colorado, Denver
UCSB	Univ. of California, Santa Barbara

The intended coverage of these funds is as follows:

Fund No.	Grant or Allocation	Effort Supported
PROJECT FUNDS		
1	**NSF**	All effort at UCB,CWRU,PU,SCU: Scientist support (fac,phys,postdoc,grad). Salary & Travel Technical Staff (eng,tech,undergrads,admin.) Salary & Travel Project management and admin. at UCB Cold Hardware/Electronics Design, Procurement, Construction Warm Electronics: Design and testing Detector prep and testing Background MC studies and measurements Experiment operations
2	**DOE_Proj**	Project support at SU,UCSB,LBNL,NIST,UCol: Technical Staff (eng,tech,undergrads) Salary & Travel Detector production, preparation, and testing Cold Electronics: SQUIDs design, fab, testing Shield design, construction, installation DAQ design, procurement, commissioning
3	**FNAL**	Equipment and Operating Expenses Travel Soudan Infrastructure and enclosures setup: procurement, construction, and installation Cryo system: icebox procurement, construction, and installation Warm Electronics design, procurement, assembly, installation. DAQ design Experiment operations
OTHER FUNDS		
3.1	**FNAL_Base**	Scientific and Technical Personnel
4	**UCSB_Base**	Scientist salary & travel Technical Staff (eng,tech,undergrads) Salary & Travel Shield Design and assembly DAQ Design
4.1	**UCSB_Oper**	Experiment operations (years 4-6)
5	**SU_Base**	Scientist salary & travel Stanford Detector Development - K15
5.1	**SU_Oper**	Experiment operations (years 4-6)
6	**LBNL_Base**	Scientist salary & travel
6.1	**LBNL_Oper**	Experiment operations (years 4-6)
7	**NSF_Career**	Scientist salary & travel (at CWRU)
8	**ARI**	SUF facility setup

2.2. Project Funds

2.2.1. NSF Grant

This is a $9.3M 6-year grant from the NSF. UC Berkeley is the lead institution and Bernard Sadoulet is the PI. The grant covers from Jan 1, 2000 through December 31, 2005. It is awarded in performance periods as follows:

	Period 1	**Period 2**	**Period 3**	**Period 4**	**Period 5**
Project Months	1-28	29-36	37-48	49-60	61-72
Start	1/1/00	5/1/02	1/1/03	1/1/04	1/1/05
End	4/30/02	12/31/02	12/31/03	12/31/04	12/31/05
Amount	$4,000,000	$1,117,202	$1,400,524	$1,428,176	$1,136,104

This grant supports *all* effort on CDMS at Berkeley, Case Western, Santa Clara, and Princeton on CDMS II. Subawards are established from Berkeley to the other institutions. Funds support a) project construction efforts, including technical, project management, and administratve personnel, b) operations expenses such as travel and supplies, and c) scientist support such as data analysis, support of post-docs and graduate students and travel to conferences.

Note: In this document all NSF amounts are referred to calendar years.

2.2.2. DOE Award

This is a commitment of $5.3M over 6 years from the DOE University Program for a supplement to the base grants (at Stanford and UC Santa Barbara) for the construction of CDMS II. This supports only project construction costs, such as technical personnel, equipment, and installation costs. It supports work at Stanford, Santa Barbara, LBNL, NIST, and Colorado-Denver.

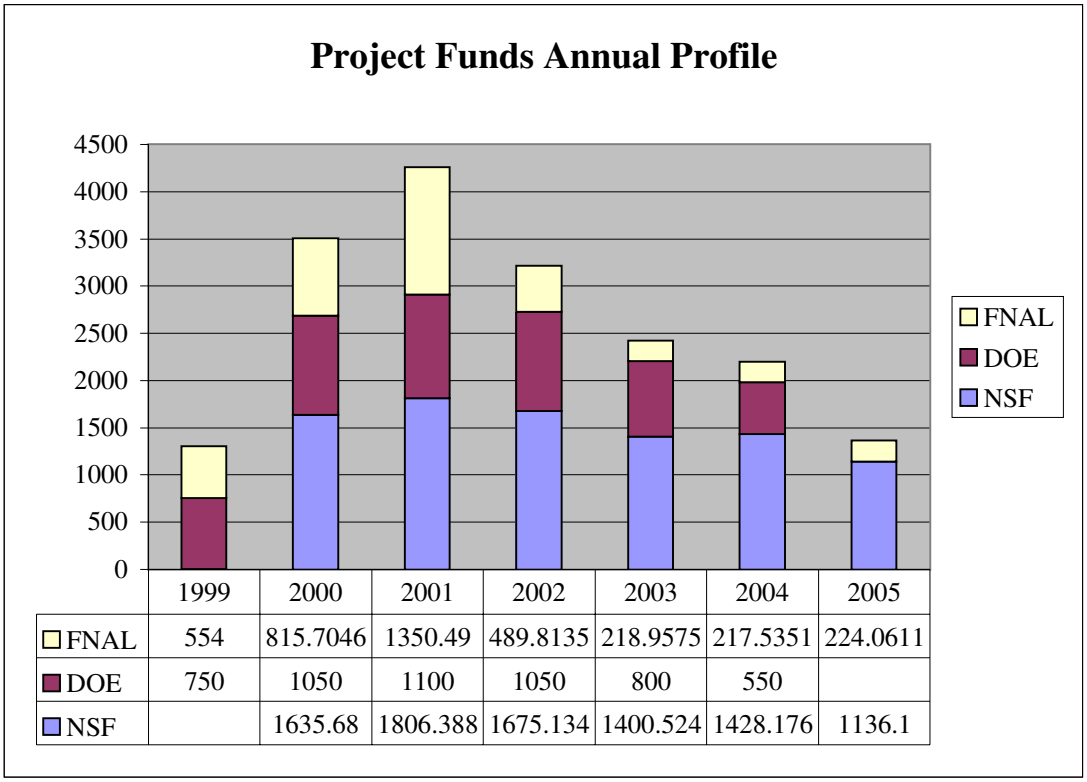
These funds are administered by the Project office at Fermilab as “pass-through” funds, supporting work at the other institutions. The project manager establishes the annual allocations to the various groups and holds funds in reserve for contingency

These funds are awarded and allocated on US government fiscal year basis (Oct 1 start).

2.2.3. *FNAL Project funds*

The funds included in this budget are the FNAL equipment and operating allocations for the construction and operation of CDMS II. These project funds are distinguished from the FNAL base funding which supports personnel.

These funds are awarded and allocated on US government fiscal year basis (Oct 1 start).



	1999	2000	2001	2002	2003	2004	2005
FNAL	554	815.7046	1350.49	489.8135	218.9575	217.5351	224.0611
DOE	750	1050	1100	1050	800	550	
NSF		1635.68	1806.388	1675.134	1400.524	1428.176	1136.1

Note:

Note: in the above graph FNAL and DOE funds correspond to Oct-1 ***fiscal years*** *while the NSF funds correspond to* ***calendar years.***

2.3. Other Funds

The other funds used to support the project are listed above on p. 4. These include:

- c o ntinuing base support of the Stanford and Santa Barbara groups. These are renewed annually.
- s u p p ort of scientific personnel at LBNL from the base program
- O p erating supplements to the above. It is projected that when the experiment is in operation, supplements to the base grants to support travel and technical personnel will be needed. *These operating supplements have not yet been requested.* This will proceed when necessary.
- M iscellaneous NSF grants: a career award to D. Akerib at CWRU and an ARI (Academic Research Infrastructure) grant to Stanford and Berkeley.

3. Baseline Budget

A baseline budget for the project has been established for the project grants within the award profiles. The project schedule calls for a four year construction and commissioning period: 2000 through 2003, followed by a two year operations period. However, due to the modularity of the detector installation, the construction and operations phases will overlap: we will be operating the experiment with a partial complement of detectors during the "construction" phase and will still be operating the detector test facilities during the "operations" phase in order to study the detector performance.

The project budget is constructed according to the work breakdown structure (WBS), which is shown to level 4 on the following page. This is followed by various summary tables.

3.1 Work Breakdown Structure

WBS_no level:	Task 1	2	3	4
1.	Construction			
1.1.		Integration and Running		
1.1.1.			SUF and Test Facility Operations	
1.1.1.1.				SUF Test Facility
1.1.1.2.				UCB Test Facility
1.1.1.3.				CWRU Test Facility
1.1.1.4.				SU/SCU Test Facility
1.1.1.5.				SU 15uW Test Facility
1.1.2.			Det. Install/commission at Soudan	
1.1.2.1.				Det system operation
1.1.2.2.				Det system setup/supplies
1.1.2.3.				Sci personnel/travel
1.1.3.			Soudan Ops/Science	
1.1.3.1.				Experiment operations
1.1.3.2.				Science support
1.1.4.			Scientific Communication	
1.1.4.1.				Meetings/conferences
1.1.4.2.				Education/outreach
1.2.		Detectors		
1.2.1.			Det Production	
1.2.1.1.				Planning & Monitoring
1.2.1.2.				Ge/Si Procurement
1.2.1.3.				Wafer Processing
1.2.1.4.				Detector mounting
1.2.2.			SQUID Amplifier Production	
1.2.2.1.				SQUID Chip production
1.2.2.2.				SQUID Card production
1.2.2.3.				Testing
1.2.3.			Cold Hardware & Electronics Prod	
1.2.3.1.				Design & Assembly
1.2.3.2.				Towers
1.2.3.3.				Cold Electronics
1.2.3.4.				Cold Elec Testing
1.2.4.			Det Test & Characterization	
1.2.4.1.				Det Mounting/prep
1.2.4.2.				Det Transport
1.2.4.3.				Det Testing
1.3.		Warm Electronics		
1.3.1.			Front End Elec. Prod	
1.3.1.1				Design & Assembly
1.3.1.2.				ZIP bds
1.3.1.3.				RTF bds
1.3.1.4.				Crates & PS
1.3.1.5.				Cables
1.3.1.6				Test Stands
1.3.2.			Warm Elec. Testing & Installation	
1.3.2.1.				Testing Personnel
1.3.2.2.				Testing Supplies & travel
1.4.		DAQ & Information Management		
1.4.1.			DAQ	
1.4.1.1.				Design, Assemble, Test
1.4.2.1.				DAQ Hardware
1.4.2.			Information Management	
1.4.2.1.				Design, code, test
1.4.2.2.				Hardware
1.4.2.3.				Software
1.4.3.			Data Reduction	
1.4.3.1.				Offline Hardware
1.4.3.2.				Software
1.5.		Shield, Veto, Backgrounds		
1.5.1.			Muon Veto system	
1.5.1.1.				Veto Design & Construct
1.5.1.2.				Veto Components
1.5.1.3.				Assemble and test veto at Soudan
1.5.1.4.				Outer Veto
1.5.2.			Shield Construction and Installation	
1.5.2.1.				Shield design & Assembly
1.5.2.2.				Shield Components
1.5.2.3.				Extra Shielding
1.5.3.			Phys Design & Bkgds	
1.5.3.1.				Neutron calc & meas
1.5.3.2.				Gamma Screening
1.5.3.3.				Surface Contamination
1.5.3.4.				Radon Suppression
1.5.3.5.				Alpha Screening
1.5.3.6.				General Bkgd calc.
1.6.		Soudan Installation		
1.6.1.			Cryogenic Systems	
1.6.1.1.				Dilution Fridge
1.6.1.2.				Liquefier
1.6.1.3.				Cryo Control System
1.6.1.4.				Icebox & Cryo Installation
1.6.2.			Exp Enclosures at Soudan	
1.6.2.1				Design & Planning
1.6.2.2.				Pre-installation setup
1.6.2.3.				Utility Systems
1.6.2.4.				General setup
1.6.2.5.				Structures
1.6.2.6.				Network Conn.
1.7.		Management		
1.7.1.			Project Management	
1.7.1.1.				Man. Personnel & Support
1.7.1.2.				Grant Admin
1.7.1.3.				Management meetings
2.	Operations			
2.1.		Integration and Running		
2.1.1.			SUF and Test Facility Operations	
2.1.1.1.				SUF Test Facility
2.1.1.2.				UCB Test Facility
2.1.1.3.				CWRU Test Facility
2.1.1.4.				SU/SCU Test Facility
2.1.1.5.				SU 15uW Test Facility
2.1.3.			Soudan Ops/Science	
2.1.3.1.				Experiment operations
2.1.3.2.				Science support
2.1.4.			Scientific Communication	
2.1.4.1.				Meetings/conferences
2.1.4.2.				Education/outreach
2.2.		Detectors		
2.2.4.			Detector Testing & Characterization	
2.2.4.1.				Det Mounting/prep
2.2.4.2.				Det Transport
2.2.4.3.				Det Testing
2.7.		Management		
2.7.1.			Project Management	
2.7.1.1.				Man. Personnel & Support
2.7.1.2.				Grant Admin
2.7.1.3.				Management meetings

3.2 Baseline budget 6-year cumulative

		Baseline Project Funds	fund no.		Project Total	other Total	Grand Total
WBS1_task							
Construction							
WBS 2	WBS 3	NSF	DOE	FNAL			
1.1.Integ/Run	1.1.1.SUF & Test Facil. Oper	654	495	36	1,185	436	1,621
	1.1.2.Det. Install/commission at Soudan	326	233	298	857	184	1,041
	1.1.3.Soudan Ops/Science			121	121		121
	1.1.4.Scientific Communication	284			284	114	398
1.1.Integ/Run Total		1,264	728	455	2,447	734	3,180
1.2.Detectors	1.2.1.Det Production	105	1,011		1,115	388	1,503
	1.2.2.SQUID Amplifier Production		441		441		441
	1.2.3.Cold Hdwr & Elec	923	411		1,334		1,334
	1.2.4.Det Test & Characterization	964	325		1,289	504	1,793
1.2.Detectors Total		1,992	2,187		4,179	892	5,071
1.3.W Elec	1.3.1.Front End Elec. Prod	341		433	773	395	1,168
	1.3.2.Warm Elec. Testing & Installation	22			22	159	181
1.3.W Elec Total		362		433	795	554	1,349
1.4.DAQ	1.4.1.DAQ		476		476	781	1,257
	1.4.2.Information Management		71		71		71
	1.4.3.Data Reduction		126		126		126
1.4.DAQ Total			673		673	781	1,454
1.5.Shld & Bkgds	1.5.1.Muon Veto system		359		359	91	449
	1.5.2.Shield Construction and Installation		194		194	149	343
	1.5.3.Phys Design & Bkgds	211	119	125	455	226	681
1.5.Shld & Bkgds Total		211	672	125	1,008	466	1,473
1.6.Soudan	1.6.1.Cryogenic Systems		21	591	612	351	963
	1.6.2.Exp Enclosures at Soudan			622	622	951	1,573
1.6.Soudan Total			21	1,213	1,234	1,301	2,536
1.7.Management	1.7.1.Project Management	672	126	80	878	764	1,642
1.7.Management Total		672	126	80	878	764	1,642
budget item Total		**4,501**	**4,407**	**2,306**	**11,214**	**5,491**	**16,705**
Contingency Total		**397**	**893**	**545**	**1,835**	**0**	**1,835**
Construction Total		**4,898**	**5,300**	**2,851**	**13,048**	**5,491**	**18,540**
Operations							
2.1.Integ/Run	2.1.1.SUF and Test Facility Operations	247			247	216	464
	2.1.3.Soudan Ops/Science	2,624		964	3,588	4,179	7,767
	2.1.4.Scientific Communication	332			332	91	422
2.1.Integ/Run Total		3,203		964	4,168	4,486	8,653
2.2.Detectors	2.2.4.Detector Testing & Characterization	310			310	346	657
2.2.Detectors Total		310			310	346	657
2.7.Management	2.7.1.Project Management	670		56	726	882	1,608
2.7.Management Total		670		56	726	882	1,608
Operations Total		**4,184**		**1,020**	**5,204**	**5,714**	**10,918**
Grand Total		**9,082**	**5,300**	**3,871**	**18,253**	**11,205**	**29,458**

3.3.1 All funds combined: Allocation years (Calendar Year for NSF, Fiscal Year for DOE and FNAL)

TO WBS 3

Sum of Cost3K				Baseline Year							
				Project							Grand Total
WBS1_t	class_2	WBS 2	WBS 3	99	00	01	02	03	04	05	
Construction	budget item	1.1.Integ/Run	1.1.1.SUF & Test Facil. Oper	55	488	348	294				1,185
			1.1.2.Det. Install/commission at Soudan		101	417	339				857
			1.1.3.Soudan Ops/Science		121						121
			1.1.4.Scientific Communication		86	102	97				284
		1.1.Integ/Run Total		55	796	867	729				2,447
		1.2.Detectors	1.2.1.Det Production	124	423	389	179				1,115
			1.2.2.SQUID Amplifier Production	49	170	160	62				441
			1.2.3.Cold Hdwr & Elec	21	615	457	241				1,334
			1.2.4.Det Test & Characterization	48	518	373	350				1,289
		1.2.Detectors Total		242	1,726	1,379	832				4,179
		1.3.W Elec	1.3.1.Front End Elec. Prod	189	86	352	126	21			773
			1.3.2.Warm Elec. Testing & Installation		6	8	8				22
		1.3.W Elec Total		189	92	360	134	21			795
		1.4.DAQ	1.4.1.DAQ	85	97	112	115	67			476
			1.4.2.Information Management		43	12	16				71
			1.4.3.Data Reduction		23	42	46	15			126
		1.4.DAQ Total		85	162	166	178	82			673
		1.5.Shld & Bkgds	1.5.1.Muon Veto system	232	89	38					359
			1.5.2.Shield Construction and Installation	149	25	13	7				194
			1.5.3.Phys Design & Bkgds	10	69	81	295				455
		1.5.Shld & Bkgds Total		391	183	132	302				1,008
		1.6.Soudan	1.6.1.Cryogenic Systems	307	106	199					612
			1.6.2.Exp Enclosures at Soudan	58	290	274					622
		1.6.Soudan Total		365	396	473					1,234
		1.7.Management	1.7.1.Project Management	11	305	274	265	13	9		878
		1.7.Management Total		11	305	274	265	13	9		878
	budget item Total			1,338	3,660	3,650	2,440	116	9		11,214
	Contingency Total			0	508	908	393	26			1,835
Construction Total				1,338	4,168	4,558	2,833	141	9		13,048
Operations	budget item	2.1.Integ/Run	2.1.1.SUF and Test Facility Operations					94	96	58	247
			2.1.3.Soudan Ops/Science			251	458	1,004	1,043	833	3,588
			2.1.4.Scientific Communication					108	111	113	332
		2.1.Integ/Run Total				251	458	1,206	1,250	1,003	4,168
		2.2.Detectors	2.2.4.Detector Testing & Characterization					108	111	92	310
		2.2.Detectors Total						108	111	92	310
		2.7.Management	2.7.1.Project Management					240	239	247	726
		2.7.Management Total						240	239	247	726
	budget item Total					251	458	1,554	1,600	1,342	5,204
Operations Total						251	458	1,554	1,600	1,342	5,204
Grand Total				1,338	4,168	4,809	3,291	1,695	1,609	1,342	18,253

See Sec. 4.1 for details

3.3.2 All funds combined: Reporting Years - all funds on Calendar Year basis

				REPORTING (CALENDAR) YEARS						
W	class_2	WBS 2	WBS 3	2000	2001	2002	2003	2004	2005	CUMULATIVE
1.	budget item	1.1.Integ/Run	1.1.1.SUF & Test Facil. Oper	584	337	264				1,185
			1.1.2.Det. Install/commission at Soudan	171	393	293				857
			1.1.3.Soudan Ops/Science	121						121
			1.1.4.Scientific Communication	86	102	97				284
		1.1.Integ/Run Total		962	832	653				2,447
		1.2.Detectors	1.2.1.Det Production	640	339	137				1,115
			1.2.2.SQUID Amplifier Production	259	135	46				441
			1.2.3.Cold Hdwr & Elec	680	418	236				1,334
			1.2.4.Det Test & Characterization	588	368	333				1,289
		1.2.Detectors Total		2,167	1,260	751				4,179
		1.3.W Elec	1.3.1.Front End Elec. Prod	332	295	126	21			773
			1.3.2.Warm Elec. Testing & Installation	6	8	8				22
		1.3.W Elec Total		338	302	134	21			795
		1.4.DAQ	1.4.1.DAQ	210	113	103	50			476
			1.4.2.Information Management	46	13	12				71
			1.4.3.Data Reduction	33	43	39	11			126
		1.4.DAQ Total		289	169	154	62			673
		1.5.Shld & Bkgds	1.5.1.Muon Veto system	330	28					359
			1.5.2.Shield Construction and Installation	177	11	5				194
			1.5.3.Phys Design & Bkgds	88	112	254				455
		1.5.Shld & Bkgds Total		596	152	259				1,008
		1.6.Soudan	1.6.1.Cryogenic Systems	463	149					612
			1.6.2.Exp Enclosures at Soudan	417	205					622
		1.6.Soudan Total		880	355					1,234
		1.7.Management	1.7.1.Project Management	330	275	254	12	7		878
		1.7.Management Total		330	275	254	12	7		878
	budget item Total			5,561	3,345	2,206	94	7		11,214
	Contingency Total			678	794	344	19			1,835
1. Total				6,240	4,138	2,550	114	7		13,048
2.	budget item	2.1.Integ/Run	2.1.1.SUF and Test Facility Operations				94	96	58	247
			2.1.3.Soudan Ops/Science	31	278	449	1,006	1,044	781	3,588
			2.1.4.Scientific Communication				108	111	113	332
		2.1.Integ/Run Total		31	278	449	1,208	1,251	951	4,168
		2.2.Detectors	2.2.4.Detector Testing & Characterization				108	111	92	310
		2.2.Detectors Total					108	111	92	310
		2.7.Management	2.7.1.Project Management			6	238	239	242	726
		2.7.Management Total				6	238	239	242	726
	budget item Total			31	278	454	1,553	1,601	1,286	5,204
2. Total				31	278	454	1,553	1,601	1,286	5,204
Grand Total				6,271	4,416	3,004	1,667	1,608	1,286	18,253

Note: Calendar year 2000 includes DOE and FNAL start-up funds from 1999

3.3.3 NSF Profile

Sum of Cost3K				Baseline Project	Year 00	01	02	03	04	05	Grand Total
WBS1_t	class_2	WBS 2	WBS 3								
Construction	budget item	1.1.Integ/Run	1.1.1.SUF & Test Facil. Oper		301	181	172				654
			1.1.2.Det. Install/commission at Soudan		31	139	157				326
			1.1.4.Scientific Communication		86	102	97				284
		1.1.Integ/Run Total			417	422	425				1,264
		1.2.Detectors	1.2.1.Det Production		79	17	9				105
			1.2.3.Cold Hdwr & Elec		423	281	219				923
			1.2.4.Det Test & Characterization		396	285	282				964
		1.2.Detectors Total			899	583	510				1,992
		1.3.W Elec	1.3.1.Front End Elec. Prod		71	122	126	21			341
			1.3.2.Warm Elec. Testing & Installation		6	8	8				22
		1.3.W Elec Total			77	130	134	21			362
		1.5.Shld & Bkgds	1.5.3.Phys Design & Bkgds		37	42	131				211
		1.5.Shld & Bkgds Total			37	42	131				211
		1.7.Management	1.7.1.Project Management		240	221	211				672
		1.7.Management Total			240	221	211				672
	budget item Total				1,671	1,398	1,411	21			4,501
	Contingency Total					228	170				397
Construction Total					1,671	1,626	1,581	21			4,898
Operations	budget item	2.1.Integ/Run	2.1.1.SUF and Test Facility Operations					94	96	58	247
			2.1.3.Soudan Ops/Science			126	224	809	841	625	2,624
			2.1.4.Scientific Communication					108	111	113	332
		2.1.Integ/Run Total				126	224	1,010	1,048	796	3,203
		2.2.Detectors	2.2.4.Detector Testing & Characterization					108	111	92	310
		2.2.Detectors Total						108	111	92	310
		2.7.Management	2.7.1.Project Management					217	223	230	670
		2.7.Management Total						217	223	230	670
	budget item Total					126	224	1,335	1,382	1,118	4,184
Operations Total						126	224	1,335	1,382	1,118	4,184
Grand Total					1,671	1,752	1,804	1,356	1,382	1,118	9,082

	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**TOTAL**
AWARD	1,636	1,806	1,675	1,401	1,428	1,136	9,082

See Sec. 4.2 for details

3.3.4. DOE Profile

Fiscal years

Sum of Cost3K				Baseline Year						
				Project						Grand Total
WBS1_	class_2	WBS 2	WBS 3	99	00	01	02	03	04	
Construction	budget item	1.1.Integ/Run	1.1.1.SUF & Test Facil. Oper	55	166	152	122			495
			1.1.2.Det. Install/commission at Soudan		26	74	132			233
		1.1.Integ/Run Total		55	192	226	254			728
		1.2.Detectors	1.2.1.Det Production	124	344	373	170			1,011
			1.2.2.SQUID Amplifier Production	49	170	160	62			441
			1.2.3.Cold Hdwr & Elec	21	192	176	22			411
			1.2.4.Det Test & Characterization	48	122	87	68			325
		1.2.Detectors Total		242	827	796	322			2,187
		1.4.DAQ	1.4.1.DAQ	85	97	112	115	67		476
			1.4.2.Information Management		43	12	16			71
			1.4.3.Data Reduction		23	42	46	15		126
		1.4.DAQ Total		85	162	166	178	82		673
		1.5.Shld & Bkgds	1.5.1.Muon Veto system	232	89	38				359
			1.5.2.Shield Construction and Installation	149	25	13	7			194
			1.5.3.Phys Design & Bkgds	10	26	39	44			119
		1.5.Shld & Bkgds Total		391	140	89	51			672
		1.6.Soudan	1.6.1.Cryogenic Systems		11	11				21
		1.6.Soudan Total			11	11				21
		1.7.Managemen	1.7.1.Project Management	11	30	31	31	13	9	126
		1.7.Management Total		11	30	31	31	13	9	126
	budget item Total			784	1,362	1,320	836	95	9	4,407
	Contingency Total			0	319	387	161	26		893
Construction Total				784	1,682	1,706	997	121	9	5,300
Grand Total				784	1,682	1,706	997	121	9	5,300

1999	2000	2001	2002	2003	2004	TOTAL
750	1,050	1,100	1,050	800	550	5,300

See Sec. 4.3 for details

3.3.5. FNAL Profile

Fiscal years

Sum of Cost3K				Baseline Year							
				Project							Grand Total
WBS1_t	class_2	WBS 2	WBS 3	99	00	01	02	03	04	05	
Construction	budget item	1.1.Integ/Run	1.1.1.SUF & Test Facil. Oper		21	15					36
			1.1.2.Det. Install/commission at Soudan		44	204	50				298
			1.1.3.Soudan Ops/Science		121						121
		1.1.Integ/Run Total			186	219	50				455
		1.3.W Elec	1.3.1.Front End Elec. Prod	189	14	230					433
		1.3.W Elec Total		189	14	230					433
		1.5.Shld & Bkgds	1.5.3.Phys Design & Bkgds		5		120				125
		1.5.Shld & Bkgds Total			5		120				125
		1.6.Soudan	1.6.1.Cryogenic Systems	307	95	188					591
			1.6.2.Exp Enclosures at Soudan	58	290	274					622
		1.6.Soudan Total		365	386	462					1,213
		1.7.Management	1.7.1.Project Management		36	22	23				80
		1.7.Management Total			36	22	23				80
	budget item Total			554	627	932	192				2,306
	Contingency Total				189	293	63				545
Construction Total				554	816	1,226	255				2,851
Operations	budget item	2.1.Integ/Run	2.1.3.Soudan Ops/Science			125	235	196	202	208	964
		2.1.Integ/Run Total				125	235	196	202	208	964
		2.7.Management	2.7.1.Project Management					23	16	16	56
		2.7.Management Total						23	16	16	56
	budget item Total					125	235	219	218	224	1,020
Operations Total						125	235	219	218	224	1,020
Grand Total				554	816	1,350	490	219	218	224	3,871

AWARD	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**TOTAL**
	554	816	1,350	490	219	218	224	3,871

See Sec. 4.4 for details

3.4 Allocations to Institutions

Sum of Cost3K			Year							
fu	Fund_Nm	Inst	99	00	01	02	03	04	05	Grand Total
1	NSF	CWRU		387	447	446	438	451	398	2,567
		PU		0		160	167	169	169	665
		SCU		61	56	47	36	37	33	271
		UCB		1,223	1,021	981	714	725	517	5,181
	NSF Total			1,671	1,524	1,635	1,356	1,382	1,118	8,685
1 Total				1,671	1,524	1,635	1,356	1,382	1,118	8,685
2	DOE_Proj	CWRU	48							48
		FNAL	11	16	17	17	13	9		83
		LBNL	46	338	297	144				825
		NIST	35	119	109	45				308
		SCU	15							15
		SU	148	525	589	390				1,652
		UcolD	15	51	51	16				133
		UCSB	466	314	256	224	82			1,342
	DOE_Proj Total		784	1,362	1,320	836	95	9		4,407
2 Total			784	1,362	1,320	836	95	9		4,407
3	FNAL	FNAL	554	627	1,057	427	219	218	224	3,326
	FNAL Total		554	627	1,057	427	219	218	224	3,326
3 Total			554	627	1,057	427	219	218	224	3,326
Grand Total			1,338	3,660	3,901	2,898	1,670	1,609	1,342	16,418

Note: Contingency is NOT included

3.5 Personnel

Sum of FTE					Year						
Inst	level	Item (WBS 5)	fund	Fund_Nm	99	00	01	02	03	04	05
CWRU	fac	Akerib	1	NSF			0.50	0.50	1.00	1.00	1.00
			7	NSF_Career		1.00	0.50	0.50			
	postd	Bolozdynya/pd B	1	NSF		0.20	0.20	0.20	1.00	1.00	1.00
			7	NSF_Career		0.80	0.80	0.80			
		Schnee/pd A	1	NSF		1.00	1.00	1.00	1.00	1.00	1.00
	grad	Driscoll/gr B	1	NSF		0.50	1.00	1.00	1.00	1.00	
		Perera/gr A	1	NSF		1.00	1.00	1.00	1.00	1.00	1.00
		Wang/gr C	1	NSF			1.00	1.00	1.00	1.00	1.00
	ugrad	CWRU ugrad A	1	NSF		1.00	1.00	1.00			
		CWRU ugrad B	1	NSF		1.00	1.00	1.00			
		CWRU ugrad C	1	NSF		1.00	1.00	1.00			
	tech	Computer support	1	NSF		0.05	0.05	0.05	0.05	0.05	0.05
FNAL	phys	Crisler	3	FNAL							
			3.1	FNAL_Base		0.50	0.50	0.50	0.50	0.50	0.50
		Dixon	3.1	FNAL_Base		1.00	1.00	1.00	1.00	1.00	1.00
		FNAL phys A	3.1	FNAL_Base		0.50	1.00	1.00	1.00	1.00	1.00
		Holmgren	3.1	FNAL_Base				0.25	0.25	0.25	0.25
	postd	Eichblatt/pd A	3.1	FNAL_Base		1.00	1.00	1.00	1.00	1.00	1.00
		FNAL postd B	3.1	FNAL_Base		0.50	1.00	1.00	1.00	1.00	0.00
	ugrad	FNAL coop 1	3.1	FNAL_Base		0.63	0.13				
		FNAL coop 2	3.1	FNAL_Base		0.63	0.13				
	eng	Haldeman	3	FNAL							
			3.1	FNAL_Base		0.63	0.50				
		Kula	3	FNAL							
			3.1	FNAL_Base		1.00	1.00	1.00			
		Schmitt	3	FNAL							
			3.1	FNAL_Base		0.25	0.25	0.25			
		Holmgren	3	FNAL							
			3.1	FNAL_Base		0.50	0.50				
		Orr	3	FNAL							
			3.1	FNAL_Base		0.12					
		ES&H Professsional	3.1	FNAL_Base		0.10	0.05	0.05	0.05	0.05	0.05
	tech	FNAL designer	3	FNAL							
			3.1	FNAL_Base		0.25					
		Johnson,W.	3	FNAL							
			3.1	FNAL_Base		0.63	0.50				
		Merkel	3	FNAL							
			3.1	FNAL_Base		0.63	0.13				
		Morrison/Regan	3	FNAL							
			3.1	FNAL_Base		0.63	0.13				
		Elec tech	3.1	FNAL_Base		0.13					
		Mech techs	3	FNAL							
			3.1	FNAL_Base		2.00					
LBNL	fac	Ross	6	LBNL_Base		0.30	0.30	0.30	0.30	0.30	0.30
		Sadoulet	6	LBNL_Base		1.00	1.00	1.00	1.00	1.00	1.00
	phys	McDonald	6	LBNL_Base		0.00	0.00	0.00			
	postd	LBNL postd A	6	LBNL_Base				1.00	1.00	1.00	1.00
	eng	Taylor,J.	6	LBNL_Base		0.10	0.10	0.10	0.10	0.10	
	tech	Emes	2	DOE_Proj	0.25	1.00	1.00	1.00			
			6.1	LBNL_Oper					1.00	0.50	0.50
		Hernikl/LBNL tech A	2	DOE_Proj	0.25	1.00	1.00	0.25			
		Brumfield/LBNL tech B	2	DOE_Proj		1.00	0.75				
NIST	fac	Huber (sabbat)	2	DOE_Proj		0.40					
	phys	Martinis	2	DOE_Proj	0.05	0.10	0.10	0.05			
	tech	NIST tech	2	DOE_Proj	0.16	0.40	0.40	0.11			
PU	fac	Shutt	1	NSF				0.25	0.25	0.25	0.25
	postd	PU postd A	1	NSF		0.00	0.00	1.00	1.00	1.00	1.00
	grad	PU grad A	1	NSF		0.00	1.00	1.00	1.00	1.00	1.00

Sum of FTE					Year						
Inst	level	Item (WBS 5)	fund	Fund_Nm	99	00	01	02	03	04	05
SCU	fac	Young	1	NSF		1.00	1.00	1.00	1.00	1.00	1.00
	ugrad	SCU ugrad A	1	NSF		1.00	1.00	1.00	1.00	1.00	1.00
		SCU ugrad B	1	NSF		1.00	1.00	1.00			
SU	fac	Cabrera	5	SU_Base		1.00	1.00	1.00	1.00	1.00	1.00
	phys	Brink	2	DOE_Proj		1.00	1.00	1.00			
			5	SU_Base					1.00	1.00	1.00
	postd	Baudis/pd A	5	SU_Base		0.00	1.00	1.00			
			5.1	SU_Oper					1.00	1.00	1.00
	grad	Chang/grad B	5	SU_Base		1.00	1.00	1.00	1.00	1.00	1.00
		Saab/gr A	5	SU_Base		1.00	1.00	1.00	1.00	1.00	
		SU grad/rotation	5	SU_Base		0.50	0.50	0.50			
		Abrams/gr C	5	SU_Base		1.00	1.00	1.00	1.00	1.00	1.00
	ugrad	SU ugrad A	5	SU_Base		1.00	1.00	1.00			
	eng	Hennessy	5	SU_Base		0.25	0.25	0.25	0.25	0.25	0.25
	tech	Abusaidi et al	2	DOE_Proj	1.00						
		Castle	2	DOE_Proj		1.00	1.00	1.00			
			5.1	SU_Oper					1.00	0.50	0.50
		Perales	2	DOE_Proj		0.75	0.75	0.75			
			5.1	SU_Oper					0.75	0.30	0.30
	admin	Hubly	5	SU_Base		0.20	0.20	0.20	0.20	0.20	0.20
UCB	phys	Spadafora	1	NSF		1.00	1.00	1.00	1.00	1.00	1.00
	postd	Gaitskell/pd A	1	NSF		1.00					
		Hellmig	1	NSF		0.33					
		Isaac/pd C	1	NSF		1.00	1.00	1.00	1.00	1.00	
		Meunier/pd D	1	NSF		0.67	1.00	1.00			
		Rau/Humbolt Fellow	1	NSF		0.25	1.00	1.00	1.00	1.00	1.00
		Armel/pd A	1	NSF		0.25	1.00	1.00	1.00	1.00	
	grad	Golwala	1	NSF		0.50					
		Mandic/gr A	1	NSF		1.00	1.00	1.00	1.00	1.00	
		UCB grad B	1	NSF		0.00	1.00	1.00	1.00	1.00	1.00
		UCB grad C	1	NSF		0.00	0.50	1.00	1.00	1.00	1.00
	ugrad	UCB ugrad A	1	NSF		1.00	1.00	1.00			
		UCB ugrad B	1	NSF		1.00	1.00	1.00			
		UCB ugrad C	1	NSF		0.00	0.00				
		UCB ugrad D	1	NSF		0.00	0.00				
		UCB ugrad E	1	NSF				0.00	0.00	0.00	0.00
		web programmer	1	NSF		0.00	1.00	1.00	1.00	1.00	1.00
	eng	Seitz	1	NSF		1.00	1.00	1.00	0.50	0.50	0.50
		Smith,G.	1	NSF		0.40	0.40	0.40			
	admin	admin asst	1	NSF		0.50	0.50	0.50	0.50	0.50	0.50
		Esteves	1	NSF		0.50	0.50	0.50	0.50	0.50	0.50
UcolD	fac	Huber	2	DOE_Proj		0.50	0.50	0.33			
	ugrad	Ucol ugrad	2	DOE_Proj	0.70	1.25	1.25				
UCSB	fac	Nelson	4	UCSB_Base		1.00	1.00	1.00	1.00	1.00	1.00
		Caldwell (emeritus)	2	DOE_Proj		0.50	0.50	0.50			
			4	UCSB_Base		0.50	0.50	0.50	0.50	0.50	0.50
			4.1	UCSB_Oper					0.50	0.50	0.50
	phys	Bauer	4	UCSB_Base		1.00	1.00	1.00	1.00	1.00	1.00
		Yellin	4	UCSB_Base		1.00	1.00	1.00	1.00	1.00	1.00
	postd	UCSB postd A	4	UCSB_Base		0.25	1.00	1.00	1.00	1.00	1.00
	grad	Bunker/gr A	4	UCSB_Base		1.00	1.00	1.00	1.00	1.00	
		Maloney	4	UCSB_Base		0.50	1.00	1.00	1.00	1.00	1.00
		Sander	4	UCSB_Base		0.50	1.00	1.00	1.00	1.00	1.00
	ugrad	UCSB ugrad A	2	DOE_Proj		1.00	1.00	1.00			
	eng	Burke,S.	4	UCSB_Base		0.50	0.50	0.00			
		Hale/Kyre	4	UCSB_Base		0.50	0.50	0.00			
	tech	Callahan,D.	2	DOE_Proj		1.00	0.50				

3.6 Contingency

Sum of Cost3K		Yr					
class_2	Fund_Nm	99	00	01	02	03	Grand Total
Contingency	NSF			228	170		397
	DOE_Proj	0	319	387	161	26	893
	FNAL		189	293	63		545
Contingency Total		0	508	908	393	26	1,835
Grand Total		0	508	908	393	26	1,835

Contingency is held in reserve by the Project Manager. Its use is approved by the change control panel as described in the management section of the April 1999 proposal.

4.1 Budget detail. All funds to WBS 4

Baseline	Project
class_2	budget item

NOTE:
Contingency NOT included
Different funds have different annual start dates

Sum of Cost3K						Year							
WBS 3	WBS 4	categ	Fund_Nm	Inst	Item (WBS 5)	99	00	01	02	03	04	05	Grand Total
1.1.1.SUF & Test Facil. Oper	1.1.1.1. SUF Test Facility	pers	DOE_Proj	SU	Brink				22	22			44
					Perales			65	67	69			200
				SU Total				65	89	91			245
			DOE_Proj Total					65	89	91			245
		pers Total						65	89	91			245
		Travel	FNAL	FNAL	travel			7					7
				FNAL Total				7					7
			FNAL Total					7					7
		Travel Total						7					7
		S&E	DOE_Proj	SU	cryogens		45	63	34	27			168
					lab supplies			4	4	4			13
				SU Total			45	67	38	31			181
				UCSB	lab supplies			25	25				50
				UCSB Total				25	25				50
			DOE_Proj Total				45	92	63	31			231
			FNAL	FNAL	lab supplies			14	15				29
				FNAL Total				14	15				29
			FNAL Total					14	15				29
		S&E Total					45	106	78	31			260
	1.1.1.1. SUF Test Facility Total						45	178	166	122			512
	1.1.1.2. UCB Test Facility	pers	NSF	UCB	Hellmig			1					1
					Mandic/gr A			3	3	3			9
					Rau/Humbolt Fellow				3	4			7
					UCB grad C			0	3	3			6
				UCB Total				4	9	10			23
			NSF Total					4	9	10			23
		pers Total						4	9	10			23
		Travel	NSF	UCB	travel to CWRU			8					8
				UCB Total				8					8
			NSF Total					8					8
		Travel Total						8					8
		S&E	NSF	UCB	Computer support			5	5				11
					cryogens			25	26	26			77
					lab supplies			18	19	19			56
					shops			5	5	5			14
				UCB Total				53	54	50			157
			NSF Total					53	54	50			157
		S&E Total						53	54	50			157
		eqpt	NSF	UCB	computer for 75 lab (PC)			5	5				10
					Turbo pump for75 lab			10					10
					Vac. gauge & controller			3					3
				UCB Total				18	5				23
			NSF Total					18	5				23
		eqpt Total						18	5				23
	1.1.1.2. UCB Test Facility Total							82	68	60			211
	1.1.1.3. CWRU Test Facility	pers	NSF	CWRU	Bolozdynya/pd B			7					7
					Computer support			4	4				8
					Driscoll/gr B			7					7
					Perera/gr A				4	4			8
					Wang/gr C				4	4			8
				CWRU Total				18	12	8			38
			NSF Total					18	12	8			38
		pers Total						18	12	8			38
		Travel	NSF	CWRU	travel			29					29
				CWRU Total				29					29
			NSF Total					29					29
		Travel Total						29					29
		S&E	NSF	CWRU	cryogens			39	40	41			121
					DLT tape drive			2					2
					Geiger counter			1					1

Sum of Cost3K						Year							
WBS 3	WBS 4	categ	Fund_Nm	Inst	Item (WBS 5)	99	00	01	02	03	04	05	Grand Total
					HEPA Filter w/Blower			1					1
					lab computer			4					4
					lab supplies			8	16	16			40
					laser printer for lab			1					1
					LN trap for diff pump			2					2
					magnetic shield			5					5
					phone/office supplies			2	2	2			5
					Radioactive sources			3					3
					shops			15	16	16			47
					SRS 760 spectrum analyzer			8					8
					SRS function generator			3					3
					Stereo Microscope Setup			3					3
					VXI adapters			2					2
				CWRU Total				96	73	75			245
			NSF Total					96	73	75			245
		S&E Total						96	73	75			245
		eqpt	NSF	CWRU	AC Resistance Bridge			17					17
					computer (linux clust. MC/anal.)			13					13
					Digital Oscilloscope			6					6
					HEPA-Filtered Clean Bench			5					5
					VXI Waveform Digitizer (qty 4)			0	0				0
				CWRU Total				40	0				40
			NSF Total					40	0				40
		eqpt Total						40	0				40
	1.1.1.3. CWRU Test Facility Total							184	85	83			352
	1.1.1.4. SU/SCU Test Facility	pers	NSF	SCU	SCU ugrad A			7					7
					SCU ugrad B			7					7
				SCU Total				13					13
			NSF Total					13					13
		pers Total						13					13
		S&E	NSF	SCU	SU/SCU Test Facility			15					15
				SCU Total				15					15
			NSF Total					15					15
			DOE_Proj	SCU	SU/SCU Test Facility		10						10
				SCU Total			10						10
			DOE_Proj Total				10						10
		S&E Total					10	15					25
		eqpt	NSF	SCU	Tex TDS420 scope			7					7
				SCU Total				7					7
			NSF Total					7					7
			DOE_Proj	SU	Computer for SU/SCU TF			0					0
					Joerger digitizers for SU/SCU TF			0					0
				SU Total				0					0
			DOE_Proj Total					0					0
		eqpt Total						7					7
	1.1.1.4. SU/SCU Test Facility Total						10	35					45
	1.1.1.5. SU 15uW Test Facility	pers	NSF	SCU	SCU ugrad A				7	7			13
					SCU ugrad B				7	7			13
				SCU Total					13	13			26
			NSF Total						13	13			26
		pers Total							13	13			26
		S&E	NSF	SCU	SU 15uW Test Facility				15	15			30
				SCU Total					15	15			30
			NSF Total						15	15			30
			DOE_Proj	SU	SU 15uW Test Facility			0	0	0			0
				SU Total				0	0	0			0
			DOE_Proj Total					0	0	0			0
		S&E Total						0	15	15			30
		eqpt	DOE_Proj	SU	Nat'l Inst. VXI crate for SU/SCU TF			8					8
					SU 15uW run time licenses (5)			2					2
				SU Total				9					9
			DOE_Proj Total					9					9
		eqpt Total						9					9
	1.1.1.5. SU 15uW Test Facility Total							9	28	28			66

Sum of Cost3K						Year							
WBS 3	WBS 4	categ	Fund_Nm	Inst	Item (WBS 5)	99	00	01	02	03	04	05	Grand Total
1.1.1.SUF & Test Facil. Oper Total						55	488	348	294				1,185
1.1.2.Det. Install/commission at Soudan	1.1.2.1. Det system operation	S&E	FNAL	FNAL	cryogens		44	197					241
					Soudan tech				39				39
				FNAL Total			44	197	39				279
			FNAL Total				44	197	39				279
		S&E Total					44	197	39				279
	1.1.2.1. Det system operation Total						44	197	39				279
	1.1.2.2. Det system setup/supplies	S&E	NSF	CWRU	lab supplies			12	12				24
				CWRU Total				12	12				24
				UCB	lab supplies				12				12
				UCB Total					12				12
			NSF Total					12	24				36
			DOE_Proj	LBNL	lab supplies				3				3
				LBNL Total					3				3
				SU	lab supplies			12	12				24
				SU Total				12	12				24
				UCSB	lab supplies				25				25
				UCSB Total					25				25
			DOE_Proj Total					12	40				52
			FNAL	FNAL	lab supplies				11				11
				FNAL Total					11				11
			FNAL Total						11				11
		S&E Total						24	75				99
		eqpt	NSF	UCB	Digital Oscilloscope (2)			14					14
					SRS 760 Spec Analyzer			6					6
					SRS Amplifier (2)			5					5
					SRS Func. Gen. (2)			4					4
				UCB Total				29					29
			NSF Total					29					29
		eqpt Total						29					29
	1.1.2.2. Det system setup/supplies Total							53	75				128
	1.1.2.3. Sci personnel/travel	pers	NSF	CWRU	Akerib				4				4
					Driscoll/gr B				10				10
					Schnee/pd A		17	35	36				89
					Wang/gr C			8	12				20
				CWRU Total			17	43	62				122
				PU	PU grad A				12				12
					PU postd A				20				20
				PU Total					32				32
				UCB	Mandic/gr A			3					3
					Rau/Humbolt Fellow			13					13
				UCB Total				16					16
			NSF Total				17	59	94				170
			DOE_Proj	SU	Brink		26	44	67				137
				SU Total			26	44	67				137
			DOE_Proj Total				26	44	67				137
		pers Total					44	102	161				307
		Travel	NSF	CWRU	travel		14	21	21				55
				CWRU Total			14	21	21				55
				UCB	travel			19	18				37
				UCB Total				19	18				37
			NSF Total				14	39	39				92
			DOE_Proj	SU	travel		0	19	25				44
				SU Total			0	19	25				44
			DOE_Proj Total				0	19	25				44
			FNAL	FNAL	travel			7					7
				FNAL Total				7					7
			FNAL Total					7					7
		Travel Total					14	65	63				142

Sum of Cost3K						Year							
WBS 3	WBS 4	categ	Fund_Nm	Inst	Item (WBS 5)	99	00	01	02	03	04	05	Grand Total
	1.1.2.3. Sci personnel/travel Total						57	168	225				450
1.1.2.Det. Install/commission at Soudan Total							101	417	339				857
1.1.3.Soudan Ops/Science	1.1.3.1. Experiment operations	S&E	FNAL	FNAL	Soudan hoist		31						31
					Soudan space		17						17
					Soudan tech		73						73
				FNAL Total			121						121
			FNAL Total				121						121
		S&E Total					121						121
	1.1.3.1. Experiment operations Total						121						121
1.1.3.Soudan Ops/Science Total							121						121
1.1.4.Scientific Communication	1.1.4.1. Meetings/conferences	Travel	NSF	CWRU	Domestic conferences		5	4	4				13
					Foreign conferences		8	3	6				17
					Meetings		13	29	29				72
				CWRU Total			27	35	39				101
				PU	Domestic conferences				0				0
					Foreign conferences				0				0
				PU Total					0				0
				SCU	travel			2					2
				SCU Total				2					2
				UCB	Domestic conferences		14	14	14				42
					Foreign conferences		14	14	14				42
				UCB Total			27	28	29				84
			NSF Total				54	65	68				186
		Travel Total					54	65	68				186
		S&E	NSF	UCB	publication costs			3	3				6
				UCB Total				3	3				6
			NSF Total					3	3				6
		S&E Total						3	3				6
		eqpt	NSF	CWRU	Polycom video conf.			6					6
				CWRU Total				6					6
			NSF Total					6					6
		eqpt Total						6					6
	1.1.4.1. Meetings/conferences Total						54	74	71				199
	1.1.4.2. Education/outreach	pers	NSF	UCB	Isaac/pd C		9	9	9				27
					web programmer		0	9	10				19
				UCB Total			9	19	19				46
			NSF Total				9	19	19				46
		pers Total					9	19	19				46
		S&E	NSF	CWRU	supplies for prototypes		5						5
					teacher stipends		4	4	4				11
				CWRU Total			8	4	4				16
				UCB	Ed display @ Sdn		8						8
					Ed. Supplies		5						5
					teacher stipends		2	2	3				7
				UCB Total			14	2	3				19
			NSF Total				23	6	6				35
		S&E Total					23	6	6				35
		eqpt	NSF	UCB	computer for edu prgmr			3					3
				UCB Total				3					3
			NSF Total					3					3
		eqpt Total						3					3

Sum of Cost3K						Year							
WBS 3	WBS 4	categ	Fund_Nm	Inst	Item (WBS 5)	99	00	01	02	03	04	05	Grand Total
	1.1.4.2. Education/outreach Total							31	28	26			85
1.1.4.Scientific Communication Total								86	102	97			284
1.2.1.Det Production	1.2.1.2. Ge/Si Procurement	eqpt	NSF	UCB	Ge det (50) polish				0				0
					Ge material boule #3			25					25
					Ge polish boule #3			12					12
					Si material			17					17
					Si polish			9					9
				UCB Total				63	0				63
			NSF Total					63	0				63
			DOE_Proj	LBNL	Ge material boule #2			28					28
					GE polish boule #2			11					11
					Si det (50) polish		4						4
					Si det (50) raw		4						4
				LBNL Total			8	39					47
				SU	Ge material boule#4,5				56				56
					Ge polish boule#4,5				26				26
					Ge test wafers 1mm polish			0					0
					Ge test wafers 1mm raw			10					10
					Ge test wafers 300 um			5	5	5			15
					Si det (50) polish			0	27				27
					Si det (50) raw			0	58				58
					Si test wafers 300 um			1	1	1			2
				SU Total				16	173	6			194
			DOE_Proj Total				8	55	173	6			241
		eqpt Total					8	118	173	6			304
	1.2.1.2. Ge/Si Procurement Total						8	118	173	6			304
	1.2.1.3. Wafer Processing	pers	DOE_Proj	LBNL	Emes		18	35	36	37			126
				LBNL Total			18	35	36	37			126
				SU	Abusaidi et al		75						75
					Castle			77	79	82			238
				SU Total			75	77	79	82			313
			DOE_Proj Total				93	112	115	119			439
		pers Total					93	112	115	119			439
		S&E	DOE_Proj	SU	Aligner Masks			8	8	8			24
					Balzers mod			4					4
					CIS personnel chrges			52	54	28			133
					CIS supplies			1	1	1			2
					Spinner/Dryer in CIS				6	3			10
					SU machine shop			7					7
				SU Total				71	69	40			180
			DOE_Proj Total					71	69	40			180
		S&E Total						71	69	40			180
		eqpt	NSF	SCU	IICO ion implantation			5	5				10
					materials analyses			3	3				6
				SCU Total				8	8				16
			NSF Total					8	8				16
			DOE_Proj	SCU	IICO ion implantation		5						5
				SCU Total			5						5
				SU	IICO ion implantation		3						3
					Karl Suss New Wafer Stage		15						15
					Si sputtering target			2	2				4
					W sputtering target				8				8
				SU Total			18	2	10				31
			DOE_Proj Total				23	2	10				36
		eqpt Total					23	10	19				52
	1.2.1.3. Wafer Processing Total						116	193	203	159			671
	1.2.1.4. Detector mounting	S&E	NSF	UCB	UCB/CR Adhesive Mats			1	1	1			2

Sum of Cost3K						Year							
WBS 3	WBS 4	categ	Fund_Nm	Inst	Item (WBS 5)	99	00	01	02	03	04	05	Grand Total
					UCB/CR gas supplies		3	3	3				9
					UCB/CR Gowns,Boots,Gloves,Hoods		2	2	2				7
					UCB/CR HEPA Filters		2	2	2				7
				UCB Total			8	9	9				26
			NSF Total				8	9	9				26
			DOE_Proj	SU	SU/RF Adhesive Mats		1	1	1				2
					SU/RF Gowns, gloves, boots&hoods		2	2	2				7
					SU/RF HEPA Filters		2	2	2				7
				SU Total			5	6	6				17
			DOE_Proj Total				5	6	6				17
		S&E Total					14	14	15				42
		eqpt	DOE_Proj	SU	SU/RF computer		2						2
					SU/RF lam flow bench(2)		15						15
					SU/RF Class 100 chairs (5)		2						2
					SU/RF cleanroom waste cans		1						1
					SU/RF Desicator		3						3
					SU/RF DI water and nitrogen gas spray		1						1
					SU/RF Dump rinser, tubing, & controlle		8						8
					SU/RF Garment Storage/Shelve		2						2
					SU/RF Gas cylinder cart		0						0
					SU/RF Gas regulators, tubing, fittings, (		1						1
					SU/RF Low Rad Soldering Stn		1						1
					SU/RF Mechnical pump		1						1
					SU/RF microscope		14						14
					SU/RF Microtemp controller		2						2
					SU/RF Polypropylene shelves, stand		0						0
					SU/RF Secondary containers for acid &		1						1
					SU/RF Shelving & al sleeves & stand		1						1
					SU/RF Shoe dust vacuum		1						1
					SU/RF spinner/dryer		15						15
					SU/RF Storage containers and holders		5						5
					SU/RF Thermal impulse sealer & drypa		1						1
					SU/RF Vacuum flanges, valves		1						1
					SU/RF wirebonder		20						20
					SU/RFThermocouple gauge		0						0
				SU Total			98						98
			DOE_Proj Total				98						98
		eqpt Total					98						98
	1.2.1.4. Detector mounting Total						112	14	15				140
1.2.1.Det Production Total						124	423	389	179				1,115
1.2.2.SQUID Amplifier Production	1.2.2.1. SQUID Chip production	pers	DOE_Proj	NIST	Huber (sabbat)		10						10
					Martinis	16	32	32	16				96
					NIST tech	19	51	51	13				134
				NIST Total		35	93	83	29				240
				UcolD	Huber		9	9	6				24
					Ucol ugrad	15	26	26					67
				UcolD Total		15	35	35	6				91
			DOE_Proj Total			49	128	118	36				331
		pers Total				49	128	118	36				331
		S&E	DOE_Proj	NIST	NIST clean room OH		18	18	11				47
					NIST S&E/travel		8	8	5				21
				NIST Total			26	26	16				68
				UcolD	UCD S&E/travel		16	16	10				42
				UcolD Total			16	16	10				42
			DOE_Proj Total				42	42	26				110
		S&E Total					42	42	26				110
	1.2.2.1. SQUID Chip production Total					49	170	160	62				441
1.2.2.SQUID Amplifier Production Total						49	170	160	62				441
1.2.3.Cold Hdwr & Elec	1.2.3.1. Design & Assembly	pers	NSF	UCB	Isaac/pd C		66	68	70				204
					Seitz		55	57	59				172

Sum of Cost3K						Year							
WBS 3	WBS 4	categ	Fund_Nm	Inst	Item (WBS 5)	99	00	01	02	03	04	05	Grand Total
					Smith,G.		43	44	45				132
					UCB grad B		0	31	32				63
					UCB ugrad A		9	9	10				28
				UCB Total			173	210	216				599
			NSF Total				173	210	216				599
			DOE_Proj	LBNL	Brumfield/LBNL tech B		84	65					150
					Hernikl/LBNL tech A	21	84	87	22				215
				LBNL Total		21	169	152	22				365
			DOE_Proj Total			21	169	152	22				365
		pers Total				21	342	362	238				963
	1.2.3.1. Design & Assembly Total					21	342	362	238				963
	1.2.3.2. Towers	S&E	NSF	UCB	Twr fixtures shops		8						8
					Twr parts shops		85	58					143
					Twr welding		1						1
				UCB Total			94	58					153
			NSF Total				94	58					153
		S&E Total					94	58					153
		eqpt	NSF	UCB	Twr parts material		5						5
					Twr Pb shield		1						1
					Twr shielding Cu		1						1
					Twr stock items		14	10					24
					Twr transport cases (mat)		5						5
				UCB Total			26	10					36
			NSF Total				26	10					36
		eqpt Total					26	10					36
	1.2.3.2. Towers Total						121	68					189
	1.2.3.3. Cold Electronics	eqpt	NSF	UCB	CE SQUID boards		4						4
					CE SQUID ribbon cable		1						1
					CE stripline clamps		1						1
					CE DIB		2						2
					CE DIB components		2						2
					CE FET components		2						2
					CE FET PCB		9						9
					CE SCAB		6						6
				UCB Total			26						26
			NSF Total				26						26
			DOE_Proj	LBNL	CE sputtering at LBL		23	23					46
				LBNL Total			23	23					46
			DOE_Proj Total				23	23					46
		eqpt Total					49	23					72
	1.2.3.3. Cold Electronics Total						49	23					72
	1.2.3.4. Cold Elec Testing	S&E	NSF	UCB	software licenses		3	3	3				9
				UCB Total			3	3	3				9
			NSF Total				3	3	3				9
		S&E Total					3	3	3				9
		eqpt	NSF	UCB	CE Test Equipment		5						5
					computer for CE testing		2						2
					computer for twr autocad		4						4
					HP Function generator		3						3
					N2 Purge Twr storage		1						1
					New Oscilloscope		6						6
					Spectrum Analyser		25						25
					SRS amplifiers (2)		4						4
					UCB/CR Lam Flow bench		10						10
					UCB/CR microscope		5						5
					UCB/CR New Wet Bench		35						35
				UCB Total			100						100
			NSF Total				100						100
		eqpt Total					100						100
	1.2.3.4. Cold Elec Testing Total						103	3	3				109
1.2.3.Cold Hdwr & Elec Total						21	615	457	241				1,334

Sum of Cost3K						Year							
WBS 3	WBS 4	categ	Fund_Nm	Inst	Item (WBS 5)	99	00	01	02	03	04	05	Grand Total
1.2.4.Det Test & Characterization	1.2.4.1. Det Mounting/prep	pers	DOE_Proj	LBNL	Emes		35	36	37				108
				LBNL Total			35	36	37				108
			DOE_Proj Total				35	36	37				108
		pers Total					35	36	37				108
		S&E	NSF	CWRU	cl rm supplies				3				3
				CWRU Total					3				3
			NSF Total						3				3
		S&E Total							3				3
		eqpt	NSF	CWRU	cl rm particle counter				2				2
				CWRU Total					2				2
			NSF Total						2				2
		eqpt Total							2				2
	1.2.4.1. Det Mounting/prep Total						35	41	37				113
	1.2.4.2. Det Transport	S&E	NSF	CWRU	detector transport		3	3					6
				CWRU Total			3	3					6
				UCB	Twr transport cases shops		15						15
				UCB Total			15						15
			NSF Total				18	3					21
		S&E Total					18	3					21
	1.2.4.2. Det Transport Total						18	3					21
	1.2.4.3. Det Testing	pers	NSF	CWRU	Akerib			12	5				17
					Bolozdynya/pd B		7	15	16				38
					CWRU ugrad A		9	9	10				28
					CWRU ugrad B		9	9	10				28
					CWRU ugrad C		9	9	10				28
					Driscoll/gr B		11	19	20				50
					Perera/gr A		22	15	16				54
					Schnee/pd A		51						51
					Wang/gr C			15					15
				CWRU Total			120	105	85				310
				SCU	Young		18	18	19				55
				SCU Total			18	18	19				55
				UCB	Gaitskell/pd A		88						88
					Golwala		15						15
					Hellmig		11						11
					Mandic/gr A		27	15					43
					Meunier/pd D		78	81	83				242
					Rau/Humbolt Fellow		7	13	34				54
					UCB grad C		0	12	29				41
				UCB Total			226	121	146				493
			NSF Total				363	245	250				858
			DOE_Proj	SU	Brink		79	44	22				145
				SU Total			79	44	22				145
			DOE_Proj Total				79	44	22				145
		pers Total					443	288	273				1,004
		Travel	NSF	CWRU	travel				9	8			17
				CWRU Total					9	8			17
				UCB	travel to CWRU				8	8			16
					travel to SU		15	15	16				46
				UCB Total			15	23	24				62
			NSF Total				15	33	32				80
			DOE_Proj	SU	travel to UCB		7	8	8				23
				SU Total			7	8	8				23
			DOE_Proj Total				7	8	8				23
		Travel Total					22	40	40				103
		S&E	DOE_Proj	CWRU	Case ops	48							48
				CWRU Total		48							48
			DOE_Proj Total			48							48
		S&E Total				48							48
	1.2.4.3. Det Testing Total					48	465	329	313				1,154
1.2.4.Det Test & Characterization Total						48	518	373	350				1,289

Sum of Cost3K						Year							
WBS 3	WBS 4	categ	Fund_Nm	Inst	Item (WBS 5)	99	00	01	02	03	04	05	Grand Total
1.3.1.Front End Elec. Prod	1.3.1.1 Design & Assembly	pers	NSF	UCB	Armel/pd A			16	65	67	21		169
					Seitz			55	57	59			172
				UCB Total				71	122	126	21		341
			NSF Total					71	122	126	21		341
		pers Total						71	122	126	21		341
		Travel	FNAL	FNAL	travel			14	15				29
				FNAL Total				14	15				29
			FNAL Total					14	15				29
		Travel Total						14	15				29
	1.3.1.1 Design & Assembly Total							86	137	126	21		369
	1.3.1.2. ZIP bds	eqpt	FNAL	FNAL	Warm electronics prototypes	189							189
					ZIP Boards (60)				83				83
				FNAL Total		189			83				272
			FNAL Total			189			83				272
		eqpt Total				189			83				272
	1.3.1.2. ZIP bds Total					189			83				272
	1.3.1.3. RTF bds	eqpt	FNAL	FNAL	RTF Boards (25)				41				41
				FNAL Total					41				41
			FNAL Total						41				41
		eqpt Total							41				41
	1.3.1.3. RTF bds Total								41				41
	1.3.1.4. Crates & PS	eqpt	FNAL	FNAL	Crates (9)				34				34
				FNAL Total					34				34
			FNAL Total						34				34
		eqpt Total							34				34
	1.3.1.4. Crates & PS Total								34				34
	1.3.1.5. Cables	eqpt	FNAL	FNAL	FE Cables				23				23
				FNAL Total					23				23
			FNAL Total						23				23
		eqpt Total							23				23
	1.3.1.5. Cables Total								23				23
	1.3.1.6 Test Stands	eqpt	FNAL	FNAL	Test Bnch/Diag eqpt Sdn				21				21
					Test Bnch/Diag eqpt UCB				14				14
				FNAL Total					34				34
			FNAL Total						34				34
		eqpt Total							34				34
	1.3.1.6 Test Stands Total								34				34
1.3.1.Front End Elec. Prod Total						189		86	352	126	21		773
1.3.2.Warm Elec. Testing & Installation	1.3.2.2. Testing Supplies & Travel	Travel	NSF	UCB	Warm Elec travel			3	5	5			12
				UCB Total				3	5	5			12
			NSF Total					3	5	5			12
		Travel Total						3	5	5			12
		S&E	NSF	UCB	Warm Elec supplies			3	3	3			9
				UCB Total				3	3	3			9
			NSF Total					3	3	3			9
		S&E Total						3	3	3			9
	1.3.2.2. Testing Supplies & Travel Total							6	8	8			22
1.3.2.Warm Elec. Testing & Installation Total								6	8	8			22

Sum of Cost3K						Year							
WBS 3	WBS 4	categ	Fund_Nm	Inst	Item (WBS 5)	99	00	01	02	03	04	05	Grand Total
1.4.1.DAQ	1.4.1.1. Design, Assemble, Test	pers	DOE_Proj	UCSB	UCSB ugrad A		8	8	8				24
				UCSB Total			8	8	8				24
			DOE_Proj Total				8	8	8				24
		pers Total					8	8	8				24
		Travel	DOE_Proj	UCSB	travel		7	15	10				32
				UCSB Total			7	15	10				32
			DOE_Proj Total				7	15	10				32
		Travel Total					7	15	10				32
	1.4.1.1. Design, Assemble, Test Total						15	23	18				56
	1.4.2.1. DAQ Hardware	eqpt	DOE_Proj	UCSB	Crate Processors (6)	12	12	25					49
					Crates (3)		12	12	13				37
					DAQ various hardware	43	-43						0
					Detector Monitoring		10						10
					Diagnostic Equipment		25						25
					Environmental Monitorin		10						10
					External Processors (1)		0	0					0
					Fridge Monitoring		10						10
					GPIB		10						10
					Grand Trigger Bds. (3)		7	4					11
					Scalers (12)		6	18					23
					Server CPU		0						0
					Switch		3						3
					Time History Units		6	6	6				19
					Trig CPU Forw. (6)		8	4					12
					Trigger Logic Bds. (9)		6	21	8				34
					Waveform Digitiz. (36)	30			70	67			167
				UCSB Total		85	82	89	97	67			420
			DOE_Proj Total			85	82	89	97	67			420
		eqpt Total				85	82	89	97	67			420
	1.4.2.1. DAQ Hardware Total					85	82	89	97	67			420
1.4.1.DAQ Total						85	97	112	115	67			476
1.4.2.Information Management	1.4.2.2. Hardware	eqpt	DOE_Proj	UCSB	Disks		4	8	13				25
					DLT Drive		4	4	4				11
				UCSB Total			8	12	16				36
			DOE_Proj Total				8	12	16				36
		eqpt Total					8	12	16				36
	1.4.2.2. Hardware Total						8	12	16				36
	1.4.2.3. Software	eqpt	DOE_Proj	SU	Run Time Licenses (5)		2						2
				SU Total			2						2
				UCSB	Database		10						10
					Development Environment		12						12
					Software/Licenses (6)		12						12
				UCSB Total			34						34
			DOE_Proj Total				36						36
		eqpt Total					36						36
	1.4.2.3. Software Total						36						36
1.4.2.Information Management Total							43	12	16				71
1.4.3.Data Reduction	1.4.3.1. Offline Hardware	eqpt	DOE_Proj	UCSB	CPUs		15	30	30	15			90
					Disks		4	8	13				25
					DLT Drive		4	4	4				11
				UCSB Total			23	42	46	15			126

Sum of Cost3K						Year							
WBS 3	WBS 4	categ	Fund_Nm	Inst	Item (WBS 5)	99	00	01	02	03	04	05	Grand Total
			DOE_Proj Total					23	42	46	15		126
		eqpt Total						23	42	46	15		126
	1.4.3.1. Offline Hardware Total							23	42	46	15		126
	1.4.3.2. Software	eqpt	DOE_Proj	SU	Run Time Licences (5)			0					0
				SU Total				0					0
			DOE_Proj Total					0					0
		eqpt Total						0					0
	1.4.3.2. Software Total							0					0
1.4.3.Data Reduction Total								23	42	46	15		126
1.5.1.Muon Veto system	1.5.1.1. Veto Design & Construct	pers	DOE_Proj	UCSB	Callahan,D.			74	38				112
				UCSB Total				74	38				112
			DOE_Proj Total					74	38				112
		pers Total						74	38				112
		S&E	DOE_Proj	UCSB	S&E			0	0				0
				UCSB Total				0	0				0
			DOE_Proj Total					0	0				0
		S&E Total						0	0				0
	1.5.1.1. Veto Design & Construct Total							74	38				112
	1.5.1.2. Veto Components	eqpt	DOE_Proj	UCSB	HV cables	2							2
					HV PS	8							8
					light guides & WLS	40							40
					Linear Fan In (10)		15						15
					LV cables	2							2
					mag shields	4							4
					NIM crates	20							20
					PHA & scope	10							10
					PM bases	4							4
					PM tubes	32							32
					scintillator	100							100
					Veto support	10							10
				UCSB Total		232	15						247
			DOE_Proj Total			232	15						247
		eqpt Total				232	15						247
	1.5.1.2. Veto Components Total					232	15						247
	1.5.1.4. Outer Veto	eqpt	DOE_Proj	UCSB	Outer veto				0				0
				UCSB Total					0				0
			DOE_Proj Total						0				0
		eqpt Total							0				0
	1.5.1.4. Outer Veto Total								0				0
1.5.1.Muon Veto system Total						232	89	38					359
1.5.2.Shield Construction and Installation	1.5.2.1. Shield design & Assembly	Travel	DOE_Proj	UCSB	travel			25	13	7			45
				UCSB Total				25	13	7			45
			DOE_Proj Total					25	13	7			45
		Travel Total						25	13	7			45
		S&E	DOE_Proj	UCSB	S&E			0	0	0			0
				UCSB Total				0	0	0			0
			DOE_Proj Total					0	0	0			0
		S&E Total						0	0	0			0
		eqpt	DOE_Proj	UCSB	Shield Asmbly,tooling	15							15
					UCSB clean room	20							20

Sum of Cost3K						Year							
WBS 3	WBS 4	categ	Fund_Nm	Inst	Item (WBS 5)	99	00	01	02	03	04	05	Grand Total
				UCSB Total		35							35
			DOE_Proj Total			35							35
		eqpt Total				35							35
	1.5.2.1. Shield design & Assembly Total					35	25	13	7				80
	1.5.2.2. Shield Components	eqpt	DOE_Proj	UCSB	Doe run lead	40							40
					Icebox Magnetic shield	5							5
					polyethylene	66							66
					Shield base	3							3
				UCSB Total		114							114
			DOE_Proj Total			114							114
		eqpt Total				114							114
	1.5.2.2. Shield Components Total					114							114
	1.5.2.3. Extra Shielding	eqpt	DOE_Proj	UCSB	extra shielding			0					0
				UCSB Total				0					0
			DOE_Proj Total					0					0
		eqpt Total						0					0
	1.5.2.3. Extra Shielding Total							0					0
1.5.2.Shield Construction and Installation Total						149	25	13	7				194
1.5.3.Phys Design & Bkgds	1.5.3.1. Neutron calc & meas	pers	NSF	CWRU	Perera/gr A		15	19	20				54
				CWRU Total			15	19	20				54
			NSF Total				15	19	20				54
		pers Total					15	19	20				54
	1.5.3.1. Neutron calc & meas Total						15	19	20				54
	1.5.3.2. Gamma Screening	pers	NSF	UCB	Isaac/pd C		13	14	14				41
					UCB ugrad B		9	9	10				28
					UCB ugrad C		0	0					0
					UCB ugrad D		0	0					0
				UCB Total			22	23	24				69
			NSF Total				22	23	24				69
		pers Total					22	23	24				69
		S&E	DOE_Proj	LBNL	low bkgd fac		26	39	44				109
				LBNL Total			26	39	44				109
			DOE_Proj Total				26	39	44				109
		S&E Total					26	39	44				109
	1.5.3.2. Gamma Screening Total						49	62	68				178
	1.5.3.3. Surface Contaminatio n	pers	NSF	PU	PU postd A				41				41
					Shutt				7				7
				PU Total					48				48
			NSF Total						48				48
		pers Total							48				48
		S&E	NSF	PU	S&E		0		8				8
				PU Total			0		8				8
			NSF Total				0		8				8
		S&E Total					0		8				8

Sum of Cost3K						Year							
WBS 3	WBS 4	categ	Fund_Nm	Inst	Item (WBS 5)	99	00	01	02	03	04	05	Grand Total
	1.5.3.3. Surface Contaminatio n Total							0		56			56
	1.5.3.4. Radon Suppression	pers	NSF	PU	PU grad A			0					0
				PU Total				0					0
			NSF Total					0					0
		pers Total						0					0
		eqpt	NSF	PU	Rn mon (alpha counter)			0					0
				PU Total				0					0
			NSF Total					0					0
			DOE_Proj	SU	SU/RF Radon mon	10							10
					SU/RF Rn scrubbing			0					0
				SU Total		10		0					10
			DOE_Proj Total			10		0					10
			FNAL	FNAL	Rn monitor			5					5
					Soudan Radon scrubbing				120				120
				FNAL Total				5	120				125
			FNAL Total					5	120				125
		eqpt Total				10		5	120				135
	1.5.3.4. Radon Suppression Total					10		5	120				135
	1.5.3.6. General Bkgd calc.	pers	NSF	PU	PU grad A			0	24				24
					PU postd A			0					0
				PU Total				0	24				24
			NSF Total					0	24				24
		pers Total						0	24				24
		Travel	NSF	PU	travel bkgd studies				8				8
				PU Total					8				8
			NSF Total						8				8
		Travel Total							8				8
		S&E	NSF	PU	S&E bkgd studies			0					0
				PU Total				0					0
			NSF Total					0					0
		S&E Total						0					0
	1.5.3.6. General Bkgd calc. Total							0	32				32
1.5.3.Phys Design & Bkgds Total						10	69	81	295				455
1.6.1.Cryogen ic Systems	1.6.1.1. Dilution Fridge	eqpt	FNAL	FNAL	Dilution Refrigerator setup				1				1
				FNAL Total					1				1
			FNAL Total						1				1
		eqpt Total							1				1
	1.6.1.1. Dilution Fridge Total								1				1
	1.6.1.2. Liquefier	eqpt	FNAL	FNAL	Liquefier				93				93
				FNAL Total					93				93
			FNAL Total						93				93
		eqpt Total							93				93
	1.6.1.2. Liquefier Total								93				93
	1.6.1.3. Cryo Control System	eqpt	FNAL	FNAL	Cabinets				1				1
					Controller ACM				6				6
					Controller VIM				2				2
					Display Board			3					3
					Instruments				14				14
					PC with GPIB				5				5
					Power Supplies				2				2
					Relays				1				1
					Software				3				3

Sum of Cost3K						Year							
WBS 3	WBS 4	categ	Fund_Nm	Inst	Item (WBS 5)	99	00	01	02	03	04	05	Grand Total
					Wiring			1					1
				FNAL Total				3	35				38
			FNAL Total					3	35				38
		eqpt Total						3	35				38
	1.6.1.3. Cryo Control System Total							3	35				38
	1.6.1.4. Icebox & Cryo installation	Travel	DOE_Proj	LBNL	travel			8	8				16
				LBNL Total				8	8				16
			DOE_Proj Total					8	8				16
			FNAL	FNAL	Eng Travel			21	15				36
					phys travel			21	15				36
					Tech Travel			50	31				80
				FNAL Total				92	60				152
			FNAL Total					92	60				152
		Travel Total						100	68				169
		S&E	DOE_Proj	LBNL	lab supplies			2	3				5
				LBNL Total				2	3				5
			DOE_Proj Total					2	3				5
		S&E Total						2	3				5
		eqpt	FNAL	FNAL	Machining & Welding	307							307
				FNAL Total		307							307
			FNAL Total			307							307
		eqpt Total				307							307
	1.6.1.4. Icebox & Cryo installation Total					307	103	71					481
1.6.1.Cryogenic Systems Total						307	106	199					612
1.6.2.Exp Enclosures at Soudan	1.6.2.1 Design & Planning	Travel	FNAL	FNAL	phys travel			7	7				14
				FNAL Total				7	7				14
			FNAL Total					7	7				14
		Travel Total						7	7				14
	1.6.2.1 Design & Planning Total							7	7				14
	1.6.2.3. Utility Systems	S&E	FNAL	FNAL	Soudan tech			36					36
				FNAL Total				36					36
			FNAL Total					36					36
		S&E Total						36					36
		eqpt	FNAL	FNAL	Chiller System				8				8
					Fire Protection System			32					32
					Power			25					25
				FNAL Total				57	8				65
			FNAL Total					57	8				65
		eqpt Total						57	8				65
	1.6.2.3. Utility Systems Total							93	8				102
	1.6.2.4. General setup	eqpt	FNAL	FNAL	Concrete Pad(s)	12							12
					Crane	46							46
					Decking				36				36
					Ladders and Stairs				1				1
					Main Clean Room Filter and air circulation sys				52				52
					Racks				2				2
					Shield Assembly fixtures				5				5
					Sound proofing				3				3
					Vibration Isolation				5				5
					Work Bench installation				10				10
				FNAL Total		58			114				172
			FNAL Total			58			114				172
		eqpt Total				58			114				172

Sum of Cost3K						Year							
WBS 3	WBS 4	categ	Fund_Nm	Inst	Item (WBS 5)	99	00	01	02	03	04	05	Grand Total
	1.6.2.4. General setup Total					58		114					172
	1.6.2.5. Structures	eqpt	FNAL	FNAL	Air shower installation			9					9
					Clean Room mods			5					5
					Clean Room Soft Wall			7					7
					Det Prep Room			44					44
					Elec Hut			34					34
					Eqpt Room			34					34
					RF Structure, penetrations, and electric		190						190
				FNAL Total			190	134					324
			FNAL Total				190	134					324
		eqpt Total					190	134					324
	1.6.2.5. Structures Total						190	134					324
	1.6.2.6. Network Conn.	eqpt	FNAL	FNAL	Link to Soudan Control Room			10					10
					Link to Surface Control Room			0					0
					Link to World			0					0
				FNAL Total				10					10
			FNAL Total					10					10
		eqpt Total						10					10
	1.6.2.6. Network Conn. Total							10					10
1.6.2.Exp Enclosures at Soudan Total						58	290	274					622
1.7.1.Project Management	1.7.1.1. Man. Personnel & Support	pers	NSF	UCB	admin asst		28	29	29				86
					Spadafora		117	121	124				362
				UCB Total			145	149	154				448
			NSF Total				145	149	154				448
			DOE_Proj	UCSB	Caldwell (emeritus)		14	14	15				43
				UCSB Total			14	14	15				43
			DOE_Proj Total				14	14	15				43
		pers Total					159	164	168				491
		Travel	NSF	UCB	travel		8	8	8				23
				UCB Total			8	8	8				23
			NSF Total				8	8	8				23
			FNAL	FNAL	travel		36	22	23				80
				FNAL Total			36	22	23				80
			FNAL Total				36	22	23				80
		Travel Total					43	30	31				103
		eqpt	NSF	UCB	computer mngemnt (Mac)		4	4					8
				UCB Total			4	4					8
			NSF Total				4	4					8
		eqpt Total					4	4					8
	1.7.1.1. Man. Personnel & Support Total						206	197	199				602
	1.7.1.2. Grant Admin	pers	NSF	UCB	Esteves		36	37	38				111
				UCB Total			36	37	38				111
			NSF Total				36	37	38				111
		pers Total					36	37	38				111
		S&E	NSF	UCB	UCB OH on CWRU subaward		13						13
					UCB OH on PU subaward		13						13
					UCB OH on SCU subaward		13						13
					UCB OH on UCL subaward			13					13
				UCB Total			38	13					50
			NSF Total				38	13					50
			DOE_Proj	FNAL	FNAL OH on subcontracts	11	16	17	17	13	9		83
				FNAL Total		11	16	17	17	13	9		83
			DOE_Proj Total			11	16	17	17	13	9		83
		S&E Total				11	54	30	17	13	9		134

Sum of Cost3K						Year							
WBS 3	WBS 4	categ	Fund_Nm	Inst	Item (WBS 5)	99	00	01	02	03	04	05	Grand Total
	1.7.1.2. Grant Admin Total					11	90	67	55	13	9		245
	1.7.1.3. Management meetings	Travel	NSF	UCB	EAB meetings		4	4	4				12
				UCB Total			4	4	4				12
			NSF Total				4	4	4				12
		Travel Total					4	4	4				12
		S&E	NSF	UCB	EAB meetings		3	3	3				9
					teleconferences		3	3	3				9
				UCB Total			6	6	6				19
			NSF Total				6	6	6				19
		S&E Total					6	6	6				19
	1.7.1.3. Management meetings Total						10	10	11				31
1.7.1.Project Management Total						11	305	274	265	13	9		878
2.1.1.SUF and Test Facility Operations	2.1.1.2. UCB Test Facility	pers	NSF	UCB	Mandic/gr A					2	2		3
					Rau/Humbolt Fellow					2	2	2	6
					UCB grad C					2	2	2	5
				UCB Total						5	5	4	14
			NSF Total							5	5	4	14
		pers Total								5	5	4	14
		S&E	NSF	UCB	cryogens					14	14	7	35
					lab supplies					10	10	5	25
					shops					2	3	1	6
				UCB Total						26	27	14	66
			NSF Total							26	27	14	66
		S&E Total								26	27	14	66
	2.1.1.2. UCB Test Facility Total									31	32	18	81
	2.1.1.3. CWRU Test Facility	pers	NSF	CWRU	Bolozdynya/pd B					4	4	4	13
					Perera/gr A					2	2	2	6
					Wang/gr C					2	2	2	6
				CWRU Total						8	8	9	25
			NSF Total							8	8	9	25
		pers Total								8	8	9	25
		S&E	NSF	CWRU	cryogens					22	22	12	56
					lab supplies					8	9	4	21
					phone/office supplies					2	2	1	4
					shops					8	9	4	21
				CWRU Total						40	41	21	103
			NSF Total							40	41	21	103
		S&E Total								40	41	21	103
	2.1.1.3. CWRU Test Facility Total									48	50	30	128
	2.1.1.5. SU 15uW Test Facility	pers	NSF	SCU	SCU ugrad A					7	7	7	20
				SCU Total						7	7	7	20
			NSF Total							7	7	7	20
		pers Total								7	7	7	20
		S&E	NSF	SCU	SU 15uW Test Facility					8	8	4	19
				SCU Total						8	8	4	19
			NSF Total							8	8	4	19
		S&E Total								8	8	4	19
	2.1.1.5. SU 15uW Test Facility Total									14	14	10	39
2.1.1.SUF and Test Facility Operations Total										94	96	58	247

Sum of Cost3K						Year							
WBS 3	WBS 4	categ	Fund_Nm	Inst	Item (WBS 5)	99	00	01	02	03	04	05	Grand Total
2.1.3.Soudan Ops/Science	2.1.3.1. Experiment operations	S&E	FNAL	FNAL	cryogens				126	25	25	26	203
					Soudan hoist			32	33	34	35	36	171
					Soudan space			18	18	19	19	20	93
					Soudan tech			75	39	79	82	84	359
				FNAL Total				125	216	157	162	166	826
			FNAL Total					125	216	157	162	166	826
		S&E Total						125	216	157	162	166	826
	2.1.3.1. Experiment operations Total							125	216	157	162	166	826
	2.1.3.2. Science support	pers	NSF	CWRU	Akerib				4	18	18	19	59
					Bolozdynya/pd B					57	58	52	167
					Computer support				4	4	4	4	17
					Driscoll/gr B			19	10	29	29		87
					Perera/gr A					29	29	30	88
					Schnee/pd A			35	36	49	51	51	222
					Wang/gr C			12	24	29	29	30	123
				CWRU Total				66	77	214	220	186	763
				PU	PU grad A				12	50	52	52	165
					PU postd A				20	81	81	81	265
					Shutt					7	8	8	22
				PU Total					32	139	141	141	452
				SCU	Young					19	20	20	60
				SCU Total						19	20	20	60
				UCB	Armel/pd A					48	71		120
					Isaac/pd C					87	89		176
					Mandic/gr A			9	29	23	23		84
					Rau/Humbolt Fellow					27	28	29	85
					Seitz					61	62	64	187
					UCB grad B					32	33	34	100
					UCB grad C					23	23	24	70
					UCB ugrad E				0	0	0	0	0
				UCB Total				9	29	301	331	152	822
			NSF Total					75	138	673	712	498	2,097
		pers Total						75	138	673	712	498	2,097
		Travel	NSF	CWRU	travel			23	22	21	22	23	111
				CWRU Total				23	22	21	22	23	111
				PU	travel					8	8	8	24
				PU Total						8	8	8	24
				SCU	travel					3	3	3	8
				SCU Total						3	3	3	8
				UCB	travel			16	20	27	18	19	101
				UCB Total				16	20	27	18	19	101
			NSF Total					39	42	59	51	52	243
			FNAL	FNAL	travel				8	16	16	16	55
				FNAL Total					8	16	16	16	55
			FNAL Total						8	16	16	16	55
		Travel Total						39	50	75	67	68	299
		S&E	NSF	CWRU	lab supplies			12	12	25	26	27	102
				CWRU Total				12	12	25	26	27	102
				PU	lab supplies				8	16	16	16	55
				PU Total					8	16	16	16	55
				UCB	Computer support				6	6	6	6	23
					lab supplies				12	25	25	26	88
				UCB Total					17	30	31	32	111
			NSF Total					12	38	71	73	75	268
			FNAL	FNAL	lab supplies				11	23	24	25	83
				FNAL Total					11	23	24	25	83
			FNAL Total						11	23	24	25	83
		S&E Total						12	49	94	97	99	351
		eqpt	NSF	UCB	computers/data analysis				5	5	6		16
				UCB Total					5	5	6		16
			NSF Total						5	5	6		16
		eqpt Total							5	5	6		16
	2.1.3.2. Science support Total							126	242	848	881	666	2,763

Sum of Cost3K						Year							
WBS 3	WBS 4	categ	Fund_Nm	Inst	Item (WBS 5)	99	00	01	02	03	04	05	Grand Total
2.1.3.Soudan Ops/Science Total								251	458	1,004	1,043	833	3,588
2.1.4.Scientific Communication	2.1.4.1. Meetings/conferences	Travel	NSF	CWRU	Domestic conferences					8	8	8	24
					Foreign conferences					6	6	6	19
					Meetings					30	31	32	94
				CWRU Total						44	45	47	136
				PU	Domestic conferences					2	2	2	7
					Foreign conferences					2	2	2	7
				PU Total						5	5	5	14
				UCB	Domestic conferences					15	15	16	46
					Foreign conferences					15	15	16	46
				UCB Total						30	30	31	91
			NSF Total							78	81	83	242
		Travel Total								78	81	83	242
		S&E	NSF	UCB	publication costs					3	3	3	10
				UCB Total						3	3	3	10
			NSF Total							3	3	3	10
		S&E Total								3	3	3	10
	2.1.4.1. Meetings/conferences Total									82	84	86	252
	2.1.4.2. Education/outreach	pers	NSF	CWRU	Bolozdynya/pd B							9	9
				CWRU Total								9	9
				UCB	Isaac/pd C					10	10		20
					web programmer					10	10	11	31
				UCB Total						20	20	11	51
			NSF Total							20	20	19	59
		pers Total								20	20	19	59
		S&E	NSF	CWRU	teacher stipends					4	4	4	12
				CWRU Total						4	4	4	12
				UCB	teacher stipends					3	3	3	8
				UCB Total						3	3	3	8
			NSF Total							7	7	7	21
		S&E Total								7	7	7	21
	2.1.4.2. Education/outreach Total									26	27	26	80
2.1.4.Scientific Communication Total										108	111	113	332
2.2.4.Detector Testing & Characterization	2.2.4.3. Det Testing	pers	NSF	CWRU	Akerib					8	8	8	24
					Bolozdynya/pd B					20	21	22	63
					Driscoll/gr B					12	13		25
					Perera/gr A					10	10	11	31
					Schnee/pd A					21	22	22	65
					Wang/gr C					10	10	11	31
				CWRU Total						82	84	73	239
				UCB	Mandic/gr A					8	8		16
					Rau/Humbolt Fellow					10	10	10	30
					UCB grad C					8	8	9	25
				UCB Total						26	27	19	72
			NSF Total							108	111	92	310
		pers Total								108	111	92	310
	2.2.4.3. Det Testing Total									108	111	92	310
2.2.4.Detector Testing & Characterization Total										108	111	92	310
2.7.1.Project Management	2.7.1.1. Man. Personnel & Support	pers	NSF	UCB	admin asst					30	31	32	94

Sum of Cost3K						Year							
WBS 3	WBS 4	categ	Fund_Nm	Inst	Item (WBS 5)	99	00	01	02	03	04	05	Grand Total
					Spadafora					128	132	136	396
				UCB Total						158	163	168	490
			NSF Total							158	163	168	490
		pers Total								158	163	168	490
		Travel	NSF	UCB	travel					8	8	9	25
				UCB Total						8	8	9	25
			NSF Total							8	8	9	25
			FNAL	FNAL	travel					23	16	16	56
				FNAL Total						23	16	16	56
			FNAL Total							23	16	16	56
		Travel Total								31	24	25	81
	2.7.1.1. Man. Personnel & Support Total									190	188	193	571
	2.7.1.2. Grant Admin	pers	NSF	UCB	Esteves					39	40	42	121
				UCB Total						39	40	42	121
			NSF Total							39	40	42	121
		pers Total								39	40	42	121
	2.7.1.2. Grant Admin Total									39	40	42	121
	2.7.1.3. Management meetings	Travel	NSF	UCB	EAB meetings					4	5	5	14
				UCB Total						4	5	5	14
			NSF Total							4	5	5	14
		Travel Total								4	5	5	14
		S&E	NSF	UCB	EAB meetings					3	3	3	10
					teleconferences					3	3	3	10
				UCB Total						7	7	7	20
			NSF Total							7	7	7	20
		S&E Total								7	7	7	20
	2.7.1.3. Management meetings Total									11	11	12	34
2.7.1.Project Management Total										240	239	247	726
Grand Total						1,338	3,660	3,901	2,898	1,670	1,609	1,342	16,418

4.2 NSF Grant

NSF	All effort at UCB,CWRU,PU,SCU
	Scientist support (fac,phys,postdoc,grad). Salary & Travel
	Technical Staff (eng,tech,undergrads,admin.) Salary & Travel
	Project management and admin. at UCB
	Cold Hardware/Electronics Design, Procurement, Construction
	Warm Electronics: Design and testing
	Detector prep and testing
	Background MC studies and measurements
	Experiment operations

NSF GRANT: Original subaward plan in Proposal

	Year 1	Year 2	Year 3a	Cumulative	Year 3b	Year 4	Year 5	Year 6	Cumulative
	2000	2001	2002		2002	2003	2004	2005	
Months #	1-12	13-24	25-28	1-28	29-36	37-48	49-60	61-72	1-72
Total Award	**1,636**	**1,806**	**558**	**4,000**	**1,117**	**1,401**	**1,428**	**1,136**	**9,082**
UCB Base (not including subawards or contingency)	**837**	**1,044**	**331**	**2,212**	**663**	**751**	**763**	**528**	**4,917**
Case-Western	**388**	**447**	**149**	**983**	**297**	**438**	**451**	**398**	**2,567**
Princeton	**154**	**183**	**63**	**401**	**126**	**175**	**177**	**177**	**1,055**
Santa Clara	**61**	**55**	**16**	**131**	**31**	**36**	**37**	**33**	**269**
Subtotal	**1,440**	**1,729**	**558**	**3,727**	**1,117**	**1,401**	**1,428**	**1,136**	**8,809**
Contingency	**196**	**78**	**0**	**273**	**0**	**0**	**0**	**0**	**273**

Detail on year 3	Year 3a	Year 3b	Yr 3 Tot
	2002	2002	2002
Months #	25-28	29-36	25-36
Total Award	**558**	**1,117**	**1,675**
UCB Base	**331**	**663**	**993**
Case-Western	149	297	446
Princeton	63	126	189
Santa Clara	16	31	47
Total allocated	558	1,117	1,675

fund no.	1
class_2	budget item
Inst	CWRU

Sum of Cost3K					Year						
WBS 2	WBS 3	WBS 4	categ	Item (WBS 5)	00	01	02	03	04	05	Grand Total
1.1.Integ/Run	1.1.1.SUF & Test Facil. Oper	1.1.1.3. CWRU Test Facility	pers Total		18	12	8				38
			Travel	travel	29						29
			Travel Total		29						29
			S&E	cryogens	39	40	41				121
				DLT tape drive	2						2
				Geiger counter	1						1
				HEPA Filter w/Blower	1						1
				lab computer	4						4
				lab supplies	8	16	16				40
				laser printer for lab	1						1
				LN trap for diff pump	2						2
				magnetic shield	5						5
				phone/office supplies	2	2	2				5
				Radioactive sources	3						3
				shops	15	16	16				47
				SRS 760 spectrum analyzer	8						8
				SRS function generator	3						3
				Stereo Microscope Setup	3						3
				VXI adapters	2						2
			S&E Total		96	73	75				245
			eqpt	AC Resistance Bridge	17						17
				computer (linux clust. MC/anal.	13						13
				Digital Oscilloscope	6						6
				HEPA-Filtered Clean Bench	5						5
				VXI Waveform Digitizer (qty 4)	0	0					0
			eqpt Total		40	0					40
		1.1.1.3. CWRU Test Facility Total			184	85	83				352
	1.1.1.SUF & Test Facil. Oper Total				184	85	83				352
	1.1.2.Det. Install/commission at Soudan	1.1.2.2. Det system setup/supplies	S&E	lab supplies		12	12				24
			S&E Total			12	12				24
		1.1.2.2. Det system setup/supplies Total				12	12				24
	1.1.2.Det. Install/commission at Soudan	1.1.2.3. Sci personnel/travel	pers Total		17	43	62				122
			Travel	travel	14	21	21				55
			Travel Total		14	21	21				55
		1.1.2.3. Sci personnel/travel Total			31	64	82				176
	1.1.2.Det. Install/commission at Soudan Total				31	75	94				200
	1.1.4.Scientific Communication	1.1.4.1. Meetings/conferences	Travel	Domestic conferences	5	4	4				13
				Foreign conferences	8	3	6				17
				Meetings	13	29	29				72

fund no.	1
class_2	budget item
Inst	CWRU

Sum of Cost3K					Year						
WBS 2	WBS 3	WBS 4	categ	Item (WBS 5)	00	01	02	03	04	05	Grand Total
			Travel Total		27	35	39				101
			eqpt	Polycom video conf.		6					6
			eqpt Total			6					6
		1.1.4.1. Meetings/conferences Total			27	41	39				107
		1.1.4.2. Education/outreach	S&E	supplies for prototypes	5						5
				teacher stipends	4	4	4				11
			S&E Total		8	4	4				16
		1.1.4.2. Education/outreach Total			8	4	4				16
	1.1.4.Scientific Communication Total				35	45	43				123
1.2.Detectors	1.2.4.Det Test & Characterization	1.2.4.1. Det Mounting/prep	S&E	cl rm supplies		3					3
			S&E Total			3					3
			eqpt	cl rm particle counter		2					2
			eqpt Total			2					2
		1.2.4.1. Det Mounting/prep Total				5					5
		1.2.4.2. Det Transport	S&E	detector transport	3	3					6
			S&E Total		3	3					6
		1.2.4.2. Det Transport Total			3	3					6
		1.2.4.3. Det Testing	pers	Akerib		12	5				17
				Bolozdynya/pd B	7	15	16				38
				CWRU ugrad A	9	9	10				28
				CWRU ugrad B	9	9	10				28
				CWRU ugrad C	9	9	10				28
				Driscoll/gr B	11	19	20				50
				Perera/gr A	22	15	16				54
				Schnee/pd A	51						51
				Wang/gr C		15					15
			pers Total		120	105	85				310
			Travel	travel		9	8				17
			Travel Total			9	8				17
		1.2.4.3. Det Testing Total			120	115	94				328
	1.2.4.Det Test & Characterization Total				123	123	94				339
1.5.Shld & Bkgds	1.5.3.Phys Design & Bkgds	1.5.3.1. Neutron calc & meas	pers	Perera/gr A	15	19	20				54
			pers Total		15	19	20				54
		1.5.3.1. Neutron calc & meas Total			15	19	20				54
	1.5.3.Phys Design & Bkgds Total				15	19	20				54

fund no.	1
class_2	budget item
Inst	CWRU

Sum of Cost3K					Year						
WBS 2	WBS 3	WBS 4	categ	Item (WBS 5)	00	01	02	03	04	05	Grand Total
2.1.Integ/Run	2.1.1.SUF and Test Facility Operations	2.1.1.3. CWRU Test Facility	pers	Bolozdynya/pd B				4	4	4	13
				Perera/gr A				2	2	2	6
				Wang/gr C				2	2	2	6
			pers Total					8	8	9	25
			S&E	cryogens				22	22	12	56
				lab supplies				8	9	4	21
				phone/office supplies				2	2	1	4
				shops				8	9	4	21
			S&E Total					40	41	21	103
		2.1.1.3. CWRU Test Facility Total						48	50	30	128
	2.1.1.SUF and Test Facility Operations Total							48	50	30	128
	2.1.3.Soudan Ops/Science	2.1.3.2. Science support	pers	Akerib			4	18	18	19	59
				Bolozdynya/pd B				57	58	52	167
				Computer support			4	4	4	4	17
				Driscoll/gr B		19	10	29	29		87
				Perera/gr A				29	29	30	88
				Schnee/pd A		35	36	49	51	51	222
				Wang/gr C		12	24	29	29	30	123
			pers Total			66	77	214	220	186	763
			Travel	travel		23	22	21	22	23	111
			Travel Total			23	22	21	22	23	111
			S&E	lab supplies		12	12	25	26	27	102
			S&E Total			12	12	25	26	27	102
		2.1.3.2. Science support Total				100	112	260	268	235	975
	2.1.3.Soudan Ops/Science Total					100	112	260	268	235	975
	2.1.4.Scientific Communication	2.1.4.1. Meetings/conferences	Travel	Domestic conferences				8	8	8	24
				Foreign conferences				6	6	6	19
				Meetings				30	31	32	94
			Travel Total					44	45	47	136
		2.1.4.1. Meetings/conferences Total						44	45	47	136
		2.1.4.2. Education/outreach	pers	Bolozdynya/pd B						9	9
			pers Total							9	9
			S&E	teacher stipends				4	4	4	12
			S&E Total					4	4	4	12
		2.1.4.2. Education/outreach Total						4	4	13	21
	2.1.4.Scientific Communication Total							48	50	60	157

fund no.	1
class_2	budget item
Inst	CWRU

Sum of Cost3K					Year						
WBS 2	WBS 3	WBS 4	categ	Item (WBS 5)	00	01	02	03	04	05	Grand Total
2.2.Detectors	2.2.4.Detector Testing & Characterization	2.2.4.3. Det Testing	pers	Akerib				8	8	8	24
				Bolozdynya/pd B				20	21	22	63
				Driscoll/gr B				12	13		25
				Perera/gr A				10	10	11	31
				Schnee/pd A				21	22	22	65
				Wang/gr C				10	10	11	31
			pers Total					82	84	73	239
		2.2.4.3. Det Testing Total						82	84	73	239
	2.2.4.Detector Testing & Characterization Total							82	84	73	239
Grand Total					387	447	446	438	451	398	2,567

fund no.	1
class_2	budget item
Inst	PU

Sum of Cost3K					Year	Year					
WBS 2	WBS 3	WBS 4	categ	Item (WBS 5)	00	01	02	03	04	05	Grand Total
1.1.Integ/Run	1.1.2.Det. Install/commission at Soudan	1.1.2.3. Sci personnel/travel	pers	PU grad A			12				12
				PU postd A			20				20
			pers Total				32				32
		1.1.2.3. Sci personnel/travel Total					32				32
	1.1.2.Det. Install/commission at Soudan Total						32				32
	1.1.4.Scientific Communication	1.1.4.1. Meetings/conferences	Travel	Domestic conferences			0				0
				Foreign conferences			0				0
			Travel Total				0				0
		1.1.4.1. Meetings/conferences Total					0				0
	1.1.4.Scientific Communication Total						0				0
1.5.Shld & Bkgds	1.5.3.Phys Design & Bkgds	1.5.3.3. Surface Contamination	pers	PU postd A			41				41
				Shutt			7				7
			pers Total				48				48
			S&E	S&E	0	0	8				8
			S&E Total		0	0	8				8
		1.5.3.3. Surface Contamination Total			0	0	56				56
		1.5.3.4. Radon Suppression	pers	PU grad A	0	0					0
			pers Total		0	0					0
			eqpt	Rn mon (alpha counter)	0	0					0
			eqpt Total		0	0					0
		1.5.3.4. Radon Suppression Total			0	0					0
		1.5.3.6. General Bkgd calc.	pers	PU grad A	0	0	24				24
				PU postd A	0	0					0
			pers Total		0	0	24				24
			Travel	travel bkgd studies			8				8
			Travel Total				8				8
			S&E	S&E bkgd studies	0	0					0
			S&E Total		0	0					0
		1.5.3.6. General Bkgd calc. Total			0	0	32				32
	1.5.3.Phys Design & Bkgds Total				0	0	88				88
2.1.Integ/Run	2.1.3.Soudan Ops/Science	2.1.3.2. Science support	pers	PU grad A			12	50	52	52	165
				PU postd A			20	81	81	81	265
				Shutt				7	8	8	22
			pers Total				32	139	141	141	452
			Travel	travel				8	8	8	24
			Travel Total					8	8	8	24
			S&E	lab supplies			8	16	16	16	55
			S&E Total				8	16	16	16	55
		2.1.3.2. Science support Total					40	162	164	164	531
	2.1.3.Soudan Ops/Science Total						40	162	164	164	531
	2.1.4.Scientific Communication	2.1.4.1. Meetings/conferences	Travel	Domestic conferences				2	2	2	7
				Foreign conferences				2	2	2	7
			Travel Total					5	5	5	14
		2.1.4.1. Meetings/conferences Total						5	5	5	14
	2.1.4.Scientific Communication Total							5	5	5	14
Grand Total					0	0	160	167	169	169	665

fund	1
class	budget item
Inst	SCU

Sum of Cost3K					Year						
WBS	WBS 3	WBS 4	categ	Item (WBS 5)	00	01	02	03	04	05	Grand Total
1.1.In	1.1.1.SUF & Test Facil. Oper	1.1.1.4. SU/SCU Test Facility	pers	SCU ugrad A	7						7
				SCU ugrad B	7						7
			pers Total		13						13
			S&E	SU/SCU Test Facility	15						15
			S&E Total		15						15
			eqpt	Tex TDS420 scope	7						7
			eqpt Total		7						7
		1.1.1.4. SU/SCU Test Facility Total			35						35
		1.1.1.5. SU 15uW Test Facility	pers	SCU ugrad A			7	7			13
				SCU ugrad B			7	7			13
			pers Total				13	13			26
			S&E	SU 15uW Test Facility			15	15			30
			S&E Total				15	15			30
		1.1.1.5. SU 15uW Test Facility Total					28	28			56
	1.1.1.SUF & Test Facil. Oper Total				35		28	28			91
	1.1.4.Scientific Communication	1.1.4.1. Meetings/conferences	Travel	travel			2				2
			Travel Total				2				2
		1.1.4.1. Meetings/conferences Total					2				2
	1.1.4.Scientific Communication Total						2				2
1.2.D	1.2.1.Det Production	1.2.1.3. Wafer Processing	eqpt	IICO ion implantation	5	5					10
				materials analyses	3	3					6
			eqpt Total		8	8					16
		1.2.1.3. Wafer Processing Total			8	8					16
	1.2.1.Det Production Total				8	8					16
	1.2.4.Det Test & Characterization	1.2.4.3. Det Testing	pers	Young	18	18	19				55
			pers Total		18	18	19				55
		1.2.4.3. Det Testing Total			18	18	19				55
	1.2.4.Det Test & Characterization Total				18	18	19				55
2.1.In	2.1.1.SUF and Test Facility Operations	2.1.1.5. SU 15uW Test Facility	pers	SCU ugrad A				7	7	7	20
			pers Total					7	7	7	20
			S&E	SU 15uW Test Facility				8	8	4	19
			S&E Total					8	8	4	19
		2.1.1.5. SU 15uW Test Facility Total						14	14	10	39
	2.1.1.SUF and Test Facility Operations Total							14	14	10	39
	2.1.3.Soudan Ops/Science	2.1.3.2. Science support	pers	Young				19	20	20	60
			pers Total					19	20	20	60
			Travel	travel				3	3	3	8
			Travel Total					3	3	3	8
		2.1.3.2. Science support Total						22	23	23	68
	2.1.3.Soudan Ops/Science Total							22	23	23	68
Grand Total					61	56	47	36	37	33	271

fund	1
class	budget item
Inst	UCB

Sum of Cost3K					Year						
WBS	WBS 3	WBS 4	categ	Item (WBS 5)	00	01	02	03	04	05	Grand Total
1.1.In	1.1.1.SUF & Test Facil. Oper	1.1.1.2. UCB Test Facility	pers	Hellmig	1						1
				Mandic/gr A	3	3	3				9
				UCB grad C	0	3	3				6
				Rau/Humbolt Fellow		3	4				7
			pers Total		4	9	10				23
			Travel	travel to CWRU	8						8
			Travel Total		8						8
			S&E	Computer support	5	5					11
				cryogens	25	26	26				77
				lab supplies	18	19	19				56
				shops	5	5	5				14
			S&E Total		53	54	50				157
			eqpt	computer for 75 lab (PC)	5	5					10
				Vac. gauge & controller	3						3
				Turbo pump for75 lab	10						10
			eqpt Total		18	5					23
		1.1.1.2. UCB Test Facility Total			82	68	60				211
	1.1.1.SUF & Test Facil. Oper Total				82	68	60				211
	1.1.2.Det. Install/commissi on at Soudan	1.1.2.2. Det system setup/supplies	S&E	lab supplies			12				12
			S&E Total				12				12
			eqpt	Digital Oscilloscope (2)		14					14
				SRS 760 Spec Analyzer		6					6
				SRS Amplifier (2)		5					5
				SRS Func. Gen. (2)		4					4
			eqpt Total			29					29
		1.1.2.2. Det system setup/supplies Total				29	12				41
		1.1.2.3. Sci personnel/travel	pers	Mandic/gr A		3					3
				Rau/Humbolt Fellow		13					13
			pers Total			16					16
			Travel	travel		19	18				37
			Travel Total			19	18				37
		1.1.2.3. Sci personnel/travel Total				35	18				53
	1.1.2.Det. Install/commissi on at Soudan Total					64	30				94
	1.1.4.Scientific Communication	1.1.4.1. Meetings/confere nces	Travel	Domestic conferences	14	14	14				42
				Foreign conferences	14	14	14				42
			Travel Total		27	28	29				84
			S&E	publication costs		3	3				6
			S&E Total			3	3				6
		1.1.4.1. Meetings/confere nces Total			27	31	32				90
		1.1.4.2. Education/outrea ch	pers	Isaac/pd C	9	9	9				27
				web programmer	0	9	10				19
			pers Total		9	19	19				46
			S&E	Ed display @ Sdn	8						8
				Ed. Supplies	5						5
				teacher stipends	2	2	3				7
			S&E Total		14	2	3				19
			eqpt	computer for edu prgmr		3					3
			eqpt Total			3					3
		1.1.4.2. Education/outrea ch Total			23	24	22				69

Inst	UCB

Sum of Cost3K					Year						
WBS	WBS 3	WBS 4	categ	Item (WBS 5)	00	01	02	03	04	05	Grand Total
	1.1.4.Scientific Communication Total				50	55	54				159
1.2.D	1.2.1.Det Production	1.2.1.2. Ge/Si Procurement	eqpt	Ge det (50) polish		0					0
				Ge polish boule #3	12						12
				Ge material boule #3	25						25
				Si material	17						17
				Si polish	9						9
			eqpt Total		63	0					63
		1.2.1.2. Ge/Si Procurement Total			63	0					63
		1.2.1.4. Detector mounting	S&E	UCB/CR Adhesive Mats	1	1	1				2
				UCB/CR gas supplies	3	3	3				9
				UCB/CR Gowns,Boots,Gloves,	2	2	2				7
				UCB/CR HEPA Filters	2	2	2				7
			S&E Total		8	9	9				26
		1.2.1.4. Detector mounting Total			8	9	9				26
		1.2.1.Det Production Total			71	9	9				89
	1.2.3.Cold Hdwr & Elec	1.2.3.1. Design & Assembly	pers	Isaac/pd C	66	68	70				204
				Seitz	55	57	59				172
				Smith,G.	43	44	45				132
				UCB grad B	0	31	32				63
				UCB ugrad A	9	9	10				28
			pers Total		173	210	216				599
		1.2.3.1. Design & Assembly Total			173	210	216				599
		1.2.3.2. Towers	S&E	Twr fixtures shops	8						8
				Twr parts shops	85	58					143
				Twr welding	1						1
			S&E Total		94	58					153
			eqpt	Twr parts material	5						5
				Twr Pb shield	1						1
				Twr shielding Cu	1						1
				Twr stock items	14	10					24
				Twr transport cases (mat)	5						5
			eqpt Total		26	10					36
		1.2.3.2. Towers Total			121	68					189
		1.2.3.3. Cold Electronics	eqpt	CE SQUID boards	4						4
				CE SQUID ribbon cable	1						1
				CE stripline clamps	1						1
				CE DIB	2						2
				CE DIB components	2						2
				CE FET components	2						2
				CE FET PCB	9						9
				CE SCAB	6						6
			eqpt Total		26						26
		1.2.3.3. Cold Electronics Total			26						26
		1.2.3.4. Cold Elec Testing	S&E	software licenses	3	3	3				9
			S&E Total		3	3	3				9
			eqpt	CE Test Equipment	5						5
				computer for CE testing	2						2
				computer for twr autocad	4						4
				HP Function generator	3						3
				N2 Purge Twr storage	1						1
				New Oscilloscope	6						6
				Spectrum Analyser	25						25
				SRS amplifiers (2)	4						4
				UCB/CR Lam Flow bench	10						10
				UCB/CR microscope	5						5
				UCB/CR New Wet Bench	35						35
			eqpt Total		100						100

Inst	UCB

Sum of Cost3K					Year						
WBS	WBS 3	WBS 4	categ	Item (WBS 5)	00	01	02	03	04	05	Grand Total
		1.2.3.4. Cold Elec Testing Total			103	3	3				109
	1.2.3.Cold Hdwr & Elec Total				423	281	219				923
	1.2.4.Det Test & Characterizatio n	1.2.4.2. Det Transport	S&E	Twr transport cases shops	15						15
			S&E Total		15						15
		1.2.4.2. Det Transport Total			15						15
		1.2.4.3. Det Testing	pers	Gaitskell/pd A	88						88
				Golwala	15						15
				Hellmig	11						11
				Mandic/gr A	27	15					43
				Meunier/pd D	78	81	83				242
				UCB grad C	0	12	29				41
				Rau/Humbolt Fellow	7	13	34				54
			pers Total		226	121	146				493
			Travel	travel to CWRU		8	8				16
				travel to SU	15	15	16				46
			Travel Total		15	23	24				62
		1.2.4.3. Det Testing Total			241	144	170				555
	1.2.4.Det Test & Characterizatio n Total				256	144	170				570
1.3.W	1.3.1.Front End Elec. Prod	1.3.1.1 Design & Assembly	pers	Seitz	55	57	59				172
				Armel/pd A	16	65	67	21			169
			pers Total		71	122	126	21			341
		1.3.1.1 Design & Assembly Total			71	122	126	21			341
	1.3.1.Front End Elec. Prod Total				71	122	126	21			341
	1.3.2.Warm Elec. Testing & Installation	1.3.2.2. Testing Supplies & Travel	Travel	Warm Elec travel	3	5	5				12
			Travel Total		3	5	5				12
			S&E	Warm Elec supplies	3	3	3				9
			S&E Total		3	3	3				9
		1.3.2.2. Testing Supplies & Travel Total			6	8	8				22
	1.3.2.Warm Elec. Testing & Installation Total				6	8	8				22
1.5.S	1.5.3.Phys Design & Bkgds	1.5.3.2. Gamma Screening	pers	Isaac/pd C	13	14	14				41
				UCB ugrad B	9	9	10				28
				UCB ugrad C	0	0					0
				UCB ugrad D	0	0					0
			pers Total		22	23	24				69
		1.5.3.2. Gamma Screening Total			22	23	24				69
	1.5.3.Phys Design & Bkgds Total				22	23	24				69
1.7.M	1.7.1.Project Management	1.7.1.1. Man. Personnel & Support	pers	admin asst	28	29	29				86
				Spadafora	117	121	124				362
			pers Total		145	149	154				448
			Travel	travel	8	8	8				23
			Travel Total		8	8	8				23
			eqpt	computer mngemnt (Mac)	4	4					8
			eqpt Total		4	4					8

Inst	UCB

Sum of Cost3K					Year						
WBS	WBS 3	WBS 4	categ	Item (WBS 5)	00	01	02	03	04	05	Grand Total
		1.7.1.1. Man. Personnel & Support Total			156	161	162				479
		1.7.1.2. Grant Admin	pers	Esteves	36	37	38				111
			pers Total		36	37	38				111
			S&E	UCB OH on CWRU subaward	13						13
				UCB OH on PU subaward	13						13
				UCB OH on SCU subaward	13						13
				UCB OH on UCL subaward		13					13
			S&E Total		38	13					50
		1.7.1.2. Grant Admin Total			74	50	38				162
		1.7.1.3. Management meetings	Travel	EAB meetings	4	4	4				12
			Travel Total		4	4	4				12
			S&E	EAB meetings	3	3	3				9
				teleconferences	3	3	3				9
			S&E Total		6	6	6				19
		1.7.1.3. Management meetings Total			10	10	11				31
	1.7.1.Project Management Total				240	221	211				672
2.1.In	2.1.1.SUF and Test Facility Operations	2.1.1.2. UCB Test Facility	pers	Mandic/gr A				2	2		3
				UCB grad C				2	2	2	5
				Rau/Humbolt Fellow				2	2	2	6
			pers Total					5	5	4	14
			S&E	cryogens				14	14	7	35
				lab supplies				10	10	5	25
				shops				2	3	1	6
			S&E Total					26	27	14	66
		2.1.1.2. UCB Test Facility Total						31	32	18	81
	2.1.1.SUF and Test Facility Operations Total							31	32	18	81
	2.1.3.Soudan Ops/Science	2.1.3.2. Science support	pers	Isaac/pd C				87	89		176
				Mandic/gr A		9	29	23	23		84
				Seitz				61	62	64	187
				UCB grad B				32	33	34	100
				UCB grad C				23	23	24	70
				UCB ugrad E			0	0	0	0	0
				Rau/Humbolt Fellow				27	28	29	85
				Armel/pd A				48	71		120
			pers Total			9	29	301	331	152	822
			Travel	travel		16	20	27	18	19	101
			Travel Total			16	20	27	18	19	101
			S&E	Computer support			6	6	6	6	23
				lab supplies			12	25	25	26	88
			S&E Total				17	30	31	32	111
			eqpt	computers/data analysis			5	5	6		16
			eqpt Total				5	5	6		16
		2.1.3.2. Science support Total				26	72	364	386	202	1,050
	2.1.3.Soudan Ops/Science Total					26	72	364	386	202	1,050
	2.1.4.Scientific Communication	2.1.4.1. Meetings/conferences	Travel	Domestic conferences				15	15	16	46
				Foreign conferences				15	15	16	46
			Travel Total					30	30	31	91
			S&E	publication costs				3	3	3	10
			S&E Total					3	3	3	10
		2.1.4.1. Meetings/conferences Total						33	34	35	102

Inst	UCB

Sum of Cost3K					Year						
WBS	WBS 3	WBS 4	categ	Item (WBS 5)	00	01	02	03	04	05	Grand Total
		2.1.4.2. Education/outreach	pers	Isaac/pd C				10	10		20
				web programmer				10	10	11	31
			pers Total					20	20	11	51
			S&E	teacher stipends				3	3	3	8
			S&E Total					3	3	3	8
		2.1.4.2. Education/outreach Total						22	23	13	59
	2.1.4.Scientific Communication Total							55	57	48	160
2.2.D	2.2.4.Detector Testing & Characterization	2.2.4.3. Det Testing	pers	Mandic/gr A				8	8		16
				UCB grad C				8	8	9	25
				Rau/Humbolt Fellow				10	10	10	30
			pers Total					26	27	19	72
		2.2.4.3. Det Testing Total						26	27	19	72
	2.2.4.Detector Testing & Characterization Total							26	27	19	72
2.7.M	2.7.1.Project Management	2.7.1.1. Man. Personnel & Support	pers	admin asst				30	31	32	94
				Spadafora				128	132	136	396
			pers Total					158	163	168	490
			Travel	travel				8	8	9	25
			Travel Total					8	8	9	25
		2.7.1.1. Man. Personnel & Support Total						167	172	177	515
		2.7.1.2. Grant Admin	pers	Esteves				39	40	42	121
			pers Total					39	40	42	121
		2.7.1.2. Grant Admin Total						39	40	42	121
		2.7.1.3. Management meetings	Travel	EAB meetings				4	5	5	14
			Travel Total					4	5	5	14
			S&E	EAB meetings				3	3	3	10
				teleconferences				3	3	3	10
			S&E Total					7	7	7	20
		2.7.1.3. Management meetings Total						11	11	12	34
	2.7.1.Project Management Total							217	223	230	670
Grand Total					1,223	1,021	981	714	725	517	5,181

4.3 DOE Project Fund

fund no.	2	**DOE_Proj**

DOE_Proj

Project support at SU,UCSB,LBNL,NIST,UCol:
Technical Staff (eng,tech,undergrads) Salary & Travel
Detector production, preparation, and testing
Cold Electronics: SQUIDs design, fab, testing
Shield design, construction, installation
DAQ design, procurement, commissioning

DOE AWARD (in $K)
from DOE letter of 1/27/00

FISCAL YEAR	**FY 1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**TOTAL**
PROJ+CONT	750	1,050	1,100	1,050	800	550	5,300

Project only	4,300
Contingency	1,000

notes:

contingency held at Project office at FNAL
quarterly reports submitted to DOE, including justification of use of contingency funds

Not included:
Scientific personnel not allowed on this grant

Operating costs can be provided for DOE-supported univ. groups through the DOE University program following standard proceedures.

nb This money is budgeted and allocated to groups on GOVERNMENT FISCAL YEARS, i.e. Oct 1.

ALLOCATION PLAN
What we NEED to budget. (Amounts shown as debits.) Breakdown given in following pages.

Sum of Amount		Fiscal Year						
Funds	Inst	99	00	01	02	03	04	Grand Total
Cost	CWRU	-48	48					0
	SCU	-15	15					0
	Ge purchases		-63					-63
	LBNL	-46	-338	-297	-144	0	0	-825
	SU	-148	-525	-589	-390	0	0	-1,652
	UCSB	-466	-314	-256	-224	-82	0	-1,342
	NIST	-35	-119	-109	-45	0	0	-308
	UcolD	-15	-51	-51	-16	0	0	-133
	FNAL	-11	-16	-17	-17	-13	-9	-83
	Cont/Reserve	0	-319	-387	-161	-26		-893
Cost Total		-785	-1,682	-1,706	-997	-121	-9	-5,300
DOE Award		750	1,050	1,100	1,050	800	550	5,300

PLANNED allocation to groups

Sum of Amount		FY						
Funds	Inst	99	00	01	02	03	04	Grand Total
Fund 2	CWRU	48	-48					0
	SCU	15	-15					0
	Ge purchases		63					63

	LBNL	7	377	297	144	0	0	825
	SU	148	300	375	450	379	0	1,652
	UCSB	466	160	154	275	287	0	1,342
	NIST	35	119	109	45		0	308
	UcolD	15	51	51	16	0	0	133
	FNAL	11	16	17	17	13	9	83
	Cont/Reserve	5	27	97	103	121	540	893
Fund 2 Total		687	1,050	1,100	1,050	800	550	5,300

FUND 2: what has been allocated as of 9/1/00

		FY						
	Inst	99	00	01	02	03	04	Grand Total
(see note below)	CWRU	48	-48					0
	SCU	15	-15					0
	Ge purchases		63					
	LBNL	7	200					207
	SU	148	200					348
	UCSB	466						466
	NIST	35						35
	UcolD	15	36					51
	FNAL 1.5% O	11	7	0	0	0	0	18
	Allocated	745	443	0	0	0	0	1,188
	Reserve	5	612	1,712	2,762	3,562	4,112	
	Alloc. + Res.	750	1,055	1,712	2,762	3,562	4,112	
	funds availabl	750	1,050	1,100	1,050	800	550	0

NOTE ON 1999 allocation:

$48K+$15K were allocated to CWRU and SCU due to delay in start of NSF funding.
This amount is repaid to the DOE Project fund in FY2000 by using NSF funds to purchase
$63K worth of Ge and Si material, reducing the DOE costs by that amount in the FY 2000 budget.

FY 2000 final allocations - pending as of 9/29/00

	FY						
Inst	99	00	01	02	03	04	
CWRU							
SCU							
LBNL		177					
SU		100					
UCSB		160					
NIST		119					
UcolD		15					
FNAL 1.5% OH		9	0	0	0	0	
Allocated		580	0	0	0	0	

Summary by Institution		FY					
		99	00	01	02	03	04
LBNL Funding Profile							
Funds received		7	377	297	144	0	0
Funds spent		-46	-338	-297	-144	0	0
Start Yr Balance		7	338	297	143	0	0
End Yr Balance	yearly	-39	39	0	0	0	0
Net Balance	Cumulative	-39	0	0	0	0	0
SU Funding Profile							
Funds received		148	300	375	450	379	0

Funds spent		-148	-525	-589	-390	0	0
Start Yr Balance		148	300	150	11	0	0
End Yr Balance	yearly	0	-225	-214	60	379	0
Net Balance	Cumulative	0	-225	-439	-379	0	0

UCSB Funding Profile

Funds received		466	160	154	275	287	0
Funds spent		-466	-314	-256	-224	-82	0
Start Yr Balance		466	160	0	19	82	0
End Yr Balance	yearly	0	-154	-102	51	205	0
Net Balance	Cumulative	0	-154	-256	-205	0	0

NISTFunding Profile

Funds received		35	119	109	45	0	0
Funds spent		-35	-119	-109	-45	0	0
Start Yr Balance		35	119	109	45	0	0
End Yr Balance	yearly	0	0	0	0	0	0
Net Balance	Cumulative	0	0	0	0	0	0

UColD Funding Profile

Funds received		15	51	51	16	0	0
Funds spent		-15	-51	-51	-16	0	0
Start Yr Balance		15	51	51	16	0	0
End Yr Balance	yearly	0	0	0	0	0	0
Net Balance	Cumulative	0	0	0	0	0	0

notes: All amounts are in $K.
(1) first row (DOE Project funds received) are the official authorizations for each year.
(2) our proposed expenditures for each year.
(3) balance at the beginning of each fiscal year
(4) balance at the end of each fiscal year
(5) total debt at end of each fiscal year

RESERVE HELD - ESTIMATED CONTINGENCY NEEDED

	yearly	5	-292	-290	-58	95	540
	cumul	5	-287	-577	-635	-540	0

Note that in yrs 1-4 we are only holding 100K in reserve for contingency items,
whereas the cost table above shows more contingency needed in these years.
This is the minimum that is acceptable. It involves some risk but
has been done to reduce the University loans to a minimum.

4.3.1 DOE Groups to WBS 4

fund no.	2
class_2	budget item

DOE_Proj

(Contingency NOT included)

Sum of Cost3K						Year						
Inst	WBS 2	WBS 3	WBS 4	categ	Item (WBS 5)	99	00	01	02	03	04	Grand Total
CWRU	1.2.Detectors	1.2.4.Det Test & Characterization	1.2.4.3. Det Testing	S&E	Case ops	48						48
				S&E Total		48						48
		1.2.4.Det Test & Characterization Total				48						48
	1.2.Detectors Total					48						48
CWRU Total						48						48
FNAL	1.7.Management	1.7.1.Project Management	1.7.1.2. Grant Admin	S&E	FNAL OH on subcontracts	11	16	17	17	13	9	83
				S&E Total		11	16	17	17	13	9	83
		1.7.1.Project Management Total				11	16	17	17	13	9	83
	1.7.Management Total					11	16	17	17	13	9	83
FNAL Total						11	16	17	17	13	9	83
LBNL	1.1.Integ/Run	1.1.2.Det. Install/commission at Soudan	1.1.2.2. Det system setu	S&E	lab supplies					3		3
				S&E Total						3		3
		1.1.2.Det. Install/commission at Soudan Total								3		3
	1.1.Integ/Run Total									3		3
	1.2.Detectors	1.2.1.Det Production	1.2.1.2. Ge/Si Procureme	eqpt	Si det (50) polish	4						4
					Si det (50) raw	4						4
					GE polish boule #2		11					11
					Ge material boule #2		28					28
				eqpt Total		8	39					47
			1.2.1.3. Wafer Processin	pers	Emes	18	35	36	37			126
				pers Total		18	35	36	37			126
		1.2.1.Det Production Total				25	74	36	37			173
		1.2.3.Cold Hdwr & Elec	1.2.3.1. Design & Assem	pers	Hernikl/LBNL tech A	21	84	87	22			215
					Brumfield/LBNL tech B		84	65				150
				pers Total		21	169	152	22			365
			1.2.3.3. Cold Electronics	eqpt	CE sputtering at LBL		23	23				46
				eqpt Total			23	23				46
		1.2.3.Cold Hdwr & Elec Total				21	192	176	22			411
		1.2.4.Det Test & Characterization	1.2.4.1. Det Mounting/pre	pers	Emes		35	36	37			108
				pers Total			35	36	37			108
		1.2.4.Det Test & Characterization Total					35	36	37			108
	1.2.Detectors Total					46	301	248	97			692
	1.5.Shld & Bkgds	1.5.3.Phys Design & Bkgds	1.5.3.2. Gamma Screeni	S&E	low bkgd fac		26	39	44			109
				S&E Total			26	39	44			109
		1.5.3.Phys Design & Bkgds Total					26	39	44			109
	1.5.Shld & Bkgds Total						26	39	44			109
	1.6.Soudan	1.6.1.Cryogenic Systems	1.6.1.4. Icebox & Cryo in	Travel	travel		8	8				16
				Travel Total			8	8				16
				S&E	lab supplies		2	3				5
				S&E Total			2	3				5
		1.6.1.Cryogenic Systems Total					11	11				21
	1.6.Soudan Total						11	11				21
LBNL Total						46	338	297	144			825
NIST	1.2.Detectors	1.2.2.SQUID Amplifier Production	1.2.2.1. SQUID Chip pro	pers	Huber (sabbat)		10					10
					Martinis	16	32	32	16			96
					NIST tech	19	51	51	13			134
				pers Total		35	93	83	29			240
				S&E	NIST clean room OH		18	18	11			47
					NIST S&E/travel		8	8	5			21
				S&E Total			26	26	16			68
		1.2.2.SQUID Amplifier Production Total				35	119	109	45			308
	1.2.Detectors Total					35	119	109	45			308
NIST Total						35	119	109	45			308
SCU	1.1.Integ/Run	1.1.1.SUF & Test Facil. Oper	1.1.1.4. SU/SCU Test Fa	S&E	SU/SCU Test Facility	10						10
				S&E Total		10						10
		1.1.1.SUF & Test Facil. Oper Total				10						10
	1.1.Integ/Run Total					10						10
	1.2.Detectors	1.2.1.Det Production	1.2.1.3. Wafer Processin	eqpt	IICO ion implantation	5						5
				eqpt Total		5						5
		1.2.1.Det Production Total				5						5
	1.2.Detectors Total					5						5
SCU Total						15						15
SU	1.1.Integ/Run	1.1.1.SUF & Test Facil. Oper	1.1.1.1. SUF Test Facility	pers	Brink				22	22		44
					Perales		65	67	69			200
				pers Total			65	89	91			245
				S&E	cryogens	45	63	34	27			168
					lab supplies		4	4	4			13
				S&E Total		45	67	38	31			181
			1.1.1.4. SU/SCU Test Fa	eqpt	Computer for SU/SCU TF		0					0
					Joerger digitizers for SU/SCU TF		0					0

fund no.	2
class_2	budget item

DOE_Proj

(Contingency NOT included)

Sum of Cost3K						Year						
Inst	WBS 2	WBS 3	WBS 4	categ	Item (WBS 5)	99	00	01	02	03	04	Grand Total
				eqpt Total				0				0
			1.1.1.5. SU 15uW Test F	S&E	SU 15uW Test Facility			0	0	0		0
				S&E Total				0	0	0		0
				eqpt	Nat'l Inst. VXI crate for SU/SCU TF			8				8
					SU 15uW run time licenses (5)			2				2
				eqpt Total				9				9
		1.1.1.SUF & Test Facil. Oper Total				45		141	127	122		435
		1.1.2.Det. Install/commission at Soudan	1.1.2.2. Det system setu	S&E	lab supplies				12	12		24
				S&E Total					12	12		24
			1.1.2.3. Sci personnel/tra	pers	Brink			26	44	67		137
				pers Total				26	44	67		137
				Travel	travel			0	19	25		44
				Travel Total				0	19	25		44
		1.1.2.Det. Install/commission at Soudan Total						26	74	104		205
	1.1.Integ/Run Total					45		167	201	227		640
	1.2.Detectors	1.2.1.Det Production	1.2.1.2. Ge/Si Procureme	eqpt	Ge test wafers 300 um			5	5	5		15
					Si det (50) polish			0	27			27
					Si det (50) raw			0	58			58
					Si test wafers 300 um			1	1	1		2
					Ge test wafers 1mm polish			0				0
					Ge test wafers 1mm raw			10				10
					Ge polish boule#4,5				26			26
					Ge material boule#4,5				56			56
				eqpt Total				16	173	6		194
			1.2.1.3. Wafer Processin	pers	Abusaidi et al	75						75
					Castle			77	79	82		238
				pers Total		75		77	79	82		313
				S&E	Aligner Masks			8	8	8		24
					Balzers mod			4				4
					CIS personnel chrges			52	54	28		133
					CIS supplies			1	1	1		2
					Spinner/Dryer in CIS				6	3		10
					SU machine shop			7				7
				S&E Total				71	69	40		180
				eqpt	IICO ion implantation	3						3
					Karl Suss New Wafer Stage	15						15
					Si sputtering target			2	2			4
					W sputtering target				8			8
				eqpt Total		18		2	10			31
			1.2.1.4. Detector mountin	S&E	SU/RF Adhesive Mats			1	1	1		2
					SU/RF Gowns, gloves, boots&hoods			2	2	2		7
					SU/RF HEPA Filters			2	2	2		7
				S&E Total				5	6	6		17
				eqpt	SU/RF computer			2				2
					SU/RF lam flow bench(2)			15				15
					SU/RF Class 100 chairs (5)			2				2
					SU/RF cleanroom waste cans			1				1
					SU/RF Desicator			3				3
					SU/RF DI water and nitrogen gas spra			1				1
					SU/RF Dump rinser, tubing, & controll			8				8
					SU/RF Garment Storage/Shelve			2				2
					SU/RF Gas cylinder cart			0				0
					SU/RF Gas regulators, tubing, fittings			1				1
					SU/RF Low Rad Soldering Stn			1				1
					SU/RF Mechnical pump			1				1
					SU/RF microscope			14				14
					SU/RF Microtemp controller			2				2
					SU/RF Polypropylene shelves, stand			0				0
					SU/RF Secondary containers for acid			1				1
					SU/RF Shelving & al sleeves & stand			1				1
					SU/RF Shoe dust vacuum			1				1
					SU/RF spinner/dryer			15				15
					SU/RF Storage containers and holder			5				5
					SU/RF Thermal impulse sealer & dryp			1				1
					SU/RF Vacuum flanges, valves			1				1
					SU/RF wirebonder			20				20
					SU/RFThermocouple gauge			0				0
				eqpt Total				98				98
		1.2.1.Det Production Total				93		269	337	133		833
		1.2.4.Det Test & Characterization	1.2.4.3. Det Testing	pers	Brink			79	44	22		145
				pers Total				79	44	22		145
				Travel	travel to UCB			7	8	8		23
				Travel Total				7	8	8		23
		1.2.4.Det Test & Characterization Total						87	51	30		168
	1.2.Detectors Total					93		356	388	164		1,001
	1.4.DAQ	1.4.2.Information Management	1.4.2.3. Software	eqpt	Run Time Licenses (5)			2				2
				eqpt Total				2				2
		1.4.2.Information Management Total						2				2
		1.4.3.Data Reduction	1.4.3.2. Software	eqpt	Run Time Licences (5)			0				0

fund no.	2
class_2	budget item

DOE_Proj

(Contingency NOT included)

Sum of Cost3K						Year						
Inst	WBS 2	WBS 3	WBS 4	categ	Item (WBS 5)	99	00	01	02	03	04	Grand Total
				eqpt Total				0				0
		1.4.3.Data Reduction Total						0				0
	1.4.DAQ Total							2				2
	1.5.Shld & Bkgds	1.5.3.Phys Design & Bkgds	1.5.3.4. Radon Suppress	eqpt	SU/RF Radon mon	10						10
					SU/RF Rn scrubbing			0				0
				eqpt Total		10		0				10
		1.5.3.Phys Design & Bkgds Total				10		0				10
	1.5.Shld & Bkgds Total					10		0				10
SU Total						148		525	589	390		1,652
		1.2.2.SQUID Amplifier										
UcolD	1.2.Detectors	Production	1.2.2.1. SQUID Chip pro	pers	Huber			9	9	6		24
					Ucol ugrad	15		26	26			67
				pers Total		15		35	35	6		91
				S&E	UCD S&E/travel			16	16	10		42
				S&E Total				16	16	10		42
		1.2.2.SQUID Amplifier Production Total				15		51	51	16		133
	1.2.Detectors Total					15		51	51	16		133
UcolD Total						15		51	51	16		133
		1.1.1.SUF & Test										
UCSB	1.1.Integ/Run	Facil. Oper	1.1.1.1. SUF Test Facility	S&E	lab supplies			25	25			50
				S&E Total				25	25			50
		1.1.1.SUF & Test Facil. Oper Total						25	25			50
		1.1.2.Det. Install/commission										
		at Soudan	1.1.2.2. Det system setu	S&E	lab supplies					25		25
				S&E Total						25		25
		1.1.2.Det. Install/commission at Soudan Total								25		25
	1.1.Integ/Run Total							25	25	25		75
	1.4.DAQ	1.4.1.DAQ	1.4.1.1. Design, Assemb	pers	UCSB ugrad A			8	8	8		24
				pers Total				8	8	8		24
				Travel	travel			7	15	10		32
				Travel Total				7	15	10		32
			1.4.2.1. DAQ Hardware	eqpt	Crates (3)			12	12	13		37
					DAQ various hardware	43		-43				0
					Detector Monitoring			10				10
					Diagnostic Equipment			25				25
					Environmental Monitorin			10				10
					External Processors (1)			0	0			0
					Fridge Monitoring			10				10
					GPIB			10				10
					Grand Trigger Bds. (3)			7	4			11
					Scalers (12)			6	18			23
					Server CPU			0				0
					Switch			3				3
					Time History Units			6	6	6		19
					Trig CPU Forw. (6)			8	4			12
					Trigger Logic Bds. (9)			6	21	8		34
					Waveform Digitiz. (36)	30				70	67	167
					Crate Processors (6)	12		12	25			49
				eqpt Total		85		82	89	97	67	420
		1.4.1.DAQ Total				85		97	112	115	67	476
		1.4.2.Information										
		Management	1.4.2.2. Hardware	eqpt	Disks			4	8	13		25
					DLT Drive			4	4	4		11
				eqpt Total				8	12	16		36
			1.4.2.3. Software	eqpt	Database			10				10
					Development Environment			12				12
					Software/Licenses (6)			12				12
				eqpt Total				34				34
		1.4.2.Information Management Total						42	12	16		70
		1.4.3.Data										
		Reduction	1.4.3.1. Offline Hardware	eqpt	CPUs			15	30	30	15	90
					Disks			4	8	13		25
					DLT Drive			4	4	4		11
				eqpt Total				23	42	46	15	126
		1.4.3.Data Reduction Total						23	42	46	15	126
	1.4.DAQ Total					85		161	166	178	82	672
		1.5.1.Muon Veto										
	1.5.Shld & Bkgds	system	1.5.1.1. Veto Design & C	pers	Callahan,D.			74	38			112
				pers Total				74	38			112
				S&E	S&E			0	0			0
				S&E Total				0	0			0
			1.5.1.2. Veto Component	eqpt	HV cables	2						2
					HV PS	8						8
					light guides & WLS	40						40
					Linear Fan In (10)			15				15
					LV cables	2						2
					mag shields	4						4
					NIM crates	20						20
					PHA & scope	10						10
					PM bases	4						4
					PM tubes	32						32
					scintillator	100						100

fund no.	2
class_2	budget item

DOE_Proj

(Contingency NOT included)

Sum of Cost3K						Year						
Inst	WBS 2	WBS 3	WBS 4	categ	Item (WBS 5)	99	00	01	02	03	04	Grand Total
					Veto support	10						10
				eqpt Total		232	15					247
			1.5.1.4. Outer Veto	eqpt	Outer veto				0			0
				eqpt Total					0			0
		1.5.1.Muon Veto system Total				232	89	38				359
		1.5.2.Shield Construction and Installation	1.5.2.1. Shield design &	Travel	travel		25	13	7			45
				Travel Total			25	13	7			45
				S&E	S&E		0	0	0			0
				S&E Total			0	0	0			0
				eqpt	Shield Asmbly,tooling	15						15
					UCSB clean room	20						20
				eqpt Total		35						35
			1.5.2.2. Shield Compone	eqpt	Doe run lead	40						40
					Icebox Magnetic shield	5						5
					polyethylene	66						66
					Shield base	3						3
				eqpt Total		114						114
			1.5.2.3. Extra Shielding	eqpt	extra shielding				0			0
				eqpt Total					0			0
		1.5.2.Shield Construction and Installation Total				149	25	13	7			194
	1.5.Shld & Bkgds Total					381	114	51	7			553
	1.7.Management	1.7.1.Project Management	1.7.1.1. Man. Personnel	pers	Caldwell (emeritus)		14	14	15			43
				pers Total			14	14	15			43
		1.7.1.Project Management Total					14	14	15			43
	1.7.Management Total						14	14	15			43
UCSB Total						466	314	256	224	82		1,342
Grand Total						784	1,362	1,320	836	95	9	4,407

4.4 FNAL Project Funds

Fund No 3 **FNAL**

All effort at FNAL: Scientists and Technical
Scientist support (phys,postdoc,) Salary & Travel
Technical Staff (eng,tech,undergrads,admin.) Salary & Travel
Soudan Infrastructure and enclosures setup:
procurement, construction, and installation
Cryo system: icebox procurement, construction, and installation
Warm Electronics design, procurement, assembly, installation.
DAQ design
Experiment operations

Notes:

For items other than equipment, an overhead of 42% is included in amounts shown.
Project years correspond to fiscal years.
S&E = "supplies and expenses"

Summary

Sum of Cost3K		Yr							
categ		99	00	01	02	03	04	05	Grand Total
Operating	travel	0	156	111	30	39	32	33	401
	S&E	0	216	336	277	180	186	191	1,386
Operating Total		0	372	447	307	219	218	224	1,787
eqpt		554	255	610	120	0	0	0	1,539
Total		554	627	1,057	427	219	218	224	3,326

Contingency		99	00	01	02	03	04	05	Grand Total
	total	0	189	293	63				545

4.4.1 FNAL budget to WBS4

fund no.	3
class_2	budget item
Inst	FNAL

FNAL ***(Contingency NOT included)***

Sum of Cost3K					Year						
WBS 2	WBS 3	WBS 4	categ	Item (WBS 5)	99	00	02	03	04	05	Grand Total
1.1.Integ/Run	1.1.1.SUF & Test Facil. Oper	1.1.1.1. SUF Test Facility	Travel	travel		7					7
			S&E	lab supplies		14					29
	1.1.1.SUF & Test Facil. Oper Total					21					36
	1.1.2.Det. Install/commission at Soudan	1.1.2.1. Det system operation	S&E	cryogens		44					241
				Soudan tech			39				39
		1.1.2.2. Det system setup/supplies	S&E	lab supplies			11				11
		1.1.2.3. Sci personnel/travel	Travel	travel							7
	1.1.2.Det. Install/commission at Soudan Total					44	50				298
	1.1.3.Soudan Ops/Science	1.1.3.1. Experiment operations	S&E	Soudan hoist		31					31
				Soudan space		17					17
				Soudan tech		73					73
	1.1.3.Soudan Ops/Science Total					121					121
1.1.Integ/Run Total						186	50				455
1.3.W Elec	1.3.1.Front End Elec. Prod	1.3.1.1 Design & Assembly	Travel	travel		14					29
		1.3.1.2. ZIP bds	eqpt	ZIP Boards (60)							83
				Warm electronics prototype	189						189
		1.3.1.3. RTF bds	eqpt	RTF Boards (25)							41
		1.3.1.4. Crates & PS	eqpt	Crates (9)							34
		1.3.1.5. Cables	eqpt	FE Cables							23
		1.3.1.6 Test Stands	eqpt	Test Bnch/Diag eqpt Sdn							21
				Test Bnch/Diag eqpt UCB							14
	1.3.1.Front End Elec. Prod Total				189	14					433
1.3.W Elec Total					189	14					433
1.5.Shld & Bkgds	1.5.3.Phys Design & Bkgds	1.5.3.4. Radon Suppression	eqpt	Rn monitor		5					5
				Soudan Radon scrubbing			120				120
	1.5.3.Phys Design & Bkgds Total					5	120				125
1.5.Shld & Bkgds Total						5	120				125
1.6.Soudan	1.6.1.Cryogenic Systems	1.6.1.1. Dilution Fridge	eqpt	Dilution Refrigerator setup							1
		1.6.1.2. Liquefier	eqpt	Liquefier							93
		1.6.1.3. Cryo Control System	eqpt	Display Board		3					3
				Software							3
				Instruments							14
				Wiring							1
				Relays							1
				Controller VIM							2
				Controller ACM							6
				Power Supplies							2
				Cabinets							1
				PC with GPIB							5
		1.6.1.4. Icebox & Cryo installation	Travel	Eng Travel		21					36
				phys travel		21					36
				Tech Travel		50					80
			eqpt	Machining & Welding	307						307
	1.6.1.Cryogenic Systems Total				307	95					591
	1.6.2.Exp Enclosures at Soudan	1.6.2.1 Design & Planning	Travel	phys travel		7					14
		1.6.2.3. Utility Systems	S&E	Soudan tech		36					36
			eqpt	Chiller System							8
				Fire Protection System		32					32
				Power		25					25
		1.6.2.4. General setup	eqpt	Decking							36
				Ladders and Stairs							1
				Main Clean Room Filter and air circulation system							52
				Racks							2
				Shield Assembly fixtures							5
				Sound proofing							3
				Vibration Isolation							5
				Work Bench installation							10
				Concrete Pad(s)	12						12
				Crane	46						46
		1.6.2.5. Structures	eqpt	Air shower installation							9
				RF Structure, penetrations, and el		190					190
				Clean Room mods							5
				Clean Room Soft Wall							7
				Det Prep Room							44
				Elec Hut							34
				Eqpt Room							34

fund no.	3
class_2	budget item
Inst	FNAL

FNAL ***(Contingency NOT included)***

		1.6.2.6. Network Conn.	eqpt	Link to Soudan Control Room							10
				Link to Surface Control Room							0
				Link to World							0
	1.6.2.Exp Enclosures at Soudan Total				58	290					622
1.6.Soudan Total					365	386					1,213
1.7.Management	1.7.1.Project Management	1.7.1.1. Man. Personnel & Support	Travel	travel		36	23				80
	1.7.1.Project Management Total					36	23				80
1.7.Management Total						36	23				80
2.1.Integ/Run	2.1.3.Soudan Ops/Science	2.1.3.1. Experiment operations	S&E	cryogens			126	25	25	26	203
				Soudan hoist			33	34	35	36	171
				Soudan space			18	19	19	20	93
				Soudan tech			39	79	82	84	359
		2.1.3.2. Science support	Travel	travel			8	16	16	16	55
			S&E	lab supplies			11	23	24	25	83
	2.1.3.Soudan Ops/Science Total						235	196	202	208	964
2.1.Integ/Run Total							235	196	202	208	964
2.7.Management	2.7.1.Project Management	2.7.1.1. Man. Personnel & Support	Travel	travel				23	16	16	56
	2.7.1.Project Management Total							23	16	16	56
2.7.Management Total								23	16	16	56
Grand Total					554	627	427	219	218	224	3,326

Appendix

Overhead	rate
CWRU	53.0%
FNAL	42.0%
LBNL	62.0%
NIST	169.0%
PU	58.0%
SCU	40.5%
SFSU	30.0%
SU	55.0%
UCB	50.4%
UCoID	39.0%
UCSB	26.0%

Inflation	factor
-1	1.000
0	1.000
1	1.000
2	1.030
3	1.061
4	1.093
5	1.126
6	1.159

Grad Tuition	Amount
CWRU	0
FNAL	0
LBNL	0
NIST	0
PU	12,650
SCU	0
SFSU	0
SU	12,388
UCB	4,408
UCL	0
UCSB	0