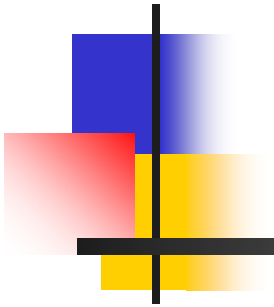


OLYMPUS
Resource Loaded Schedule

Uwe Schneekloth
DESY

OLYMPUS Meeting
30.11.2009

Schedule Constraints

Activities, in particular

- heavy construction work
- modification of DORIS
- moving-in of OLYMPUS detector
- commissioning of detector and
- data taking

should not disturb scheduled synchrotron radiation experiments at DORIS and PETRA (PETRA will be operating in top-up mode)

Accelerator shutdown or dedicated beam time

- Modification of DORIS IR scheduled during DORIS winter shutdown
- Moving-in of OLYMPUS detector during short summer shutdown
- First data-taking period during PETRA shutdown
- Second data-taking period after end of nominal DORIS operation for SR users/during PETRA shutdown/modification

Schedule discussed/agreed with DESY M(machine), FS(synchrotron radiation) and FH (HEP) directors

Schedule Milestones

- Remove ARGUS experiment in fall 2009
- Disassemble and pack BLAST detector Jan.-April 2010
- Ship and assemble BLAST/OLYMPUS detector and OLYMPUS target in spring-fall 2010
- Modify DORIS beam-line and install OLYMPUS target in DORIS in winter 2010/11 shutdown
- Background measurements with new IR and target winter-summer 2011
- OLYMPUS commissioning in parking position winter-summer 2011
- Install complete OLYMPUS experiment in summer 2011
- Commissioning fall 2011
  - Parasitic mode and some dedicated shifts during service weeks
- Dedicated data taking periods:
  - 1 month: Jan. - Feb. 2012
  - 2 months: Oct. – Dec. 2012

Schedule Changes

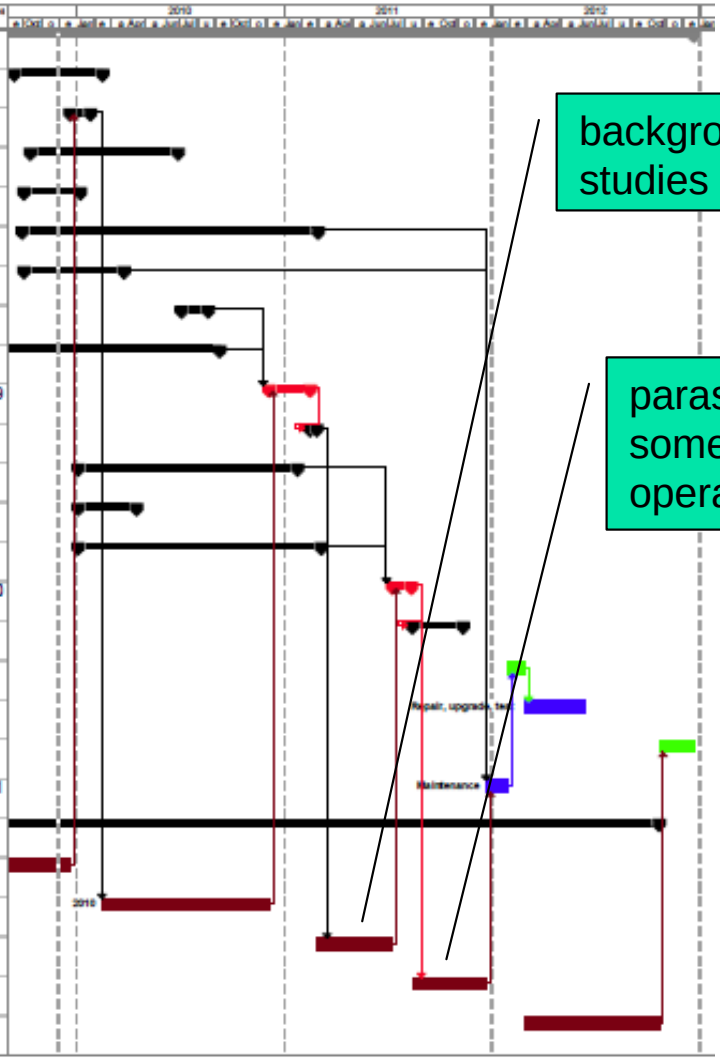
Changes since Technical Review in September

- ARGUS removal delayed, started 23.11.
- DORIS: modified quads will no be installed this winter shutdown. No time for bakeout.
- Wire chamber and GEM schedules included (D.Hasell)
- Man power resources now included as requested by DOE and PRC, resource loaded schedule
- Discussed schedule option to already move in detector in 2010/11 winter shutdown
  - Would save about 16 days of work (interlock, shielding, beamline)
  - One shutdown schedule would be very tight. No slack for preparing and testing detector. Commission (electronics checks, cosmics studies, alignment) very difficult without access to detector.

  → Keep two shutdown schedule

Schedule - Overview

ID	Task Name	Duration	Start	Finish	Predecess
0	OLYMPUS_5_v2003	993 days	Mon 09.02.09	Fri 21.12.12	
1	Prepare DORIS Hall	105 days	Mon 14.09.09	Mon 15.02.10	
6	Winter shutdown 09/10	20 days	Mon 21.12.09	Mon 25.01.10	88
9	Water cooling	180 days	Mon 12.10.09	Mon 28.06.10	
13	Detector power supply	65 days	Thu 01.10.09	Thu 07.01.10	
18	Polarity switches	360 days	Mon 28.09.09	Tue 01.03.11	
21	Kicker	120 days	Thu 01.10.09	Thu 25.03.10	
23	MHFsI workshop	35 days	Mon 05.07.10	Fri 20.08.10	
25	Target system and Beamline	308 days	Mon 29.06.09	Thu 09.09.10	
36	Modify IP region	46 days	Mon 06.12.10	Tue 15.02.11	25;89
49	Doris Startup	8 days	Tue 15.02.11	Sun 27.02.11	36
52	GEM Tracker	270 days	Mon 04.01.10	Mon 24.01.11	
57	WC Transport Frame	75 days	Mon 04.01.10	Fri 16.04.10	
62	Move OLYMPUS detector	300 days	Mon 04.01.10	Mon 07.03.11	
68	Install OLYMPUS	25 days	Mon 11.07.11	Fri 12.08.11	62;90
81	Detector commissioning	65 days	Mon 15.08.11	Fri 11.11.11	68
83	First data period	4 wks	Tue 31.01.12	Mon 27.02.12	86
84	Repair, upgrade, test	15 wks	Tue 28.02.12	Mon 11.06.12	83
85	Second data period	9 wks	Mon 22.10.12	Fri 21.12.12	92
86	Maintenance	22 days	Fri 23.12.11	Mon 30.01.12	18;21
87	Synchrotron radiation runs	948 days	Mon 09.02.09	Mon 22.10.12	
88	2009	315 edays	Mon 09.02.09	Mon 21.12.09	
89	2010	294 edays	Mon 15.02.10	Mon 06.12.10	6
90	2011/1	132 edays	Mon 28.02.11	Sun 10.07.11	49
91	2011/2	130 edays	Mon 15.08.11	Fri 23.12.11	68
92	2012	238 edays	Mon 27.02.12	Mon 22.10.12	



background studies

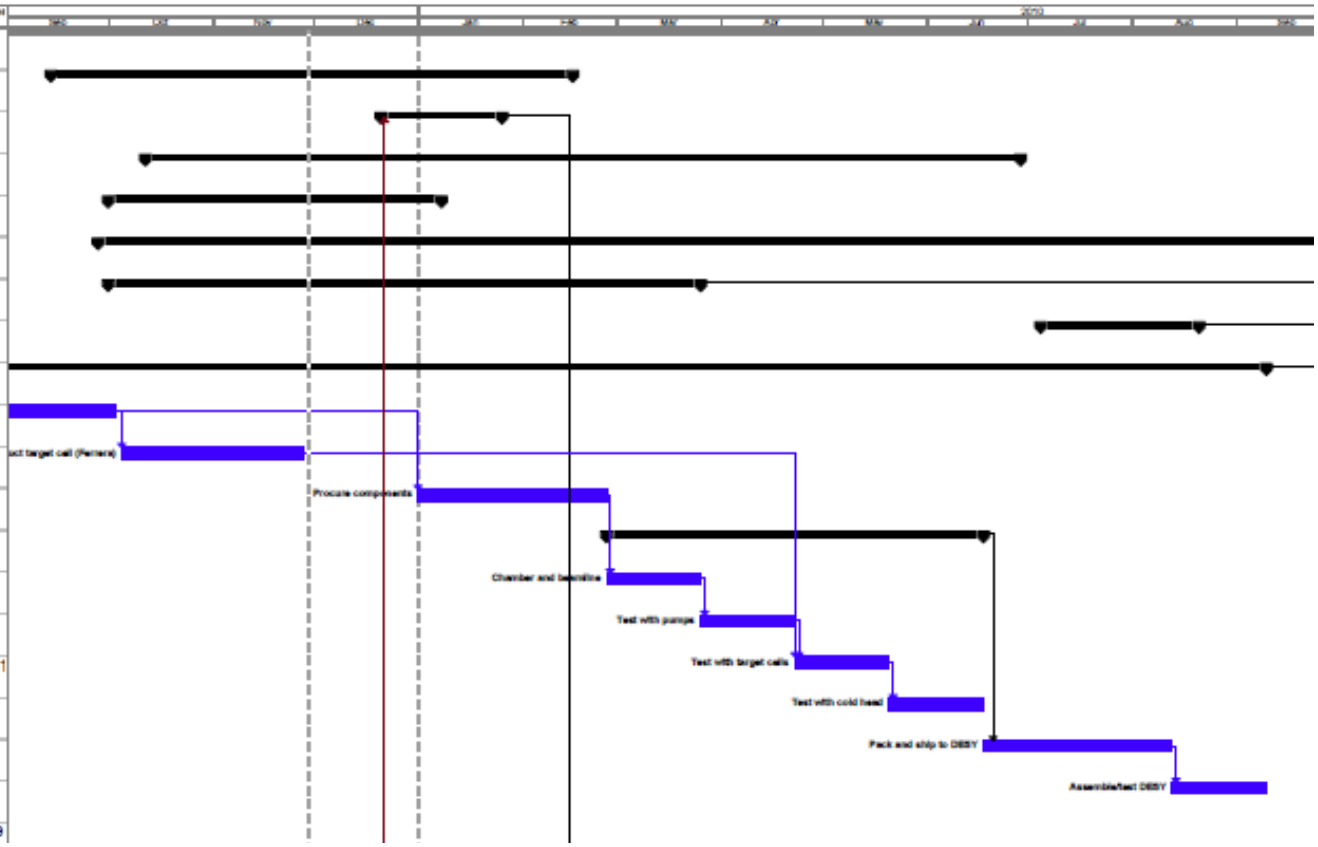
parasitic studies + some days (~5) full operation

Schedule: Preparation

ID	Task Name	Duration	Start	Finish	Predecessors
0	OLYMPUS_5_v2003	993 days	Mon 09.02.09	Fri 21.12.12	
1	Prepare DORIS Hall	105 days	Mon 14.09.09	Mon 15.02.10	
2	Remove Exhibitions	3 wks	Mon 14.09.09	Fri 02.10.09	
3	Remove ARGUS 1	4 wks	Mon 16.11.09	Fri 11.12.09	2
4	Remove ARGUS break	4 wks	Mon 14.12.09	Mon 18.01.10	3
5	Remove ARGUS 2	4 wks	Tue 19.01.10	Mon 15.02.10	4
6	Winter shutdown 09/10	20 days	Mon 21.12.09	Mon 25.01.10	88
7	Install cavity cooling	10 days	Mon 21.12.09	Mon 11.01.10	
8	dust protection	10 days	Tue 12.01.10	Mon 25.01.10	7
9	Water cooling	180 days	Mon 12.10.09	Mon 28.06.10	
10	Design (Mainz/DESY)	3 mons	Mon 12.10.09	Mon 11.01.10	
11	Purchase	3 mons	Tue 12.01.10	Mon 05.04.10	10
12	Install	3 mons	Tue 06.04.10	Mon 28.06.10	11
13	Detector power supply	65 days	Thu 01.10.09	Thu 07.01.10	
14	Prepare transformer pit	1 mon	Thu 01.10.09	Wed 28.10.09	
15	Install transformer	1 wk	Thu 29.10.09	Wed 04.11.09	14
16	Install power supply	4 wks	Thu 05.11.09	Wed 02.12.09	15
17	Cabling	1 mon	Thu 03.12.09	Thu 07.01.10	16
18	Polarity switches	360 days	Mon 28.09.09	Tue 01.03.11	
19	Construction (Bonn)?	9 mons	Mon 28.09.09	Mon 14.06.10	
20	Install	9 mons	Tue 15.06.10	Tue 01.03.11	19
21	Kicker	120 days	Thu 01.10.09	Thu 25.03.10	
22	Build	6 mons	Thu 01.10.09	Thu 25.03.10	
23	MHFsl workshop	35 days	Mon 05.07.10	Fri 20.08.10	
24	Construction	7 wks	Mon 05.07.10	Fri 20.08.10	
25	Target system and Beamline	308 days	Mon 29.06.09	Thu 09.09.10	

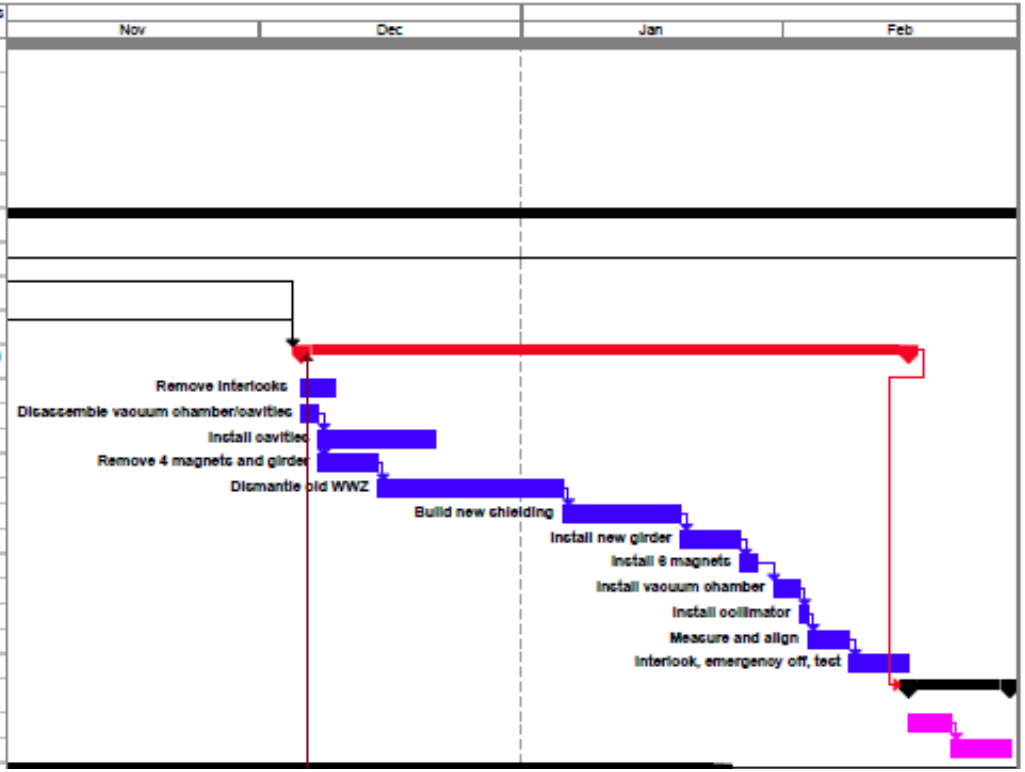
Schedule: Target Chamber

ID	Task Name	Duration	Start	Finish	Predecessors
0	OLYMPUS_5_v2003	993 days	Mon 09.02.09	Fri 21.12.12	
1	Prepare DORIS Hall	105 days	Mon 14.09.09	Mon 15.02.10	
8	Winter shutdown 09/10	20 days	Mon 21.12.09	Mon 25.01.10	88
9	Water cooling	180 days	Mon 12.10.09	Mon 28.06.10	
13	Detector power supply	65 days	Thu 01.10.09	Thu 07.01.10	
16	Polarity switches	360 days	Mon 28.09.09	Tue 01.03.11	
21	Kicker	120 days	Thu 01.10.09	Thu 25.03.10	
23	MHFsi workshop	35 days	Mon 05.07.10	Fri 20.08.10	
25	Target system and Beamline	308 days	Mon 29.06.09	Thu 09.09.10	
26	Design	14 wks	Mon 29.06.09	Fri 02.10.09	
27	Construct target cell (Ferrer	8 wks	Mon 05.10.09	Fri 27.11.09	26
28	Procure components	8 wks	Fri 01.01.10	Thu 25.02.10	26
29	Assemble/test MIT-Bates	80 days	Fri 26.02.10	Thu 17.06.10	
30	Chamber and beamline	4 wks	Fri 26.02.10	Thu 25.03.10	28
31	Test with pumps	4 wks	Fri 26.03.10	Thu 22.04.10	30
32	Test with target cells	4 wks	Fri 23.04.10	Thu 20.05.10	27;31
33	Test with cold head	4 wks	Fri 21.05.10	Thu 17.06.10	32
34	Pack and ship to DESY	8 wks	Fri 18.06.10	Thu 12.08.10	29
35	Assemble/test DESY	4 wks	Fri 13.08.10	Thu 09.09.10	34
36	Modify IP region	46 days	Mon 06.12.10	Tue 15.02.11	25;89

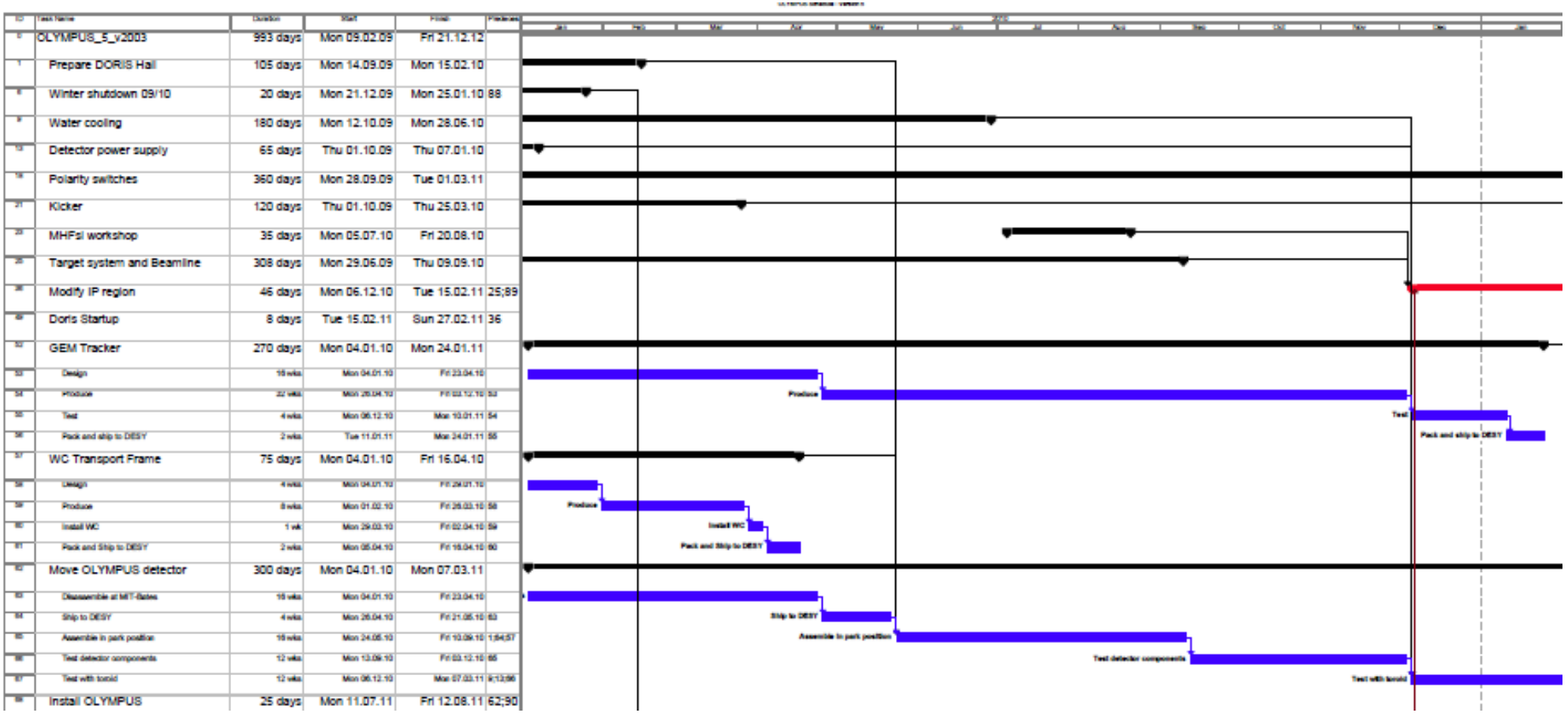


Schedule: Modification of IR

ID	Task Name	Duration	Start	Finish	Predeces
0	OLYMPUS_5_v2003	993 days	Mon 09.02.09	Fri 21.12.12	
1	Prepare DORIS Hall	105 days	Mon 14.09.09	Mon 15.02.10	
6	Winter shutdown 09/10	20 days	Mon 21.12.09	Mon 25.01.10	88
9	Water cooling	180 days	Mon 12.10.09	Mon 28.06.10	
13	Detector power supply	65 days	Thu 01.10.09	Thu 07.01.10	
18	Polarity switches	360 days	Mon 28.09.09	Tue 01.03.11	
21	Kicker	120 days	Thu 01.10.09	Thu 25.03.10	
23	MHFsi workshop	35 days	Mon 05.07.10	Fri 20.08.10	
25	Target system and Beamline	308 days	Mon 29.06.09	Thu 09.09.10	
36	Modify IP region	46 days	Mon 06.12.10	Tue 15.02.11	25;89
37	Remove interlocks	4 days	Mon 06.12.10	Thu 09.12.10	
38	Disassemble vacuum chamber/cavities	2 days	Mon 06.12.10	Tue 07.12.10	
39	Install cavities	2 wks	Wed 08.12.10	Tue 21.12.10	38
40	Remove 4 magnets and girder	5 days	Wed 08.12.10	Tue 14.12.10	38
41	Dismantle old WWZ	2 wks	Wed 15.12.10	Wed 05.01.11	40
42	Build new shielding	2 wks	Thu 06.01.11	Wed 19.01.11	41
43	Install new girder	5 days	Thu 20.01.11	Wed 26.01.11	42
44	Install 6 magnets	2 days	Thu 27.01.11	Fri 28.01.11	43
45	Install vacuum chamber	3 days	Mon 31.01.11	Wed 02.02.11	44
46	Install collimator	1 day	Thu 03.02.11	Thu 03.02.11	45
47	Measure and align	3 days	Fri 04.02.11	Tue 08.02.11	46
48	Interlock, emergency off, test	5 days	Wed 09.02.11	Tue 15.02.11	47
49	Doris Startup	8 days	Tue 15.02.11	Sun 27.02.11	36
50	machine shifts	5 edays	Tue 15.02.11	Sun 20.02.11	
51	bakeout	7 edays	Sun 20.02.11	Sun 27.02.11	50



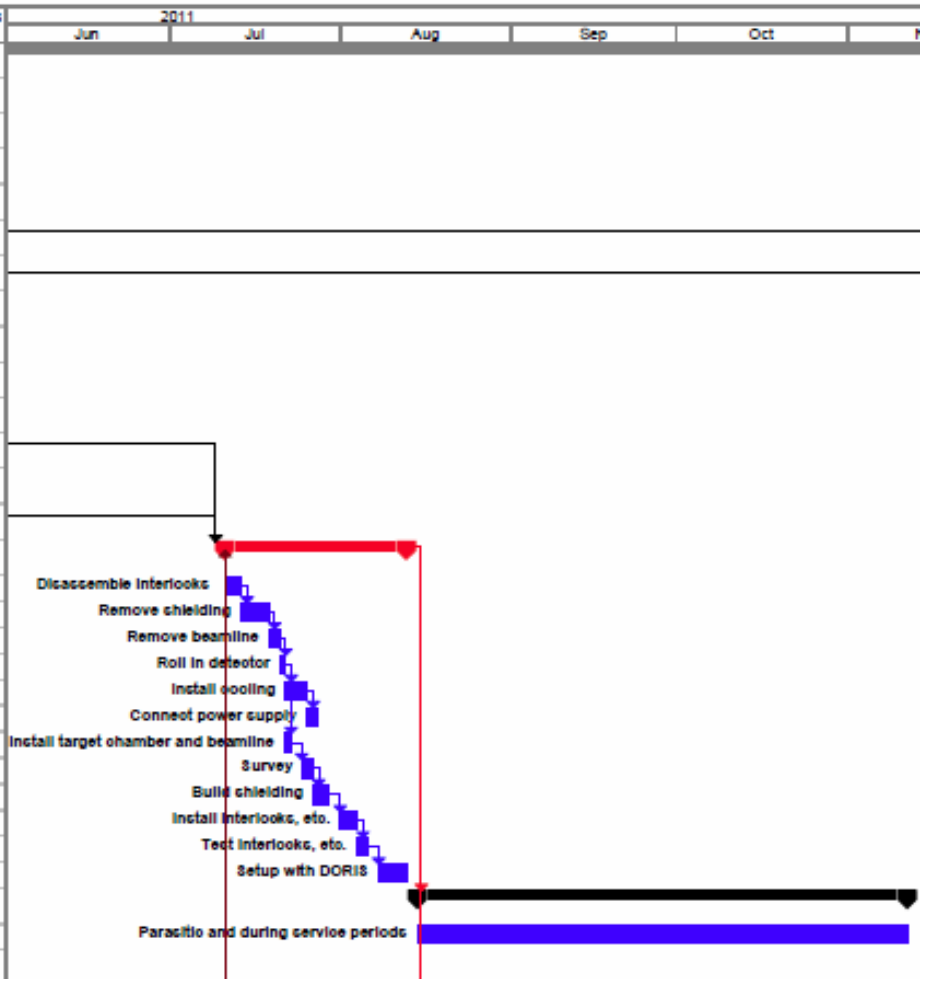
Schedule:GEM, WC and Shipping



	Task Name	Duration	Start	Finish	Predecessors
0	OLYMPUS_5_v2003	993 days	Mon 09.02.09	Fri 21.12.12	
1	Prepare DORIS Hall	105 days	Mon 14.09.09	Mon 15.02.10	
8	Winter shutdown 09/10	20 days	Mon 21.12.09	Mon 25.01.10	88
9	Water cooling	180 days	Mon 12.10.09	Mon 28.06.10	
13	Detector power supply	65 days	Thu 01.10.09	Thu 07.01.10	
18	Polarity switches	360 days	Mon 28.09.09	Tue 01.03.11	
21	Kicker	120 days	Thu 01.10.09	Thu 25.03.10	
23	MHFsl workshop	35 days	Mon 05.07.10	Fri 20.08.10	
25	Target system and Beamline	308 days	Mon 29.06.09	Thu 09.09.10	
36	Modify IP region	46 days	Mon 06.12.10	Tue 15.02.11	25;89
49	Doris Startup	8 days	Tue 15.02.11	Sun 27.02.11	36
52	GEM Tracker	270 days	Mon 04.01.10	Mon 24.01.11	
53	Design	16 wks	Mon 04.01.10	Fri 23.04.10	
54	Produce	32 wks	Mon 26.04.10	Fri 03.12.10	53
55	Test	4 wks	Mon 06.12.10	Mon 10.01.11	54
56	Pack and ship to DESY	2 wks	Tue 11.01.11	Mon 24.01.11	55
57	WC Transport Frame	75 days	Mon 04.01.10	Fri 16.04.10	
58	Design	4 wks	Mon 04.01.10	Fri 29.01.10	
59	Produce	8 wks	Mon 01.02.10	Fri 26.03.10	58
60	Install WC	1 wk	Mon 29.03.10	Fri 02.04.10	59
61	Pack and Ship to DESY	2 wks	Mon 05.04.10	Fri 16.04.10	60
62	Move OLYMPUS detector	300 days	Mon 04.01.10	Mon 07.03.11	
63	Disassemble at MIT-Bates	16 wks	Mon 04.01.10	Fri 23.04.10	
64	Ship to DESY	4 wks	Mon 26.04.10	Fri 21.05.10	63
65	Assemble in park position	16 wks	Mon 24.05.10	Fri 10.09.10	1;64;57
66	Test detector components	12 wks	Mon 13.09.10	Fri 03.12.10	65
67	Test with toroid	12 wks	Mon 06.12.10	Mon 07.03.11	9;13;66
68	Install OLYMPUS	25 days	Mon 11.07.11	Fri 12.08.11	62;90

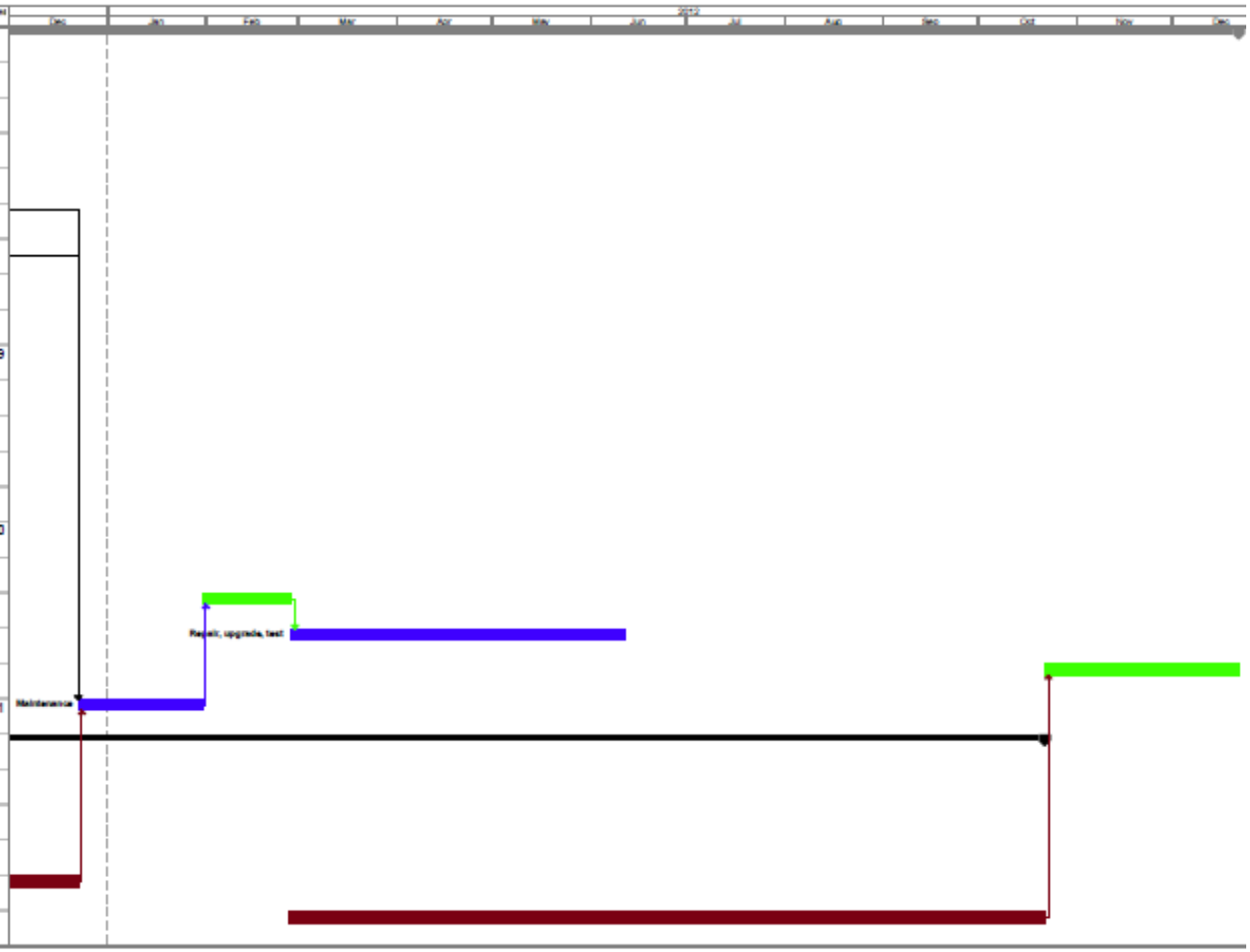
Schedule: Installation & Commissioning

ID	Task Name	Duration	Start	Finish	Predeces
0	OLYMPUS_5_v2003	993 days	Mon 09.02.09	Fri 21.12.12	
1	Prepare DORIS Hall	105 days	Mon 14.09.09	Mon 15.02.10	
6	Winter shutdown 09/10	20 days	Mon 21.12.09	Mon 25.01.10	88
9	Water cooling	180 days	Mon 12.10.09	Mon 28.06.10	
13	Detector power supply	65 days	Thu 01.10.09	Thu 07.01.10	
18	Polarity switches	360 days	Mon 28.09.09	Tue 01.03.11	
21	Kicker	120 days	Thu 01.10.09	Thu 25.03.10	
23	MHFsi workshop	35 days	Mon 05.07.10	Fri 20.08.10	
25	Target system and Beamline	308 days	Mon 29.06.09	Thu 09.09.10	
36	Modify IP region	46 days	Mon 06.12.10	Tue 15.02.11	25;89
49	Doris Startup	8 days	Tue 15.02.11	Sun 27.02.11	36
52	GEM Tracker	270 days	Mon 04.01.10	Mon 24.01.11	
57	WC Transport Frame	75 days	Mon 04.01.10	Fri 16.04.10	
62	Move OLYMPUS detector	300 days	Mon 04.01.10	Mon 07.03.11	
68	Install OLYMPUS	25 days	Mon 11.07.11	Fri 12.08.11	62;90
69	Disassemble interlocks	3 days	Mon 11.07.11	Wed 13.07.11	
70	Remove shielding	3 days	Thu 14.07.11	Mon 18.07.11	69
71	Remove beamline	2 days	Tue 19.07.11	Wed 20.07.11	70
72	Roll in detector	1 day	Thu 21.07.11	Thu 21.07.11	71
73	Install cooling	2 days	Fri 22.07.11	Mon 25.07.11	72
74	Connect power supply	2 days	Tue 26.07.11	Wed 27.07.11	73
75	Install target chamber and beamline	1 day	Fri 22.07.11	Fri 22.07.11	72
76	Survey	2 days	Mon 25.07.11	Tue 26.07.11	75
77	Build shielding	3 days	Wed 27.07.11	Fri 29.07.11	76
78	Install interlocks, etc.	3 days	Mon 01.08.11	Wed 03.08.11	77
79	Test interlocks, etc.	2 days	Thu 04.08.11	Fri 05.08.11	78
80	Setup with DORIS	5 days	Mon 08.08.11	Fri 12.08.11	79
81	Detector commissioning	65 days	Mon 15.08.11	Fri 11.11.11	68
82	Parasitic and during service periods	13 wks	Mon 15.08.11	Fri 11.11.11	
83	First data period	4 wks	Tue 31.01.12	Mon 27.02.12	86



Schedule: Data Taking

ID	Task Name	Duration	Start	Finish	Predecessors
0	OLYMPUS_5_v2003	993 days	Mon 09.02.09	Fri 21.12.12	
1	Prepare DORIS Hall	105 days	Mon 14.09.09	Mon 15.02.10	
6	Winter shutdown 09/10	20 days	Mon 21.12.09	Mon 25.01.10	88
9	Water cooling	180 days	Mon 12.10.09	Mon 28.06.10	
13	Detector power supply	65 days	Thu 01.10.09	Thu 07.01.10	
18	Polarity switches	360 days	Mon 28.09.09	Tue 01.03.11	
21	Kicker	120 days	Thu 01.10.09	Thu 25.03.10	
23	MHFsl workshop	35 days	Mon 05.07.10	Fri 20.08.10	
25	Target system and Beamline	308 days	Mon 29.06.09	Thu 09.09.10	
36	Modify IP region	46 days	Mon 06.12.10	Tue 15.02.11	25;89
40	Doris Startup	8 days	Tue 15.02.11	Sun 27.02.11	36
52	GEM Tracker	270 days	Mon 04.01.10	Mon 24.01.11	
57	WC Transport Frame	75 days	Mon 04.01.10	Fri 16.04.10	
62	Move OLYMPUS detector	300 days	Mon 04.01.10	Mon 07.03.11	
66	Install OLYMPUS	25 days	Mon 11.07.11	Fri 12.08.11	62;90
81	Detector commissioning	65 days	Mon 15.08.11	Fri 11.11.11	68
83	First data period	4 wks	Tue 31.01.12	Mon 27.02.12	86
84	Repair, upgrade, test	15 wks	Tue 28.02.12	Mon 11.06.12	83
85	Second data period	9 wks	Mon 22.10.12	Fri 21.12.12	92
86	Maintenance	22 days	Fri 23.12.11	Mon 30.01.12	18;21
87	Synchrotron radiation runs	948 days	Mon 09.02.09	Mon 22.10.12	
88	2009	315 edays	Mon 09.02.09	Mon 21.12.09	
89	2010	294 edays	Mon 15.02.10	Mon 06.12.10	6
90	2011/1	132 edays	Mon 28.02.11	Sun 10.07.11	49
91	2011/2	130 edays	Mon 15.08.11	Fri 23.12.11	68
92	2012	238 edays	Mon 27.02.12	Mon 22.10.12	



Schedule Resource Usage

	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	Total
MIT Post-doc			112 hrs	504 hrs	184 hrs	77 hrs		877 hrs
Assemble in park position		112 hrs	208 hrs					320 hrs
Test detector components			240 hrs					240 hrs
Test with toroid			56 hrs	184 hrs				240 hrs
Roll in detector					21 hrs			21 hrs
Install target chamber and beamline					8 hrs			8 hrs
Survey					48 hrs			48 hrs
MIT Engineer 1	8 hrs	272 hrs	470,4 hrs	313,6 hrs	12 hrs	30 hrs		1.106 hrs
Design	272 hrs							272 hrs
Procure components		80 hrs						80 hrs
Chamber and beamline		32 hrs						32 hrs
Test with pumps		32 hrs						32 hrs
Test with target cells		32 hrs						32 hrs
Test with cold head		32 hrs						32 hrs
Pack and ship to DESY		14,4 hrs	49,6 hrs					64 hrs
Assemble/test DESY			160 hrs					160 hrs
Install vacuum chamber				12 hrs				12 hrs
Design		32 hrs						32 hrs
Disassemble at MIT-Bates		128 hrs						128 hrs
Ship to DESY		32 hrs						32 hrs
Assemble in park position		56 hrs	104 hrs					160 hrs
Roll in detector					14 hrs			14 hrs
Install target chamber and beamline					16 hrs			16 hrs
MIT Engineer 2	4 hrs	136 hrs	651,2 hrs	515,2 hrs	37,6 hrs	30 hrs		1.374 hrs
Design	136 hrs							136 hrs
Procure components		80 hrs						80 hrs
Chamber and beamline		32 hrs						32 hrs
Test with pumps		32 hrs						32 hrs
Test with target cells		32 hrs						32 hrs
Test with cold head		32 hrs						32 hrs
Pack and ship to DESY		14,4 hrs	49,6 hrs					64 hrs
Assemble/test DESY			160 hrs					160 hrs
Install vacuum chamber				12 hrs				12 hrs
Design		128 hrs						128 hrs
Produce		76,8 hrs	179,2 hrs					256 hrs
Test			22,4 hrs	9,6 hrs				32 hrs
Pack and ship to DESY				16 hrs				16 hrs
Design		80 hrs						80 hrs
Produce		64 hrs						64 hrs
Install WC		8 hrs						8 hrs
Pack and Ship to DESY		16 hrs						16 hrs
Assemble in park position		56 hrs	104 hrs					160 hrs

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Schedule Resource Usage

	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	Total
Roll in detector					14 hrs			14 hrs
Install target chamber and beamline					16 hrs			16 hrs
MIT Engineer 3			128 hrs					128 hrs
Design		128 hrs						128 hrs
MIT Technician 1			560 hrs					560 hrs
Produce		160 hrs						160 hrs
Install WC		20 hrs						20 hrs
Pack and Ship to DESY		20 hrs						20 hrs
Disassemble at MIT-Bates		320 hrs						320 hrs
Ship to DESY		40 hrs						40 hrs
MIT Technician 2			560 hrs					560 hrs
Produce		160 hrs						160 hrs
Install WC		20 hrs						20 hrs
Pack and Ship to DESY		20 hrs						20 hrs
Disassemble at MIT-Bates		320 hrs						320 hrs
Ship to DESY		40 hrs						40 hrs
MIT Technician 3			360 hrs					360 hrs
Disassemble at MIT-Bates		320 hrs						320 hrs
Ship to DESY		40 hrs						40 hrs
MIT Technician 4			360 hrs					360 hrs
Disassemble at MIT-Bates		320 hrs						320 hrs
Ship to DESY		40 hrs						40 hrs
MIT Technician 5			320 hrs					320 hrs
Disassemble at MIT-Bates		320 hrs						320 hrs
MIT Technician 6			384 hrs	918,4 hrs	49,6 hrs			1.352 hrs
Produce		384 hrs	896 hrs					1.280 hrs
Test			22,4 hrs	9,6 hrs				32 hrs
Pack and ship to DESY				40 hrs				40 hrs
MEA eng 1		80 hrs	80 hrs	40 hrs	24 hrs	63 hrs		287 hrs
Remove ARGUS 1	80 hrs							80 hrs
Remove ARGUS 2		80 hrs						80 hrs
Install cavities			40 hrs					40 hrs
Build new shielding				16 hrs				16 hrs
Install 6 magnets				8 hrs				8 hrs
Roll in detector					7 hrs			7 hrs
Install target chamber and beamline					8 hrs			8 hrs
Build shielding					24 hrs			24 hrs
Install interlocks, etc.					24 hrs			24 hrs
MEA crane driver		200 hrs	160 hrs	52 hrs	108 hrs	72 hrs		592 hrs
Remove ARGUS 1	160 hrs							160 hrs
Remove ARGUS 2		160 hrs						160 hrs
Install transformer	8 hrs							8 hrs

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Schedule Resource Usage

	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	Total
Install power supply	32 hrs							32 hrs
Install cavities			16 hrs					16 hrs
Remove 4 magnets and girder			8 hrs					8 hrs
Dismantle old WWZ			28 hrs	12 hrs				40 hrs
Build new shielding				80 hrs				80 hrs
Install new girder				8 hrs				8 hrs
Install 6 magnets				8 hrs				8 hrs
Remove shielding					24 hrs			24 hrs
Remove beamline					16 hrs			16 hrs
Install target chamber and beamline					8 hrs			8 hrs
Build shielding					24 hrs			24 hrs
MEA tech 1		212 hrs	40 hrs	40 hrs	136 hrs	32 hrs		460 hrs
Remove Exhibitions	12 hrs							12 hrs
dust protection		40 hrs						40 hrs
Install transformer	40 hrs							40 hrs
Install power supply	160 hrs							160 hrs
Remove 4 magnets and girder			40 hrs					40 hrs
Build new shielding				80 hrs				80 hrs
Install new girder				40 hrs				40 hrs
Install 6 magnets				16 hrs				16 hrs
Remove shielding					24 hrs			24 hrs
Install target chamber and beamline					8 hrs			8 hrs
MEA tech 2		52 hrs	40 hrs	176 hrs	160 hrs	40 hrs		468 hrs
Remove Exhibitions	12 hrs							12 hrs
dust protection		40 hrs						40 hrs
Install transformer	40 hrs							40 hrs
Install cavities			80 hrs					80 hrs
Remove 4 magnets and girder			40 hrs					40 hrs
Dismantle old WWZ			56 hrs	24 hrs				80 hrs
Build new shielding				80 hrs				80 hrs
Install new girder				40 hrs				40 hrs
Install 6 magnets				16 hrs				16 hrs
Remove shielding					24 hrs			24 hrs
Remove beamline					16 hrs			16 hrs
MEA tech 3				56 hrs	24 hrs	40 hrs		120 hrs
Dismantle old WWZ			56 hrs	24 hrs				80 hrs
Remove beamline					16 hrs			16 hrs
Build shielding					24 hrs			24 hrs
MEA tech 4						24 hrs		24 hrs
Build shielding					24 hrs			24 hrs
Yerevan tech 1		160 hrs	160 hrs					320 hrs
Remove ARGUS 1	160 hrs							160 hrs

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Schedule Resource Usage

	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	Total
Remove ARGUS 2		160 hrs						160 hrs
Yerevan tech 2		160 hrs	160 hrs					320 hrs
Remove ARGUS 1	160 hrs							160 hrs
Remove ARGUS 2		160 hrs						160 hrs
Yerevan tech 3		160 hrs	160 hrs					320 hrs
Remove ARGUS 1	160 hrs							160 hrs
Remove ARGUS 2		160 hrs						160 hrs
MKK1 eng 1			48 hrs					48 hrs
Install		48 hrs						48 hrs
MKK1 tech 1		160 hrs	489,6 hrs	100,8 hrs	49,6 hrs	16 hrs		816 hrs
Install		480 hrs						480 hrs
Install power supply	160 hrs							160 hrs
Install		9,6 hrs	100,8 hrs	33,6 hrs				144 hrs
Install 6 magnets				16 hrs				16 hrs
Connect power supply					16 hrs			16 hrs
MKK1 tech 2			9,6 hrs	100,8 hrs	33,6 hrs	16 hrs		160 hrs
Install		9,6 hrs	100,8 hrs	33,6 hrs				144 hrs
Connect power supply					16 hrs			16 hrs
MKK2 eng 1								
MKK2 tech 1		24 hrs	56 hrs		16 hrs	16 hrs		112 hrs
Install cavity cooling	24 hrs	56 hrs						80 hrs
Install 6 magnets				16 hrs				16 hrs
Install cooling					16 hrs			16 hrs
MKK2 tech 2		24 hrs	56 hrs			16 hrs		96 hrs
Install cavity cooling	24 hrs	56 hrs						80 hrs
Install cooling					16 hrs			16 hrs
MIN tech 1		480 hrs	480 hrs					960 hrs
Build	480 hrs	480 hrs						960 hrs
MIN tech 2		480 hrs	480 hrs					960 hrs
Build	480 hrs	480 hrs						960 hrs
MVS tech 1				8 hrs	20 hrs	16 hrs		44 hrs
Disassemble vacuum chamber/cavities			8 hrs					8 hrs
Install vacuum chamber				12 hrs				12 hrs
Install collimator				8 hrs				8 hrs
Remove beamline					8 hrs			8 hrs
Install target chamber and beamline					8 hrs			8 hrs
MVS tech 2				8 hrs	20 hrs	8 hrs		36 hrs
Disassemble vacuum chamber/cavities			8 hrs					8 hrs
Install vacuum chamber				12 hrs				12 hrs
Install collimator				8 hrs				8 hrs
Remove beamline					8 hrs			8 hrs

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Schedule Resource Usage

	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	Total
MEA2 eng 1					24 hrs	16 hrs		40 hrs
Measure and align				24 hrs				24 hrs
Survey					16 hrs			16 hrs
MEA2 tech 1					24 hrs	16 hrs		40 hrs
Measure and align				24 hrs				24 hrs
Survey					16 hrs			16 hrs
MEA2 tech 2					24 hrs	16 hrs		40 hrs
Measure and align				24 hrs				24 hrs
Survey					16 hrs			16 hrs
MHF eng 1								
MHF tech 1				80 hrs				80 hrs
Install cavities			80 hrs					80 hrs
MHF tech 2								
MPS eng 1				16 hrs	40 hrs	64 hrs		120 hrs
Remove interlocks			16 hrs					16 hrs
Interlock, emergency off, test				40 hrs				40 hrs
Disassemble interlocks					24 hrs			24 hrs
Install interlocks, etc.					24 hrs			24 hrs
Test interlocks, etc.					16 hrs			16 hrs
MPS tech 1				16 hrs	40 hrs	64 hrs		120 hrs
Remove interlocks			16 hrs					16 hrs
Interlock, emergency off, test				40 hrs				40 hrs
Disassemble interlocks					24 hrs			24 hrs
Install interlocks, etc.					24 hrs			24 hrs
Test interlocks, etc.					16 hrs			16 hrs
Bonn eng 1								
Bonn tech 1								
Mainz eng 1		42,4 hrs	53,6 hrs					96 hrs
Design (Mainz/DESY)	42,4 hrs	5,6 hrs						48 hrs
Purchase		48 hrs						48 hrs
Ferrara eng 1								
Ferrara tech 1		320 hrs						320 hrs
Construct target cell (Ferrera)	320 hrs							320 hrs
Ferrara tech 2		320 hrs						320 hrs
Construct target cell (Ferrera)	320 hrs							320 hrs
ext tech 1		280 hrs	520 hrs	336 hrs	24 hrs			1.160 hrs
Install		480 hrs						480 hrs
Prepare transformer pit	160 hrs							160 hrs
Cabling	120 hrs	40 hrs						160 hrs
Construction			280 hrs					280 hrs
Dismantle old WWZ			56 hrs	24 hrs				80 hrs

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Schedule Resource Usage

	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	Total
ext tech 2		280 hrs	40 hrs	336 hrs	24 hrs			680 hrs
Prepare transformer pit	160 hrs							160 hrs
Cabling	120 hrs	40 hrs						160 hrs
Construction			280 hrs					280 hrs
Dismantle old WWZ			56 hrs	24 hrs				80 hrs
MEA tech 1 10								
ma								
Total	12 hrs	3.842,4 hrs	6.938,4 hrs	3.616,8 hrs	1.074,4 hrs	672 hrs		16.156 hrs

Schedule Task Usage

	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	Total
OLYMPUS_5_v2003								
Prepare DORIS Hall								
Remove Exhibitions	24 hrs							24 hrs
MEA tech 1	12 hrs							12 hrs
MEA tech 2	12 hrs							12 hrs
Remove ARGUS 1	720 hrs							720 hrs
MEA eng 1	80 hrs							80 hrs
MEA crane driver	160 hrs							160 hrs
Yerevan tech 1	160 hrs							160 hrs
Yerevan tech 2	160 hrs							160 hrs
Yerevan tech 3	160 hrs							160 hrs
Remove ARGUS break								
Remove ARGUS 2		720 hrs						720 hrs
MEA eng 1		80 hrs						80 hrs
MEA crane driver		160 hrs						160 hrs
Yerevan tech 1		160 hrs						160 hrs
Yerevan tech 2		160 hrs						160 hrs
Yerevan tech 3		160 hrs						160 hrs
Winter shutdown 09/10								
Install cavity cooling	48 hrs	112 hrs						160 hrs
MKK2 tech 1	24 hrs	56 hrs						80 hrs
MKK2 tech 2	24 hrs	56 hrs						80 hrs
dust protection		80 hrs						80 hrs
MEA tech 1		40 hrs						40 hrs
MEA tech 2		40 hrs						40 hrs
Water cooling								
Design (Mainz/DESY)	42,4 hrs	5,6 hrs						48 hrs
Mainz eng 1	42,4 hrs	5,6 hrs						48 hrs
Purchase		48 hrs						48 hrs
Mainz eng 1		48 hrs						48 hrs
Install		1.008 hrs						1.008 hrs
MKK1 eng 1		48 hrs						48 hrs
MKK1 tech 1		480 hrs						480 hrs
ext tech 1		480 hrs						480 hrs
Detector power supply								
Prepare transformer pit	320 hrs							320 hrs
ext tech 1	160 hrs							160 hrs
ext tech 2	160 hrs							160 hrs
Install transformer	88 hrs							88 hrs
MEA crane driver	8 hrs							8 hrs
MEA tech 1	40 hrs							40 hrs

Schedule Task Usage

	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	Total
MEA tech 2	40 hrs							40 hrs
Install power supply	352 hrs							352 hrs
MEA crane driver	32 hrs							32 hrs
MEA tech 1	160 hrs							160 hrs
MKK1 tech 1	160 hrs							160 hrs
Cabling	240 hrs	80 hrs						320 hrs
est tech 1	120 hrs	40 hrs						160 hrs
est tech 2	120 hrs	40 hrs						160 hrs
Polarity switches								
Construction (Bonn)?								
Install		19,2 hrs	201,6 hrs	67,2 hrs				288 hrs
MKK1 tech 1		9,6 hrs	100,8 hrs	33,6 hrs				144 hrs
MKK1 tech 2		9,6 hrs	100,8 hrs	33,6 hrs				144 hrs
Kicker								
Build	960 hrs	960 hrs						1.920 hrs
MIN tech 1	480 hrs	480 hrs						960 hrs
MIN tech 2	480 hrs	480 hrs						960 hrs
MHFsi workshop								
Construction			560 hrs					560 hrs
est tech 1			280 hrs					280 hrs
est tech 2			280 hrs					280 hrs
Target system and Beamline								
Design	408 hrs							408 hrs
MIT Engineer 1	272 hrs							272 hrs
MIT Engineer 2	136 hrs							136 hrs
Construct target cell (Ferrera)	640 hrs							640 hrs
Ferrara tech 1	320 hrs							320 hrs
Ferrara tech 2	320 hrs							320 hrs
Procure components		160 hrs						160 hrs
MIT Engineer 1		80 hrs						80 hrs
MIT Engineer 2		80 hrs						80 hrs
Assemble/test MIT-Bates								
Chamber and beamline		64 hrs						64 hrs
MIT Engineer 1		32 hrs						32 hrs
MIT Engineer 2		32 hrs						32 hrs
Test with pumps		64 hrs						64 hrs
MIT Engineer 1		32 hrs						32 hrs
MIT Engineer 2		32 hrs						32 hrs
Test with target cells		64 hrs						64 hrs
MIT Engineer 1		32 hrs						32 hrs
MIT Engineer 2		32 hrs						32 hrs

Schedule Task Usage

	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	Total
Test with cold head		64 hrs						64 hrs
MIT Engineer 1		32 hrs						32 hrs
MIT Engineer 2		32 hrs						32 hrs
Pack and ship to DESY		28,8 hrs	99,2 hrs					128 hrs
MIT Engineer 1		14,4 hrs	49,6 hrs					64 hrs
MIT Engineer 2		14,4 hrs	49,6 hrs					64 hrs
Assemble/test DESY			320 hrs					320 hrs
MIT Engineer 1			160 hrs					160 hrs
MIT Engineer 2			160 hrs					160 hrs
Modify IP region								
Remove interlocks			32 hrs					32 hrs
MPS eng 1			16 hrs					16 hrs
MPS tech 1			16 hrs					16 hrs
Disassemble vacuum chamber/cavities			16 hrs					16 hrs
MVS tech 1			8 hrs					8 hrs
MVS tech 2			8 hrs					8 hrs
Install cavities			216 hrs					216 hrs
MEA eng 1			40 hrs					40 hrs
MEA crane driver			16 hrs					16 hrs
MEA tech 2			80 hrs					80 hrs
MHF tech 1			80 hrs					80 hrs
Remove 4 magnets and girder			88 hrs					88 hrs
MEA crane driver			8 hrs					8 hrs
MEA tech 1			40 hrs					40 hrs
MEA tech 2			40 hrs					40 hrs
Dismantle old WWZ			252 hrs	108 hrs				360 hrs
MEA crane driver			28 hrs	12 hrs				40 hrs
MEA tech 2			56 hrs	24 hrs				80 hrs
MEA tech 3			56 hrs	24 hrs				80 hrs
ext tech 1			56 hrs	24 hrs				80 hrs
ext tech 2			56 hrs	24 hrs				80 hrs
Build new shielding				256 hrs				256 hrs
MEA eng 1				16 hrs				16 hrs
MEA crane driver				80 hrs				80 hrs
MEA tech 1				80 hrs				80 hrs
MEA tech 2				80 hrs				80 hrs
Install new girder				88 hrs				88 hrs
MEA crane driver				8 hrs				8 hrs
MEA tech 1				40 hrs				40 hrs
MEA tech 2				40 hrs				40 hrs
Install 8 magnets				80 hrs				80 hrs
MEA eng 1				8 hrs				8 hrs

Schedule Task Usage

	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	Total
MEA crane driver				8 hrs				8 hrs
MEA tech 1				16 hrs				16 hrs
MEA tech 2				16 hrs				16 hrs
MKK1 tech 1				16 hrs				16 hrs
MKK2 tech 1				16 hrs				16 hrs
Install vacuum chamber				48 hrs				48 hrs
MIT Engineer 1				12 hrs				12 hrs
MIT Engineer 2				12 hrs				12 hrs
MVS tech 1				12 hrs				12 hrs
MVS tech 2				12 hrs				12 hrs
Install collimator				16 hrs				16 hrs
MVS tech 1				8 hrs				8 hrs
MVS tech 2				8 hrs				8 hrs
Measure and align				72 hrs				72 hrs
MEA2 eng 1				24 hrs				24 hrs
MEA2 tech 1				24 hrs				24 hrs
MEA2 tech 2				24 hrs				24 hrs
Interlock, emergency off, test				80 hrs				80 hrs
MPS eng 1				40 hrs				40 hrs
MPS tech 1				40 hrs				40 hrs
Doris Startup								
machine shifts								
bakeout								
GEM Tracker								
Design		256 hrs						256 hrs
MIT Engineer 2		128 hrs						128 hrs
MIT Engineer 3		128 hrs						128 hrs
Produce		460,8 hrs	1.075,2 hrs					1.536 hrs
MIT Engineer 2		76,8 hrs	179,2 hrs					256 hrs
MIT Technician 6		384 hrs	896 hrs					1.280 hrs
Test			44,8 hrs	19,2 hrs				64 hrs
MIT Engineer 2			22,4 hrs	9,6 hrs				32 hrs
MIT Technician 6			22,4 hrs	9,6 hrs				32 hrs
Pack and ship to DESY				56 hrs				56 hrs
MIT Engineer 2				16 hrs				16 hrs
MIT Technician 6				40 hrs				40 hrs
WC Transport Frame								
Design		112 hrs						112 hrs
MIT Engineer 1		32 hrs						32 hrs
MIT Engineer 2		80 hrs						80 hrs
Produce		384 hrs						384 hrs

Schedule Task Usage

	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	Total
MIT Engineer 2		64 hrs						64 hrs
MIT Technician 1		160 hrs						160 hrs
MIT Technician 2		160 hrs						160 hrs
Install WC		48 hrs						48 hrs
MIT Engineer 2		8 hrs						8 hrs
MIT Technician 1		20 hrs						20 hrs
MIT Technician 2		20 hrs						20 hrs
Pack and Ship to DESY		58 hrs						58 hrs
MIT Engineer 2		18 hrs						18 hrs
MIT Technician 1		20 hrs						20 hrs
MIT Technician 2		20 hrs						20 hrs
Move OLYMPUS detector								
Disassemble at MIT-Bates		1,728 hrs						1,728 hrs
MIT Engineer 1		128 hrs						128 hrs
MIT Technician 1		320 hrs						320 hrs
MIT Technician 2		320 hrs						320 hrs
MIT Technician 3		320 hrs						320 hrs
MIT Technician 4		320 hrs						320 hrs
MIT Technician 5		320 hrs						320 hrs
Ship to DESY		192 hrs						192 hrs
MIT Engineer 1		32 hrs						32 hrs
MIT Technician 1		40 hrs						40 hrs
MIT Technician 2		40 hrs						40 hrs
MIT Technician 3		40 hrs						40 hrs
MIT Technician 4		40 hrs						40 hrs
Assemble in park position		224 hrs	416 hrs					640 hrs
MIT Post-doc		112 hrs	208 hrs					320 hrs
MIT Engineer 1		56 hrs	104 hrs					160 hrs
MIT Engineer 2		56 hrs	104 hrs					160 hrs
Test detector components			240 hrs					240 hrs
MIT Post-doc			240 hrs					240 hrs
Test with toroid			56 hrs	184 hrs				240 hrs
MIT Post-doc			56 hrs	184 hrs				240 hrs
Install OLYMPUS								
Disassemble interlocks					48 hrs			48 hrs
MPS eng 1					24 hrs			24 hrs
MPS tech 1					24 hrs			24 hrs
Remove shielding					72 hrs			72 hrs
MEA crane driver					24 hrs			24 hrs
MEA tech 1					24 hrs			24 hrs
MEA tech 2					24 hrs			24 hrs
Remove beamline					64 hrs			64 hrs

Schedule Task Usage

	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	Total
MEA crane driver					16 hrs			16 hrs
MEA tech 2					16 hrs			16 hrs
MEA tech 3					16 hrs			16 hrs
MVS tech 1					8 hrs			8 hrs
MVS tech 2					8 hrs			8 hrs
Roll in detector					56 hrs			56 hrs
MIT Post-doc					21 hrs			21 hrs
MIT Engineer 1					14 hrs			14 hrs
MIT Engineer 2					14 hrs			14 hrs
MEA eng 1					7 hrs			7 hrs
Install cooling					32 hrs			32 hrs
MKK2 tech 1					16 hrs			16 hrs
MKK2 tech 2					16 hrs			16 hrs
Connect power supply					32 hrs			32 hrs
MKK1 tech 1					16 hrs			16 hrs
MKK1 tech 2					16 hrs			16 hrs
Install target chamber and beamline					72 hrs			72 hrs
MIT Post-doc					8 hrs			8 hrs
MIT Engineer 1					16 hrs			16 hrs
MIT Engineer 2					16 hrs			16 hrs
MEA eng 1					8 hrs			8 hrs
MEA crane driver					8 hrs			8 hrs
MEA tech 1					8 hrs			8 hrs
MVS tech 1					8 hrs			8 hrs
Survey					96 hrs			96 hrs
MIT Post-doc					48 hrs			48 hrs
MEA2 eng 1					16 hrs			16 hrs
MEA2 tech 1					16 hrs			16 hrs
MEA2 tech 2					16 hrs			16 hrs
Build shielding					96 hrs			96 hrs
MEA eng 1					24 hrs			24 hrs
MEA crane driver					24 hrs			24 hrs
MEA tech 3					24 hrs			24 hrs
MEA tech 4					24 hrs			24 hrs
Install interlocks, etc.					72 hrs			72 hrs
MEA eng 1					24 hrs			24 hrs
MPS eng 1					24 hrs			24 hrs
MPS tech 1					24 hrs			24 hrs
Test interlocks, etc.					32 hrs			32 hrs
MPS eng 1					16 hrs			16 hrs
MPS tech 1					16 hrs			16 hrs
Setup with DORIS								

Schedule Task Usage

	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	Total
Detector commissioning								
Parasitic and during service periods								
First data period								
Repair, upgrade, test								
Second data period								
Maintenance								
Synchrotron radiation runs								
2009								
2010								
2011/1								
2011/2								
2012								
Total	3.842,4 hrs	6.938,4 hrs	3.616,8 hrs	1.074,4 hrs	672 hrs			16.144 hrs

Conclusions

Only minor schedule chances

Man power resources now included