

## MEMORANDUM

Date 24 March 2011

To: Members of the LHCb RRB  
 From: C. D'Ambrosio  
 Subject: Status of M&O Category A.

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**Budget Closing Report for 2010**

As indicated by LHCb at the last RRB (CERN-RRB-2010-116), we note that 2010 is a first-time full data-taking year for LHCb. However, the budget forecast for this year is generally correct for all the items. The closing result for 2010 is given in Table 1.

The main deviations are on three lines: detector related, core computing and online computing. The detector related line shows an underspending, thanks to a smooth year of data-taking. This was already anticipated, as discussed with the Scrutiny Group, although most of the spending did come at the end-of-year (which is charged in year 2011), due to the important shut-down activities that took place between Dec. 15, 2010 and Feb. 2011. Thus the impression is that a longer time span is needed to really come to definite conclusions. Core Computing overspent, as foreseen. It was a tremendous but successful effort on data distribution, processing and analysis.

Due to the foreseen LHC activity and the demanding LHCb running conditions for 2011-12 and beyond, we anticipated the completion of the Farm for 2010. However, more consolidation has been deemed necessary for the general network infrastructure and the farm itself. To this end, two generous extra-contributions have been given from Switzerland and CERN: the first to reinforce our farm computing power and the second to strengthen our DAQ network Infrastructure. Both belong to DAQ-NONCORE contributions and are of the order of 300 kCHF each.

2010	Budget	Used	Difference
detector related	920	816	104
secretariat	192	169	23
communication	50	41	9
core comp	150	195	-45
on line (see text)	750	910	-160
test beams	30	12	18
laboratory	60	41	19
general services	360	309	51
Totals	2512	2493	19

Table 1: M&O Category A in kCHF at book closing for 2010

The need to provide LHCb with extra network power asked for action already end of 2010, as it would allow to effectively use the Christmas stop. Therefore, M&O Cat.A has loaned 256 kCHF towards this acquisition, and it has been refunded by the CERN extra-contribution in 2011. This means that Online Computing effectively underspent for 96 kCHF.

In Table 2, details on the 2010 main expenditure lines are given. We propose that the overall under spending of 19 kCHF plus the 256 kCHF from the returned loan is kept as buffer in the M&O Cat.A budget. We will report back to RRB in October.

Detector related costs	Magnet	44
	Gas	339
	Cooling	95
	Safety	75
	Tech. support	143
	Beam pipe	43
Secretariat	Secretarial aid	153
Communication	EVO	39
On-line computing	System Manag.	405
	Hardware	249
Test beams, calibration	Operation	12
Laboratory operations	Operation	41
General services	Cool., vent. etc	122
	Transport	151
	Survey	0

Table 2: Partial list of the main items paid from 2010 M&O Category A

### **Current status of the 2011 M&O Category A budget**

In October 2010 the RRB approved the M&O Category A budget for 2011 for a total of 2,773 kCHF, including a power cost of 970 kCHF and a VELO Spare contribution of 100 kCHF. As in previous years, there are only minor expenditures on the M&O Category A budget by the end of March. However, we are confident that the expenditure will follow closely the budget forecast.

### Forecast for the 2012 M&O Category A budget

The estimated budget for 2012 will be examined with the Scrutiny Group in the coming months and presented for ratification to the RRB in fall 2011. There are minor changes from 2011 to 2012, which reflect the discussions from last year, agreed upon with the SG, and which are described in CERN-RRB-2010-116. However, due to the delayed LHC shutdown schedule, we change accordingly the Power line. In line with the principle of keeping the budget as constant as possible over the years, any revisions are unlikely to make significant changes to the overall budget. The total budget currently stands at 2,845 kCHF including the power cost at 970 kCHF and the VELO Spare contribution of 100 kCHF (see Table 3).

The sharing between the different Funding Authorities is based on the number of PhD equivalent members at each institute. This number is normally agreed for the next year in September of the previous year. As usual, the power is shared by all Funding Authorities, but only charged to Non Member States. Provisionally, with the same numbers for PHD equivalents as for 2011, the sharing is given in Table 4.

<b>Budget 2012</b>	
Detector related costs	940
Secretariat	185
Communications	12
CORE Computing	150
On-line computing	880
Test beams, calibration facilities	30
Laboratory operations	60
General services	360
TOTAL without power	2617
Power	970
VELO Spare	100

Table 3: Projected 2012 budget in kCHF for M&O Category A.

2012	PhD eq. total/ funding auth.			M&O A	VELO	Power	Total
				kCHF	kCHF	kCHF	
				2617	100	970	
		%	CHF	CHF	CHF	CHF	
BRAZIL	12	3.4	87,966	3,361	32,605	123,933	
FRANCE	44	12.3	322,543	12,325	0	334,868	
BMBF GERMANY	16	4.5	117,289	4,482	0	121,770	
MPI, MPG, GERMANY	6	1.7	43,983	1,681	0	45,664	
IRELAND	2	0.6	14,661	560	5,434	20,655	
INFN ITALY	53	14.8	388,518	14,846	0	403,364	
NETHERLANDS	14	3.9	102,627	3,922	0	106,549	
P. R. CHINA	3	0.8	21,992	840	8,151	30,983	
POLAND	7	2.0	51,314	1,961	0	53,275	
HHNIPNE ROMANIA	5	1.4	36,653	1,401	13,585	51,639	
RUSSIA	32	9.0	234,577	8,964	36,839	280,380	
SPAIN	18	5.0	131,950	5,042	0	136,992	
SWITZERLAND	24	6.7	175,933	6,723	0	182,655	
UKRAINE	3	0.8	21,992	840	8,151	30,983	
UK	64	17.9	469,154	17,927	0	487,081	
USA	9	2.5	65,975	2,521	23,158	91,654	
CERN	45	12.6	329,874	12,605	0	342,479	
TOTAL	357	100.0	2,617,000	100,000	127,924	2,844,924	

Table 4: Sharing of the estimated 2012 budget in CHF for M&O Category A.

### M&O Category B

There are no major changes since the October 2010 RRB.