



## **Report on Maintenance & Operation Budgets**

### **1 –M&O A Expenses in 2009**

Table 1 presents a summary of 2002 - 2009 category A M&O invoices, income and amounts outstanding by Funding Agency as December 31<sup>st</sup>, 2009.

A breakdown of the 2009 Maintenance & Operations budget and expenditure is given in table 2. Note that in 2009, an amount of 261 kCHF has been paid on commitments from the previous year. In addition, 78.8 kCHF have been returned in 2009 to the 2008 energy budget.

Table 3 gives a summary of income, payments and balance of the M&O A accounts for the period 2002 – 2009.

### **2 – M&O A Estimates 2011 - 2014**

The ALICE Maintenance and Operations category A budget 2011 and cost estimates for the period 2012 – 2014 are summarized in table 4. These numbers have been presented at the RRB meeting in October 2009, and they have not been modified. Our current operating model is based on a schedule consisting of 9-months continuous operation and a 3-month shutdown. The most recent LHC schedule, featuring 11-months run in 2011 and a full year shutdown in 2012 will have an effect on our current estimates; our data will be updated on the basis of the new schedule of the LHC, discussed with the Scrutiny Group, and presented to the Resources Review Board in October 2010 for approval.

### **3 - Preliminary Estimate for M&O A Expenses in 2011**

Based on presently available estimates and on the sharing as determined in September 2009, a preliminary estimate of the 2011 budget and sharing is presented in Table 5.

The budget and sharing will be updated during 2010 and presented to the Resources Review Board in October 2010 for approval. The unused budget for energy in 2009, which has been invoiced to Non Member States Funding Agencies, will be deducted from the 2011 invoices.

### **4 - Category B Estimates**

Table 6 shows estimates of Category B M&O budget requirements for the period 2011 – 2014. The data will be reviewed during 2010 before being presented to the meeting of the Resources Review Board in October 2010 for information. Table 7 shows the 2011 preliminary M&O B budget by funding agencies and system.

Country	2002 - 2008				2009				TOTAL 2002 - 2009 (up to 31/12/2009)			
	Invoiced	Received	In-kind	Due	Invoiced	Received	In-kind	Due	Invoiced	received	in-kind	DUE
MS CERN	1,887	1,887			488	488			2,375	2,375		
Czech Republic	301	301			101	101			402	402		
Denmark	134	134		0	51			51	185	134		50
Finland	162	162			42	42			204	204		
France CEA	198	198			51	51			248	248		
France IN2P3	1,433	1,433			396	396			1,829	1,829		
Germany BMBF	884	884			295	295		-1	1,179	1,180		-1
Germany GSI	546	546			177	177			722	722		
Greece	137	137		0	42	42			179	179		0
Hungary	84	84			25	25			109	109		
Italy INFN	3,294	3,296		-2	900	898		2	4,194	4,194		0
Netherlands	270	270			84	84		0	354	354		0
Norway	376	376			126	126			502	502		
Poland	459	384		76	118			118	577	384		193
Slovak Republic	381	381			109	109			491	491		
Spain/Cuba	98	98			59	59			157	157		
Sweden	149	149			34	34			183	183		
United Kingdom	218	218			84	84			302	302		
<b>MST</b>	<b>11,011</b>	<b>10,938</b>		<b>73</b>	<b>3,181</b>	<b>3,011</b>		<b>169</b>	<b>14,192</b>	<b>13,949</b>		<b>242</b>
NMS Armenia	87	87			13	10		3	100	97		3
Brazil	51	51			92				142	51		92
China Wuhan CCNU	122	63	60	-1	65			65	187	63	60	64
China Others	97		63	34	26			26	123		63	61
Croatia	116	116			52	10		42	168	126		42
India	921	921			411	411			1,333	1,333		
Japan	133	133			116	116			249	249		
JINR	371	68	336	-33	78		64	15	449	68	399	-18
Mexico	298	298			170	170			468	468		
Republic of Korea NRF	156	156			105	105			261	261		
Romania ISS	100	100			52	52			152	152		
Romania NIPNE	206	206			78	78			284	284		
Russia	1,507	1,507			460	307	10	143	1,968	1,815	10	143
South Africa	108	108			78	78			187	187		
Ukraine	134	106	28		65	5		60	199	111	28	60
USA DOE	386	386		0	362	362			748	748		0
USA NSF	143	143		0	52	52			195	195		0
<b>NMS</b>	<b>4,937</b>	<b>4,450</b>	<b>487</b>	<b>0</b>	<b>2,277</b>	<b>1,757</b>	<b>74</b>	<b>446</b>	<b>7,214</b>	<b>6,207</b>	<b>560</b>	<b>446</b>
<b>Grand Total</b>	<b>15,947</b>	<b>15,388</b>	<b>487</b>	<b>73</b>	<b>5,458</b>	<b>4,768</b>	<b>74</b>	<b>616</b>	<b>21,405</b>	<b>20,157</b>	<b>560</b>	<b>689</b>
Percentage cash collected		96 %				87 %				94 %		
Percentage collected including in-kind		99.5 %				88.7 %				96.8 %		

Table 1 – 2002 - 2009 Cat. A M&O Invoices and Income as 31/12/2009 (in kCHF)

	Budget 2009	Payments	Commitments	Total Expenditure	Balance	%
Detector related costs	1,829	1,826	238	2,064	-235	112.9%
Secretariat	278	163	4	167	111	60.0%
Communications	0	55		55	-55	
Offline Computing	446	477	43	520	-74	116.6%
On-line Computing	1,202	802	117	919	283	76.5%
Test Beam and Calibration facilities	102	96		96	6	93.8%
Laboratory Operations	310	443	29	472	-162	152.3%
General services	430	429	127	557	-127	129.5%
Consultancy	40	2		2	38	5.0%
Outreach	50	27	8	35	15	69.2%
<b>TOTAL without power</b>	<b>4,687</b>	<b>4,321</b>	<b>566</b>	<b>4,887</b>	<b>-200</b>	<b>104.3%</b>
Power	2,592	74		74	2,518	
<b>TOTAL</b>	<b>7,279</b>	<b>4,395</b>	<b>566</b>	<b>4,961</b>	<b>2,318</b>	

Table 2 – 2009 Cat. A M&O Budget and Expenditure  
(Payments and Commitments) (kCHF)

Category	Income									
Contributions	Budget year									
Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	Grand Total
2002	330	12								342
2003	68	565								632
2004	5	73	936	13						1,027
2005	9	24	68	1,213	64					1,377
2006	9	15	112	123	2,242	274				2,776
2007	4	6	13	153	323	3,562	692			4,755
2008					25	503	4,023	111		4,661
2009						8	714	4,419	124	5,265
<b>Grand Total</b>	<b>424</b>	<b>696</b>	<b>1,129</b>	<b>1,503</b>	<b>2,653</b>	<b>4,348</b>	<b>5,429</b>	<b>4,530</b>	<b>124</b>	<b>20,835</b>

  

Expenditure	Budget year									
Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	Grand Total
2002	202									202
2003	46	502								548
2004		75	855							931
2005		20	240	1,134						1,394
2006				274	2,347					2,621
2007					291	3,422				3,714
2008						453	4,036	4		4,493
2009							261	4,134		4,395
<b>Grand Total</b>	<b>248</b>	<b>598</b>	<b>1,095</b>	<b>1,408</b>	<b>2,639</b>	<b>3,875</b>	<b>4,297</b>	<b>4,138</b>		<b>18,297</b>

  

Balance/year	177	98	34	95	14	472	1,132	392	124	2,538
End year balance	177	275	309	404	418	890	2,022	2,414	2,538	

Table 3 – Summary of M&O-A incomes and expenditure (only payments) including in-kind contributions for the period 2002 - 2009 (in kCHF)

Category	2010	2011	2012	2013	2014
Detector related costs	1,886	1,671	1,671	1,671	1,671
Secretariat	238	238	238	238	238
Communications	55	55	55	55	55
Off-line computing	527	537	537	537	537
On-line computing	1,406	1,802	1,902	1,902	1,902
Test beams & calibration facilities	95	95	95	95	95
Laboratory operations	230	230	230	230	230
General services	541	541	541	541	541
<i>Total without Power</i>	<b>4,978</b>	<b>5,169</b>	<b>5,269</b>	<b>5,269</b>	<b>5,269</b>
<i>Power</i>	<b>2,231</b>	<b>2,231</b>	<b>2,231</b>	<b>2,231</b>	<b>2,231</b>
<b>Grand Total</b>	<b>7,209</b>	<b>7,400</b>	<b>7,500</b>	<b>7,500</b>	<b>7,500</b>
<i>Operational sub-items total</i>	2,534	2,534	2,534	2,534	2,534
<i>Consumable sub-items total</i>	2,445	2,636	2,736	2,736	2,736
<i>Power</i>	2,231	2,231	2,231	2,231	2,231
<b>Grand Total</b>	<b>7,210</b>	<b>7,400</b>	<b>7,500</b>	<b>7,500</b>	<b>7,500</b>

Table 4 – M&O-A approved budget for 2010 and Estimates 2011 – 2014 (kCHF)

2011 M&O A Budget no power	5,169.0 kCHF	(preliminary!)	
Power	2,231.0 kCHF	total	7,400.0 kCHF
ALICE scientists	569		
M&O per scientist	9.1 kCHF		
Power per scientist	3.9 kCHF		

**VERY PRELIMINARY Sharing 2011 M&O A Budget**

	Scientists (data from 2009)	M&O Cat A without energy	Energy	Energy billed to FA	Bill in kCHF	Energy invoiced in 2009	Energy consumed in 2009	Rebate for 2011	2011 Bill after rebate in kCHF
CERN	53	481.5	207.8		481.5				481.5
Czech Republic	12	109.0	47.1		109.0				109.0
Denmark	6	54.5	23.5		54.5				54.5
Finland	6	54.5	23.5		54.5				54.5
France CEA	6	54.5	23.5		54.5				54.5
France IN2P3	48	436.0	188.2		436.0				436.0
Germany BMBF	40	363.4	156.8		363.4				363.4
Germany GSI	21	190.8	82.3		190.8				190.8
Greece	5	45.4	19.6		45.4				45.4
Hungary	3	27.3	11.8		27.3				27.3
Italy Centro Fermi	3	27.3	11.8		27.3				27.3
Italy INFN	109	990.2	427.4		990.2				990.2
Netherlands	10	90.8	39.2		90.8				90.8
Norway	18	163.5	70.6		163.5				163.5
Poland	18	163.5	70.6		163.5				163.5
Slovak Republic	12	109.0	47.1		109.0				109.0
Spain/Cuba	9	81.8	35.3		81.8				81.8
Sweden	4	36.3	15.7		36.3				36.3
United Kingdom	8	72.7	31.4		72.7				72.7
Armenia	1	9.1	3.9	3.9	13.0	4.7	0.9	3.7	9.3
Brazil	6	54.5	23.5	23.5	78.0	32.6	6.4	26.1	51.9
China CCNU	2	18.2	7.8	7.8	26.0	27.9	5.5	22.4	3.6
China Other	1	9.1	3.9	3.9	13.0	4.7	0.9	3.8	9.3
Croatia	4	36.3	15.7	15.7	52.0	18.6	3.7	14.9	37.1
India	33	299.8	129.4	123.4	423.2	142.0	28.1	113.9	309.3
Japan	11	99.9	43.1	41.4	141.3	40.2	8.0	32.2	109.1
JINR	6	54.5	23.5	23.5	78.0	27.9	5.5	22.4	55.6
Mexico	12	109.0	47.1	47.1	156.1	60.5	12.0	48.5	107.5
Republic of Korea	9	81.8	35.3	35.3	117.0	37.2	7.4	29.9	87.2
Peru	1	9.1	3.9	3.9	13.0				13.0
Romania ISS	4	36.3	15.7	15.7	52.0	18.6	3.7	14.9	37.1
Romania NIPNE	7	63.6	27.4	27.4	91.0	27.9	5.5	22.4	68.6
Russia	40	363.4	156.8	114.3	477.7	132.3	26.2	106.1	371.6
South Africa	7	63.6	27.4	27.4	91.0	27.9	5.5	22.4	68.6
Ukraine	3	27.3	11.8	11.8	39.0	23.3	4.6	18.7	20.4
USA DOE	28	254.4	109.8	106.6	360.9	126.5	25.0	101.5	259.5
USA NSF	3	27.3	11.8	11.4	38.7	18.1	3.6	14.5	24.2
<b>Total</b>	<b>569</b>	<b>5,169.0</b>	<b>2,231.0</b>	<b>644.1</b>	<b>5,813.1</b>	<b>770.9</b>	<b>152.6</b>	<b>618.3</b>	<b>5,194.8</b>

Table 5 – Preliminary M&amp;O-A Budget and Sharing for 2011 (kCHF).

A rebate will be applicable in 2011 to Non Member States for the unused 2009 energy budget.

System	Data			
	2011	2012	2013	2014
Pixel	128.0	128.0	128.0	128
Drift	200.0	200.0	200.0	200
Strip	193.8	193.8	193.8	193.806
ITS-CMA	62.5	62.5	62.5	62.5
TPC	150.0	150.0	150.0	150
TRD	163.4	163.4	163.4	163.4
TOF	148.0	148.0	148.0	148
EMCAL	10.0	10.0	10.0	10
HMPID	150.0	150.0	150.0	150
PHOS	130.0	130.0	130.0	130
Muons	280.0	280.0	280.0	280
Trigger	20.0	20.0	20.0	20
ACORDE	10.0	10.0	10.0	10
FMD	30.0	30.0	30.0	30
PMD	70.0	70.0	70.0	70
T0	48.1	48.1	48.1	48.1
V0	25.0	25.0	25.0	25
ZDC	37.0	50.0	37.0	37
<i>Grand Total</i>	1,855.8	1,868.8	1,855.8	1855.81

Table 6 –M&amp;O-B Preliminary Budget Estimates 2011 – 2014 (kCHF)

2011	System																Grand Total		
F/A	Pixel	Drift	Strip	ITS-CMA	TPC	TRD	TOF	EMCAL	HMPID	PHOS	Muons	Trigger	ACORDE	FMD	PMD	T0	V0	ZDC	Grand Total
CERN	57.6		25.0		24.0				45.0										151.6
Czech Republic		11.4								11.8									23.2
Denmark					4.8									30.0					34.8
Finland																48.1			48.1
France CEA											30.0								30.0
France IN2P3			41.9					10.0			130.0						15.0		196.9
Germany BMBF						153.0													153.0
Germany GSI					86.3														86.3
Italy INFN	57.6	174.4	66.9	56.3			100.0		105.0		60.0							37.0	657.3
Netherlands			45.0																45.0
Norway										23.6									23.6
Poland					4.3					11.8									16.1
Slovakia	12.8				2.9														15.7
Sweden					26.9														26.9
United Kingdom												20.0							20.0
China Wuhan CCNU										23.6									23.6
Croatia					0.8														0.8
India											30.0				70.0				100.0
Japan										11.8									11.8
JINR						7.1				11.8									18.9
Mexico													10.0				10.0		20.0
Republic of Korea NRF							48.0												48.0
Romania NIPNE						3.3													3.3
Russia		2.2	1.9	3.4						35.5	30.0								73.0
Ukraine		11.4	13.0																24.4
United States NSF		0.6		2.8															3.4
Grand Total	128.0	200.0	193.8	62.5	150.0	163.4	148.0	10.0	150.0	130.0	280.0	20.0	10.0	30.0	70.0	48.1	25.0	37.0	1,855.8

Table 7 –Sharing of M&amp;O B 2011 preliminary budget between Funding Agencies (kCHF)