

**ALICE**

Report on Maintenance & Operation Budgets

1 -M&O A Expenses in 2011

Table 1 presents a summary of 2002 - 2011 category A M&O invoices, income and amounts outstanding by Funding Agency as December 31st, 2011.

A breakdown of the 2011 Maintenance & Operations budget and expenditure is given in table 2. Note that in 2011, an amount of 436 kCHF has been paid on commitments from the previous year. As agreed last October, 1 MCHF have been transferred to a special Collaboration account for the purchasing of online systems hardware and this is visible on Table 3 which gives a summary of income, payments and balance of the M&O A accounts for the period 2002 - 2011.

2 - M&O A Estimates 2013 - 2016

The ALICE Maintenance and Operations category A budget 2013 and cost estimates for the period 2014 - 2016 are summarized in table 4. Our current operating model is based on the most recent LHC schedule, featuring a shutdown of 21-months (from Dec 2012 until Aug 2014), followed by long period of runs with short technical stops during winter periods. This preliminary version of our M&O-A budget will soon be discussed with the Scrutiny Group, and presented to the Resources Review Board in October 2012 for approval.

3 - Preliminary Estimate for M&O A Sharing in 2013

Based on presently available estimates and on the sharing as determined in September 2011 for the 2012 budget, a preliminary estimate of the 2013 budget and sharing is presented in Table 5. The budget and sharing will be updated during 2012 and presented to the Resources Review Board in October 2012 for approval.

4 -M&O B Expenses in 2011

Table 6 shows the M&O-B expenditures in 2011. Expenditures are a mix of in-kind and cash contributions, done at CERN as well as in the various laboratories and institutions.

5 - M&O B Estimates 2013 - 2016

The ALICE Maintenance and Operations category B budget 2013 and cost estimates for the period 2014 - 2016 are summarized in table 7. This

preliminary version will soon be discussed with the Scrutiny Group, and presented to the Resources Review Board in October 2012 for approval. Tables 8 and 9 shows the 2013 preliminary M&O B budget by systems and the sharing by funding agencies.

Year	Country	2002-2010					2011					2002-2011	
		Invoiced	Received	In-kind	Energy rebate	Due	Invoiced	Received	In-kind	Energy rebate	Due	Total received including in-kind	Total Outstanding
MS	CERN	2'839	2'839				400	400				3'239	
	Czech Republic	507	507				94	94				601	
	Denmark	237	237			0	47	47				285	0
	Finland	257	257				47	47				304	
	France CEA	301	301				47	47				348	
	France IN2P3	2'249	2'249				376	376		0		2'625	0
	Germany BMBF	1'529	1'530			-1	314	314				1'844	-1
	Germany GSI	906	906				188	188				1'095	
	Greece	223	223			0	16	16				239	0
	Hungary	135	135				24	24				159	
	Italy Centro Fermi	26	26				31	31				58	
	Italy INFN	5'150	5'150				823	823				5'973	
	Netherlands	442	442			0	71	71				512	0
	Norway	660	660				133	133				793	
	Poland	735	698			36	141	94		47		792	83
	Slovak Republic	596	596				86	86				682	
	Spain/Cuba	236	236				47	16		31		252	31
	Sweden	218	218				24	24				242	
	United Kingdom	372	372				63	63				435	
MS Total		17'618	17'584			35	2'970	2'892		78		20'476	113
NMS	Armenia	113	110			8	-5	13	17	4	-8	128	-14
	Brazil	218	179			16	24	76		26	50	179	74
	China Wuhan CCNU	213	134	60		20	-1	51	32	19		226	-1
	China Beijing	107	20	63		12	13	13		7	5	83	18
	Croatia	219	203			16		51	36	15		239	
	India	1'746	1'647			98		450	336	114		1'983	
	Japan	386	363			23		150	118	32	0	482	0
	JINR	525	102	399		24	0	89	67	22		568	0
	Mexico	621	573			48		153	104	49		677	
	Republic of Korea NRF	375	351			24		127	89	30	9	440	9
	Peru							13	13			13	
	Romania ISS	203	183			20		51	36	15		219	
	Romania NIPNE	373	349			24		89	67	22		416	
	Russia	2'433	2'296	10		127		456	356	106	-6	2'662	-6
	South Africa	276	264			12		76	54	22		318	
	Ukraine	237	179	28		12	19	38		19	20	207	38
	USA DOE	1'100	1'100			77	-77	440	263	101	76	1'363	-1
	USA NSF	232	217			15	0	63	21	14	28	238	28
NMS Total		9'377	8'271	560		575	-29	2'400	1'608	618	173	10'439	144
Grand Total		26'996	25'855	560		575	6	5'370	4'500	618	251	30'915	257

Table 1 – 2002 - 2011 Cat. A M&O Invoices and Income as 31/12/2011 (in kCHF)

Category	Budget	Payments	Open commitments	Total expenditure	Balance Budget - Payments
Detector related costs	1'416	2'184	250	2'435	-768
Secretariat	238	177	6	183	61
Communications	30	40	0	40	-10
Off-line computing	537	533	7	540	4
On-line computing	1'269	2'338	12	2'350	-1'069
Test beams & calibration facilities	95	72	0	72	23
Laboratory operations	270	271	9	280	-1
General services	636	662	46	708	-26
sub-total	4'491	6'277	331	6'608	-1'786
<i>Power (NSM only)</i>	261	724	0	724	-463
Total	4'752	7'001	331	7'332	-2'249

Table 2 – 2011 Cat. A M&O Budget and Expenditure (Payments and Commitments as 31/12/2011) (kCHF)

Contributions											
Income and in-kind		Budget year									
Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Grand Total
2002	330	12									342
2003	68	565									632
2004	5	73	936	13							1027
2005	9	24	68	1213	64						1377
2006	9	15	112	123	2'242	274					2776
2007	4	6	13	153	323	3'562	692				4755
2008					25	503	4'040	111			4678
2009						8	182	4'951	124		5265
2010						4	6	85	395	4'936	5729
2011									37	111	4'346
Total Income per year	424	696	1'129	1'503	2'657	4'354	4'999	5'494	5'170	4'501	30'927

Expenditure Payments only											
Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	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	4'053	4			4'510
2009							261	4'134			4'395
2010								513	4'639		5'152
2011									436	6'565	7'001
Total Expenditure per budget year	248	598	1'095	1'408	2'639	3'875	4'314	4'651	5'075	6'565	30'467
Balance/Year	177	98	34	95	18	478	684	844	95	-2'064	460
End Year Balance	177	275	309	404	422	901	1'585	2'429	2'524	460	460

Special Account for online hardware Contribution											
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Grand Total
Income										1'000	1'000
Expenditure Payments only											
End of year balance										1'000	1'000
Total end of year balance incl. special account	177	275	309	404	422	901	1'585	2'429	2'524	1'460	1'460

Table 3 – Summary of M&O-A incomes and expenditure (only payments) including in-kind contributions for the period 2002 - 2011 (in kCHF)

Category	2013	2014	2015	2016
Detector related costs	1'907	1'493	1'289	1'289
Secretariat	208	208	208	208
Communications	40	40	40	40
CORE computing	537	537	537	537
On-line computing	1'122	1'694	2'002	2'002
Test beams & calibration facilities	30	85	85	85
Laboratory operations	280	245	235	235
General services	810	632	538	538
Grand Total	4'934	4'934	4'934	4'934
Power	150	1'963	2'386	2'386
GRAND TOTAL WITH POWER	5'084	6'897	7'320	7'320

Table 4 – M&O-A preliminary budget for 2013 and Estimates 2014 – 2016(kCHF)

Preliminary Sharing 2013 M&O A Budget

DRAFT using 2011 number of scientists to be updated on 1/9/2012	number of scientists ACDB as 1/9/2011	M&O-A	Energy in CHF	Energy billed to Funding Agencies in CHF	Invoice for 2013 in CHF
CERN	50	429'791	13'066		429'791
Czech Republic	11	94'554	2'875		94'554
Denmark	8	68'767	2'091		68'767
Finland	6	51'575	1'568		51'575
France CEA	7	60'171	1'829		60'171
France IN2P3	48	412'599	12'544		412'599
Germany BMBF	37	318'045	9'669		318'045
Germany GSI	22	189'108	5'749		189'108
Greece	2	17'192	523		17'192
Hungary	3	25'787	784		25'787
Italy Centro Fermi	6	51'575	1'568		51'575
Italy INFN	107	919'753	27'962		919'753
Netherlands	10	85'958	2'613		85'958
Norway	17	146'129	4'443		146'129
Poland	18	154'725	4'704		154'725
Slovak Republic	10	85'958	2'613		85'958
Spain/Cuba	5	42'979	1'307		42'979
Sweden	3	25'787	784		25'787
United Kingdom	7	60'171	1'829		60'171
Armenia	2	17'192	523	523	17'714
Brazil	6	51'575	1'568	1'568	53'143
China Wuhan CCNU	4	34'383	1'045	1'045	35'429
China Beijing	1	8'596	261	261	8'857
Croatia	5	42'979	1'307	1'307	44'286
India	31	266'470	8'101	7'727	274'197
Japan	10	85'958	2'613	2'508	88'466
JINR	8	68'767	2'091	2'091	70'857
Mexico	12	103'150	3'136	3'136	106'286
Republic of Korea NRF	10	85'958	2'613	2'613	88'571
Peru	1	8'596	261	261	8'857
Romania ISS	4	34'383	1'045	1'045	35'429
Romania NIPNE	7	60'171	1'829	1'829	62'000
Russia	40	343'833	10'453	7'618	351'451
South Africa	7	60'171	1'829	1'829	62'000
Ukraine Kiev	3	25'787	784	784	26'571
USA DOE	40	343'833	10'453	10'148	353'981
USA NSF	6	51'575	1'568	1'522	53'097
Total	574	4'934'000	150'000	47'816	4'981'816

Table 5 – Preliminary M&O-A Budget and Sharing for 2013 (kCHF).

2011 Cat. B M&O Budgets and Expenditure (in kCHF)

Systems	2011 Budget	2011 Expenditure	Balance
ITS Pixel	128	182	-54
ITS Drift	200	321	-121
ITS Strip	194	62	132
ITS-CMA	63	63	0
TPC	150	142	8
TRD	163	169	-6
TOF	118	120	-2
EMCAL	20	0	20
HMPID	150	170	-20
PHOS	130	268	-138
Muons Tracking	210	56	154
Muons Trigger	70	54	16
Acorde	10	17	-7
FMD	30	25	5
PMD	70	48	22
T0	48	46	2
VOA	10	7	3
V0C	15	3	12
ZDC	33	19	14
CTP	20	49	-29
Total	1'832	1'771	41

Table 6 –M&O-B 2011 Expenditure (kCHF)

Project		(All)	Data			
ref	budget description		2013	2014	2015	2016
▼ A01	Mechanics		50	40.5	26.5	26.5
▼ A02	Gas Systems		38	38	38	38
▼ A03	Cooling Systems		151	101	94	94
▼ A04	FEE spares		115	119	105	105
▼ A05.1	Standard Electronics LV/HV PS		323	242	213	213
▼ A05.2	Standard Electronics Crates		26.5	27.5	17.5	17.5
▼ A05.3	Standard Electronics R/O modules		94.5	106	166	106
▼ A06	Controls (DCS & DSS)		33.5	29.5	29.5	29.5
▼ A07	Sub-Detector spares		58	55	41	41
▼ A08	Areas		42	42	42	42
▼ A09	Communications		91	91	88	88
▼ A10	Store Items		97.5	79.5	77.5	77.5
▼ A11.1	Technical Manpower @ CERN: Industrial Support		6	6	6	6
▼ A11.3	Technical Manpower @ CERN: subsistence		427	410	353	353
Grand Total			1553	1387	1297	1237

Project		(All)	Data			
ref	budget description		2013	2014	2015	2016
▼ A11.2	Technical Manpower @ CERN: From Collaborating Institutes in man-month		135	86	86	86
Grand Total			135	86	86	86

Table 7 –M&O-B Preliminary Budget Estimates 2013 – 2016 (kCHF)

CERN-RRB-2012-050

3 April 2012

PH/ALICE/CD

2013		Proj																				
ref	budget description	ITS Common	ITS-SPD	ITS-SDD	ITS-SSD	TPC	TRD	TOF	HMPID	PHOS	ACORDE	FMD	PMD	TO	ZDC	CENTRAL TRIGGER	EMCAL-DCAL	MUONS TRACKING	MUONS TRIGGER	V0 A	V0 C	Grand Total
▼ A01	Mechanics					25.0	10.0					2.0		7.0	4.0				2.0			50.0
▼ A02	Gas Systems					5.0	15.0		15.0										3.0			38.0
▼ A03	Cooling Systems	8.0	15.0	90.0		10.0	10.0	2.0	4.0	10.0							2.0					151.0
▼ A04	FEE spares			12.0		20.0			1.0	40.0	1.0	8.0		5.0	3.0		7.0		18.0			115.0
▼ A05.1	Standard Electronics LV/HV PS		30.0	34.0	105.0	40.0	43.0	25.0	4.0		2.0	6.0		5.0	2.5		10.0	16.0				322.5
▼ A05.2	Standard Electronics Crates					10.0			1.0		8.0			2.0	0.5	5.0						26.5
▼ A05.3	Standard Electronics R/O modules		5.0		3.0	10.0	20.0	12.0				2.0		2.0	2.5	10.0	6.0	14.0	4.0		4.0	94.5
▼ A06	Controls (DCS & DSS)		3.0	2.0	1.0	5.0	4.0	3.0	1.5				5.0	1.0			8.0					33.5
▼ A07	Sub-Detector spares				4.0						1.0	5.0	5.0	15.0				3.0	10.0	10.0	5.0	58.0
▼ A08	Areas		2.0						35.0					5.0								42.0
▼ A09	Communications		10.0	2.0	0.5	5.0	19.5	10.0	8.0	8.0	1.0	2.0	6.0	1.0	1.0	5.0	2.0	6.0	3.0		1.0	91.0
▼ A10	Store Items		2.0		3.0		12.0	18.0	8.0	15.0	1.0		20.0	5.0	2.5		4.0	3.0	3.0		1.0	97.5
▼ A11.1	Technical Manpower @ CERN: Industrial Support								5.0		1.0											6.0
▼ A11.3	Technical Manpower @ CERN: subsistence	80.0	8.0	40.0	36.0	30.0		24.0	10.0					17.0	10.0		10.0	122.0	38.0		2.0	427.0
Grand Total		88.0	75.0	180.0	152.5	160.0	133.5	94.0	92.5	73.0	15.0	25.0	36.0	65.0	26.0	20.0	49.0	164.0	81.0	10.0	13.0	1'552.5

2013		Proj																				
ref	budget description	ITS Common	ITS-SPD	ITS-SDD	ITS-SSD	TPC	TRD	TOF	HMPID	PHOS	ACORDE	FMD	PMD	TO	ZDC	CENTRAL TRIGGER	EMCAL-DCAL	MUONS TRACKING	MUONS TRIGGER	V0 A	V0 C	Grand Total
▼ A11.2	Technical Manpower @ CERN: From Collaborating Institutes in man-month									96.0			15.0			24.0						135.0
Grand Total										96.0			15.0			24.0						135.0

Table 8 – 2013 M&O-B Preliminary Budget Estimates by systems (kCHF)

	ITS Common	ITS-SPD	ITS-SDD	ITS-SSD	TPC	TRD	TOF	HMPID	PHOS	ACORDE	FMD	PMD	T0	ZDC	CENTRAL TRIGGER	EMCAL-DCAL	MUONS TRACKING	MUONS TRIGGER	V0 A	V0 C	Grand Total	
CERN	17.5	33.8		19.7	25.6			27.8														124.4
Czech Republic	1.7		10.3						6.6													18.5
Denmark					5.1						25.0											30.1
Finland													65.0									65.0
France CEA																	20.0					20.0
France IN2P3	6.2			32.9												5.3	60.0	45.5		13.0		163.0
Germany BMBF						125.0																125.0
Germany GSI					92.0																	92.0
Italy INFN	48.8	33.8	157.0	52.6			70.0	64.8						26.0		11.6	24.0	30.4				519.0
Netherlands	6.8			35.4																		42.2
Norway									13.1													13.1
Poland					4.6				6.6													11.2
Slovakia	3.0	7.4			3.1																	13.5
Sweden					28.7																	28.7
United Kingdom															20.0							20.0
China									6.6							3.5						10.1
Croatia					0.8																	0.8
India												36.0					20.0					56.0
Japan									6.6							5.3						11.9
JINR							5.9		6.6													12.4
Mexico										15.0										10.0		25.0
Republic of Korea							24.0													5.1		29.1
Romania NIPNE						2.7																2.7
Russia	0.4		2.0	1.5					27.0								20.0					50.9
South Africa																	20.0					20.0
Ukraine	3.6		10.3	10.2																		24.1
United States DOE																23.3						23.3
United States NSF	0.1			0.5																		0.6
Total	88.0	75.0	180.0	152.5	160.0	133.5	94.0	92.5	73.0	15.0	25.0	36.0	65.0	26.0	20.0	49.0	164.0	81.0	10.0	13.0	1'552.5	

Table 9 –Sharing of M&O B 2013 preliminary budget between Funding Agencies (kCHF) (in-kind manpower not included)