

CMS

M&O Expenditure for 2010

Compact Muon Solenoid

CERN-RRB-2011-014

cf. CERN-RRB-2011-041

A. Charkiewicz, RRB-32, April 11, 2011



Introduction

- **This is the ninth time the CMS Collaboration presents an M&O Expenditure report**
- **Reported expenses are for payments (open commitments related to delivered goods are reported globally)**
- **Expenses are compared to the approved budgets**



M&O-A 2002-2010 Contributions

- **M&O-A received contributions are as indicated in the Finance report (cf. CERN-RRB-2011-011)**
- **Budget years up to 2009 are now fully paid**
- **For budget year 2010 there is only one outstanding contribution which amounts 30 kCHF and is expected to be paid soon**
- **CMS thanks all Funding Agencies for their timely payments to the 2010 M&O-A**



Outstanding Contributions M&O-A

Budget Year	2002	2003	2004	2005	2006	2007	2008	2009	2010
Invoiced CHF	924,788	1,765,337	2,497,757	3,692,022	6,564,745	8,847,436	10,983,548	11,216,034	12,741,585
<i>Paid before following year April RRB</i>	805,287	1,548,732	2,301,570	3,371,721	6,384,062	8,839,133	10,664,148	10,977,022	12,711,496
<i>Outstanding % before following year April RRB</i>	12.9%	12.3%	7.9%	8.7%	2.8%	0.1%	2.9%	2.1%	0.2%
<i>Paid to-date</i>	924,788	1,765,337	2,497,757	3,692,022	6,564,749	8,847,436	10,983,548	11,216,034	12,711,496
<i>% Outstanding to-date</i>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%



M&O-A 2010 Expenditures Overview

- As agreed with the Scrutiny Group and mentioned in the October 2010 RRB, expenditures in 2010 should be examined in the context of the overall 2009-2011 spending plan which includes the Operational Model and the cost of the emergency bushing repair in the 2009/2010 Technical Stop.
- **Expenditures in 2010 were expected to show an overspend of some 1.1 MCHF corresponding to the bushing replacement cost and this was reflected in actual expenditures as per the initial estimate.**
- Although some of the items showed lower expenditure than estimated, other areas, mainly gas and cryogenic fluid consumption, were overspent.
- The total expenditure (excluding Power) in 2010 was 12' 291 kCHF as compared to a budget of 11' 911 kCHF. Thanks to savings in other areas (Video equipment, DAQ, Outreach) the actual total **overspend was reduced to only 380 kCHF**
- Some of the costly investments made in 2010 (e.g. high capacity Liquid Nitrogen and CO₂ storage tanks or CF₄ Gas recuperation facility) will produce significant savings in coming years.



M&O-A 2010 Expenditures Overview

		kCHF	
	Subsystem	Budget	Payments
M&O-A w/o Power	A.1. Detector related costs	3,633	4,596
	A.2. Secretariat	290	297
	A.3. Communications	370	334
	A.4. On-line computing	3,243	2,734
	A.5. Test beams, calibration facilities	95	95
	A.6. Laboratory operations	850	879
	A.7. General services	1,785	1,832
	A.7. Core Computing Infrastructure & Services	1,645	1,524
<i>M&O-A w/o Power Total</i>		11,911	12,291
Power	A.8. Electricity	1,800	518
<i>Expense Total</i>		13,711	12,809
<i>Income</i>		12,742	12,711

931 kCHF of outstanding commitments to be paid in 2011

All data extracted from Annex 1



M&O-B Expenditures Overview

- **As CMS does not centrally invoice for M&O-B, the Collaboration is reporting qualitatively on these expenses**
- **The arrangements made in 2010 worked satisfactorily**
- **A Task Force, set up by the Finance Board to ensure that M&O-B cost sharing is carried out in as fair and equitable way as possible has made specific recommendations to further formalize the M&O-B budgetary process with a view to ensuring transparency and coherence between the different CMS Sub-systems**
- **These recommendation have been taken into account by all Sub-systems and are being gradually implemented**
- **One of the main recommendations was to ensure that all CMS member countries participate in the M&O-B budget and this is also being realized following contacts with representatives of concerned Funding Agencies**



Summary

The RRB is invited to take note of the present expenditure report

- **In view of the operational nature of the CMS expenses we kindly ask Funding Agencies to ensure that payments are made as early as possible**

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Status of M&O MoU Signatures

Compact Muon Solenoid



Status of M&O MoU Signatures

Funding Agency	Signed on
Austria	9-Oct-2002
Belgium-FNRS	23-Aug-2002
Belgium-FWO	20-Aug-2002
Brazil	
Bulgaria	7-Aug-2008
Colombia	19-Sep-2008
CERN	4-Dec-2002
China NSFC/CAS	2-Aug-2002
Croatia	8-Oct-2002
Cyprus	16-Aug-2002
Egypt	
Estonia	17-Oct-2002
Finland	19-Sep-2002
France-CEA	26-Aug-2002
France-IN2P3	25-Sep-2002
Germany	12-Sep-2002
Greece	28-Apr-2009
Hungary	13-Sep-2002
India	16-Sep-2002
Iran	
Ireland	
Italy	25-Nov-2002



Status of M&O MoU Signatures

Funding Agency	Signed on
Korea	25-Oct-2006
Mexico	
New Zealand	
Pakistan	3-Mar-2003
Poland	19-Oct-2004
Portugal	26-Jun-2002
RDMS-Dubna	17-Sep-2002
RDMS-Russia	26-Mar-2006
Serbia	12-Aug-2005
Spain	17-Feb-2003
Switzerland-ETHZ	
Switzerland-PSI	
Switzerland-Univ. Basel	15-Nov-2002
Switzerland-Univ. Zurich	27-Nov-2002
Taipei	12-Jul-2002
Turkey	12-Mar-2003
UK	24-Sep-2002
USA-DOE/NSF	14-Oct-2002

The M&O MoU has not yet been sent to the following Funding Agencies:
Egypt, Iran, Ireland and New Zealand

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Preliminary Draft Budget for M&O 2012

Compact Muon Solenoid

Cf. CERN-RRB-2011-013

A. Charkiewicz, RRB-32, April 11, 2011



Introduction

- The CMS Collaboration is presenting, as last year, a **preliminary** draft Budget Request both for Category A and Category B M&O for information only
- The cost sharing presented in document CERN-RRB-2011-013 is **preliminary and for information only** (based on the latest PhDs list from September 2010) and will change for the October 2011 RRB
- The M&O-A costs will be reviewed by the CMS Finance Board and further input from the Scrutiny Group will be taken into account in the October M&O Draft Budget



2012 M&O-A PDB Comments

The M&O-A cost estimates have changed with respect to the October 2010 RRB meeting

- **The total estimated budget for M&O-A excluding power is 14'933 kCHF (14'760 kCHF estimated in the October 2010 RRB)**
- **Some of these changes have already been signaled at the October 2010 RRB (Detector Safety and Personnel Safety)**
- **Main changes result from the applying the Operational Model which differentiates costs between a running and a shutdown year in view of the revised LHC schedule according to which 2012 will be a running year (and not a shutdown as foreseen at the time of the October 2010 RRB)**
- **Additional changes result from revised estimates due to operational experience mainly related to the gas consumption and the need to retain specialized manpower in the areas of moving/hydraulics, welding, crane operation and survey**



2012 M&O-A PDB Overview of Annex A.1

Maintenance & Operations (kCHF)		Year
Group	Description	2012
Maintenance & Operations	Detector related costs	3,811
	Secretariat	297
	Communications	120
	On-line computing	5,891
	Test beams, calibration facilities	96
	Laboratory operations	919
	General services	1,835
	Core Computing Infrastructure & Services	1,964
Maintenance & Operations Total		14,933
Power	Electricity	1,800
Power Total		1,800
Grand Total		16,733



2012 M&O-B PDB Comments

- **M&O-B costs have been partially reviewed by the CMS Collaboration. This partly the result of an in-depth analysis by a Task Force created by the CMS Finance Board**
- **This budget request will be further updated before being presented to the Scrutiny Group and to the October 2011 RRB**
- **As requested at the October 2010 RRB, the M&O-B budget will undergo formal scrutiny by the Scrutiny Group**
- **Some modifications have been made in the M&O-B cost sharing as compared to the one presented in October 2010. This is a result of recommendations made by the above-mentioned Task Force**



2012 M&O-B PDB Overview of Annex B.1

Amount (kCHF/FTE)			Detector					Core Computing	Grand Total
Description	Ref.	Details	Tracker	ECAL	HCAL	Muon	Trigger		
Material Resources (kCHF)	B.1.01	Mechanics	40	25	5	10		80	
	B.1.02	Gas-system	60	15	0	20		95	
	B.1.03	Cryo-system			0	0		0	
	B.1.04	Cooling system	250	90	0	0		340	
	B.1.05	FE electronics		0	565	56		621	
	B.1.06	Standard electronics, PS (LV, HV)	110	100	32	128		370	
	B.1.07	Standard electronics, Crates		40	61	70		171	
	B.1.08	Standard electronics, RO Modules	100	155	25	92	490	862	
	B.1.09	Controls, (DCS, DSS)	140	85	27	21		273	
	B.1.10	Sub-Detector Spares	0	0	58	24		82	
	B.1.11	Areas	90	100	7	89		286	
	B.1.12	Communications	30	10	49	43		132	
	B.1.13	Store Items	50	50	4	41		145	
	B.1.14	Hired Manpower @CERN	720	470	608	1,291	245	3,334	
Material Resources (kCHF) Total			1,590	1,140	1,441	1,885	735	6,791	
Human Resources (FTE)	B.2.01	Technical Manpower @CERN	0	0	0	0	0	0	
	B.2.02	Core Computing Manpower @CMS						8	
Human Resources (FTE) Total			0	0	0	0	0	8	



Summary

- **The M&O-A Preliminary Draft Budget 2012 amounts to 16.7 MCHF**
- **The M&O-B Preliminary Draft Budget 2012 amounts to 6.8 MCHF and some 8 FTEs of Collaborating Institutes manpower**
- **The RRB is invited take note of the present, unscrutinized, cost estimates for M&O-A and M&O-B**