Based upon CERN estimates published in ATLAS_A_sept04.xls and ATLAS_B_sept04.xls
Current as of12/13/04

WBS	Fiscal Year 2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
ATLAS A&B Consumables TOTAL COSTS (kChf)											
3.7 Common	1,162	2,483	3,660	5,509	7,807	9,277	10,922	11,722	11,722	11,722	75,986
Common Consumables	476	898	1,204	2,420	3,467	4,002	4,727	5,407	5,407	5,407	33,415
Common w/o Consumables	686	1,585	2,456	3,089	4,340	5,275	6,195	6,315	6,315	6,315	42,571
US ATLAS Percentage Consumables* (kChf)											
3.7 Common	185	395	582	876	1,241	1,475	1,737	1,864	1,864	1,864	12,082
Common Consumables	76	143	191	385	551	636	752	860	860	860	5,313
Common w/o Consumables	109	252	391	491	690	839	985	1,004	1,004	1,004	6,769
Dues		413	413	413							1,238
Common w/Dues	185	807	994	1,288	1,241	1,475	1,737	1,864	1,864	1,864	13,319
US ATLAS Percentage Consumables* (k$)											
3.7 Common	167.9	358.9	529.0	796.3	1,128.5	1,340.9	1,578.7	1,694.4	1,694.4	1,694.4	10,983.4
Common Consumables	68.8	129.8	174.0	349.8	501.1	578.5	683.3	781.6	781.6	781.6	4,830.0
Common w/o Consumables	99.1	229.1	355.0	446.5	627.3	762.5	895.5	912.8	912.8	912.8	6,153.4
Common w/ Dues	167.9	733.9	904.0	1,171.3	1,128.5	1,340.9	1,578.7	1,694.4	1,694.4	1,694.4	12,108.4
ATLAS ESTIMATES OF A&B COSTS (kChf)											
Magnets	354	367	392	1,797	2,128	1,958	1,868	1,868	1,868	1,868	14,468
Magnets Consumables	85	190	195	954	1,325	1,265	1,225	1,225	1,225	1,225	8,914
Magnets Less Consumables	269	177	197	843	803	693	693	693	693	693	5,754
TDAQ	405	405	540	585	985	1,580	2,670	3,545	3,545	3,545	17,805
TDAQ Consumables	165	165	180	325	570	1,030	1,770	2,525	2,525	2,525	11,780
TDAQ Less Consumables	240	240	360	260	415	550	550	550	550	550	4,265
TCn-Gen	403	1,711	2,728	3,127	4,694	5,739	6,384	6,309	6,309	6,309	43,713
TCn-Gen Consumables	226	543	829	1,141	1,572	1,707	1,732	1,657	1,657	1,657	12,721
TCn-Gen Less	177	1,168	1,899	1,986	3,122	4,032	4,032	4,032	4,032	4,032	28,512
Total	1,162	2,483	3,660	5,509	7,807	9,277	10,922	11,722	11,722	11,722	75,986
Total Consumables	476	898	1,204	2,420	3,467	4,002	4,727	5,407	5,407	5,407	33,415
Total Less Consumables	686	1,585	2,456	3,089	4,340	5,275	6,195	6,315	6,315	6,315	42,571

Exchange Rate 1Chf= 0.909091 Dollars ($)

USATLAS SHARE*
3.7 Common 15.9%

M&O Cost Estimates in kCHF
M=Maintenance/Repairs
O=Operations
EP-ATO/mn/270804

ATLAS M&O ESTIMATES (kCHF) FOR MAGNETS

			2002	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	**TOT**	**Notes**
Detector related costs	*Type*		*19*	*52*	*57*	*1,432*	*1,968*	*1,868*	*1,868*	*1,868*	*1,868*	*11,000*	
Magnet	A	O				40	40	40	40	40	40	240	0.5 FTE/y (engineer) < 05, 0.3 FTE/y thereafter
	A	C				50	50	50	50	50	50	300	Repairs for 3 pumps < 05, 10 active thereafter
Magnet controls	A	O				210	180	180	180	180	180	1,110	Numbers from D Schinzel
	A	C				59	45	45	45	45	45	284	Numbers from D Schinzel
Magnet power supply	A	O	4	12	12	8	8	8	8	8	8	76	Numbers from D Schinzel
	A	C	5	15	15	10	10	10	10	10	10	95	Numbers from D Schinzel
Gas systems	A	O										0	
	A	C										0	
Gas consumption	A	O										0	
	A	C										0	
Cooling systems	A	O		10	10	10	10	10	10	10	10	80	0.1 FTE/y (technician)
	A	C		5	10	15	15	15	15	15	15	105	Pumps, filters, cooling towers
Cooling fluids(above –50°C)	A	O	5	5	5	5	5	5	5	5	5	45	
	A	C	5	5	5	5	5	5	5	5	5	45	Demin & tap water pumps,filters
External cryogenics	A	O				400	500	400	400	400	400	2,500	Crew for Point 1 (contract C169/LHC).Note: Hall 180 activities are under Test beams
	A	C				620	1,100	1,100	1,100	1,100	1,100	6,120	Liquid He, N;maint. repairs and work for Cryo, spares, fluids etc.
Proximity cryogenics	A	O										0	
	A	C										0	
Cryogenic fluids (below –50°C)	A	O										0	
	A	C										0	
Moving/hydraulic systems	A	O										0	
	A	C										0	
Detector safety systems	A	O										0	
	A	C										0	
Detector-specific radiation protection	A	O										0	
	A	C										0	
Shutdown activities	A	O										0	
	A	C										0	
Detector (re-)integration & survey	A	O										0	
	A	C										0	
General Technical support	A	O										0	
	A	C										0	
UPS maintenance	A	O										0	
	A	C										0	
Electronics pool rentals	A	O										0	
	A	C										0	
Beam pipe & vacuum	A	O										0	
	A	C										0	
Counting & control rooms	A	O										0	
	A	C										0	
Secretariat	*Type*		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
Secretarial assistance	A	O										0	
	A	C										0	
Economat	A	O										0	
	A	C										0	
Fax, photocopiers, printers	A	O										0	
	A	C										0	
Printing and publication	A	O										0	
	A	C										0	
Communications	*Type*		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
GSM phones	A	O										0	
	A	C										0	
GSM phones	B	O										0	
	B	C										0	
Automatic call-back	A	O										0	
	A	C										0	
Automatic call-back	B	O										0	
	B	C										0	
On-line computing	*Type*		0	0	0	0	0	0	0	0	0	0	
												0	
System management	A	O										0	
	A	C										0	
Data storage, (temporary on disk)	A	O										0	
	A	C										0	
Detector controls	A	O										0	
	A	C										0	
Computers/processors/LANs	A	O										0	
	A	C										0	
Software licenses	A	O										0	
	A	C										0	
Common desktop infrastructure	A	O										0	
	A	C										0	
Test beams, calibration facilities	*Type*		335	185	195	365	160	90	0	0	0	1,330	
General operation	A	O				70	60	50				180	Operation of test station (<0.6 FTE/y)
	A	C				100	100	40				240	B180 test station consumables (flanges,epoxy,O-rings,welding)
Common electronics	A	O										0	

	A	C										0	
Electronics and DAQ	B	O										0	
	B	C										0	
Counting & control rooms	A	O										0	
	A	C										0	
Gas systems	A	O										0	
	A	C										0	
Gas consumption	A	O										0	
	A	C										0	
Gas systems	B	O										0	
	B	C										0	
Gas consumption	B	O										0	
	B	C										0	
External cryogenics	A	O	260	150	170	100	0					680	Hall 180. All ECT activities to take place in Point 1
	A	C	75	35	25	95	0					230	Hall 180. Maintenance of infra; liquid He, Ni
Proximity cryogenics	A	O										0	
	A	C										0	
Safety & radioprotection	A	O										0	
	A	C										0	
Irradiations	B	O										0	
	B	C										0	
Modifications	A	O										0	
	A	C										0	
Modifications	B	O										0	
	B	C										0	
Electronics pool rentals	A	O										0	
	A	C										0	
Electronics pool rentals	B	O										0	
	B	C										0	
Laboratory operations	*Type*		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
Assembly areas, clean rooms, active storage areas	A	O										0	
	A	C										0	
Assembly areas, clean rooms, active storage areas	B	O										0	
	B	C										0	
Workshops	A	O										0	
	A	C										0	
Workshops	B	O										0	
	B	C										0	
Laboratory instruments	A	O										0	
	A	C										0	
Laboratory instruments	B	O										0	
	B	C										0	
Electronics pool rentals	A	O										0	
	A	C										0	
Electronics pool rentals	B	O										0	
	B	C										0	
General services	*Type*		0	130	140	0	0	0	0	0	0	270	
Cooling & ventilation	A	O										0	
	A	C										0	
Power	A	O										0	
	A	C										0	
Power distribution system	A	O										0	
	A	C										0	
Heavy transport	A	O										0	
	A	C		130	140	0						270	Insurance to cover risk of collateral damage
Cranes	A	O										0	
	A	C										0	
Cars	A	O										0	
	A	C										0	
Cars	B	O										0	
	B	C										0	
Safety & radioprotection	C	O										0	
	C	C										0	
INB compliance	C	O										0	
	C	C										0	
Radioactive waste disposal	C	O										0	
	C	C										0	
Access system	C	O										0	
	C	C										0	
Elevators	C	O										0	
	C	C										0	
Gerant de site	C	O										0	
	C	C										0	
Flood control	C	O										0	
	C	C										0	
Insurance (CERN standard)	C	O										0	
	C	C										0	
Cleaning	A	O										0	
	A	C										0	
Cleaning	C	O										0	
	C	C										0	
Survey	A	O										0	
	A	C										0	
Survey	B	O										0	
	B	C										0	
Passive storage space	A	O										0	
	A	C										0	
Passive storage space	B	O										0	
	B	C										0	

Common desktop infrastructure	A	O										0
	A	C										0
Office space	C	O										0
	C	C										0
Consultancy	*Type*		0	0	0	0	0	0	0	0	0	0
Reviewing	A	O										0
	A	C										0
Engineering	A	O										0
	A	C										0
Training	A	O										0
	A	C										0
Outreach	*Type*		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Outreach	A	O										0
	A	C										0
GRAND TOTALS			354	367	392	1,797	2,128	1,958	1,868	1,868	1,868	12,600
A TOTAL			354	367	392	1,797	2,128	1,958	1,868	1,868	1,868	12,600
B TOTAL			0	0	0	0	0	0	0	0	0	0
C TOTAL			0	0	0	0	0	0	0	0	0	0
Consumables			85	190	195	954	1,325	1,265	1,225	1,225	1,225	7,689

SUMMARY OF ATLAS MAGNETS PER TYPE

Magnets		***2002***	***2003***	***2004***	***2005***	***2006***	***2007***	***2008***	***2009***	***2010***	***Total***	
Mechanics	O	5	15	15	125	115	105	55	55	55	545	Incl. Gen services
	C	5	140	155	170	170	110	70	70	70	960	
Electronics	O	4	12	12	218	188	188	188	188	188	1,186	
	C	5	15	15	69	55	55	55	55	55	379	
Cryogenics	O	260	150	170	500	500	400	400	400	400	3,180	
	C	75	35	25	715	1,100	1,100	1,100	1,100	1,100	6,350	
TOTALS		354	367	392	1,797	2,128	1,958	1,868	1,868	1,868	12,600	

M&O Cost Estimates in kCHF
M=Maintenance/Repairs
O=Operations
EP-ATO/mn/170304

ATLAS M&O ESTIMATES (kCHF) FOR TDAQ

			2002	2003	2004	2005	2006	2007	2008	2009	2010	TOTAL	Notes
Detector related costs	*Type*		*0*	*0*	*0*	*155*	*225*	*225*	*245*	*245*	*245*	*1,340*	
Dummy	A	O										0	
	A	C										0	
Dummy	A	O										0	
	A	C										0	
Magnet power supply	A	O										0	
	A	C				30	65	65	65	65	65	355	VME plugs, PC custom cards (8% replacement rate)
Gas systems	A	O										0	
	A	C										0	
Gas consumption	A	O										0	
	A	C										0	
Cooling systems	A	O										0	
	A	C										0	
Cooling fluids(above –50°C)	A	O										0	
	A	C										0	
External cryogenics	A	O										0	
	A	C										0	
Proximity cryogenics	A	O										0	
	A	C										0	
Cryogenic fluids (below –50°C)	A	O										0	
	A	C										0	
Moving/hydraulic systems	A	O										0	
	A	C										0	
Detector safety systems	A	O										0	
	A	C										0	
Detector-specific radiation protection	A	O										0	
	A	C										0	
Shutdown activities	A	O										0	
	A	C										0	
Detector (re-)integration & survey	A	O										0	
	A	C										0	
General Technical support	A	O										0	
	A	C				125	160	160	180	180	180	985	5% of ROS, switches,Gigab Ether, ROBins, cables, connectors from stor
UPS maintenance	A	O										0	
	A	C										0	
Electronics pool rentals	A	O										0	
	A	C										0	
Beam pipe & vacuum	A	O										0	
	A	C										0	
Counting & control rooms	A	O										0	
	A	C										0	
Secretariat	*Type*		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
Secretarial assistance	A	O										0	
	A	C										0	
Economat	A	O										0	
	A	C										0	
Fax, photocopiers, printers	A	O										0	
	A	C										0	
Printing and publication	A	O										0	
	A	C										0	
Communications	*Type*		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
GSM phones	A	O										0	
	A	C	0	0	0	0	0	0				0	Included in TCn
GSM phones	B	O										0	
	B	C										0	
Automatic call-back	A	O										0	
	A	C										0	
Automatic call-back	B	O										0	
	B	C										0	
On-line computing	*Type*		*15*	*15*	*150*	*325*	*640*	*1,235*	*2,305*	*3,180*	*3,180*	*11,045*	
												0	
System management	A	O	0	0	120	260	415	550	900	1,020	1,020	4,285	1FTE/400 processors(incl.shift) from 2007
	A	C										0	
Data storage, (temporary on disk)	A	O										0	
	A	C										0	
Detector controls	A	O										0	
	A	C										0	
Computers/processors/LANs	A	O										0	
	A	C			0	15	160	585	1,230	1,935	1,935	5,860	15% of cumul.past + 5% current new inv.
Software licenses	A	O										0	
	A	C	15	15	30	50	65	100	175	225	225	900	15k/y as base +15% of CORE 1.5 MCHF by '09
Common desktop infrastructure	A	O										0	
	A	C										0	
Test beams, calibration facilities	*Type*		*340*	*340*	*340*	*20*	*20*	*20*	*20*	*20*	*20*	*1,140*	
General operation	A	O	240	240	240							720	On-line computing mgmt for test beams
	A	C										0	
Common electronics	A	O										0	
	A	C	70	70	70	20	20	20	20	20	20	330	ROBs, PCs, monitors, terminals.No test-beam in '05

Electronics and DAQ	B	O										0	
	B	C										0	
Counting & control rooms	A	O										0	
	A	C										0	
Gas systems	A	O										0	
	A	C										0	
Gas consumption	A	O										0	
	A	C										0	
Gas systems	B	O										0	
	B	C										0	
Gas consumption	B	O										0	
	B	C										0	
External cryogenics	A	O										0	
	A	C										0	
Proximity cryogenics	A	O										0	
	A	C										0	
Safety & radioprotection	A	O										0	
	A	C										0	
Irradiations	B	O										0	
	B	C										0	
Modifications	A	O										0	
	A	C										0	
Modifications	B	O										0	
	B	C										0	
Electronics pool rentals	A	O										0	
	A	C	30	30	30							90	RIO2,NIM
Electronics pool rentals	B	O										0	
	B	C										0	
Laboratory operations	*Type*		*50*	*50*	*50*	*85*	*100*	*100*	*100*	*100*	*100*	*735*	
Assembly areas, clean rooms, active storage areas	A	O										0	
	A	C										0	
Assembly areas, clean rooms, active storage areas	B	O										0	
	B	C										0	
Workshops	A	O										0	
	A	C										0	
Workshops	B	O										0	
	B	C										0	
Laboratory instruments	A	O										0	
	A	C	20	20	20	55	55	55	55	55	55	390	Lab eqpm in B513,32,40 (VME, network). PCs, testers
Laboratory instruments	B	O										0	
	B	C										0	
Electronics pool rentals	A	O										0	
	A	C	30	30	30	30	45	45	45	45	45	345	RIO2, no test-beam in '05 but preparations
Electronics pool rentals	B	O										0	
	B	C										0	
General services	*Type*		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
Cooling & ventilation	A	O										0	
	A	C										0	
Power	A	O										0	
	A	C										0	
Power distribution system	A	O										0	
	A	C										0	
Heavy transport	A	O										0	
	A	C										0	
Cranes	A	O										0	
	A	C										0	
Cars	A	O										0	
	A	C										0	
Cars	B	O										0	
	B	C										0	
Safety & radioprotection	C	O										0	
	C	C										0	
INB compliance	C	O										0	
	C	C										0	
Radioactive waste disposal	C	O										0	
	C	C										0	
Access system	C	O										0	
	C	C										0	
Elevators	C	O										0	
	C	C										0	
Gerant de site	C	O										0	
	C	C										0	
Flood control	C	O										0	
	C	C										0	
Insurance (CERN standard)	C	O										0	
	C	C										0	
Cleaning	A	O										0	
	A	C										0	
Cleaning	C	O										0	
	C	C										0	
Survey	A	O										0	
	A	C										0	
Survey	B	O										0	
	B	C										0	
Passive storage space	A	O										0	
	A	C										0	
Passive storage space	B	O										0	
	B	C										0	
Common desktop infrastructure	A	O										0	

	A	C										0
Office space	C	O										0
	C	C										0
Consultancy	*Type*		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Reviewing	A	O										0
	A	C										0
Engineering	A	O										0
	A	C										0
Training	A	O										0
	A	C										0
Outreach	*Type*		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Outreach	A	O										0
	A	C										0
GRAND TOTALS			*405*	*405*	*540*	*585*	*985*	*1,580*	*2,670*	*3,545*	*3,545*	*14,260*
A TOTAL			405	405	540	585	985	1,580	2,670	3,545	3,545	4,500
B TOTAL			0	0	0	0	0	0	0	0	0	0
C TOTAL			0	0	0	0	0	0	0	0	0	0
Consumables			165	165	180	325	570	1,030	1,770	2,525	2,525	9,255

SUMMARY OF ATLAS TDAQ PER TYPE

TDAQ		***2002***	***2003***	***2004***	***2005***	***2006***	***2007***	***2008***	***2009***	***2010***	***Total***
Mechanics	O	240	240	240	0	0	0	0	0	0	720
	C	0	0	0	125	160	160	180	180	180	985
Electronics	O	0	0	120	260	415	550	900	1,020	1,020	4,285
	C	165	165	180	200	410	870	1,590	2,345	2,345	8,270
Cryogenics	O	0	0	0	0	0	0	0	0	0	0
	C	0	0	0	0	0	0	0	0	0	0
TOTALS		405	405	540	585	985	1,580	2,670	3,545	3,545	14,260

M&O Cost Estimates in kCHF
M=Maintenance/Repairs
O=Operations
EP-ATO/mn/160704

ATLAS M&O ESTIMATES (kCHF) FOR TECH. COORD & GENERAL

			2002	2003	2004	2005	2006	2007	2008	2009	2010	TOTAL	Notes
Detector related costs	*Type*		*0*	*190*	*400*	*610*	*1,535*	*2,010*	*2,010*	*2,010*	*2,010*	*10,775*	
Magnet	A	O										0	
	A	C										0	
Magnet controls	A	O										0	
	A	C										0	
Magnet power supply	A	O										0	
	A	C										0	
Gas systems	A	O	0	0	50	50	50	50	50	50	50	350	Service contract
	A	C				50	100	100	100	100	100	550	
Gas consumption	A	O										0	
	A	C	0	70	70	150	200	200	200	200	200	1,290	Gas consuption for ID and muons. Starts with SR1 and assembly ha
Cooling systems	A	O	0	0	110	110	110	220	220	220	220	1,210	1 FTE/y (technician) up to '06, 2FTE thereafter.
	A	C				30	30	30	30	30	30	180	2% of investment running time
Cooling fluids(above –50°C)	A	O										0	
	A	C			20	20	70	70	70	70	70	390	Demineralized water, carbo-fluids etc.
External cryogenics	A	O										0	
	A	C										0	
Proximity cryogenics	A	O										0	
	A	C										0	
Cryogenic fluids (below –50°C)	A	O										0	
	A	C										0	
Moving/hydraulic systems	A	O	0	100	100	100	100	50	50	50	50	600	LAr/Magnet from B180&191
	A	C		20	20	20	40	40	40	40	40	260	2% of the capital investment
Detector safety systems	A	O										0	
	A	C				30	60	60	60	60	60	330	2% of capital value
Detector-specific radiation protection	A	O										0	
	A	C			0	0	0	0	0	0	0	0	Incl. in safety
Shutdown activities	A	O					400	400	400	400	400	2,000	Crew to operate and prepare access and to run general maitenance c
	A	C					50	50	50	50	50	250	Consumables (mechanical shop)
Detector (re-)integration & survey	A	O										0	
	A	C										0	
General Technical support	A	O	0	0	0	0	150	300	300	300	300	1,350	Crew to operate and maintain ATLAS technical services, example s
	A	C	0	0	0	0	25	50	50	50	50	225	Consumables (mechanical shop)
UPS maintenance	A	O										0	
	A	C		0	30	50	50	50	50	50	50	330	2% of capital investment
Electronics pool rentals	A	O										0	
	A	C										0	
Beam pipe & vacuum	A	O					0	120	120	120	120	480	Numbers from T Camporesi
	A	C					0	120	120	120	120	480	Numbers from T Camporesi.
Counting & control rooms	A	O										0	
	A	C					100	100	100	100	100	500	5% of capital investment. Counting room eqpm in B
Secretariat	*Type*		*40*	*110*	*155*	*205*	*210*	*210*	*260*	*260*	*260*	*1,710*	
Secretarial assistance	A	O		45	90	140	140	140	140	140	140	975	2 FTE @ 75 kCHF/y (D Schinzel guideline)
	A	C										0	
Economat	A	O										0	
	A	C	10	15	15	15	20	20	20	20	20	155	
Fax, photocopiers, printers	A	O										0	
	A	C										0	
Printing and publication	A	O										0	
	A	C	30	50	50	50	50	50	100	100	100	580	Pens, folders, transparencies, note paper
Communications	*Type*		*0*	*10*	*15*	*15*	*15*	*15*	*15*	*15*	*15*	*115*	
GSM phones	A	O										0	
	A	C	0	10	10	10	10	10	10	10	10	80	TDAQ:5 persons + TCN:5 persons; 1kCHF/y
GSM phones	B	O										0	
	B	C										0	
Automatic call-back	A	O										0	
	A	C	0	0	5	5	5	5	5	5	5	35	10 persons on call
Automatic call-back	B	O										0	
	B	C										0	
On-line computing	*Type*		60	60	60	110	170	170	170	170	170	1,140	
												0	
System management	A	O										0	
	A	C										0	
Data storage, (temporary on disk)	A	O										0	
	A	C										0	
Detector controls	A	O										0	
	A	C	20	20	20	30	30	30	30	30	30	240	DCS (PCB, cabling, connectors, interfaces)
Computers/processors/LANs	A	O										0	
	A	C					40	40	40	40	40	200	DCS (test beam instrumentation, radiation testing)
Software licenses	A	O										0	
	A	C	40	40	40	50	70	70	70	70	70	520	DCS SCADA, design

Common desktop infrastructure	A	O										0	
	A	C	0	0	0	30	30	30	30	30	30	180	PCs, WS, terminals for on-line mgmt tasks
Test beams, calibration facilities	*Type*		15	25	25	25	25	25	25	25	25	215	
General operation	A	O										0	
	A	C										0	
Common electronics	A	O										0	
	A	C	15	25	25	25	25	25	25	25	25	215	DCS (test beam instrumentation, radiation testing outside CERN)
Electronics and DAQ	B	O										0	
	B	C										0	
Counting & control rooms	A	O										0	
	A	C										0	
Gas systems	A	O										0	
	A	C										0	
Gas consumption	A	O										0	
	A	C										0	
Gas systems	B	O										0	
	B	C										0	
Gas consumption	B	O										0	
	B	C										0	
External cryogenics	A	O										0	
	A	C										0	
Proximity cryogenics	A	O										0	
	A	C										0	
Safety & radioprotection	A	O										0	
	A	C										0	
Irradiations	B	O										0	
	B	C										0	
Modifications	A	O										0	
	A	C										0	
Modifications	B	O										0	
	B	C										0	
Electronics pool rentals	A	O										0	
	A	C										0	
Electronics pool rentals	B	O										0	
	B	C										0	
Laboratory operations	*Type*		*0*	*60*	*110*	*60*	*20*	*20*	*20*	*20*	*20*	*330*	
Assembly areas, clean rooms, active storage areas	A	O										0	
	A	C	0	50	100	50						200	
Assembly areas, clean rooms, active storage areas	B	O										0	
	B	C										0	
Workshops	A	O										0	
	A	C		10	10	10	20	20	20	20	20	130	Special cleaning of lab areas (SR)
Workshops	B	O										0	
	B	C										0	
Laboratory instruments	A	O										0	
	A	C										0	
Laboratory instruments	B	O										0	
	B	C										0	
Electronics pool rentals	A	O										0	
	A	C										0	
Electronics pool rentals	B	O										0	
	B	C										0	
General services	*Type*		157	536	763	847	959	759	759	759	759	6,298	
Cooling & ventilation	A	O	36	73	109	146	182	182	182	182	182	1,274	D Schinzel/M Wilhelmson input
	A	C	36	73	109	146	182	182	182	182	182	1,274	D Schinzel/M Wilhelmson input
Power	A	O										0	
	A	C										0	See below after totals
Power distribution system	A	O	0	0	0	0	0	0	0	0	0	0	
	A	C	0	20	25	25	35	35	35	35	35	245	Service contract (ST) for periodic inspection of power connections
Heavy transport	A	O	0	60	60	60	60	60	60	60	60	480	30k/movement.Area mgmt (safety, cleaning, storage)
	A	C	0									0	
Cranes	A	O	0	60	80	80	160	160	160	160	160	1,020	LS.7 cranes in Pit 1, 6 operators @80kCHF/FTE '03-05 of which 1
	A	C	5	30	60	60	60	60	60	60	60	455	1.5% of capital value/y
Cars	A	O	0	0	0	0	0	0	0	0	0	0	
	A	C	0	30	30	30	30	30	30	30	30	240	CERN cars for TCn operate at Point 1
Cars	B	O										0	
	B	C										0	
Safety & radioprotection	C	O										0	
	C	C										0	
INB compliance	C	O										0	
	C	C										0	
Radioactive waste disposal	C	O										0	
	C	C										0	
Access system	C	O										0	
	C	C										0	

Elevators	C	O										0	
	C	C										0	
Gerant de site	C	O										0	
	C	C										0	
Flood control	C	O										0	
	C	C										0	
Insurance (CERN standard)	C	O										0	
	C	C										0	
Cleaning	A	O										0	
	A	C										0	
Cleaning	C	O										0	
	C	C										0	
Survey	A	O	60	170	170	170	170	20	20	20	20	820	See note from C Lasseur. M Nessi update 200802; now at 80 kCHF
	A	C										0	JINR in-kind 480 kCHF (AA120-2 App.3)
Survey	B	O										0	
	B	C										0	
Passive storage space	A	O										0	
	A	C			100	100	50					250	Storage of Muon chambers in B180 (passive part), 350 CHF/m2
Passive storage space	B	O										0	
	B	C										0	
Common desktop infrastructure	A	O										0	
	A	C	20	20	20	30	30	30	30	30	30	240	PCs, WSs, terminals for technical crews
Office space	C	O										0	
	C	C										0	
Consultancy	*Type*		0	100	100	100	130	130	130	130	130	950	
Reviewing	A	O										0	
	A	C										0	
Engineering	A	O	0	100	100	100	130	130	130	130	130	950	Academic subsistence. Entry requested by SG
	A	C										0	
Training	A	O										0	
	A	C										0	
Outreach	*Type*		*50*	*60*	*70*	*125*	*160*	*200*	*175*	*100*	*100*	*1,040*	See separate note (M Barnet)
Outreach	A	O										0	
	A	C	50	60	70	125	160	200	175	100	100	1,040	Movie DVDs, brochures, student/teacher materials
GRAND TOTALS			322	1,151	1,698	2,097	3,224	3,539	3,564	3,489	3,489	22,573	
A TOTAL			322	1,151	1,698	2,097	3,224	3,539	3,564	3,489	3,489	22,573	
B TOTAL			0	0	0	0	0	0	0	0	0	0	
C TOTAL			0	0	0	0	0	0	0	0	0	0	

Consumables			226	543	829	1,141	1,572	1,707	1,732	1,657	1,657	11,064	
Power	A	O	0	0	0	0	0	0	0	0	0	0	Note: energy for all ATLAS
	A	C	80	560	1,030	1,030	1,470	2,200	2,820	2,820	2,820	14,830	See separate note by M Nessi 10-01-2002. Shift of 1 year
GRAND TOTALS			***403***	***1,711***	***2,728***	***3,127***	***4,694***	***5,739***	***6,384***	***6,309***	***6,309***	***37,404***	

SUMMARY OF ATLAS TECHNICAL COORD. PER TYPE

TCn & General		***2002***	***2003***	***2004***	***2005***	***2006***	***2007***	***2008***	***2009***	***2010***	***Total***
Mechanics	O	96	608	869	956	1,652	1,832	1,832	1,832	1,832	11,509
	C	131	418	669	901	1,262	1,397	1,422	1,347	1,347	8,894
Electronics	O	0	0	0	0	0	0	0	0	0	0
	C	95	125	160	240	310	310	310	310	310	2,170
Cryogenics	O	0	0	0	0	0	0	0	0	0	0
	C	0	0	0	0	0	0	0	0	0	0
TOTALS		322	1,151	1,698	2,097	3,224	3,539	3,564	3,489	3,489	22,573

WBS	Fiscal Year										
	2003	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*Total*
US ATLAS Percentage Consumables* (k$)											
3.7 Common	14.0	29.9	44.1	6.7	(32.5)	21.6	130.2	139.9	139.9	139.9	633.7
Common Consumables	(4.9)	(63.4)	(122.0)	(117.9)	(185.5)	(248.6)	(233.2)	(225.0)	(225.0)	(225.0)	(1650.6)
Common w/o Consumables	18.9	93.3	166.1	124.7	153.0	270.2	363.5	364.9	364.9	364.9	2284.4
Common w/ Dues	14.0	61.2	75.3	38.0	(32.5)	21.6	130.2	139.9	139.9	139.9	727.5

Big change is power is not counted in consumables for thi

is iteration