

CNGS Secondary Beam Inventory

Impact on CERN's scientific objectives in case of failure:

- 1 Insignificant, i.e. loss of 1 day of physics or less
- 2 Moderate, i.e. between 1 day and 1 week of loss of physics
- 3 Major, i.e. up to few (3 to 5) weeks, major impact on scientific objectives
- 5 Catastrophic, i.e. no more operation, fail to meet scientific objectives for the year

Type	Used #	Responsible	Spare Parts	Impact on Scientific Objectives	Budget estimation
Ionization Chambers in TCC4					
at Collimator	2	AB/BDI Gianfranco Ferioli	Hardware and Electronics: enough (same detectors are used as SPS BLMs)	1 (if one is lost). 2 (if two are lost).	
at TBID	2	AB/BDI Gianfranco Ferioli	“	1	
at X-hair	2	AB/BDI Gianfranco Ferioli	“	1	
TBID					
TBID detector	1	AB/BDI Enrico Bravin	Hardware: NONE Electronics: enough - same as used for SPS	1	
Ion pump	1	AT/VAC Miguel Jimenez	exists – but intervention impossible	1	
Getter pump	1	TS/MME Paolo Chiggiato	NONE (intervention impossible)	1	
Horn/Reflector					
Horn	1	AB/ATB/EA Ans Pardons	1	5	350000.-CHF
Reflector	1	AB/ATB/EA Ans Pardons	NONE	5	400000.-CHF

Lower frame	2	AB/ATB/EA Ans Pardons	1 for construction of spare horn/reflector (not for TCC4)	not relevant	15000.-CHF
Cooling system	2	TS/CV Paolo Guglielmini	1 liquid vertical pump (Grundfos); 1 frequency converter (Allen Bradley); 1 Conductivity probe-integrated transmitter (Burkert); 1 Pressure probe-integrated transmitter (Huba Control); 1 Temperature Probe-integrated transmitter-PT100 (Thermoest); 1 demineralization filter for each station (2 in total); The rest can be quickly delivered;	2, 3	2700.-CHF 700.-CHF 1200.-CHF 240.-CHF 70.-CHF 3000.-CHF
Power supply	2	AB/PO	1 (used in horn test stand)	2	
BT/HT transformer	2	AB/PO	1 (used in horn test stand)	1, 2	
New capacitors	48	AB/PO	12 (4 of them used in horn test stand)	1, 2	
Thyristor switch	4	AB/PO	2 (used in horn test stand)	1, 2	
Striplines	2	AB/ATB/EA Ans Pardons	NONE	5	
Pulse transformer	2	orphans	1 (used in horn test stand) +2, need to be modified	2, 3	
Magnetic Probes for striplines	2x4	orphans	4	1	
Helium Tubes					
0.3mm window	1	AB/ATB/EA Ans Pardons	NONE	2 (when helium is replaced by air → 4% less performance)	

1mm thick window	3	AB/ATB/EA Ans Pardons	Material for 1 window	2	
Seals	many	AB/ATB/EA Ans Pardons	2	2	
Helium gas	1	TS/LEA and AB/ATB/EA	gas bottles: infinite; gas rack: NONE	2	
Oxymeter	1	AB/ATB/EA Edda Gschwendtner	NONE	2	6000.-CHF
X-hair					
X-hair & support	1	AB/ATB/EA Ans Pardons	NONE	1	
Shutter					
Mechanics	1	AB/ATB/EA Sylvain Girod	NONE	5	
Electronics	1	AB/ATB/LPE Alessandro Masi	1 PLC (is shared with the target); 1 power control of the motor; 1 motor; 1 analog input module for shutter; 1 digital input module for switches; enough switches (are also used for LHC collimators); 3 potentiometer	1 1 2, 3 1 1 2, 3 2, 3	3500.- € 700.- € 500.- € 400.- € 400.- €
Decay Tube					
Entrance window	1	AB/ATB/EA Ans Pardons	Material for 1 window	5	
Exit window	1	AB/ATB/EA Ans Pardons	NONE (not accessible)	5	
Vacuum pumps	2	AB/ATB/EA Ans Pardons	From the 2 installed, 1 is used	1, 3 (when filled with air instead of vacuum → 28% less	35000.-CHF

				performance)	
Electronics for vacuum pumps: → control unit → PLC	1 1	AB/ATB/EA AT/VAC	NONE enough	“	15000.-CHF
Temperature probes					
Probes: in TCC4: in hadron stop area: in decay pipe:	8 12 16	TS/CV	NONE	1	
Hadron Stop					
Flexible cooling tubes	26	AB/ATB/EA Ans Pardons	4 tubes (either 20m or 24m)	1; when 1 (out of 12) loop is lost; 5; when half of the loops are lost.	
Muon Monitors					
LHC-type BLMs	2x18	AB/BDI Gianfranco Ferioli	Hardware: initially 4 Ionization Chambers, later many. Electronics: enough- is the same as for SEM used for SPS.	1	
Step motor	2x2	AB/BDI Gianfranco Ferioli	Hardware: enough- is the same as used for LEP Electronics: enough- is the same as used for SPS	1	
Camera	2	AB/BDI Enrico Bravin	Hardware: 1 camera Electronics: enough	1	