



CONS and HL-LHC day Analysis of needs from TE-ABT

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CONS and HL-CONS approved requests

(for HL-CONS except spares)

Item n.	Description	Approved Budget	Funding (CONS/HL-CONS) %	Budget to be allocated in the years
1	LBDS dilution kicker consolidation	350 kCHF	CONS	2017-20
2	LBDS switch consolidation	1290 kCHF	CONS	2017-20
3	Controls for LHC Beam Dump System	1330 kCHF	HL-CONS	2021-26
4	MKD triggering/retriggering, earthing	1260 kCHF	HL-CONS	2017-20
5	MKD/B spark detection	400 kCHF	HL-CONS	2017-20
6	Renew MKI RCPS 800 mA supplies	50 kCHF	CONS	2017
7	Upgrade MKI thyratron heater system	90 kCHF	CONS	2017

CONS and HL-CONS requests pending approval or refused

(mark in red items that are more important in view of HL-LHC)

Item n.	Description	Budget request	Budget to be allocated in the years	Pending	Refused
		None			

New requests in view of HL-LHC installation

(to meet HL-LHC goals)

New requests for conversion of LHC into HL-LHC

Item n.	Description	Budget request	Budget to be allocated in years (from-to)	Priority (1-3) 1 top 3 low
8	Upgrade of BETS	200 kCHF	2022-26	2
9	Upgrade of TCDQ positioning system	250 kCHF	2022-26	2
10	Replacement LBDS HV capacitors	250 kCHF	2022-26	1
11	Replacement LBDS HV power supplies	400 kCHF	2022-26	1
12	Eradication LBDS MKB Dynex GTO	300 kCHF	2019-26	2

ITEM: Upgrade of BETS

Rational of the request

Add new functionality to BETS system, to be able to interlock TCDQ position as a function of beta. Necessity to be confirmed.*

Total Budget request	<i>200 kCHF</i>	Budget to be allocated in years (from-to)	<i>2022-26</i>
Material budget request	<i>200 kCHF</i>	Personnel available [y/n] in addition to personnel budget request	Y*
Personnel budget request (M2P budget for MPAs and fellows)			

Consequences of suppression of request on HL performance

TCDQ position fixed at collision energy and through squeeze – possible reduction in margins for collimation hierarchy

Consequences of delay of request to LS4 or later

ditto

**with present assumed manpower plan*

ITEM: Upgrade of TCDQ positioning

Rational of the request

Improvement to TCDQ movement and position readout, to allow arbitrary movement functions. Necessity to be confirmed.

Total Budget request	<i>250 kCHF</i>	Budget to be allocated in years (from-to)	<i>2022-26</i>
Material budget request	<i>150 kCHF</i>	Personnel available [y/n] in addition to personnel budget request	Y*
Personnel budget request (M2P budget for MPAs and fellows)	<i>100 kCHF</i>		

Consequences of suppression of request on HL performance

TCDQ position fixed at collision energy and through squeeze – possible reduction in margins for collimation hierarchy

Consequences of delay of request to LS4 or later

ditto

**with present assumed manpower plan*

ITEM: Replace LBDS MKD HV capacitors

Rational of the request

Replace main HV capacitors which will be reaching end of life (with associated degradation). Also increase capacity to increase operational margins for 7.5 TeV operation

Total Budget request	<i>250 kCHF</i>	Budget to be allocated in years (from-to)	<i>2022-26</i>
Material budget request	<i>250 kCHF</i>	Personnel available [y/n] in addition to personnel budget request	Y*
Personnel budget request (M2P budget for MPAs and fellows)			

Consequences of suppression of request on HL performance

Degradation in capacity and consequent increase in voltage for given kick, lower system reliability, higher failure rate, inability to operate at 7.5 TeV

Consequences of delay of request to LS4 or later

ditto

**with present assumed manpower plan*

ITEM: Replace LBDS main HV power supplies

Rational of the request

Replace main 35 kV HV power supplies which will be reaching end of life (installed in 2004). Increase of maximum voltage to allow reliability runs at 8 TeV for 7.5 TeV operation.

Total Budget request	<i>400 kCHF</i>	Budget to be allocated in years (from-to)	<i>2022-26</i>
Material budget request	<i>400 kCHF</i>	Personnel available [y/n] in addition to personnel budget request	Y*
Personnel budget request (M2P budget for MPAs and fellows)			

Consequences of suppression of request on HL performance

Lower system reliability, higher failure rate, inability to perform reliability run at 8 TeV (and hence to operate at 7.5 TeV)

Consequences of delay of request to LS4 or later

ditto

**with present assumed manpower plan*

ITEM: Eradicate LBDS MKB Dynex GTO

Rational of the request

Replace Dynex GTO switches in MKB generators, to reduce sensitivity to slow neutrons and hence reduce radiation-related erratics

Total Budget request	<i>300 kCHF</i>	Budget to be allocated in years (from-to)	<i>2022-26</i>
Material budget request	<i>150 kCHF</i>	Personnel available [y/n] in addition to personnel budget request	Y*
Personnel budget request (M2P budget for MPAs and fellows)	<i>150 kCHF</i>		

Consequences of suppression of request on HL performance

Increased rate of MKB erratic triggers with higher intensity, more beam dumps, reduced machine availability, less margin to operate at 7.5 TeV

Consequences of delay of request to LS4 or later

ditto

**with present assumed manpower plan*

Summary

Priority (1-3) in decreasing order of importance	Item n.	Description	Approval Status: <ul style="list-style-type: none"> • <i>Approved by CONS</i> • <i>Approved by HL-CONS</i> • <i>Not Approved by CONS</i> • <i>Not Approved by HL-CONS</i> <ul style="list-style-type: none"> • <i>New</i>
1	1	LBDS dilution kicker consolidation	<i>Approved by CONS</i>
1	2	LBDS switch consolidation	<i>Approved by HL-CONS</i>
1	3	Controls for LHC Beam Dump System	<i>Approved by HL-CONS</i>
1	4	MKD triggering/retriggering, earthing	<i>Approved by HL-CONS</i>
1	5	MKD/B spark detection	<i>Approved by CONS</i>
2	6	Renew MKI RCPS 800 mA supplies	<i>Approved by CONS</i>
2	7	Upgrade MKI thyatron heater system	<i>Approved by CONS</i>

Summary

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	8	Upgrade of BETS	<i>tbc</i>
	9	Upgrade of TCDQ positioning system	<i>tbc</i>
	10	Replace LBDS HV capacitors	<i>new</i>
	11	Replace LBDS main HV power supplies	<i>new</i>
	12	Eradication LBDS MKB Dynex GTO	<i>new</i>