US LHC Accelerator Project	Baseline Change Request
BCR Number	61
WBS	1.2.1.3, D3 Production, 1.2.1.6, EDIA
Title	D3 Heat Shield Extensions
Change Control Level	2
Originator	Erich Willen
Date	14 January 2004

Description of change

The bottom heat shields on the D3 magnets would be extended by some 570 mm at the lead end of the magnets. This would allow CERN to later more easily attach the QQS interface modules necessary for operation in the LHC machine.

Detailed Description

The D3 dipole magnets are being built by BNL for installation into the LHC, where they are part of the optics for separating the LHC beams in the RF insertion region. Two of these magnets are required in the machine, and a third is being built as a spare. When the D3 magnets were being designed and the parts fabricated, CERN had not yet developed the designs for the hardware interconnecting these magnets to its systems. Hence, the heat shields were made only as long as required for the D3 magnets. Now CERN has developed its designs and recognizes that the bottom heat shields for its QQS interfaces need to be extensions of the shields in the D3 magnets. Since the D3 magnets are being built at BNL as completed magnets with all insulation in place, it would be difficult for CERN to weld on an extension; the welding heat would damage the installed superinsulation. Hence, CERN has requested that the extensions be attached at BNL before the shields are installed into the magnets.

To accomplish this task, heat shield sections of the required length (~570 mm) must be cut and welded to the existing full length shields that have been made for the magnets. Some rerouting and modification of the local cryogenic piping is also required.

Reason for change

This change is proposed by CERN to facilitate the later installation of the D3 QQS interface modules at CERN.

Impact on other sub-systems

There is no impact on other items in the US LHC Accelerator program.

Impact on cost

The cost in FY03 dollars for the work described in this BCR, including overheads, detailed in the Appendix. Since the work will be done in FY2004, the as-spent cost will be as follows:

D3 Production	$5,695
EDIA:	$4,996
Total:	$10,691

Impact on schedule

No impact on schedule.

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Other impacts (ES&H, etc.)

None

Change Control Board recommendation (if required)

Approvals

Erich Willen — WBS Level 3 Manager — 3/17/04 Date

Laboratory Project Manager — 3/17. Date

Change Control Board Chair — 3/17/04 Date

US LHC Accelerator Project Manager — 3/17/04 Date

Pief J. Carlson — DOE LHC Project Manager — 3/17/04 Date

Director, DOE Division of High Energy Physics — Date

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APPENDIX: Cost of D3 Heat Shield Extensions, FY03 Dollars

Program	Item			Labor			Material	Total
			WBS	Type	Hours	Cost	CS Matl	
D3	Heat Shield Extensions							
	Technician labor		1.2.1.3	T	40	$1,940		
	Welding labor		1.2.1.3	W	24	$2,088		
	Parts		1.2.1.3				$240	
	EDIA							
	Engineering		1.2.1.6	E	16	$1,160		
	QA		1.2.1.6	P	8	$503		
	Designers, inc checking		1.2.1.6	D	40	$2,066		
	Total					**$7,756**	**$240**	**$7,996**
Summary								
				Mat	**Lab**	**Burden**	**Total**	
		D3 Production	1.2.1.3	$240	$4,028	$1,261	**$5,529**	
		EDIA	1.2.1.6	$0	$3,728	$1,122	**$4,850**	
		TOTAL		**$240**	**$7,756**	**$2,383**	**$10,379**	
				Lab, hrs	**Lab, $**			
		EDIA	1.2.1.6		$3,728			
		E		16	$1,160			
		D		40	$2,066			
		TOTAL		**56**	**$3,226**			