

Report: 26

Activity: LHC Insulation Vacuum

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LS2



Overview of LS2 activities

Activity	Diode consolidation train	Standard LS IV (incl. SIT)	HL-LHC	LHC IV consolidation
	LT support	LT support + PIM	LT support + PIM	Mechanics + LT
Intervention area	ARC	ARC+LSS+QRL	ARC	ARC+LSS+QRL
IC status				
Closed (phase 1)	Degrade IV Vent IV	Re-pumping IV LT @ 300K all IV Pre-loc. known He leaks Identification new leaks (He + envelope)		
	Diode flange clamshell	Localise He leaks (5 bar) Vent QRL Vent SAM Magnet exchange Specific issues Other NCs QRL multiply bellows PIM Pump & LT QRL Pump & LT SAM	11T dipoles Connection cryostats PIM Vac. equipment	Cons. & additional turbos Cons. prim. pumps & gauges IV equipment maintenance IV equipment inspection Platforms at height
Closed (phase 3)	Pump IV LT envelope LT internals LT after PT	LT envelope (SAM, QRL) LT internals (SAM, QRL) LT after PT (SAM, QRL)	Pump IV LT envelope LT internals LT after PT	Turbo exch. & commissioning LT IV equipment
OPEN POINTS		DIODE LEAK TEST	HL-LHC ACTIVITY	UNCERTAINTY

General status of LS2 activities

11T project not considered on this status as with the new planning baseline it comes in 2021, completely decoupled from the rest of activities

Intervention area	ARC	ARC+LSS+QRL	ARC	ARC+LSS+QRL
IC status				
Closed (phase 1)	Degrade IV	PHASE 1: FINISHED		
	Vent IV	Identification new leaks (He + envelope)		

PHASE 2 MAIN ACTIVITIES

	DISCO (diode flange) local LT	SIT local leak tests	SAM activities	QRL activities	Pumping group consolidation	
S1-2			(1) W25-W27, (2)	(3) W28-W29	(4) W26	(1) Triplet tie-rod + pumping group consolidation
S2-3			(1) W25-26, (2)		(5)	(2) Replacement of standalone damaged O-rings
S3-4			(2)			(3) Leak test research to continue after cryo. unlockout at B12.Q
S4-5			(1) W27			(4) LSS finished, ARC1-2 ongoing
S5-6			(1) W27			(5) LSS R2 pending (to be made after pressure test, W35-W37)
S6-7						
S7-8			(1) W25-26, (2)			
S8-1			(1) W25-27, (2)			

PHASE 2: ONGOING
(CLOSE TO END)

FINISHED
ONGOING
NOT STARTED

Closed (phase 3)	Pump IV	PHASE 3: ONGOING		Pump IV
	LT envelope LT internals	LT internals (SAM, QRL)	LT internals	Turbo exch. & comissioning LT IV equipment
	LT after PT	LT after PT (SAM, QRL)	LT after PT	

PHASE 3: NOT STARTED

OPEN POINTS	DIODE LEAK TEST	HL-LHC ACTIVITY	UNCERTAINTY
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Status of SAM activities

- All activities finished except for:
 - Support for triplet consolidation of tie-rods: venting + pumping/venting cycles + re-pumping are required
 - Envelope leak test of DFBLC+DSL at R3
 - Support for repair and investigations of O-rings damaged found on the following locations (see pictures on further slides):
 - A4L2, on standard dipole-to-quadrupole IC
 - A1R2, on DFBX-to-magnet IC (non-standard O-ring with $\varnothing 10$ mm cross-section)
 - A4R2, on **fix flange-to-cover** IC
 - A6L4, on rotatable flange-to-cover IC
 - A4L8, 2 O-rings
 - on standard dipole-to-quadrupole IC
 - on **fix flange-to-cover** IC
 - A6L8, on rotatable flange-to-cover IC
 - A4R8, on standard dipole-to-quadrupole IC
 - Support to venting and re-pumping of 2 SC cavities under request by BE-RF (several leaks found by AL4030 at the level of some connectors)

Status of pumping group consolidation

ARC 1-2							
16R1.Q	24R1.Q	32R1.Q		32L2.Q	24L2.Q	16L2.Q	14L2.Q
Q15R1.M	Q23R1.M	Q31R1.M		Q31L2.M	Q23L2.M	Q15L2.M	13L2.Q

TO BE FINISHED THIS WEEK

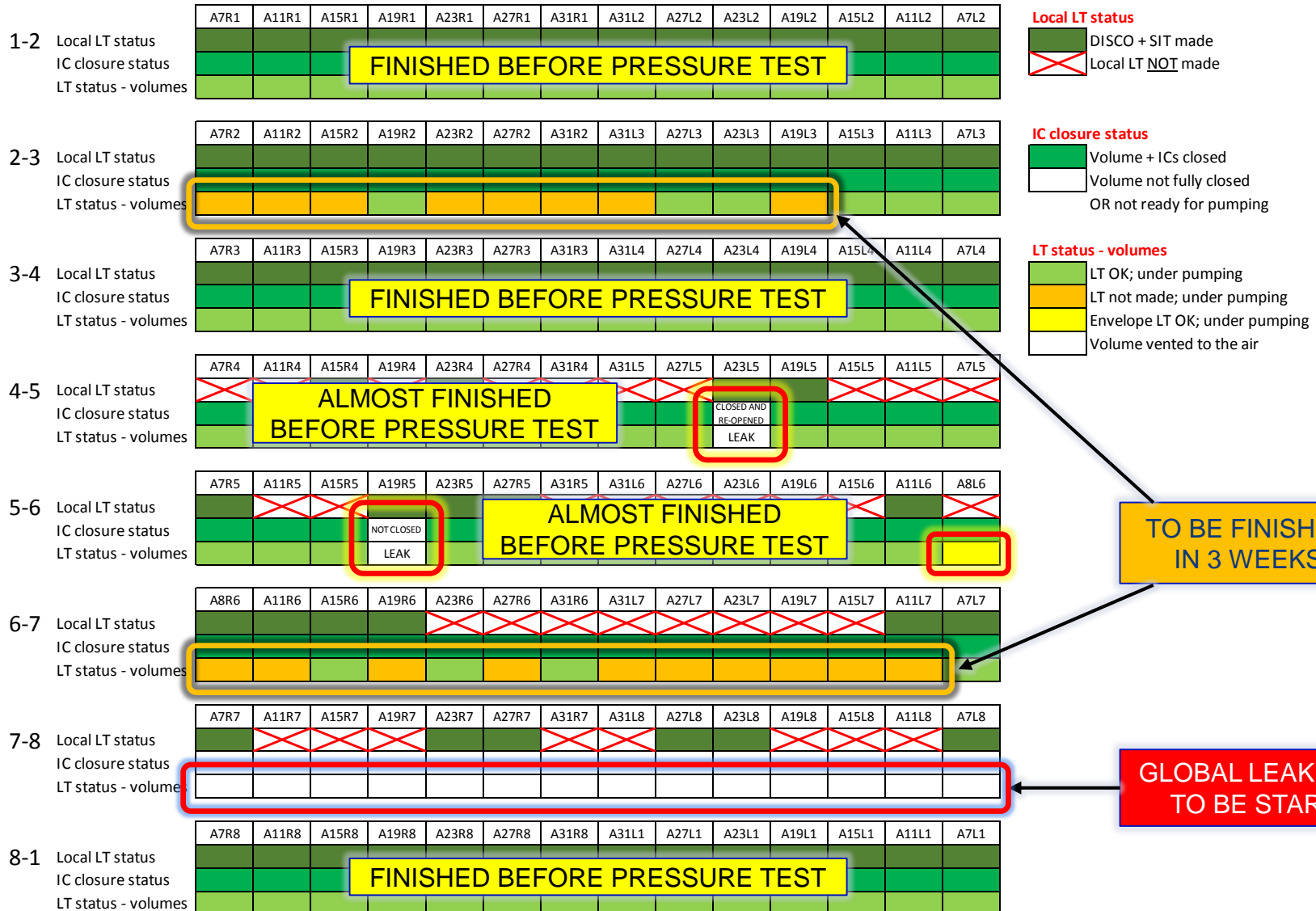
	LSS RIGHT					ARCS	LSS LEFT				
S1-2	4R1.Q						4L2.Q				
	Q2R1.M	Q3R1.M	A4R1.M	A5R1.M	A6R1.M		A6L2.M	A5L2.M	A4L2.M	Q3L2.M	Q2L2.M
S2-3	4R2.Q						4L3.Q				
	Q2R2.M	Q3R2.M	A4R2.M	A5R2.M	A6R2.M		A6L3.M				
S3-4	4R3.Q						4L4.Q				
	DFBLC				A6R3.M		A6L4.M	B5L4.M	A5L4.M	SC2 L4	SC1 L4
S4-5	4R4.Q						4L5.Q				
	SC1 R4	SC2 R4	A5R4.M	B5R4.M	A6R4.M		A6L5.M	A5L5.M	A4L5.M	Q3L5.M	Q2L5.M
S5-6	4R5.Q						4L6.Q				
	Q2R5.M	Q3R5.M	A4R5.M	A5R5.M	A6R5.M		A5L6.M	A4L6.M			
S6-7	4R6.Q					4L7.Q					
			A4R6.M	A5R6.M		A6L7.M					
S7-8	4R7.Q					4L8.Q					
					A6R7.M	A6L8.M	A5L8.M	A4L8.M	Q3L8.M	Q2L8.M	
S8-1	4R8.Q					4L1.Q					
	Q2R8.M	Q3R8.M	A4R8.M	A5R8.M	A6R8.M	A6L1.M	A5L1.M	A4L1.M	Q3L1.M	Q2L1.M	

TO BE FINISHED AFTER LEAK TESTS

- Consolidation completed and pumping group operational
- Mechanical assembly completed but pumping group not operational (waiting for ICM intervention)
- Mechanical assembly completed but waiting for new intervention after consolidation of tie-rods
- Consolidation not started but pumping group operational
- Consolidation not started AND pumping group NOT operational

NOTE Pumping groups of QRL only require mechanical intervention

DISMAC – leak test status



TO BE FINISHED IN 3 WEEKS

GLOBAL LEAK TESTS TO BE STARTED

Status of resources

- AL4030: 4 teams + 2 team coordinators (50%, shared with other activities) + % of 1 store keeper (also allocated for mechanical assembly on surface)
 - Reduction to come from August on
 - 1 team coordinator on most of July and August
- CERN: Natalia, Wim, Guillermo (% varies according to his activities in cPS) and Jaime

Thank you !



LS2

