

# LHC TS2 / injectors TS3

FOM 08-Aug-2017



ENGINEERING  
DEPARTMENT

Julie Coupard EN-ACE

# LHC schedule

	July			Aug				Sep					
Wk	27	28	29	30	31	32	33	34	35	36	37	38	39
Mo												1	25
Tu												18	
We												TS2	
Th													
Fr													
Sa													
Su													

Dear all,  
 Following the LMC meeting today, **it has been requested to evaluate the possibility to cancel the TS2 for the LHC and extend the YETS one week.** YETS would start on week 49 instead of week 50 and will finish on week 12 as foreseen (including Powering Test and Machine Check-out).

Can you please send me a list of COMPULSORY activities that you need to realise during the TS2 (September 2017), the minimal duration you need and the impact on the machine if they are postponed to YETS (December 2017)?

	Oct			Nov				Dec					
Wk	40	41	42	43	44	45	46	47	48	49	50	51	52
Mo	2	9	16	23	30	6	13	20	27	4	11	18	Xmas 25
Tu													
We				MD 4									
Th													
Fr													
Sa													
Su													

End of run [06:00]

Special physic run

Technical stop (YETS)

# LHC schedule

LHC TS2 cancelled

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Wk	27	28	29	30	31	32	33	34	35	36	37	38	39
Mo												1	25
Tu												18	
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Sa													
Su													

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Mo	2	9	16	23	30	6	13	20	27	4	11	18	Xmas 25
Tu													
We				MD 4									
Th													
Fr													
Sa													
Su													



YETS extended by one week

# LHC schedule

LHC TS2 shorter

	July				Aug				Sep				
Wk	27	28	29	30	31	32	33	34	35	36	37	38	39
Mo	3	10	17	24	31	7	14	21	28	4	11	18	25
Tu				MD 2									
We	TS1			VdM run						Leaps 6		TS2	
Th													
Fri													
Sa													
Su													

2 Can you please send me a list of COMPULSORY activities that you need to realise during the TS2 (September 2017), the minimal duration you need and the impact on the machine if they are postponed to YETS (December 2017)?

	Oct			Nov				Dec					
Wk	40	41	42	43	44	45	46	47	48	49	50	51	52
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Tu													
We				MD 4									
Th													
Fr										Special physic run			
Sa													
Su													

End of run  
[06:00]

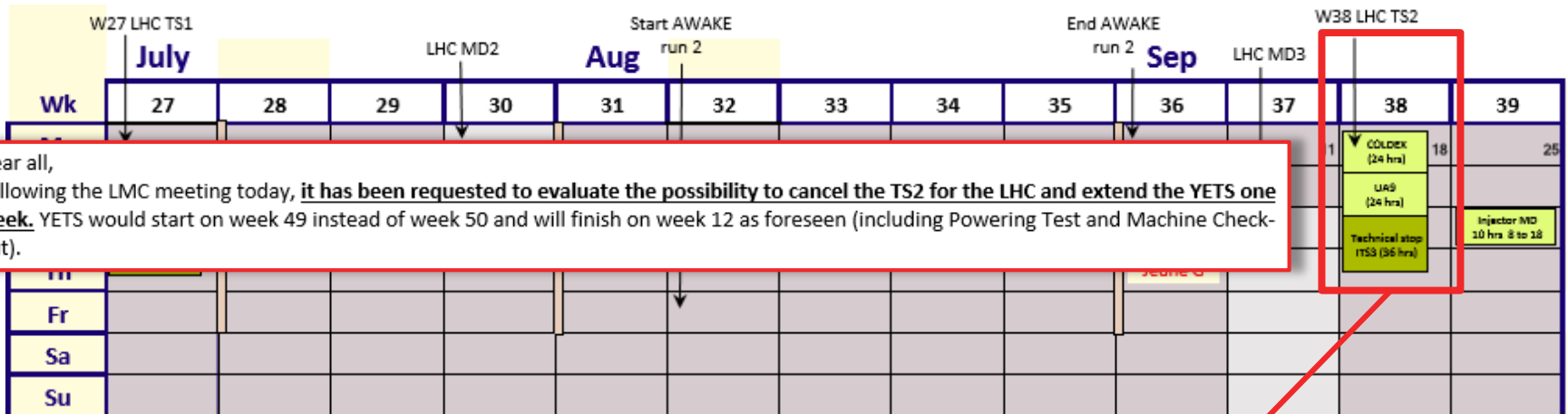
# Injectors schedule

	July			Aug					Sep		W38 LHC TS2		
Wk	27	28	29	30	31	32	33	34	35	36	37	38	39
Mo	COOLDEX (24 hrs) Cool-down (18 hrs) Technical stop (TS2) (36 hrs)	10	17	24	31	7	14	21	28	4	11	COOLDEX (24 hrs) UAG (24 hrs) Technical stop (TS3) (36 hrs)	25
Tu													
We		Injector MD 10 hrs 8 to 18	Injector MD 10 hrs 8 to 18		Injector MD 10 hrs 8 to 18	Injector MD 10 hrs 8 to 18	Injector MD 10 hrs 8 to 18	Injector MD 10 hrs 8 to 18	Injector MD 10 hrs 8 to 18	Injector MD 10 hrs 8 to 18			Injector MD 10 hrs 8 to 18
Th										Jeune G			
Fr													
Sa													
Su													

	Oct			Nov			Dec						
Wk	40	41	42	43	44	45	46	47	48	49	50	51	52
Mo	2	SPS Scrubbing MD 09:00 to 09:00	16	23	30	6	13	20	27	4	COOLDEX (24 hrs)	11	Xmas 18
Tu			UAG (24 h)										
We	Injector MD 10 hrs 8 to 18	SPS Scrubbing MD 08:00 to 09:00	Injector MD 10 hrs 8 to 18		Injector MD 10 hrs 8 to 18	Injector MD 10 hrs 8 to 18	UAG (24 h)	Injector MD 10 hrs 8 to 18	Injector MD 10 hrs 8 to 18				
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Su													

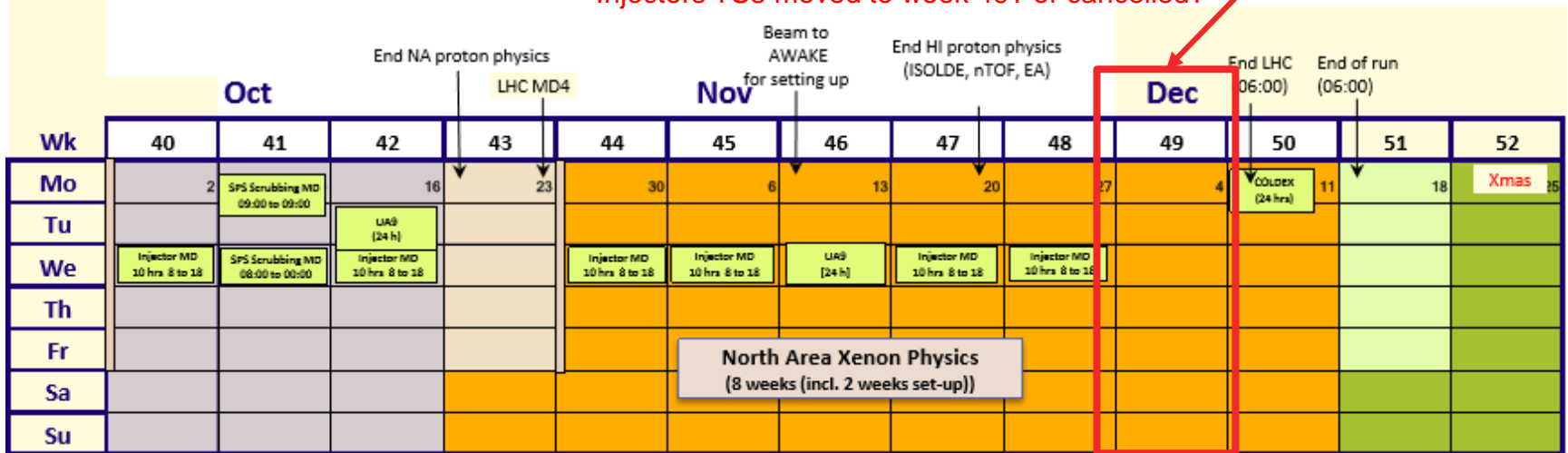
North Area Xenon Physics (8 weeks (incl. 2 weeks set-up))

# Injectors schedule



Dear all,  
 Following the LMC meeting today, **it has been requested to evaluate the possibility to cancel the TS2 for the LHC and extend the YETS one week.** YETS would start on week 49 instead of week 50 and will finish on week 12 as foreseen (including Powering Test and Machine Check-out).

Injectors TS3 moved to week 49? or cancelled?



YETS extension could be beneficial for HL-LHC Crab-cavity

No change on the YETS?

# Injectors schedule

No change on the injectors TS3?

	July			August					September			October	
	W27 LHC TS1			LHC MD2					End AWAKE run 2			W38 LHC TS2	
Wk	27	28	29	30	31	32	33	34	35	36	37	38	39
Mo	COLEX (24 hrs)	10	17	24	31	7	14	21	28	4	11	18	25
Tu	Cool-down (18 hrs)											COLEX (24 hrs)	
We	Technical stop (TS2) (36 hrs)	Injector MD (10 hrs 8 to 18)	Injector MD (10 hrs 8 to 18)		Injector MD (10 hrs 8 to 18)	Injector MD (10 hrs 8 to 18)	Injector MD (10 hrs 8 to 18)	Injector MD (10 hrs 8 to 18)	Injector MD (10 hrs 8 to 18)	Injector MD (10 hrs 8 to 18)	Injector MD (10 hrs 8 to 18)	UAG (24 hrs)	Injector MD (10 hrs 8 to 18)
Th												Technical stop (TS3) (36 hrs)	
Fri													
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	October			November					December				
	End NA proton physics			Beam to AWAKE for setting up					End HI proton physics (ISOLDE, nTOF, EA)				
	LHC MD4			End LHC (06:00)				End of run (06:00)					
Wk	40	41	42	43	44	45	46	47	48	49	50	51	52
Mo	2	SPS Scrubbing MD (09:00 to 09:00)	16	23	30	6	13	20	27	4	COLEX (24 hrs)	11	18
Tu			UAG (24 h)										Xmas
We	Injector MD (10 hrs 8 to 18)	SPS Scrubbing MD (08:00 to 09:00)	Injector MD (10 hrs 8 to 18)		Injector MD (10 hrs 8 to 18)	Injector MD (10 hrs 8 to 18)	UAG (24 h)	Injector MD (10 hrs 8 to 18)	Injector MD (10 hrs 8 to 18)				
Th													
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North Area Xenon Physics (8 weeks (incl. 2 weeks set-up))

# Main activities impacted in the injectors

- **AWAKE electron acceleration program**

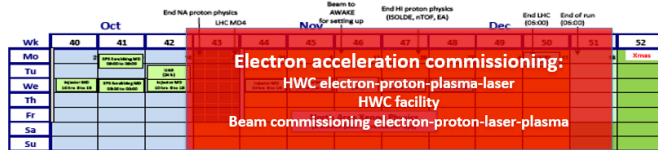
## AWAKE – Original Planning

Main works during TS for AWAKE:

1. Modification and commissioning of **WIC interlock system** to include new electron beam line
2. Verify piping system from AWAKE via T18 to point 8 for **automatic release of AWAKE sumps**

➔ We need at least a 1-day TS to perform these works!

2017:



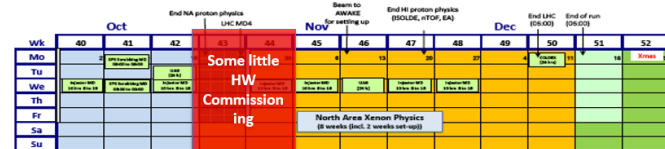
**EYETS 2017/18:** 3 months during EYETS 2017/18 for modifications as consequence from commissioning (from previous experience)



## Impact on AWAKE in case no TS in 2017

1. If no WIC interlock system done: **no electron beam** before April 2018, no physics before Sept 2018 (estimated)
2. If no automatic sump water release: **~100 containers** manually be filled, sampled, checked transported.

2017:





# Main activities impacted in the injectors

- **LIU Project:**
  - Tests on PS 80MHz fast tuner → decision on the design
  - PSB LLRF firmware upgrade to be validated with the new Btrain distribution system → the upgrade must be planned in advance and cannot possibly be squeezed in a PSB downtime period
  - VIC for the removal of obsolete CV equipment during the YETS, RP measurement to evaluate contamination → overload LS2 activities if not done during the YETS
- **COLDEX run** incompatible with LHC Run
- CV intervention to give green light for the automatic release for emptying **AWAKE** of sump water → 100 and 200m<sup>3</sup> (100-200 containers) need to be manually transported, chemically and RP checked and released
- Change of the plasma chamber of **Linac3** Source
- Change of the **Linac2** gas bottle
- EL intervention on the connectors of HL-LHC Crab cavities cables → overload YETS activities (Crab-cavity schedule on the critical path of the YETS)
- BE-CO: CS-CCR-PM2 (LHC Post Mortem backup storage server) → to be done before the end of the year (2h)
- Several inspections and VIC to prepare the work for the next YETS → some activities foreseen for the next YETS could not be ready on time (EN-EL, EN-CV, RP analysis on cables in SPS, delay in the integration studies)

# Injectors schedule

Need to keep the iTS3 on week 38  
 → How long ? 24h ? 36h?

Wk	July 27	28	29	30	Aug 31	32	33	34	35	Sep 36	37	38	39
Mo	COLEX (24 hrs) Cool-down (18 hrs) Technical stop ITS2 (36 hrs)	10	17	24	31	7	14	21	28	4	11	COLEX (24 hrs) UAG (24 hrs) Technical stop ITS3 (36 hrs)	25
Tu													
We		Injector MD 10 hrs 8 to 18	Injector MD 10 hrs 8 to 18		Injector MD 10 hrs 8 to 18	Injector MD 10 hrs 8 to 18	Injector MD 10 hrs 8 to 18	Injector MD 10 hrs 8 to 18	Injector MD 10 hrs 8 to 18	Injector MD 10 hrs 8 to 18			Injector MD 10 hrs 8 to 18
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 (8 weeks (incl. 2 weeks set-up))