



Joint COMPASS-AMBER Technical Board 16-November-2021

Stefano Levorato
16.11.2021

Agenda

- **General Communications**
 - Approval of the minutes of the last TB
 - Dates for 2022 TB confirmation
- **Update on HV modules from CAEN**
- **Gas Planning**
- **CV planning**
- **Draft injector schedule**
- **Data taking restart in 2022**
- **Interventions**

COMPASS Technical Board		
Tuesday 16 Nov 2021, 14:00 → 18:00 Europe/Zurich		
892/1-D20 (CERN)		
Videoconference		COMPASS Technical Board
14:00	→ 14:20	Communications from the Technical Coordinator Speaker: Dr Stefano Levorato (INFN Trieste (IT) and CERN)
14:20	→ 14:40	Report from the Run Coordinator Speaker: Jan Matousek (Charles University (Prague, CZ))
14:40	→ 15:00	PT status Speaker: Norihiro Doshita (Yamagata University (JP))
15:00	→ 15:10	Silicon report Speaker: Christian Dreisbach (Technische Universität Muenchen (DE))
15:10	→ 15:20	RICH-1 report Speaker: Silvia Dalla Torre (Università e INFN Trieste (IT))
15:20	→ 15:25	W45 report Speaker: Carlos Davide Da Rocha Azevedo (University of Aveiro (PT))
15:25	→ 15:35	DC5 report Speaker: Caroline Kathrin Riedl (Univ. Illinois at Urbana Champaign (US))
15:35	→ 15:45	DCS report Speaker: Christophe Menezes Pires (LIP Laboratório de Instrumentação e Física Experimental de Partículas (PT))
15:45	→ 16:05	DAQ report Speaker: Igor Konorov (Technische Universität Muenchen (DE))
16:05	→ 16:20	GEM report Speaker: Bernhard Ketzer (University of Bonn (DE))
16:20	→ 16:30	Pixel MM report Speaker: Damien Neyret (Université Paris-Saclay (FR))
16:30	→ 16:40	ECAL 1 LED monitoring report Speaker: Sergey Donskov (Institute for High Energy Physics of NRC Kurchatov Institute (RU))
16:40	→ 16:50	Trigger report Speaker: Benjamin Moritz Veit (Johannes Gutenberg Universität Mainz (DE))
16:50	→ 17:10	TPC gas system Speakers: Aleksei Dziuba (NRC Kurchatov Institute PNPI (RU)) , Alexander Vasilyev (NRC Kurchatov Institute PNPI (RU))

Dates for the next technical board meetings

2022 Calendar

January	February	March	April	May	June	July	August	September	October	November	December
1 Sa	1 Tu	1 Tu	1 Fr	1 Su	1 We	1 Fr	1 Mo	1 Th	1 Sa	1 Tu	1 Th
2 Su	2 We	2 We	2 Sa	2 Mo DIS	2 Th	2 Sa	2 Tu	2 Fr	2 Su	2 We	2 Fr
3 Mo	3 Th	3 Th	3 Su	3 Tu DIS	3 Fr	3 Su	3 We	3 Sa	3 Mo	3 Th	3 Sa
4 Tu	4 Fr	4 Fr	4 Mo	4 We DIS	4 Sa	4 Mo	4 Th	4 Su	4 Tu	4 Fr	4 Su
5 We	5 Sa	5 Sa	5 Tu	5 Th DIS	5 Su	5 Tu	5 Fr	5 Mo	5 We	5 Sa	5 Mo
6 Th	6 Su	6 Su	6 We	6 Fr DIS	6 Mo	6 We	6 Sa	6 Tu	6 Th	6 Su	6 Tu
7 Fr	7 Mo	7 Mo	7 Th	7 Sa	7 Tu	7 Th	7 Su	7 We	7 Fr	7 Mo	7 We
8 Sa	8 Tu	8 Tu	8 Fr	8 Su	8 We	8 Fr	8 Mo	8 Th	8 Sa	8 Tu	8 Th
9 Su	9 We	9 We	9 Sa	9 Mo	9 Th	9 Sa ICHEP	9 Tu	9 Fr	9 Su	9 We	9 Fr
10 Mo	10 Th	10 Th	10 Mo	10 Tu	10 Fr	10 Su	10 We	10 Sa	10 Mo	10 Th	10 Sa
11 Tu	11 Fr	11 Fr	11 Mo	11 We	11 Sa	11 Mo	11 Th	11 Su	11 Tu	11 Fr	11 Su
12 We	12 Sa	12 Sa	12 Tu	12 Th	12 Su	12 Tu	12 Fr	12 Mo	12 We	12 Sa	12 Mo
13 Th	13 Su	13 Su	13 We	13 Fr	13 Mo	13 We	13 Sa	13 Tu	13 Th	13 Su	13 Tu
14 Fr	14 Mo	14 Mo	14 Th	14 Sa	14 Tu	14 Th	14 Su	14 We	14 Fr	14 Mo	14 We
15 Sa	15 Tu	15 Tu	15 Fr	15 Su	15 We	15 Fr	15 Mo	15 Th	15 Sa	15 Tu	15 Th
16 Su	16 We	16 We	16 Sa	16 Mo	16 Th	16 Sa	16 Tu	16 Fr	16 Su	16 We	16 Fr
17 Mo	17 Th	17 Th	17 Su	17 Tu	17 Fr	17 Su	17 We	17 Sa	17 Mo	17 Th	17 Sa
18 Tu	18 Fr	18 Fr	18 Mo	18 We	18 Sa	18 Mo	18 Th	18 Su	18 Tu	18 Fr	18 Su
19 We	19 Sa	19 Sa	19 Tu	19 Th	19 Su	19 Tu	19 Fr	19 Mo	19 We	19 Sa	19 Mo
20 Th	20 Su	20 Su	20 We	20 Fr	20 Mo	20 We	20 Sa	20 Tu	20 Th	20 Su	20 Tu
21 Fr	21 Mo	21 Mo	21 Th	21 Sa	21 Tu	21 Th	21 Su	21 We	21 Fr	21 Mo	21 We
22 Sa	22 Tu	22 Tu	22 Fr	22 Su	22 We	22 Fr	22 Mo	22 Th	22 Sa	22 Tu	22 Th
23 Su	23 We	23 We	23 Sa	23 Mo	23 Th	23 Sa	23 Tu	23 Fr	23 Su	23 We	23 Fr
24 Mo	24 Th	24 Th	24 Su	24 Tu	24 Fr	24 Su	24 We	24 Sa	24 Mo	24 Th	24 Sa
25 Tu	25 Fr	25 Fr	25 Mo	25 We	25 Sa	25 Mo	25 Th	25 Su	25 Tu	25 Fr	25 Su
26 We	26 Sa	26 Sa	26 Tu	26 Th	26 Su	26 Tu	26 Fr	26 Mo	26 We	26 Sa	26 Mo
27 Th	27 Su	27 Su	27 We	27 Fr	27 Mo	27 We	27 Sa	27 Tu	27 Th	27 Su	27 Tu
28 Fr	28 Mo	28 Mo	28 Th	28 Sa	28 Tu	28 Th	28 Su	28 We	28 Fr	28 Mo	28 We
29 Sa		29 Tu	29 Fr	29 Su	29 We	29 Fr	29 Mo	29 Th	29 Sa	29 Tu	29 Th
30 Su		30 We DPG	30 Sa	30 Mo	30 Th	30 Sa	30 Tu	30 Fr	30 Su	30 We	30 Fr
31 Mo		31 Th		31 Tu		31 Su	31 We		31 Mo		31 Sa

Proposed dates for the Joint COMPASS AMBER Technical Boards

- 8 February 2022
- 19 April 2022
- 19 July 2022
- 11 October 2022
- 13 December 2022

No change request received:

Updated the TB page

<https://wwwcompass.cern.ch/compass/tech-board/>

- holidays
- conferences
- AMBER
- CM/CB

Technical Board Meetings since 2012		
(M)= starting at 9:00 am CERN time; (A)= starting at 14:00 CERN time		
2022	2021 (Download ics file)	2020
8 Feb 2022 (M)	19 Jan 2021 (M)	4 Feb 2020
19 Apr 2022 (A)	23 Mar 2021 (A)	9 April 2020
19 July 2022 (M)	04 May 2021 (M)	5 May 2020
11 Oct 2022 (A)	13 Jul 2021 (A)	13 Jul 2020
13 Dec 2022 (M)	28 Sep 2021 (M)	1 Sep 2020
	16 Nov 2021 (A)	3 Nov 2020

Communications: HV

- **CAEN HV Modules ordered with wrong polarity**
 - CAEN has not received from any external contractor any request of the same typology of HV modules we have ordered with wrong polarity → for 2021 no room for exchange
- **Ordered for 2021 CAEN HV Modules**
 - We have received 3 A7435 24 Channel, -3.5 kV, 3.5/0,35 mA (9W) Common Floating Return Dual Range Boards (originally ordered to replace BMS old PS units) → Accounts for 72 spare channels available at COMPASS for 2022 data taking in case we do not replace any old module of the BMS → discuss with Moritz and Rainer the best solution compromise
 - We have also received the extra 3 SY4527 mainframes (1 Trigger, 2 BMS) ordered as well as their dedicated power supply, this provides enough redundancy for 2022 data taking (NB delivery time 6 months)

Communications: GAS planning

- **Flammable gas delivery has been completely stopped yesterday.**
- **Now we are still running with all neutral gases**
- **22 of November changeover to nitrogen and installation of the By-Pass**
- **Restart of Gases for 2022 still negotiable: (according to requests by detector experts)**
 - Neutral gases → early restart possible (February)
 - Flammable gases → in principle an early restart is possible also in this case. We need to fulfill all safety requirements
- **For the PRM pilot run we have been using 100 bars (60m³) of H₂ 6.0. 200 remaining. The Hydrogen bottle set will be stored at 908 gas point. The gas hut will be given back. To keep in mind in case we need it for future usage, anyhow for the future the standard is the CERN Hydrogen 5.0 from the CERN line.**

CERN CV services preliminary schedule for the winter shutdown reminder → **Confirmed**

- **Draft schedule for CV**

- Starting the shutting down of Cooling Tower on November 15
- From November 15 the system will run in non redundant mode (only one pump) so in case of failure no cooling water will be distributed
- The Cooling Tower will run maximum 2 week after the **15 November** → 1 December hard deadline for any use of the Chilled-Raw Water
- CV is needed for COMPASS He liquefier → ~ 15 November or (early) Helium will not be available any longer
- **Restart for 2022**: the present schedule foresees the services restart for CV around **end of February/beginning of March**

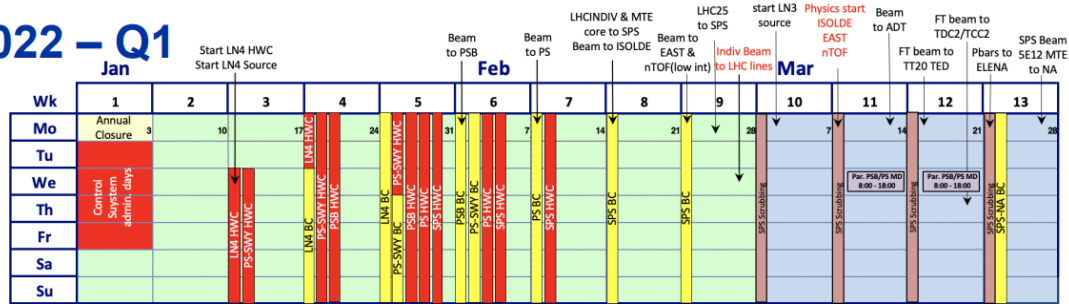
2022 **Draft** Injectors Schedule For discussion & iteration

Some of the input to the draft schedule buildup

- Close LHC machine and experimental caverns on 21 February 2022
- Start beam commissioning on 7 March 2022
- **Length of the Pb ions run in the SPS North Area is 4 weeks end of 2022.**
- **AWAKE: approved for up to 15 weeks with beam in 2022**
- **HiRadMat request: 5 Runs around week 18, 24, 30, 36 and 42**

2022 Draft Injectors Schedule For discussion & iteration

2022 – Q1



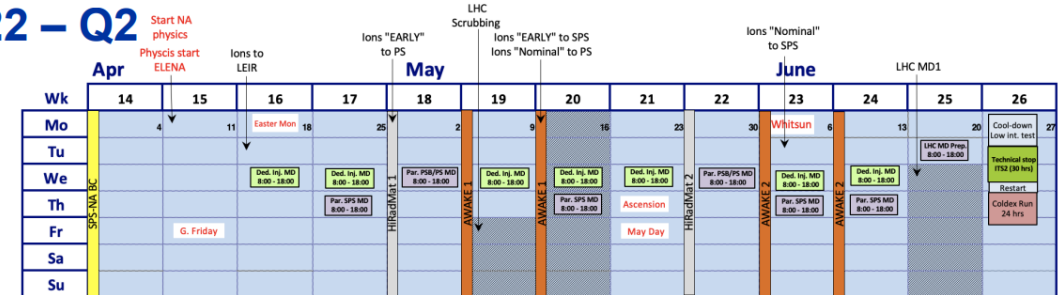
- **Wk1:** Control system administration days – starts on last day of annual closure
- **Wk3:** Start of Linac 4 source and injectors complex re-commissioning
- **Wk9:** LHCProbe/Pilot/INDIV ready for LHC
- **Wk10 – 13:** SPS scrubbing
- **Wk11:** Physics start ISOLDE, nTOF and East Area – preceded by 2 weeks setting-up
- **Wk11 and Wk 12:** Parallel MD for PSB and PS on Wednesday
- **Wk13:** Start 2-week beam commissioning SPS-NA – interleaved with scrubbing during nights

2022 – Q2

Start NA physics
Physics start ELENA



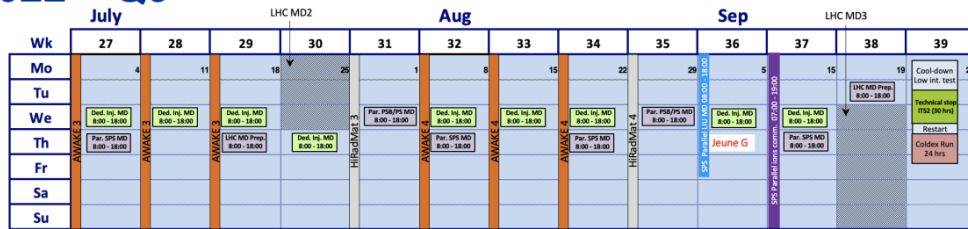
2022 – Q2



- **Wk15:** Start of SPS-NA and ELENA physics
- **Wk18 + 22:** HiRadMat runs 1 and 2
- **Wk19 + 20 & Wk23 + 24:** AWAKE runs 1 and 2 – also scrubbing in the LHC
- **Wk 25:** LHC MD block 2
- **Wk 26:** Injectors Technical stop – also 5-day LHC technical stop (COLDEX run possible)
- 7 Dedicated MD blocks, 6 Parallel MD blocks and 1 LHC MD preparation block

2022 Draft Injectors Schedule For discussion & iteration

2022 – Q3



- **Wk27+28+29 & Wk32+33+34:** AWAKE runs 3 and 4
- **Wk30:** LHC MD block 2
- **Wk31+35:** HiRadMat runs 3 and 4
- **Wk36:** Week with parallel LIU MDs
- **Wk37:** Parallel Pb ion commissioning week in the SPS – pending final evaluation of 2021 run
- **Wk38:** LHC MD block 3
- **Wk39:** Injectors Technical stop – also 5-day LHC technical stop (COLDEX run possible)
- 9 dedicated MD blocks, 6 parallel MD blocks and 2 LHC MD preparation blocks

SPS Parallel ions commissioning:

SPS Parallel ions comm. 07:00 - 19:00

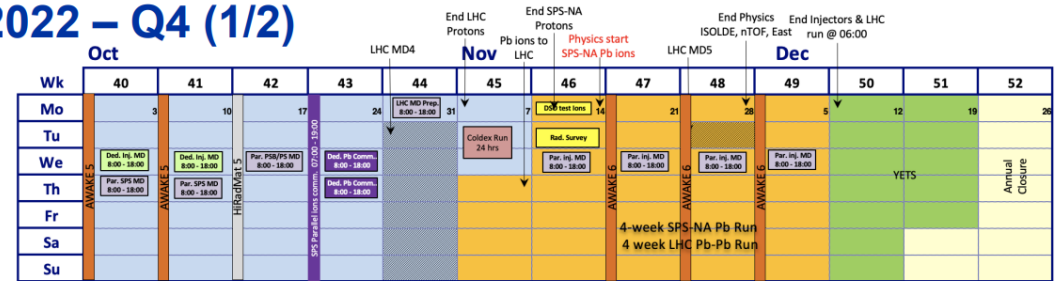
- Commissioning of ions in the SPS in parallel to the delivery of beam for physics – physics duty cycle reduced

SPS dedicated ions commissioning:

Ded. Pb Comm. 8:00 - 18:00

- Dedicated ion commissioning in the SPS, not delivery of physics beam from the SPS. – physics duty cycle in PS reduced, other physics not impacted.

2022 – Q4 (1/2)



- **Wk40+41 & 47+48+49:** AWAKE runs 5 and 6
- **Wk42:** HiRadMat run 5
- **Wk43:** Parallel and dedicated Pb ions commissioning in SPS - pending final evaluation of 2021 run
- **Wk 44:** LHC MD block 4
- **Wk45:** 3-day LHC Technical stop (COLDEX run possible) followed by Pb ions to the LHC

Experimental facility	Start Physics	End Physics	Duration [days]*	Comment
ISOLDE	14.03.2022	28.12.2022	259	
nTOF	14.03.2022	28.12.2022	259	
PS East Area	14.10.2022	28.12.2022	259	Pb Ions possible until 12.12.2022
SPS North Area p*	11.04.2022	14.11.2022	217	
ELENA	11.04.2022	12.12.2022	35	
SPS North area Pb ions	14.11.2022	12.12.2022	28	
AWAKE	09.05.2022	12.12.2022	105	2 day shifts weeks and weekend
HiRadMat	02.05.2022	23.10.2022	35	Extended daytime only, rarely weekends



2022 **Draft** Injectors Schedule For discussion & iteration

March

M	T	W	T	F	S	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

April

M	T	W	T	F	S	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Beamline commissioning

Start NA Physics

Early restart of the accelerator complex with M2 beamline commissioning foreseen last week of March, beginning of April

The M2 beam line is at the moment occupied by the NA64 μ apparatus.

The NA64 collaboration will(has) request(ed) 3 weeks of data taking in 2022, to optimize the changeover since they are already in place → possible sidis restart begin of MAY

→ Major implication for COMPASS: detectors should be switched on in March ready for the commissioning during NA64 μ data taking (NB no or very reduced access during the month of April)

Planned interventions

- **ED DT Support requested for**
 - 17 November stretching machine preparation (EP DT tech support)
 - December DC5 transport to clean room (ED DT tech support)
- **19 of November SM1 test (ramp up and down test to nominal current to measure the electrical parameters of the magnet) 10:00 → 12:00**
- **SM2 leakage fix**