

Technical Board Meeting:

News, communications & planning



December 4, 2017
Caroline Riedl



Communications

- Approval of minutes of TB meeting November 7, 2017
<https://indico.cern.ch/event/590282/attachments/1564185/2464002/TB-Minutes-2017-11-07.pdf>
- New TB member: Stephane Platchkov, confirmed at Nov. 16, 2017 CB meeting
- Confirmation of 5 TB members at next CB meeting (January 2018):
Igor Konorov, Daniele Panzieri, Fulvio Tessarotto, Bernhard Ketzer, Jens Barth

2018 TB meetings

2018 Calendar

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

	CM
	AM
	SPSC
	conference
	holiday

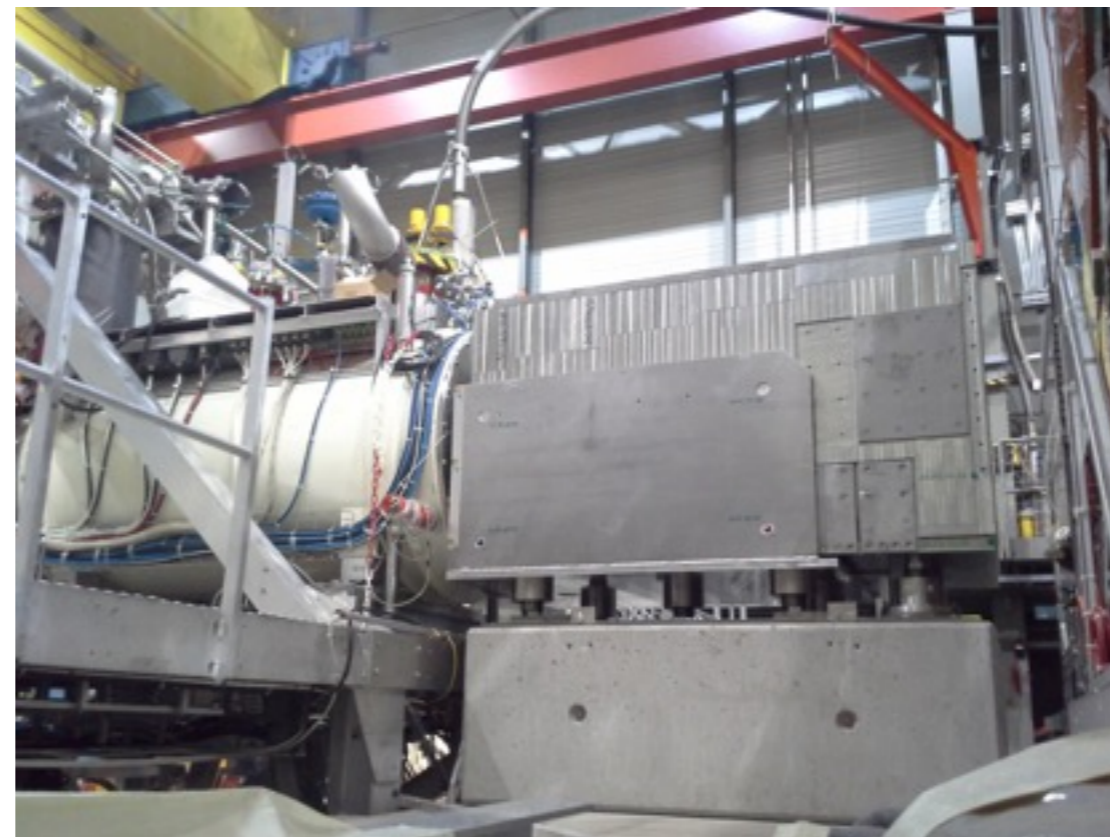
TB meetings 2018:

February 20
 April 10
 June 5
 September 4
 November 6

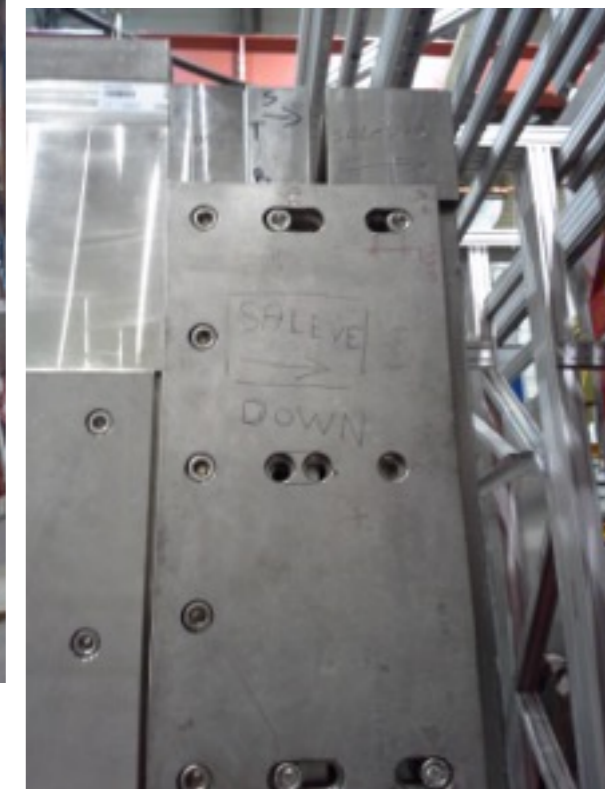
Easter: March 30 - April 2
 Pentecost: May 20/21

News from EHN2

- Winter DAQ cooling turned on Nov. 14
- Installation of new AC units in target pump room started mid-November, will take about 3 weeks until Dec. 6
- SUSI access system: VIC appointment Nov. 23 to inspect cable pulling topologies. Bastien Rae: *“system will be in place for 2018 run”*
- After water incident September 30: spare part installed Nov 23-28
- Target activity: cryogenic piping Nov 8-01; leak checking & cable pulling; preparation of PLCs; tests of AULs. *More in Nori’s talk.*
- Absorber cage, absorber, and concrete shielding installed November 20-22



*also additional 2
downstream steel plates
installed as in 2015*

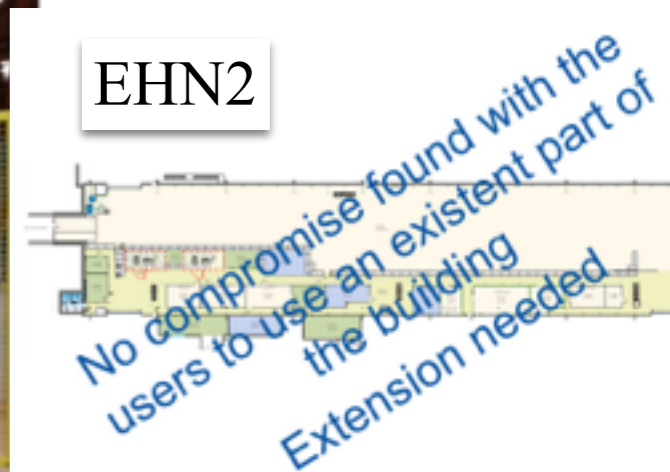


North area's present situation

- Radio Protection Buffer zone in EHN2 (Robert Froeschl) → right side
- Temporary storage of magnets (~ Feb 2018 until June 2019) close to 888 ?



- 2 Buffer Zones
- ▲ 2 Computers only
- ✘ 2 Missing



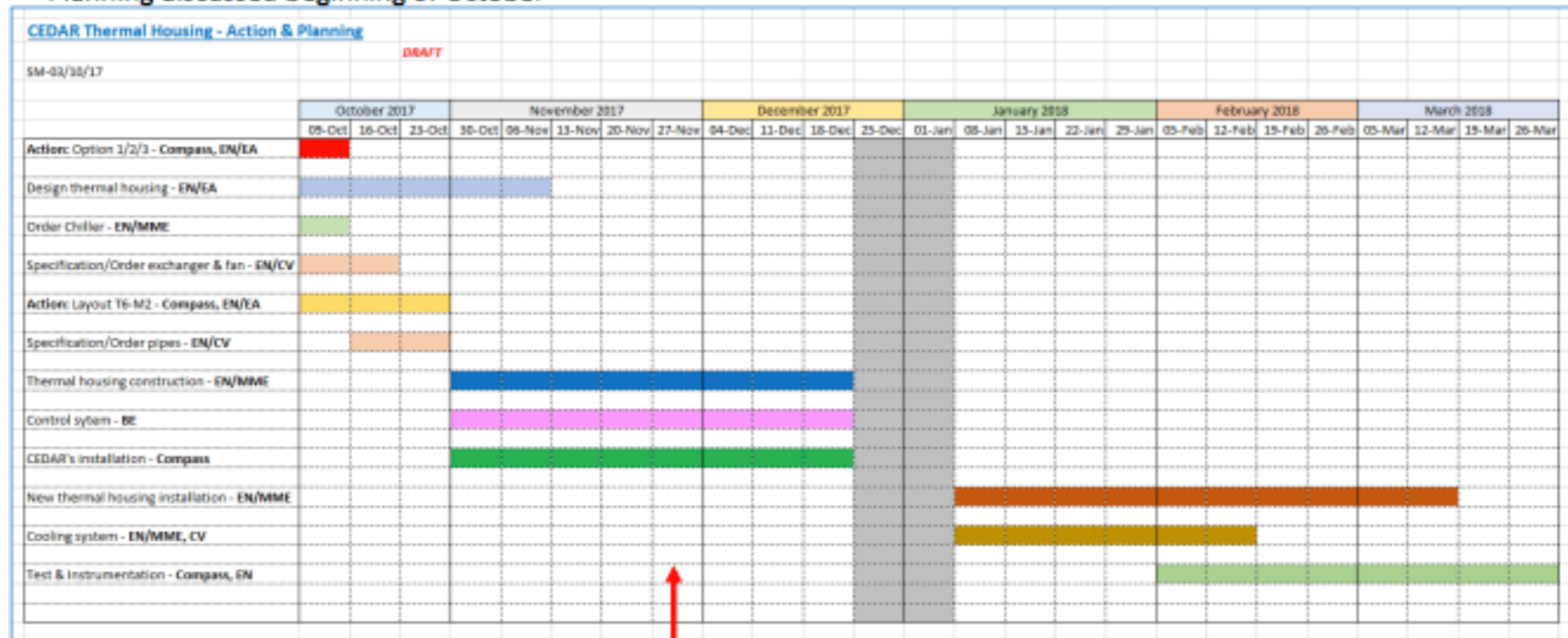
- Feedback from PBC
 - Lau Gatignon's summary: https://indico.cern.ch/event/683331/contributions/2800213/attachments/1565169/2468262/EATM_28112017_PBC_News.pdf
 - Workshop November 21/22: <https://indico.cern.ch/event/644287/>
- CEDAR upgrade (Serge Mathot): next pages
- Cryogenics related to COMPASS: next pages



CEDAR upgrade (Serge Mathot / CERN), EATM 92

Time-line & milestones:

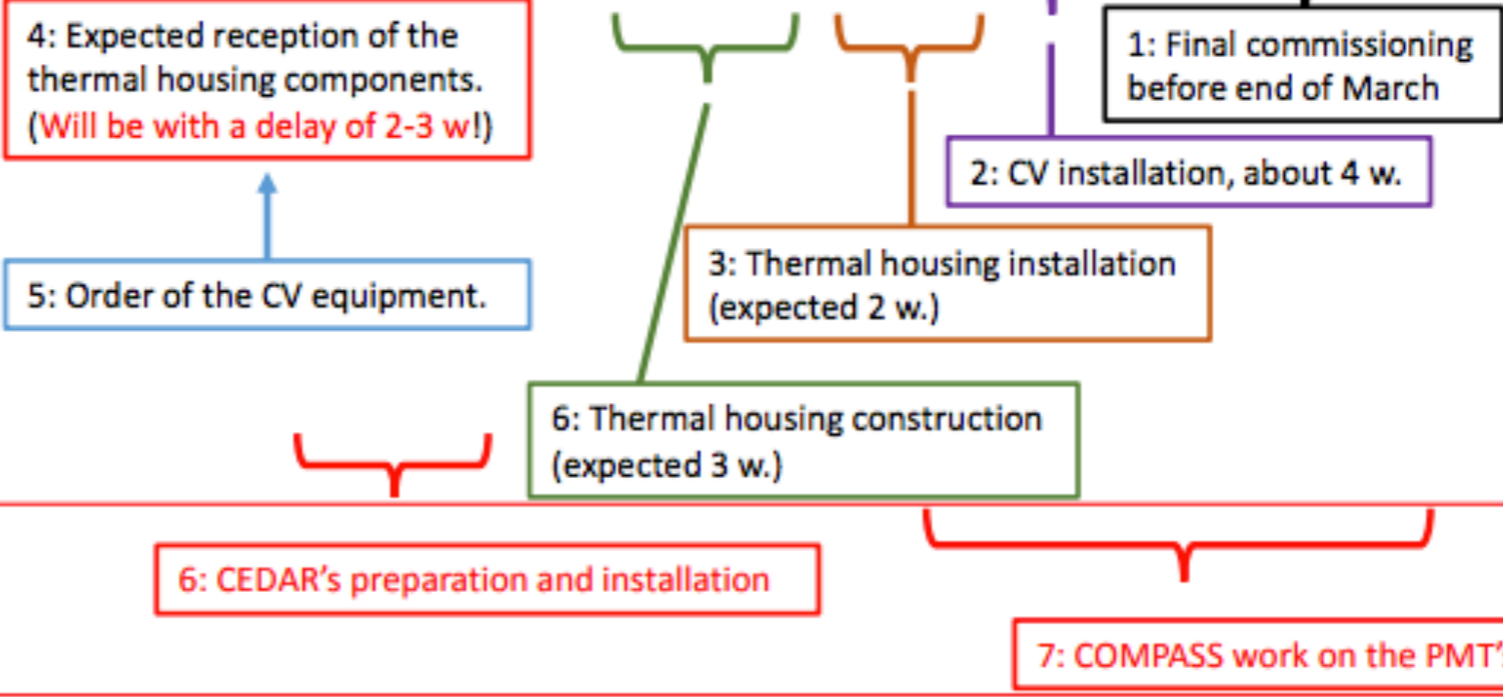
° Planning discussed beginning of October



° Critical milestones:

No margin for the planning

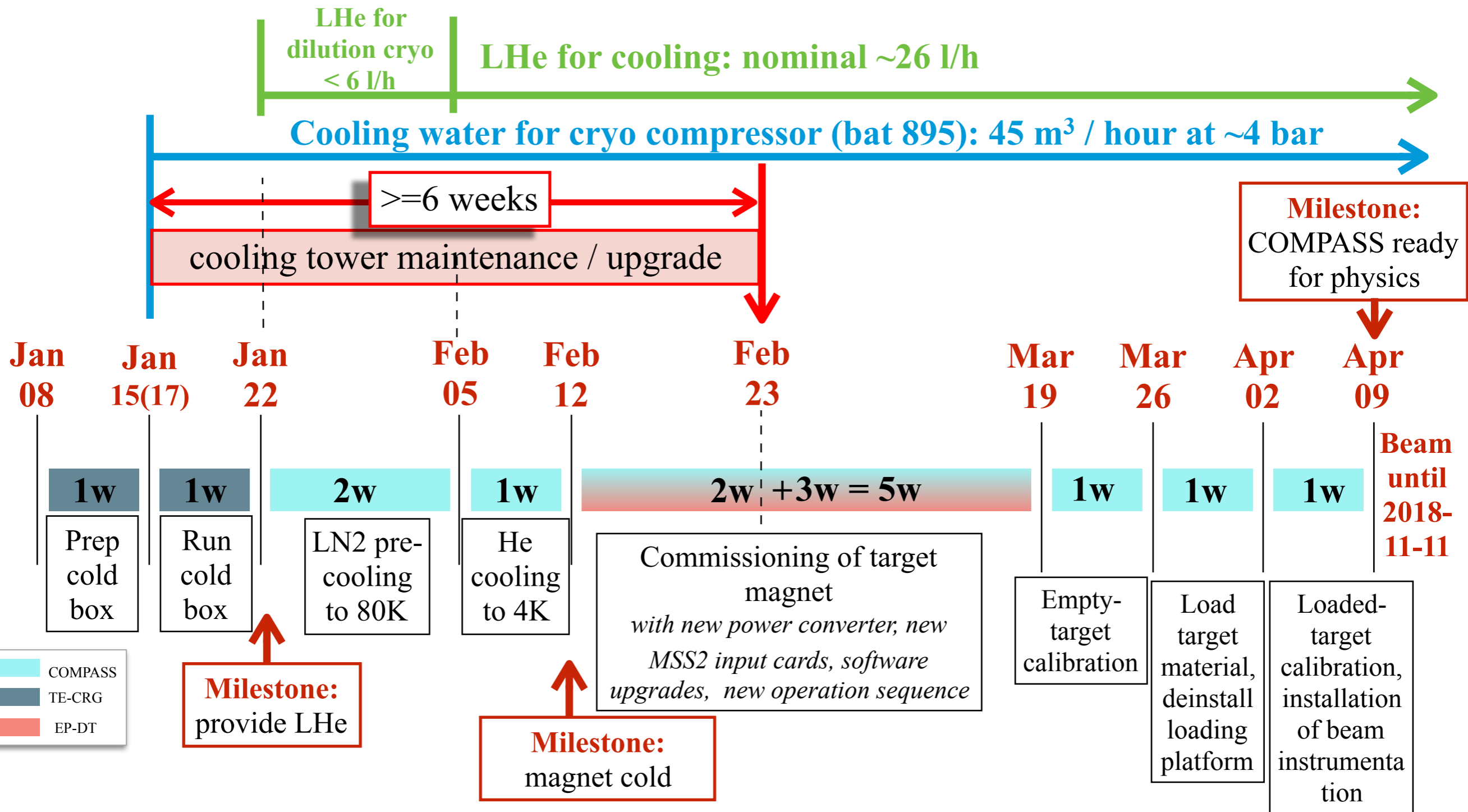
Already critical



Response from fire brigade

- Meeting with Yann Léchevin (deputy group leader of HSE) and Marc Nas Nov. 7
- Can we use firefighting water to cool cryo compressor for COMPASS target magnet?
- Yann Nov. 8:: “I have started my investigation to see what is feasible to fulfil your needs in term of water. Firstly, we will perform an **analysis** of what is really available (**dynamic flow rate and pressure**) on the water network where you will need it. We will also make a simulation about what will happen **if we need water resources at the same time** in an other Preveessin point.
I hope we will start our measurements this weekend. I will let you know the results as soon as possible to define our furthers directions.“
- Yann Nov. 27: “First result I get, shows that we could have only **51 m3/h** (5 bars) available on the loop concerned (maximum flow rate).
From my point of view, the water network will not tolerate your needs. It also will significantly affect our operational capability on Meyrin site. **I will not be able to support your request.** “

Time line of COMPASS target-magnet cooling 2018: the desired scenario



- * If no cooling water (**with sufficient volume & pressure**) before February 23: **6 weeks (of 31 total) beam loss for COMPASS**
- * Investigations of alternatives are ongoing, no suitable solutions identified as of now.
 - Firefighting water: water loop in question cannot provide required volume

**shown at
Nov 28
EATM**

Cryogenic operations in NA (EATM 92)

Nicolas Guillotin presented by Philippe Gayet



CERN Prévessin North area detail

NORTH AREA INSTALLATIONS:

Balloons:

building 887

ATLAS-H8:

building 887 – EHN1

CMS-RD5:

building 887 – EHN1

COMPASS:

building 888

NA61.1&2 (VERTEX 1&2)

building 887 – EHN1

NA62:

building 918 – EHN2

Process compressors & recovery compressors & dryer:

building 895

STATION/CRYOPLANT	2018 - CRYO OPERATION - NORTH AREA											
	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
NA61.1	STOP	STOP	MAINTENANCES OF THE CRYO STATION	PROCESS COMMISSIONING ??	Operation ??	Operation ??	Operation ??	Operation ??	Operation ??	Operation ??	Operation ??	STOP ?
NA61.2	STOP	STOP	MAINTENANCES OF THE CRYO STATION	PROCESS COMMISSIONING ??	Operation ??	Operation ??	Operation ??	Operation ??	Operation ??	Operation ??	Operation ??	STOP ?
ATLAS H8	STOP	STOP	STOP	STOP	STOP	MAINTENANCES OF THE CRYO STATION	RESTART ??	Operation ??	Operation ??	Operation ??	Operation ??	STOP ?
CMS-RD5	STOP	STOP	MAINTENANCES OF THE CRYO STATION	PROCESS COMMISSIONING ??	Operation ??	Operation ??	Operation ??	Operation ??	Operation ??	Operation ??	Operation ??	STOP ?
NA62	Operation	Operation	Operation	Operation	Operation	Operation	Operation	Operation	Operation	Operation	Operation	Operation
						MIRROR TESTS FOR MIGRATION	MIRROR TESTS FOR MIGRATION	MIRROR TESTS FOR MIGRATION	MIRROR TESTS FOR MIGRATION			
COMPASS	MAINTENANCES OF THE WATER COOLING SYSTEM/COOL DOWN WITH OTHER TECHNO??	MAINTENANCES OF THE WATER COOLING SYSTEM/COOL DOWN WITH OTHER TECHNO??	COMMISSIONING	Operation	Operation	Operation	Operation	Operation	Operation	Operation	Operation	STOP ?

Cryo compressor used for COMPASS polarized target

Nicolas Guillotin Nov. 28, 2017

- **Piston compressor CP2** in bat. 895
- Nominal requested water cooling flow close to **45 - 50 m³/hr**
Degraded mode could be tested but absolutely no guarantees can be given concerning the reliability
- Nominal inlet pressure: close to **4 bars**
Degraded mode could be tested but absolutely no guarantees can be given concerning the reliability
- Nominal water temperature at **inlet (outlet)** of cooling circuit **25 °C (29 °C)**
- Nominal electrical power characteristics of the motors: **66A - 3.3kW**
No reduced consumption is possible for such old compressor designs from the early 70's
- Bill Bannister: *“Carry out a test on this compressor to establish the flow required to maintain adequate cooling & measure the actual temperature at the same time.”*

Currently discussed solutions to the cooling water shortage

1. Use “eau de tap” (tap water) to cool compressor? → *To be checked by Bill Bannister.*
2. Use extra water chiller to cool compressor? <http://dte.eu/products/specials/> → *Asked Bill Bannister to comment.*
3. Have LHe delivered in dewars from Meyrin until Feb. 23 and fill big tank (2000l) on target platform. → *Discuss further with TE-CRG after December 4, when Johan Bremer will be back at CERN.*
 - TE-CRG does not want this to become the standard scenario whenever the cooling tower is not available.
 - Helium would be recovered back to Meyrin, but a disruption of the recovery line is expected during construction work at the Preveessin entrance.
 - Fabrice: this has been done before, but not the dewar in 888. It is painstakingly slow (20 deliveries of 450 liter dewars) and not without risk (filling procedure). Seems hardly feasible for nominal magnet operation.
4. Delay of the cooling-tower upgrade into LS2: it was stated at the EATM to be impossible (EHN1 extension, not sufficient cooling water for all Preveessin users). → ???

**Remaining possible solutions are scarce, probably unfeasible, or without gain in time.
The problem has to (continued to) be taken to the political level.**

Communicated by spokespersons to EP division leader Manfred Krammer at FRC meeting Nov. 21

Issue will be made an EATM action item (Johannes).

COMPASS has to squeeze and parallelize where possible

cooling tower upgrade

Cooling water for cryo compressor

Water

Cold He /
LHe for
DR < 6 l/h.
Dewars?

LHe for cooling: nominal ~26 l/h

Helium

Beam to COMPASS until Nov. 11

Beam

Feb
12

LN2 pre-cooling to 80K & DR cooling

Feb
26

Mar
5

Apr
2

Apr
9

Apr
16

Apr
30

2w

1w

4w?

1w

1w

2w

1w
Prep cold box

1w
Run cold box

He cooling to 4K

Commissioning of target magnet with new power converter, new MSS2 input cards, software upgrades, new operation sequence

Load target material, deinstall loading platform, install beam instrumentation

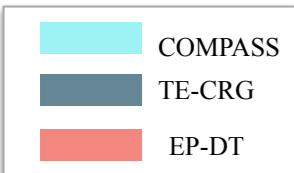
Loaded-target calibration (signal)

Spectrometer commissioning

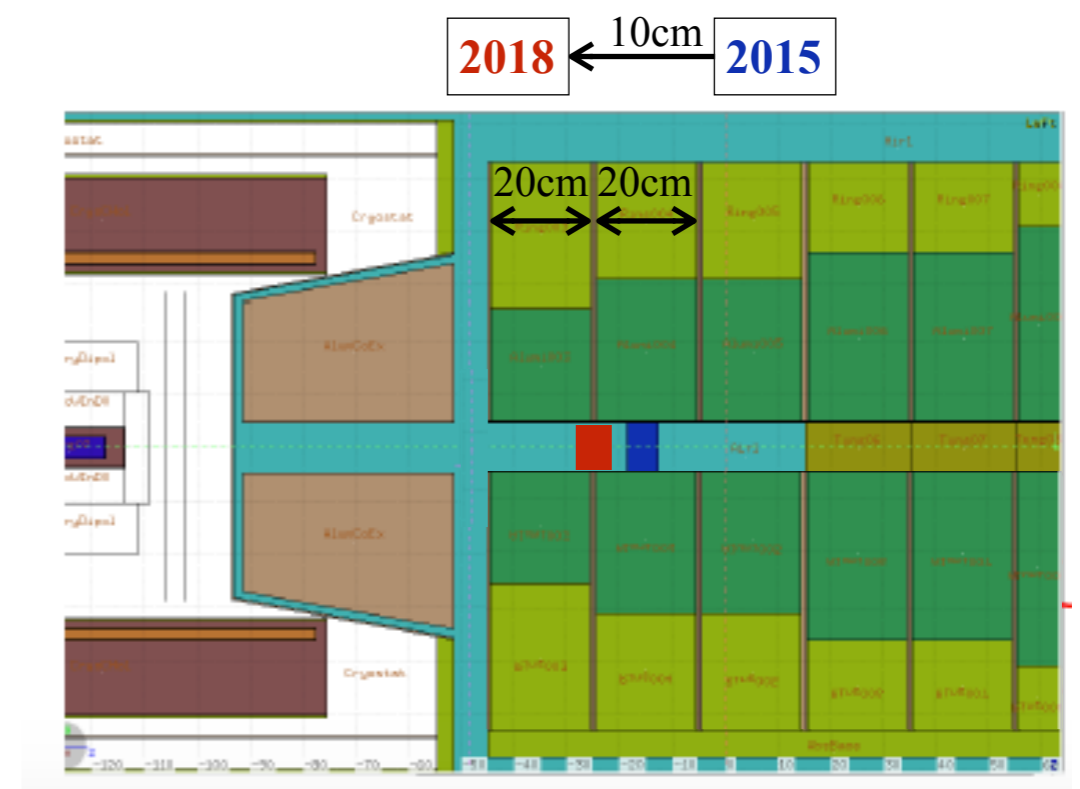
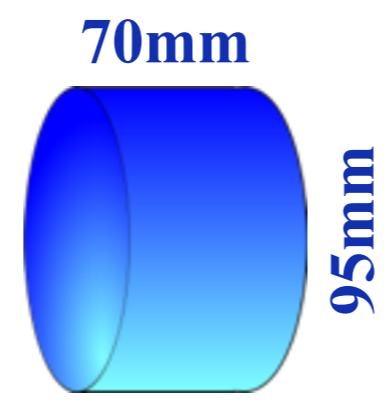
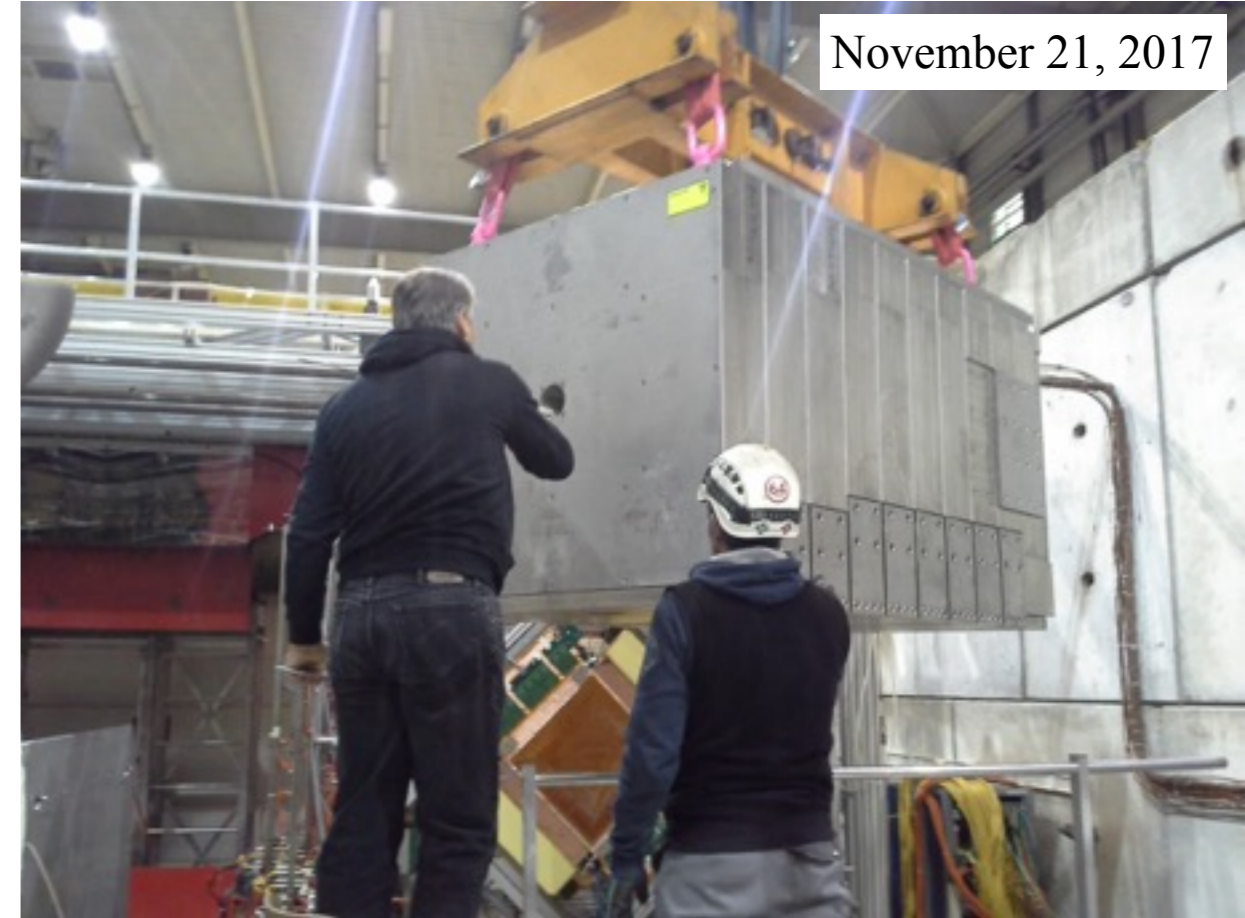
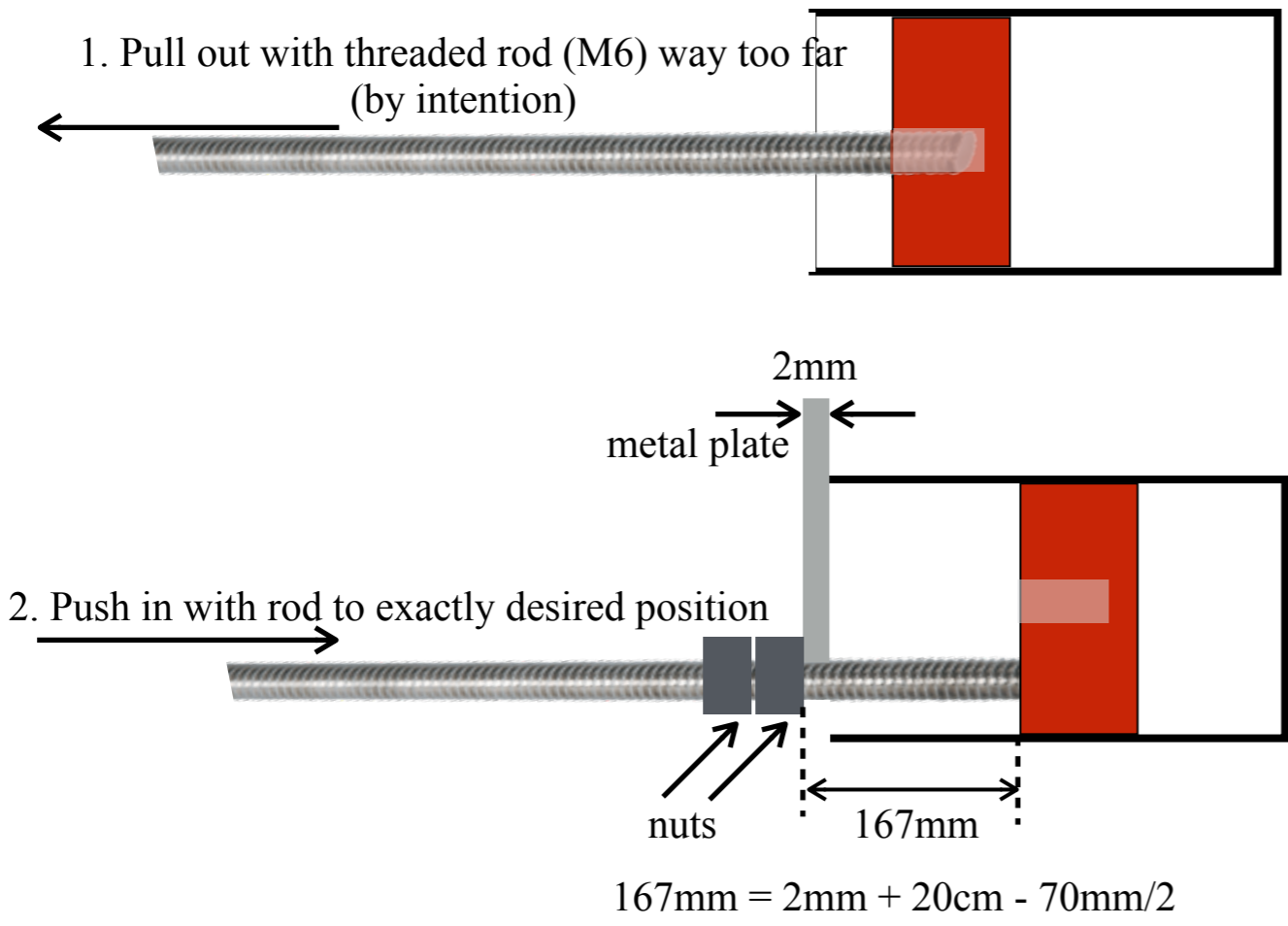
Target commissioning (optimize polarization, ...)

Operate with dewars during pre-cooling stage <6 l/h: possible?
Optimize and/or reduce magnet commissioning time
No empty target calibration :-)

Not impossible but painful and like too squeezed



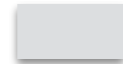
Aluminum plug in hadron absorber 2018



Shielding of target PLCs



concrete 80cm = factor 10 reduction in (high-energy) neutron flux, factor 3 thermal neutrons



polyethylene ~2cm to thermalize neutrons

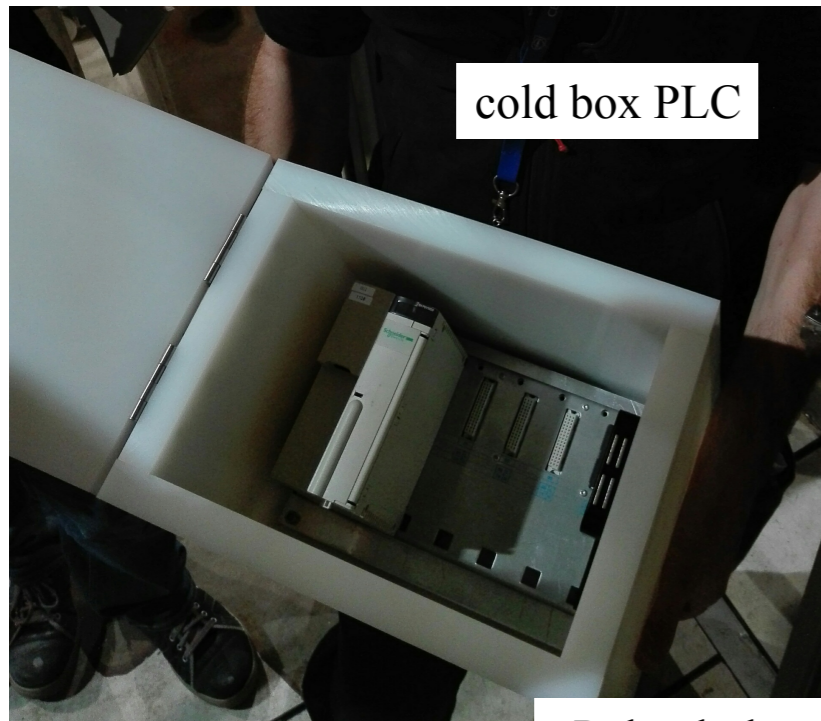


boron-carbide sheet to absorb thermal neutrons

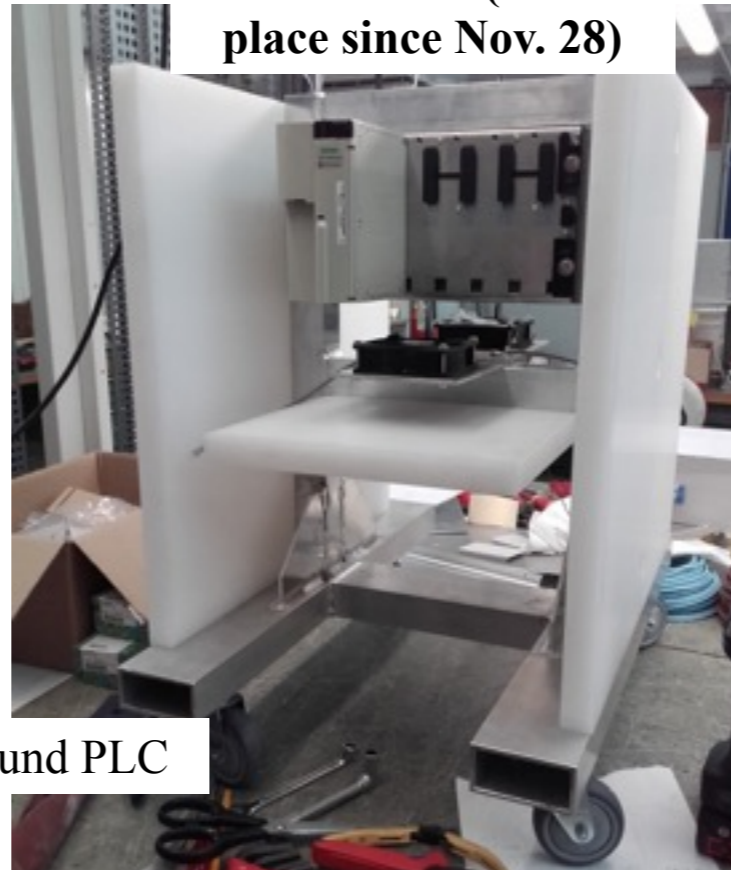


MIRROTRON Ltd. H-1121 Budapest, Konkoly-Thege út 29-33, Hungary
 ☎(36-1) 3922642 Fax: (36-1) 3922282, E-Mail: neutron@mirrotron.hu

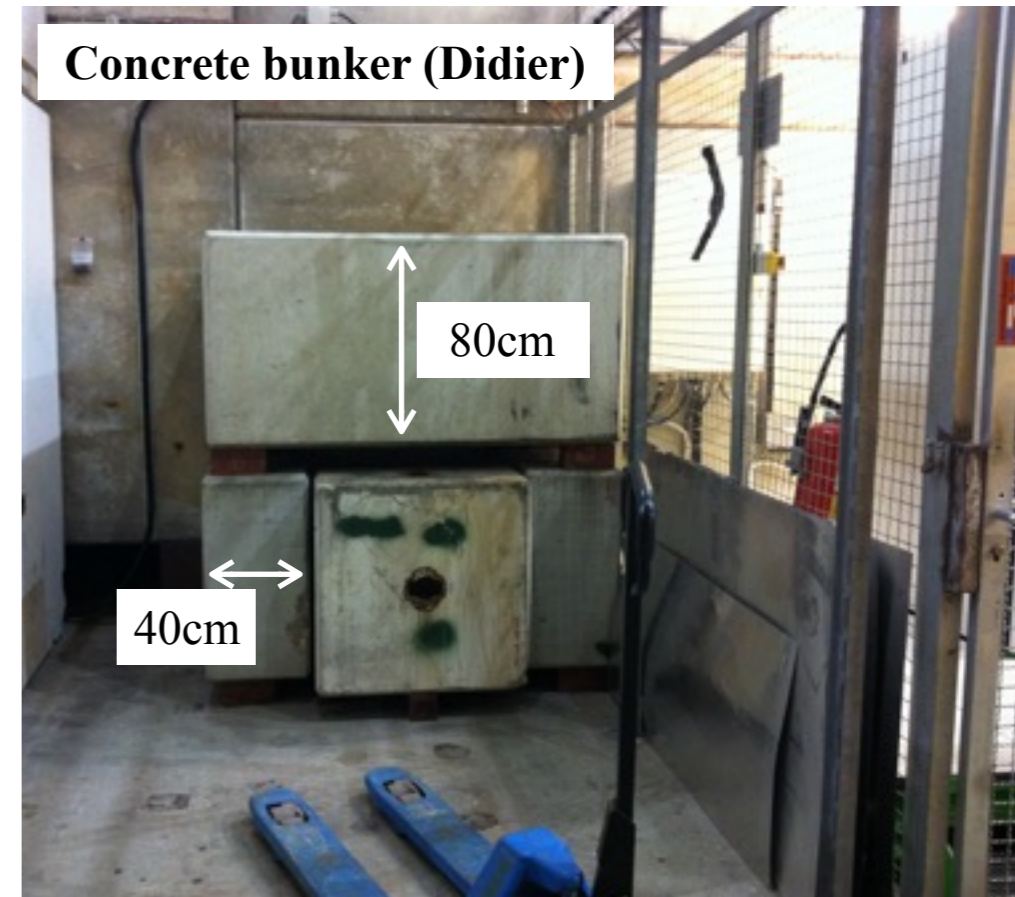
magnet & isolation
 vacuum PLCs (both in
 place since Nov. 28)



cold box PLC

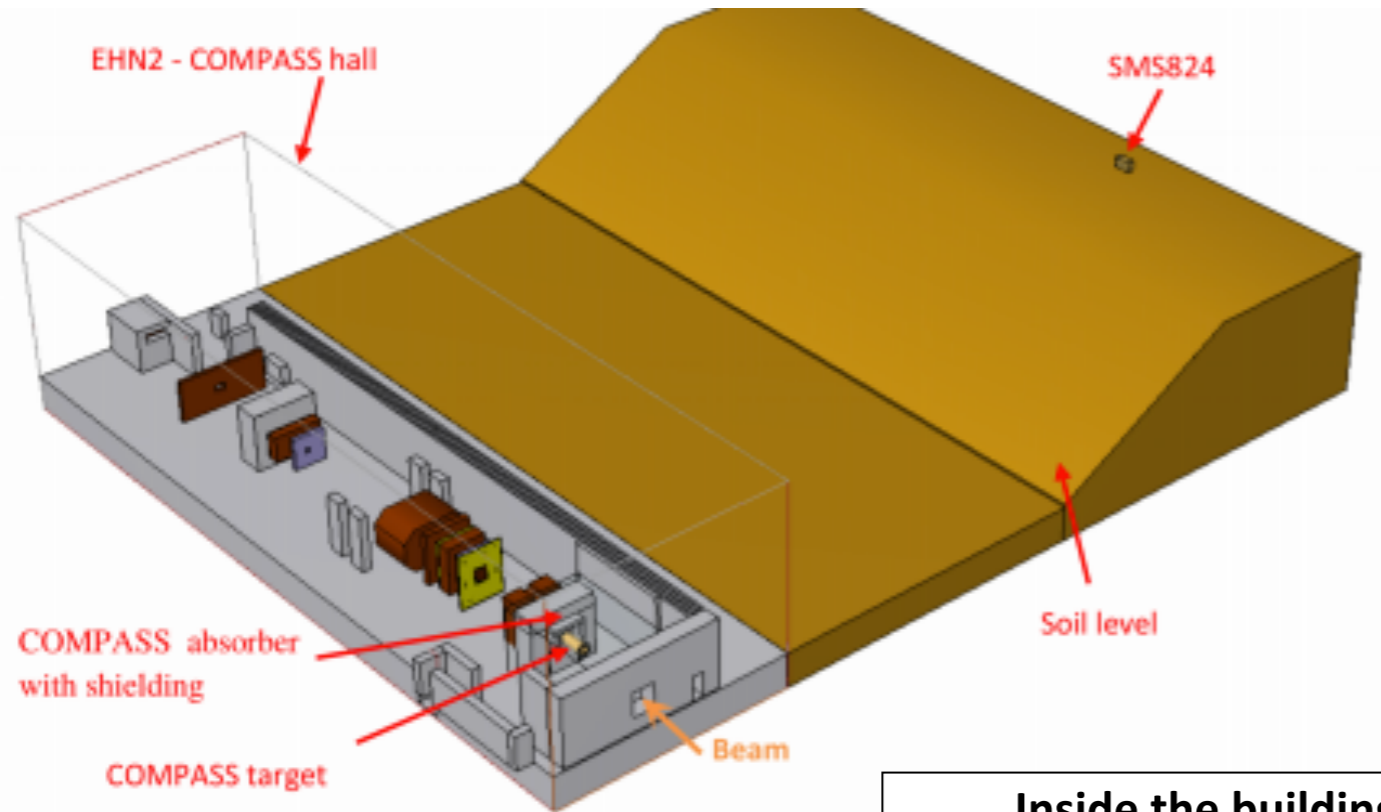


Polyethylene around PLC



Concrete bunker (Didier)

Radio Protection 2018



- (Supposedly) final meeting with Heinz Vincke from RP on Nov. 24
- Umbrella shielding
- Balcony shielding
- More in Angelo's talk

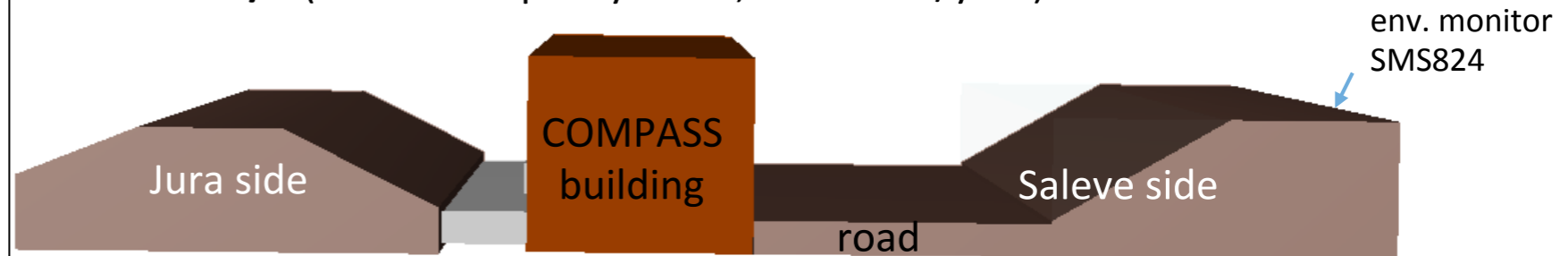
Inside the building: SUPERVISED RADIATION AREA

Dose limit: **6 mSv / year**

Hourly limit(s):

3 uSv/h @ permanent working places (2000 h occupancy per year)

15 uSv/h (in low occupancy areas, max 400h/year)



Outside the building: NON-DESIGNATED AREA (Saleve side)

Dose limit: **1 mSv / year**

Hourly limit(s):








0.5 uSv/h @ permanent working places (2000 h occupancy per year)

2.5 uSv/h (in low occupancy areas, max 400h/year)

CERN migration out of analogue telephony

- <https://phone-migration.web.cern.ch/>
- In 2018, all traditional phones present on the CERN site will be replaced with phone applications.
- Including control rooms.

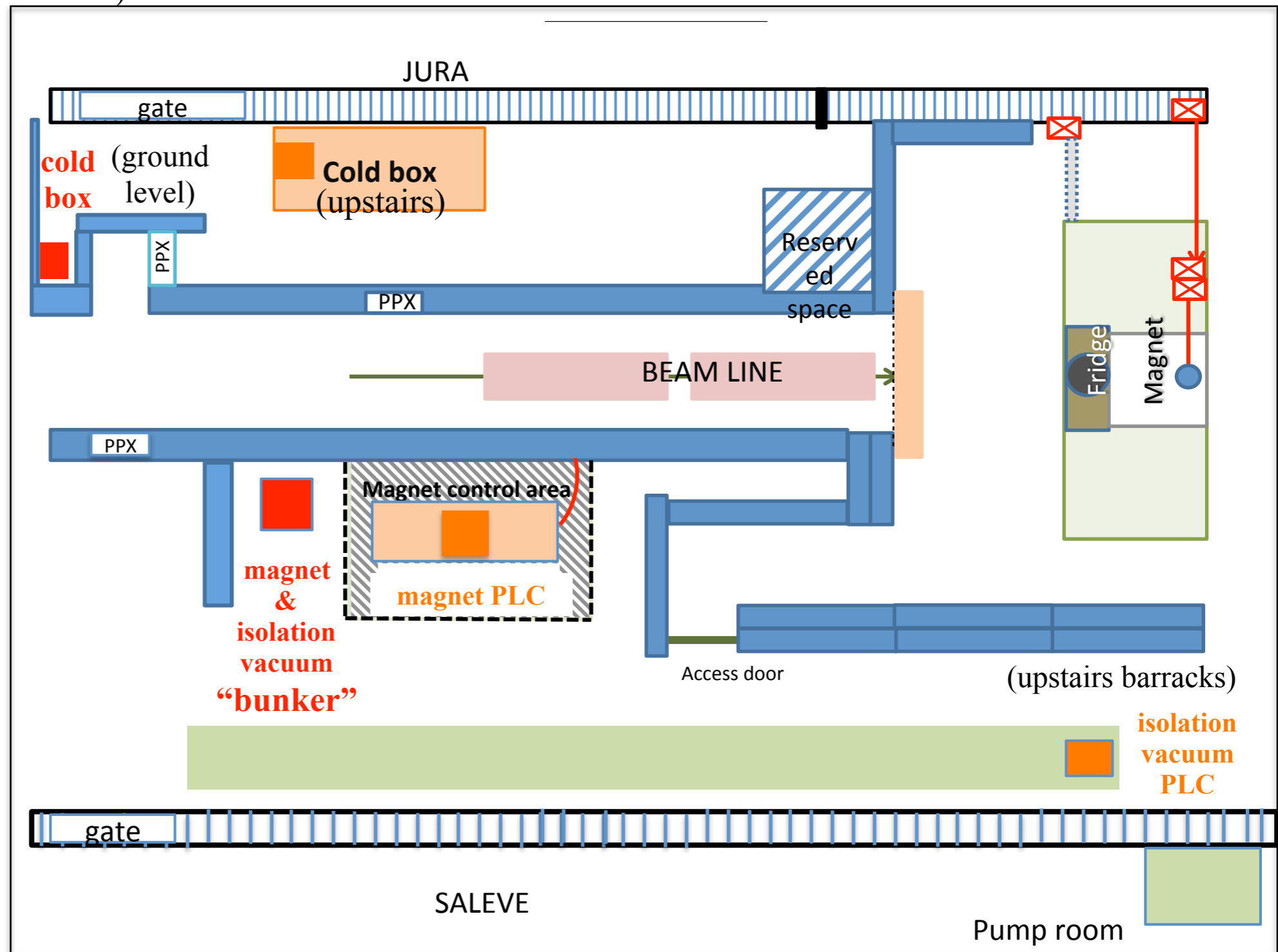
Today's agenda

09:00	→ 09:45	Communication and News Speakers: Annika Vauth (CERN) , Caroline Kathrin Riedl (Univ. Illinois at Urbana Champaign (US))	🕒 45m	
09:45	→ 10:15	Status of polarized target Speaker: Norihiro Doshita (Yamagata University (JP))	🕒 30m	
10:15	→ 10:30	Coffee	🕒 15m	
10:30	→ 11:15	Radio Protection 2018 Speaker: Angelo Maggiora (Universita e INFN Torino (IT))	🕒 45m	
11:15	→ 11:45	Status of CEDAR upgrade Speaker: Marcin Ziembicki (Warsaw University of Technology (PL))	🕒 30m	
11:45	→ 14:00	Lunch	🕒 2h 15m	
14:00	→ 14:20	2020++: projects and planned detector upgrades Speaker: Caroline Kathrin Riedl (Univ. Illinois at Urbana Champaign (US))	🕒 20m	
14:20	→ 14:30	Requirements for 2021 deuteron run Speaker: Franco Bradamante (Universita e INFN Trieste (IT))	🕒 10m	
14:30	→ 15:15	DAQFEET 2017: summary and next steps Speaker: Igor Konorov (Technische Universitaet Muenchen (DE))	🕒 45m	

extra slides

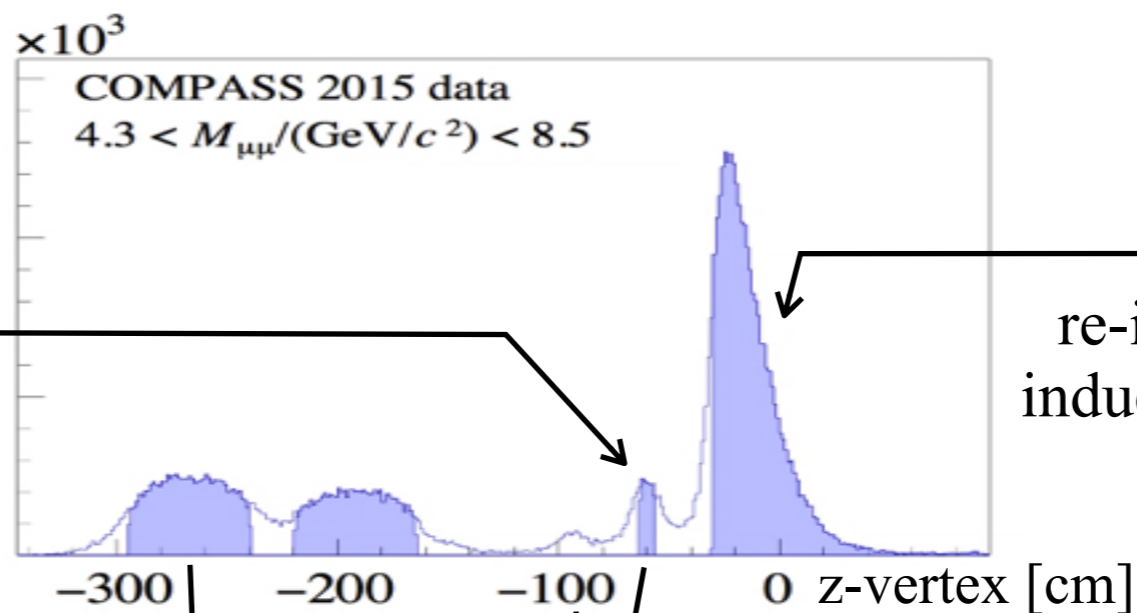
2018: improvement of protection of target PLCs against radiation

- Very useful meeting Oct. 17 with Ruben Garcia from EN-STI-FDA (sources, target, interaction): recommendation to
 - a) move &
 - b) shield PLCs.
- Re-install BatMons in 2018.



Reminder: 2015 nuclear targets

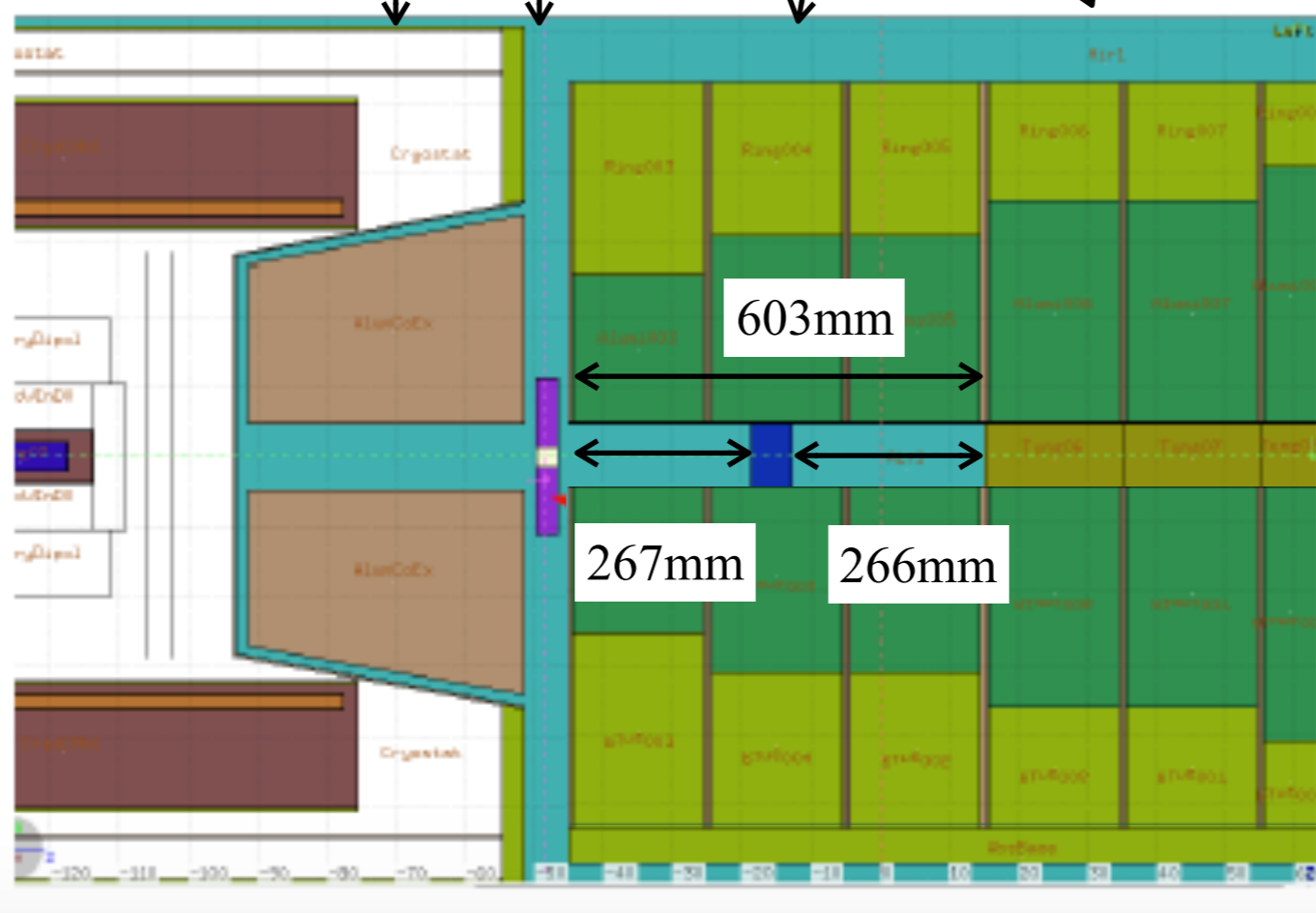
Al target:
poor statistics,
shadowed by W plug



W target (plug):
re-interactions (DY events
induced by secondary pions),
z-resolution

NH3
nose

FI35



After removal of
FI35: gain more
freedom to position
secondary nuclear
target

Al plug: cylindric
70mm
95mm