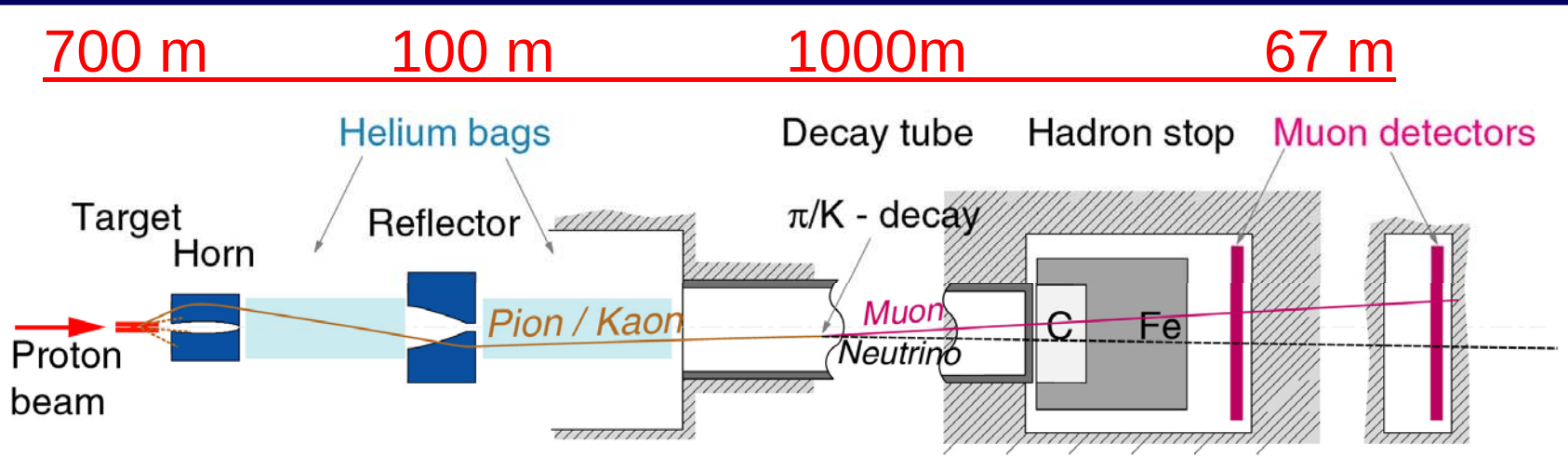
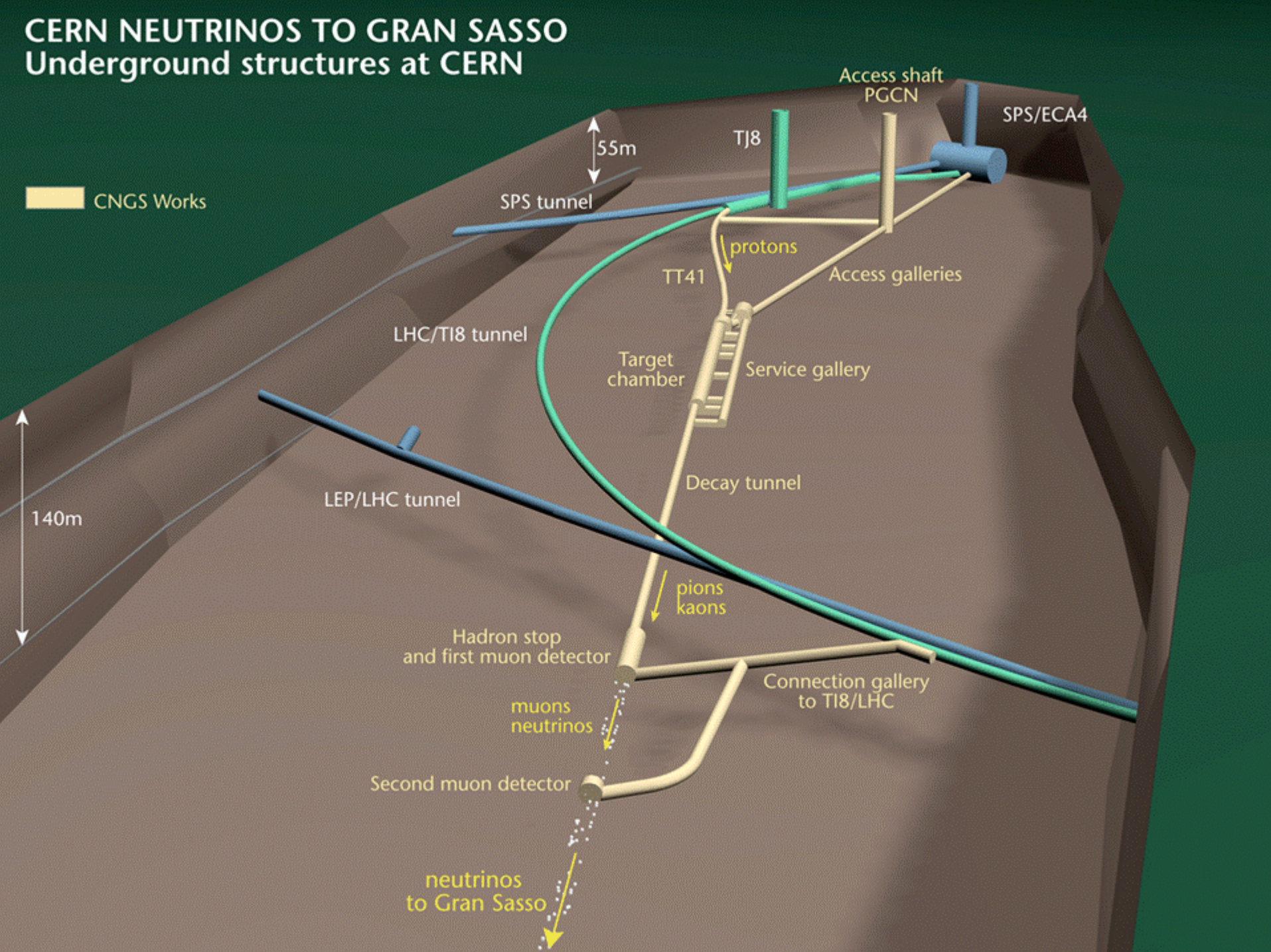
Status report on CNGS

- Brief overview of the CNGS facility
- Schedule and status of works
- Commissioning
- Summary

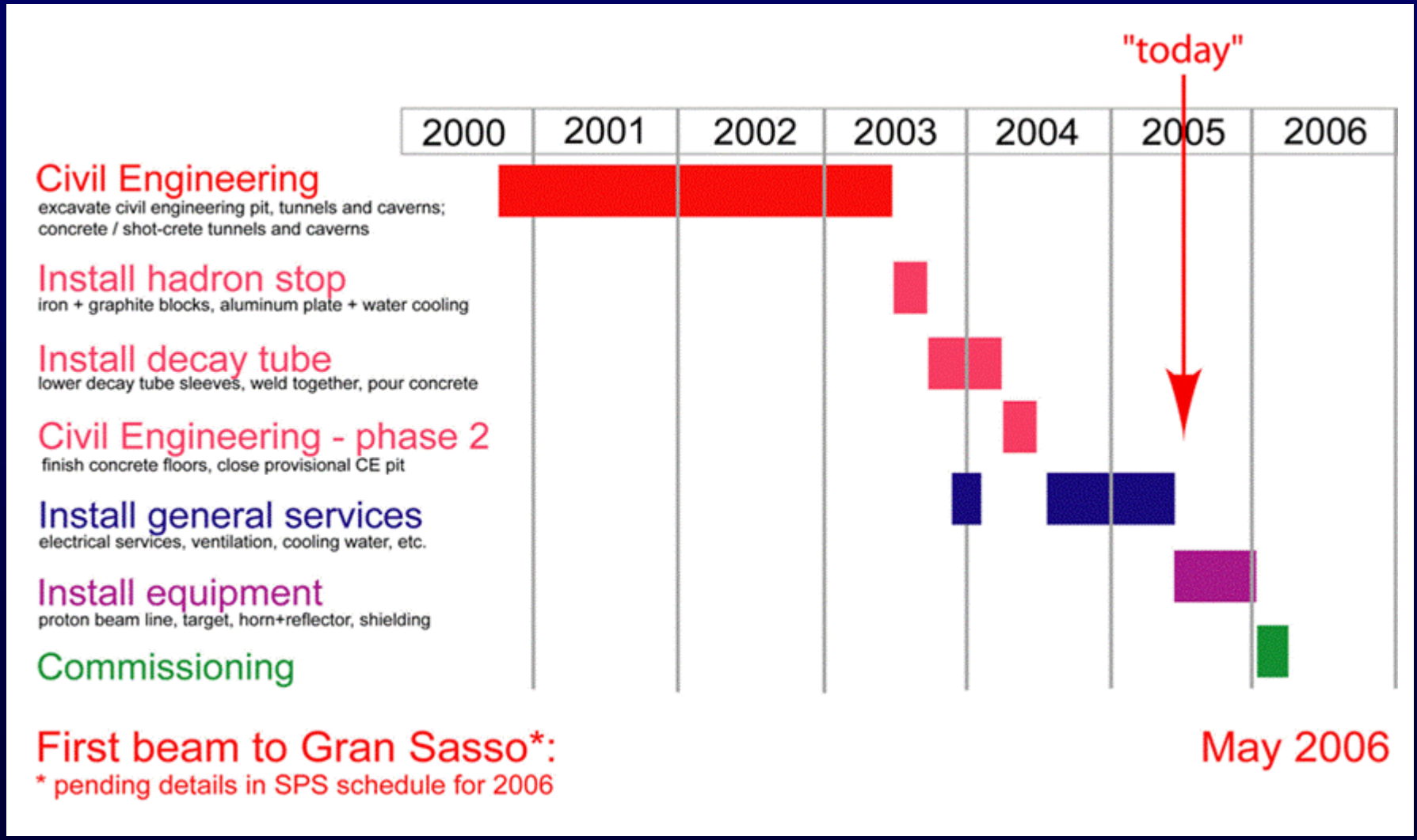
Overview of the CNGS facility



$p + C \rightarrow$ (interactions) $\rightarrow \pi^+, K^+ \rightarrow$ (decay in flight) $\rightarrow \mu^+ + \nu_\mu$


CERN NEUTRINOS TO GRAN SASSO
Underground structures at CERN
CNGS Works
55m
SPS tunnel
TJ8
Access shaft
PGCN
SPS/ECA4
protons
TT41
Access galleries
LHC/TI8 tunnel
Target
chamber
Service gallery
Decay tunnel
LEP/LHC tunnel
140m
pions
kaons
Hadron stop
and first muon detector
Connection gallery
to TI8/LHC
muons
neutrinos
Second muon detector
neutrinos
to Gran Sasso

Schedule and status of works



Infrastructure

- Proton beam tunnel: complete (except some controls cables)
- Target chamber: complete (except lights)
- Access/Service galleries: approaching completion

- Surface:
  much work still needed on water cooling systems

SUMMARY:

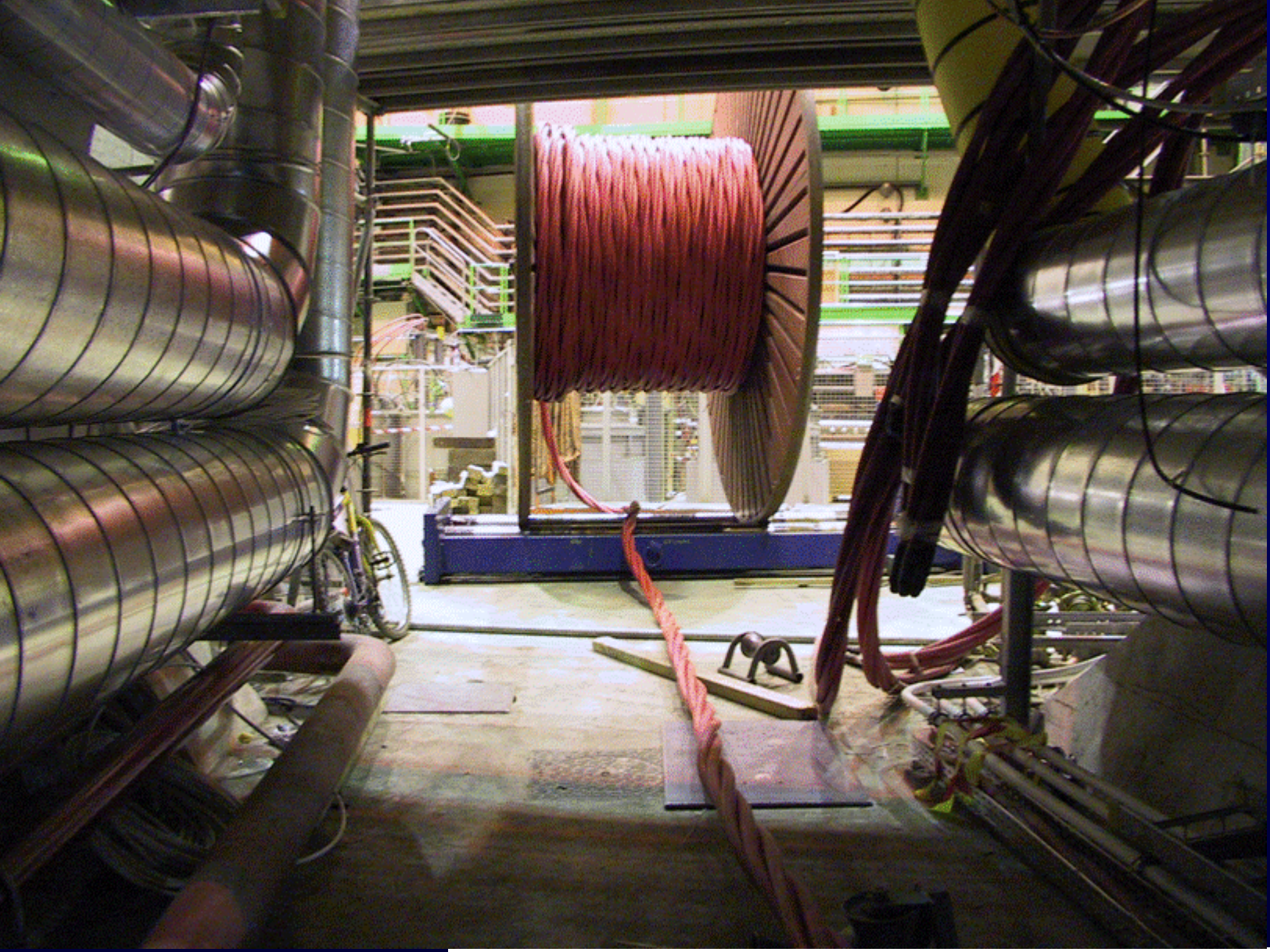
Small delays (1 to 2 months), but in areas where the next phase (equipment installation) is not affected

Proton Beam Tunnel, Jan. '05

Proton Beam Tunnel, 1 July '05

Service Gallery, 1 July '05

Access Gallery, 1 July '05



Access Gallery -> ECA4, 1 July '05

Equipment

GOAL: all equipment installed by end of January 2006

STATUS:

- this goal is still achievable
- some "bumps in the road"

- main issues today: horn / reflector / striplines (after LAL problems);

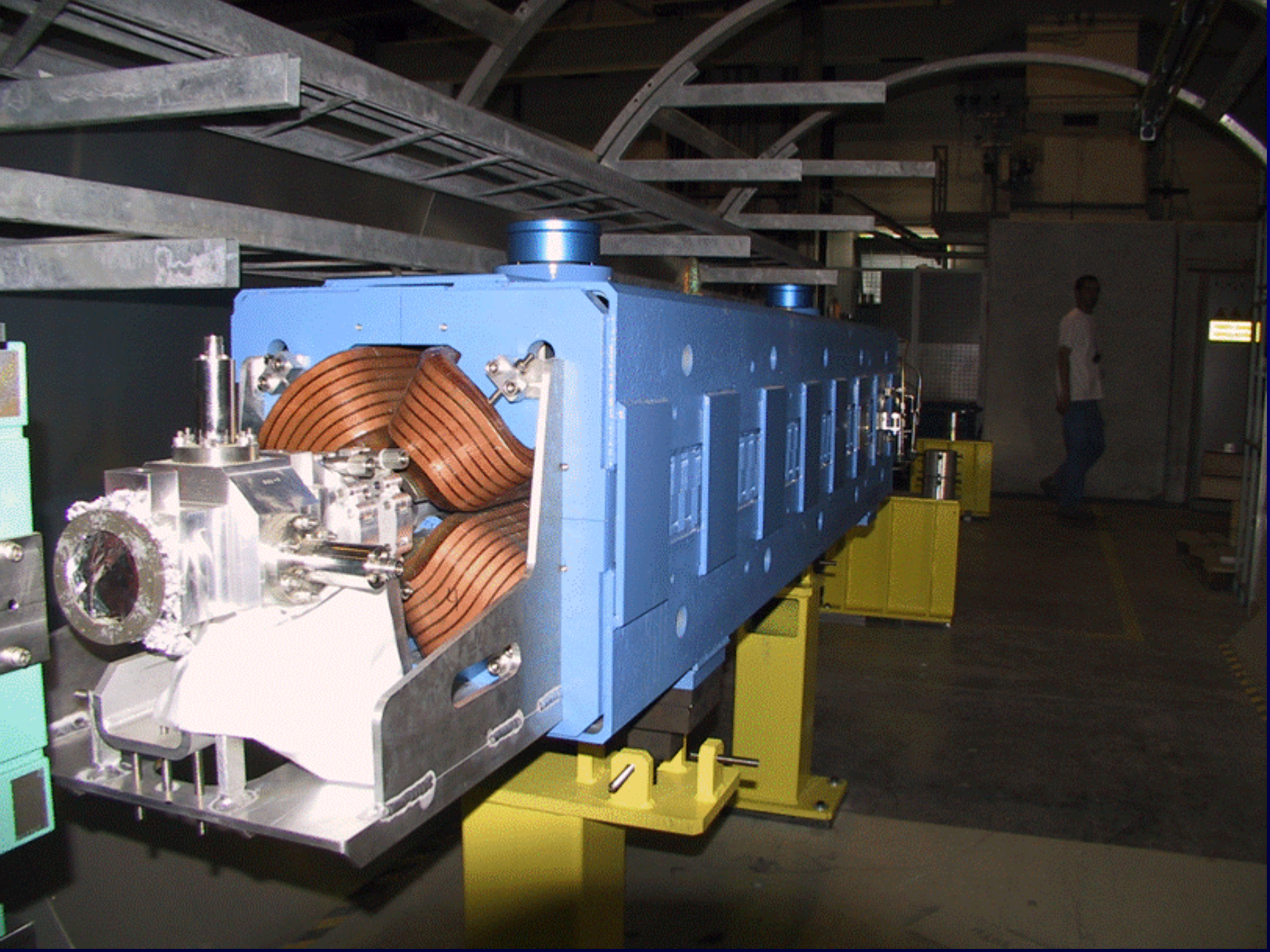
  target station

Status TT41 proton line

- MBG bends: all at CERN, ready for installation
- QTG quads: 4 missing, should be at CERN beg. July- "now"
- MDG correctors: should be at CERN end of July
- Power converters: installation BB4 almost complete
- Beam monitoring equipment: almost ready

-> QTG quadrupole installation will start 12 July 2005

TT41 mock-up in 867



BPG mounted on QTG

Status T40 target station

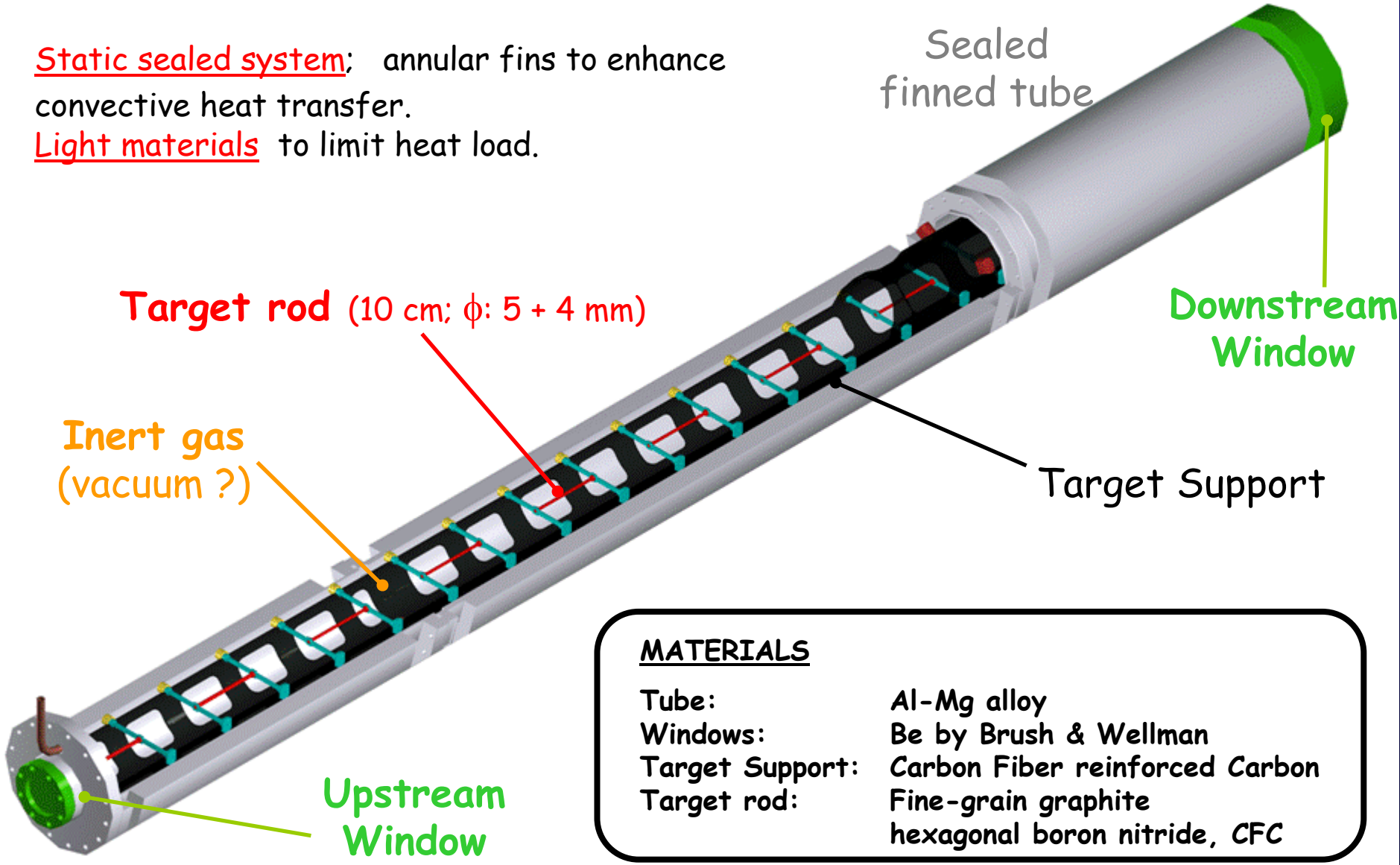
- all mechanical parts at CERN
  (some jacks faulty, need to be changed)
- assembly in the lab in progress
- electronics / controls of motors in progress

WORRY: time is getting short

-> Installation in the target chamber: September 2005

Target Unit

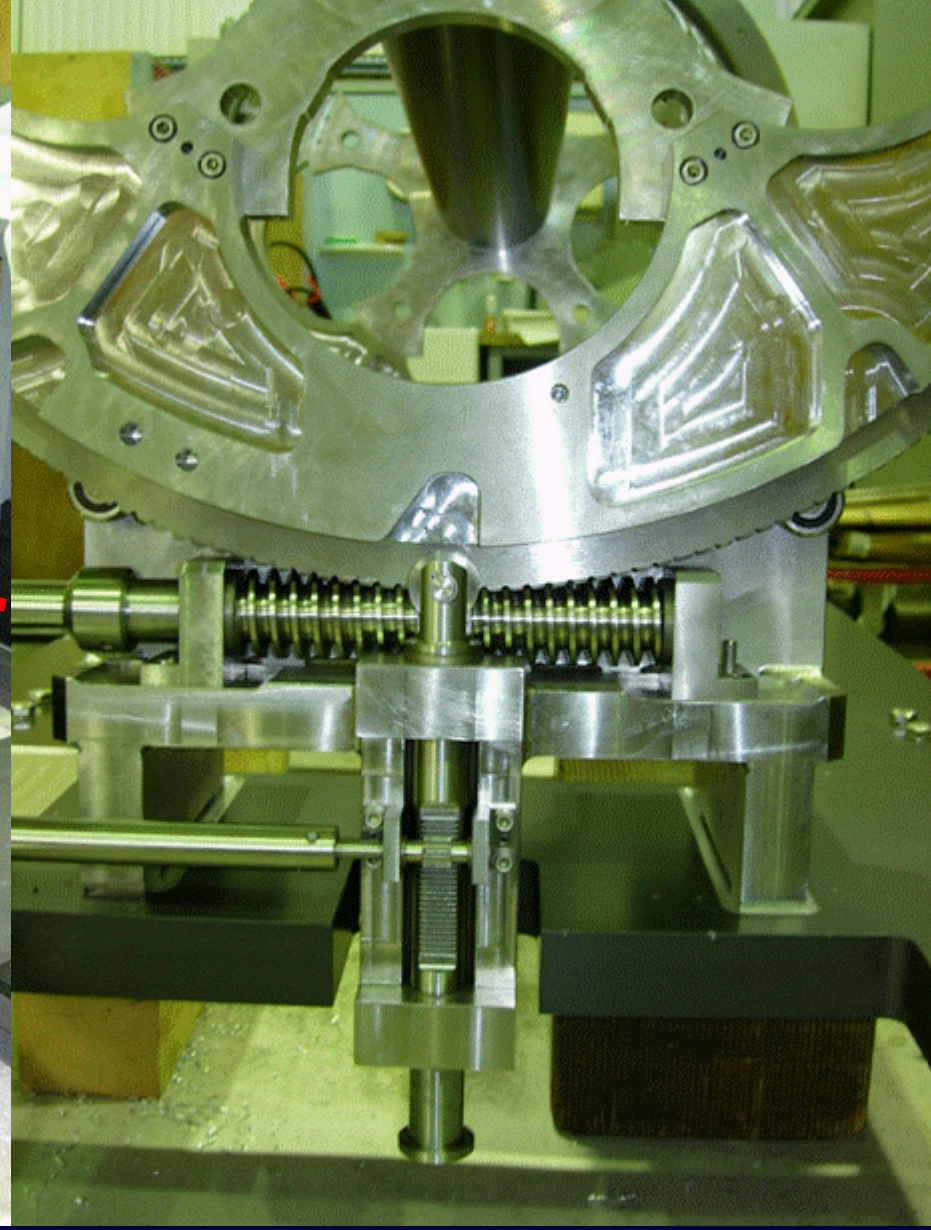
Static sealed system; annular fins to enhance convective heat transfer.
Light materials to limit heat load.



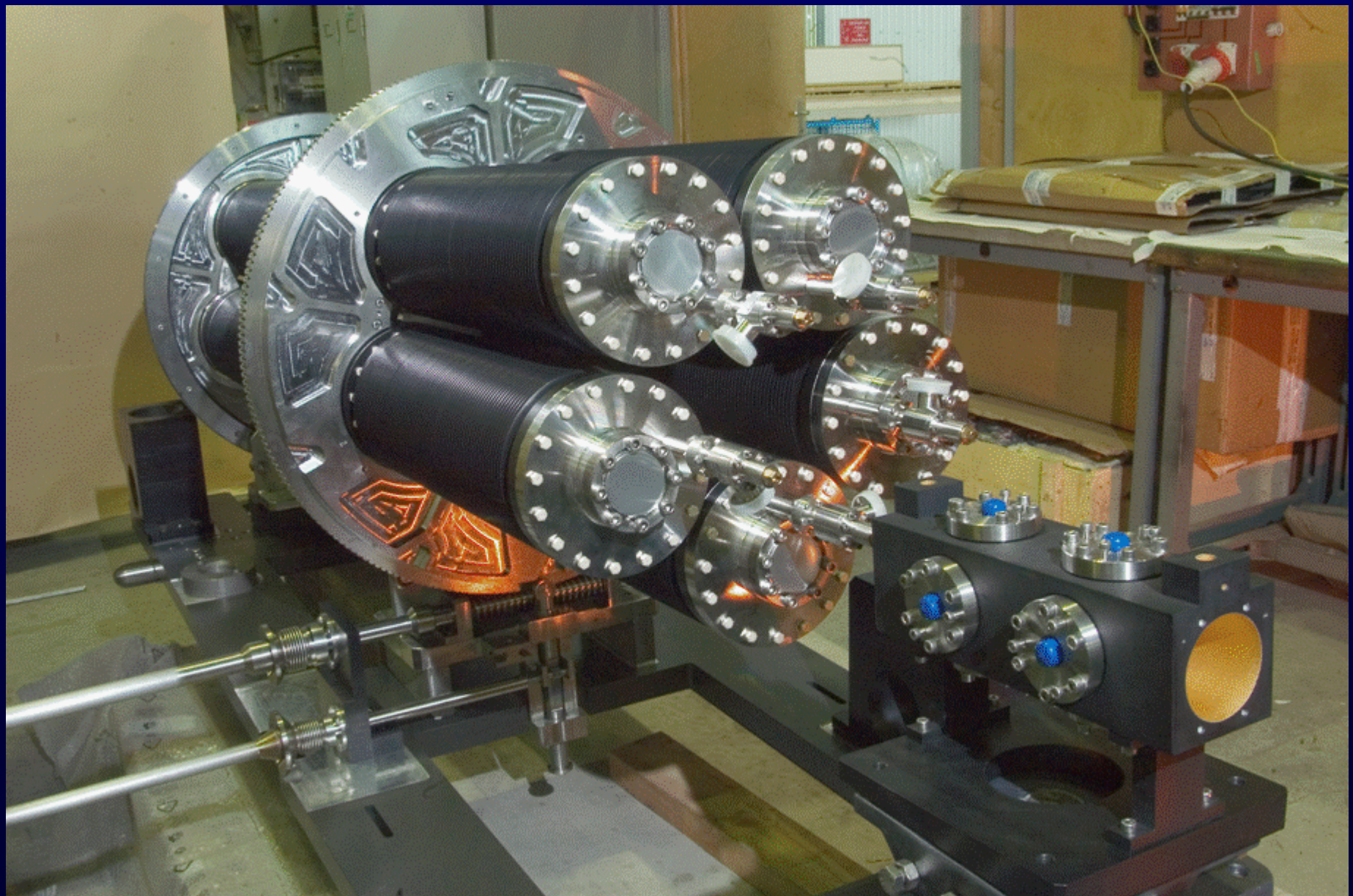
MATERIALS

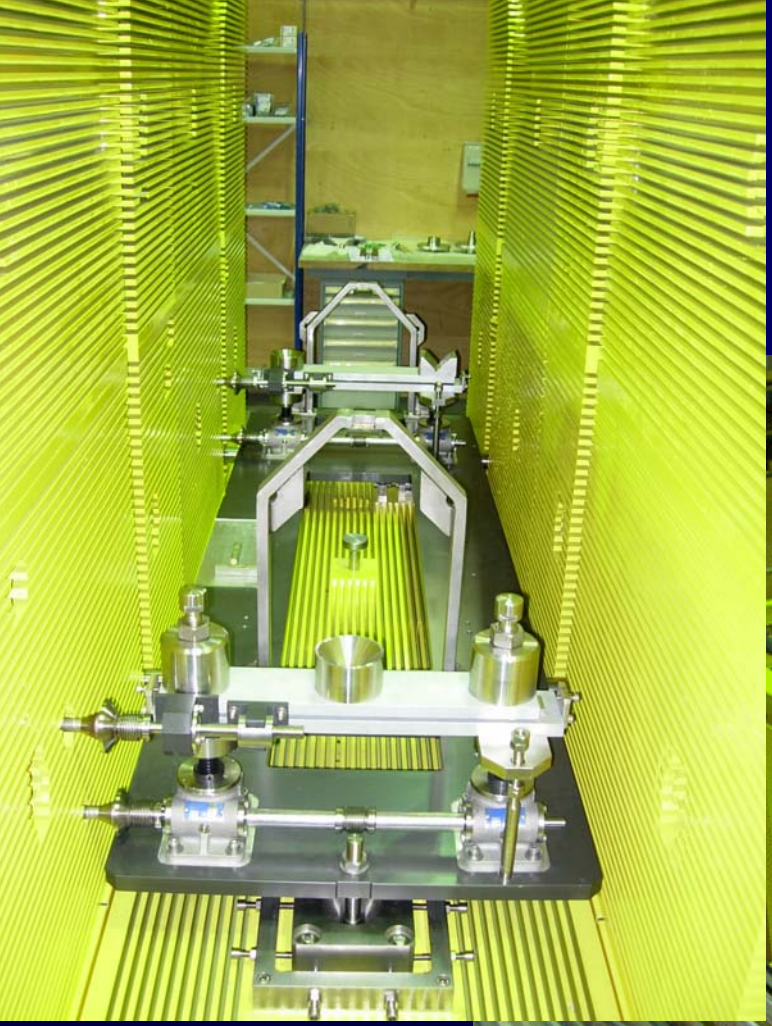
Tube:	Al-Mg alloy
Windows:	Be by Brush & Wellman
Target Support:	Carbon Fiber reinforced Carbon
Target rod:	Fine-grain graphite hexagonal boron nitride, CFC

5 July 2005



Target magazine + BPKG on "alignment table"

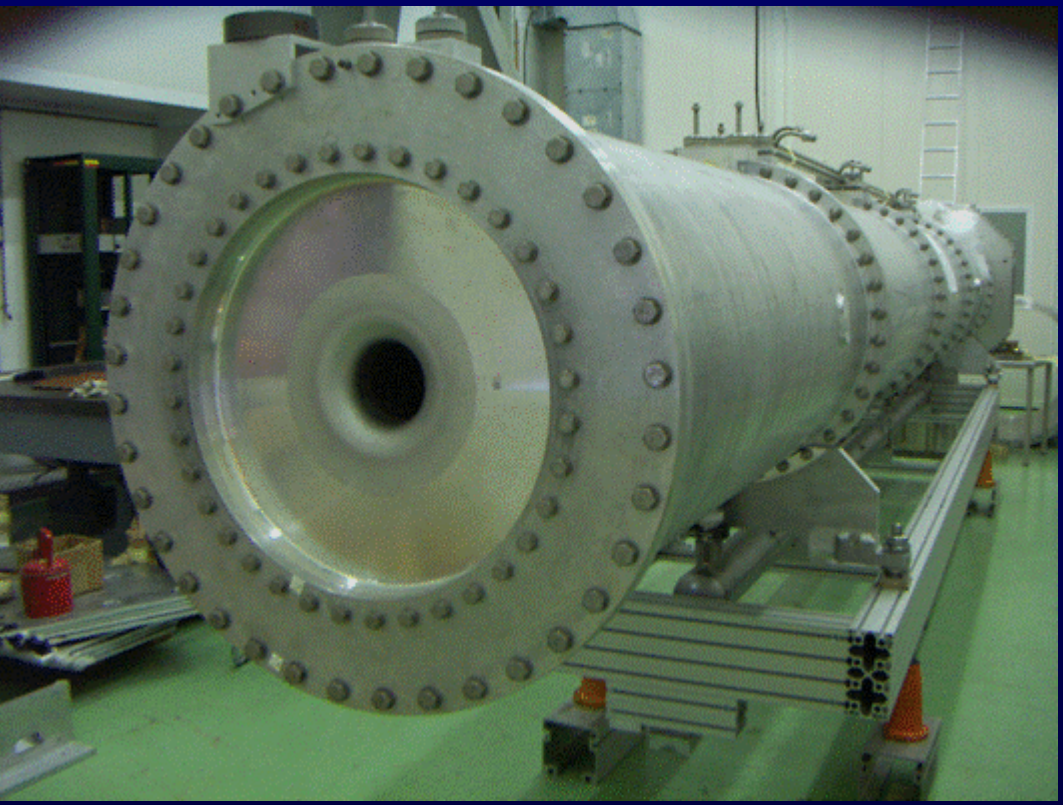




5 July 2005

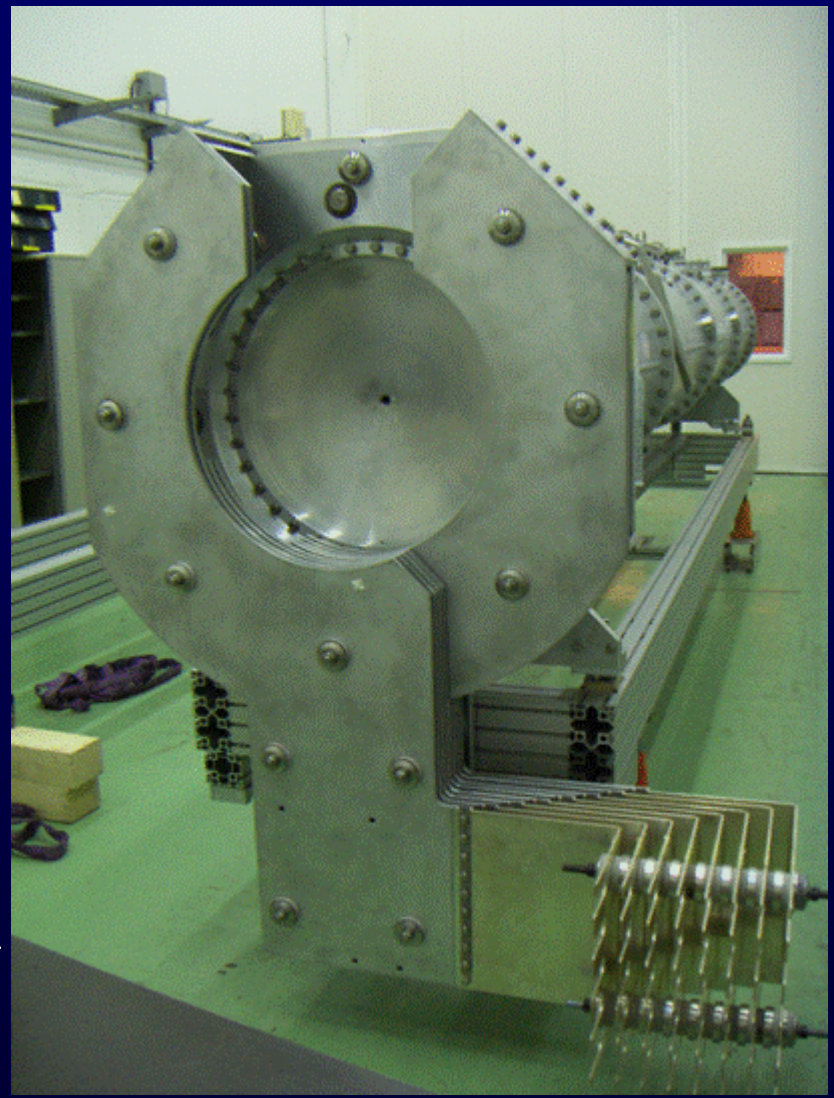
Status horn/reflector/striplines

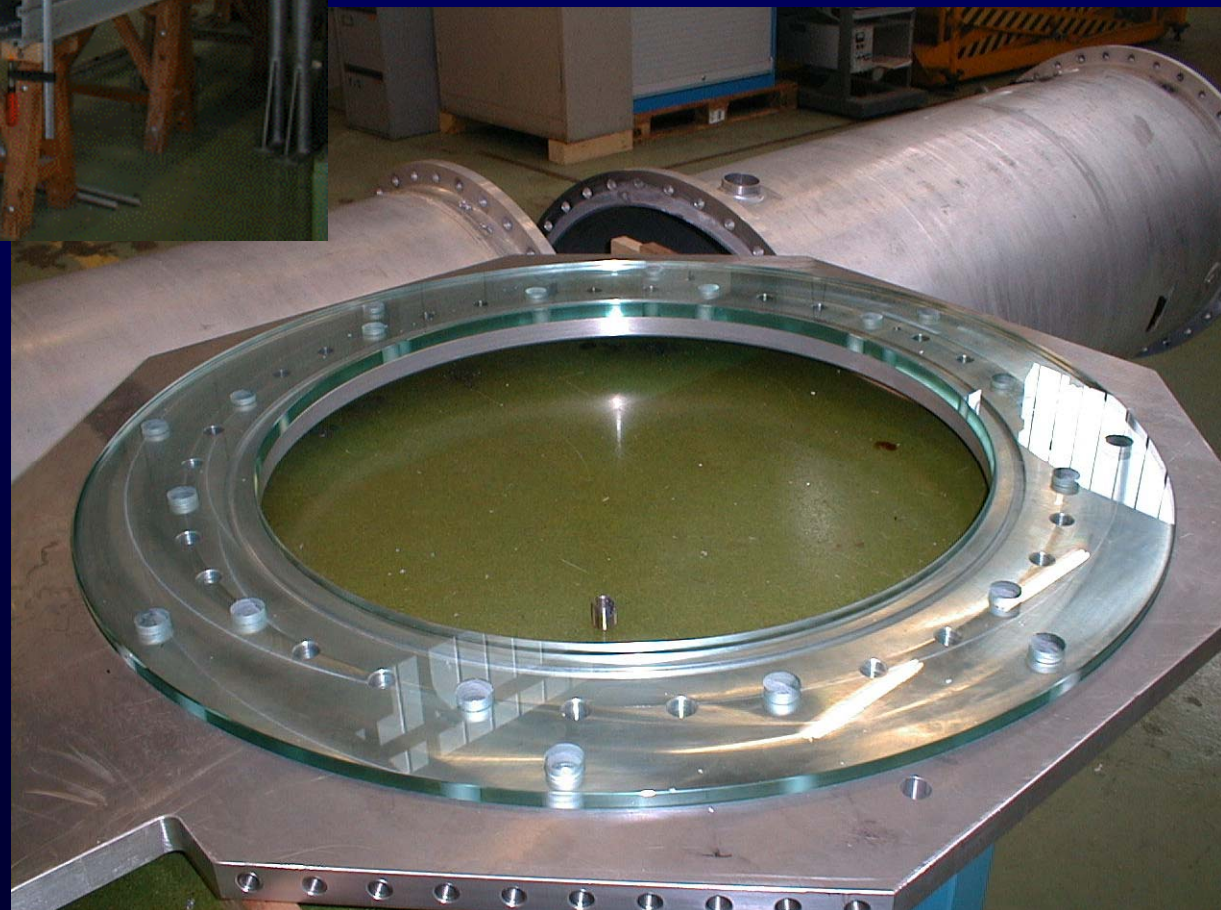
- still struggling to recuperate from LAL problems
  (in-kind contribution not up to standards / not received)
- horn: repair work done, 55000 double pulses - test o.k.
  NEW PROBLEM: cooling sprayers faulty
  IN ADDITION: glass insulating ring now cracked
  -> need a design change
- reflector: repair work under way, tests delayed
- striplines: problem with design – order out "now"
  3 months later than planned in July 2004...
  ON THE CRITICAL PATH
- water cooling circuits: outsourced with TS/CV, looks o.k.



Horn upstream ↑

downstream →



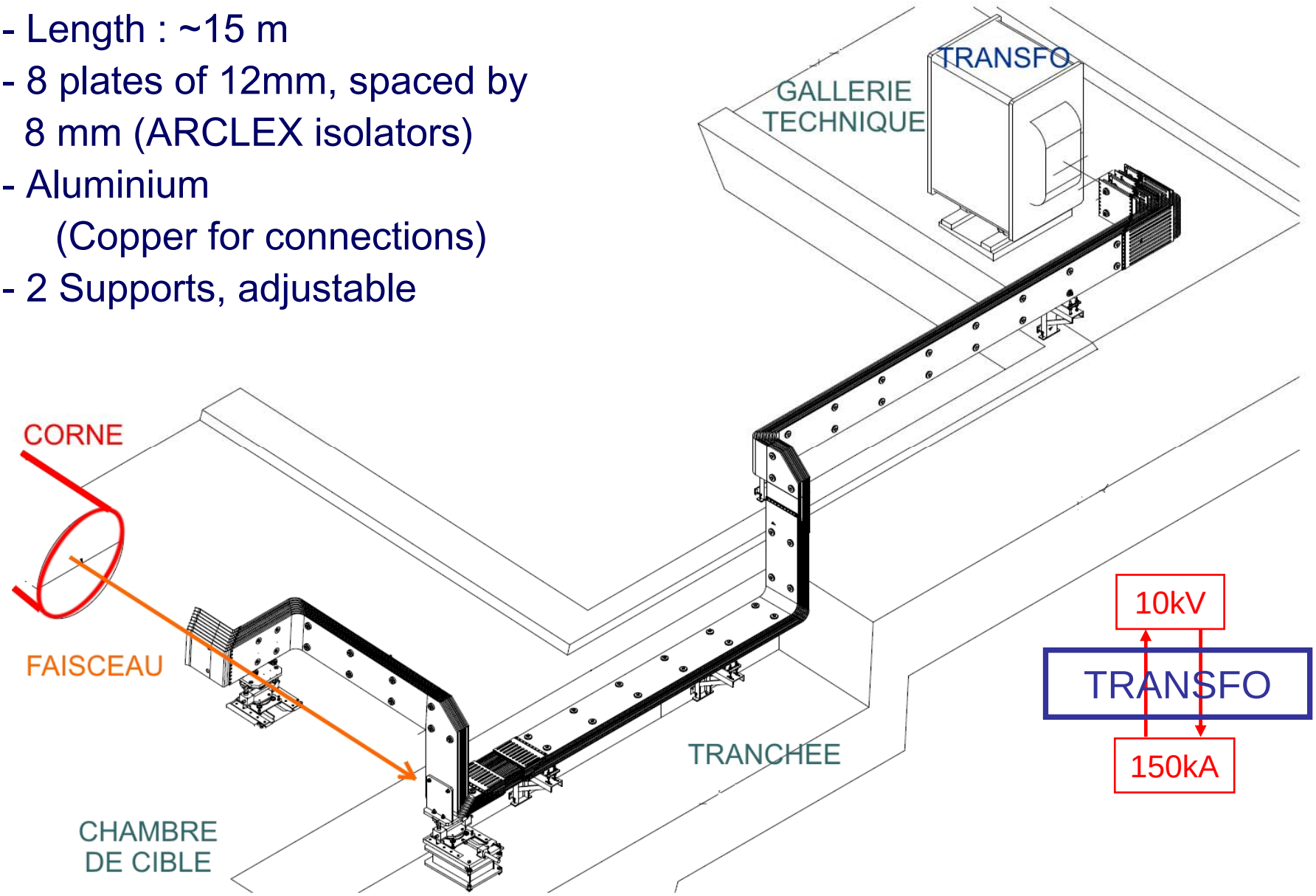


Horn re-assembly after modifications

5 July 2005

Striplines

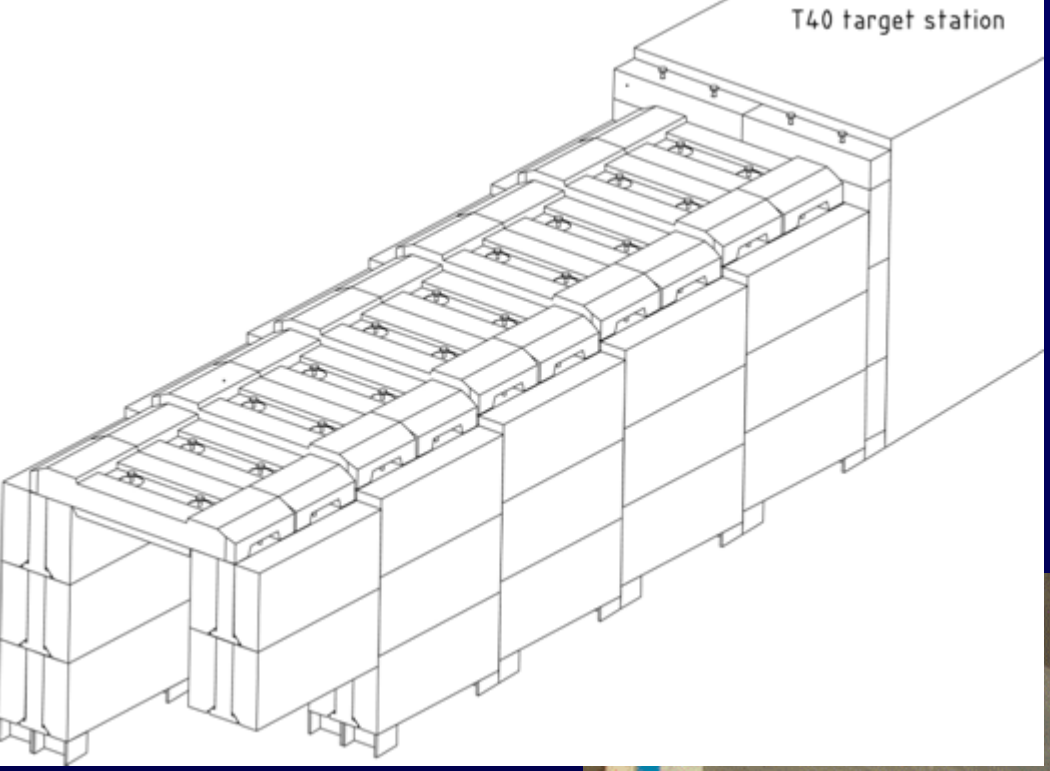
- Length : ~15 m
- 8 plates of 12mm, spaced by 8 mm (ARCLEX isolators)
- Aluminium
  (Copper for connections)
- 2 Supports, adjustable



Status in the target chamber

- Target station "feet" installed and aligned
- Phase I of shielding blocks installed
- Survey of Helium tank supports start today
- Installation of Helium tanks will start 12 July

-> Phase II of shielding blocks: completed end of Aug. '05 (make space for installation of target station, then horn, reflector, striplines ...)



Horn Shielding (sandwich blocks)

5 July 2005

Target Chamber – shielding He tank 1

Commissioning – "parasitic" cycle

commissioning goals are defined
(proton beam size / stability / intensity;
muon monitor profiles: intensity / shape -> beam understood)
-> pass over to AB operations

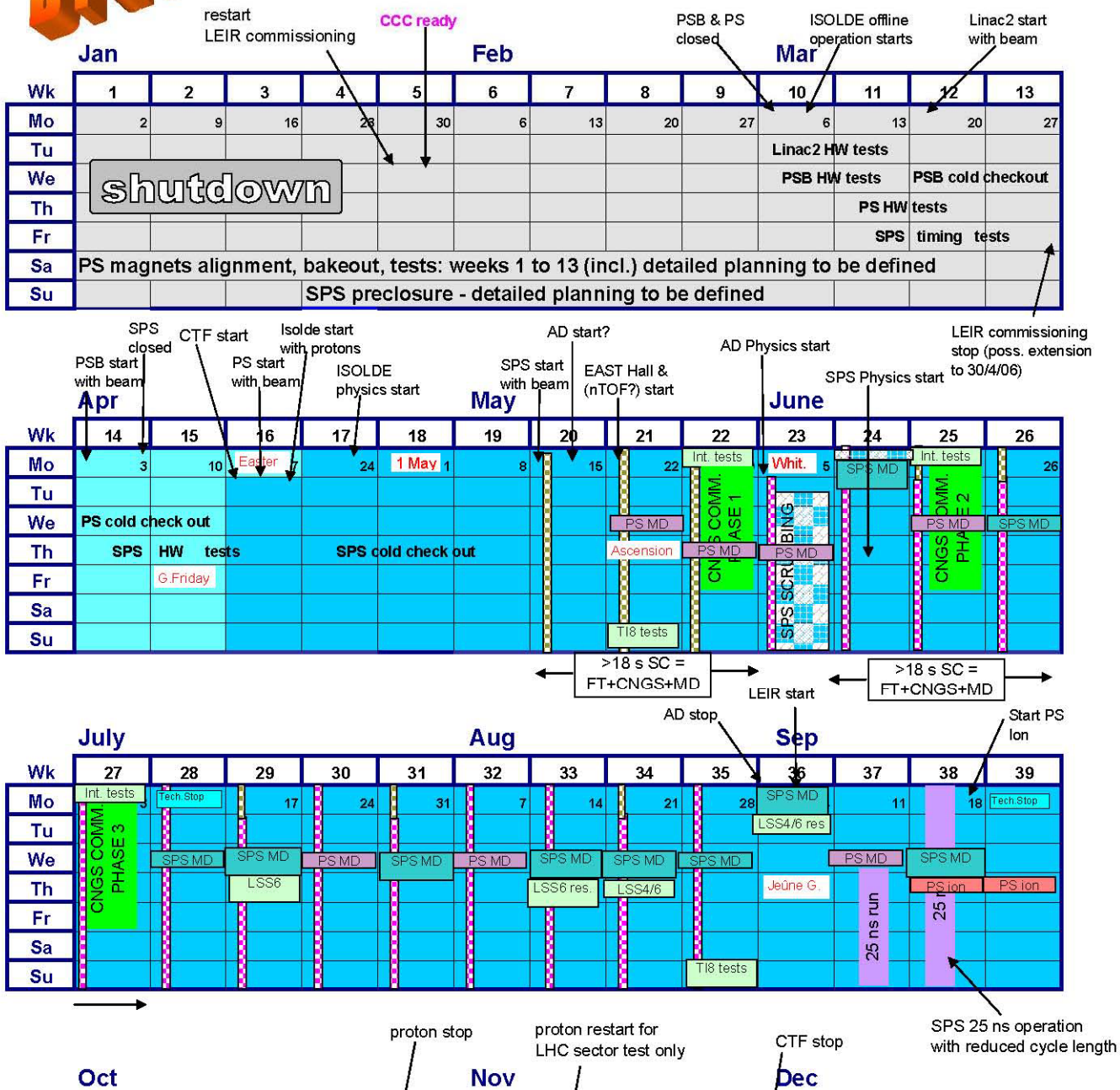
week 22: LOW INTENSITY only
extraction + proton beam to target

week 25: LOW INTENSITY
all of CNGS

week 27: increase intensity, some high intensity pulses
all of CNGS

Draft

2006 Accelerator Schedule



SUMMARY

-> CNGS approved in Dec. 1999, work started Sept. 2000

-> CNGS project is well under way

…some worries…

-> commissioning to start week 22 (end May 2006)

-> Our goal:

CNGS beam operational after week 27 (July 2006)

MANY THANKS TO ALL INVOLVED !

spares

Modifications - Examples

Ex. 1: Link between outer conductors and drain pipe for cooling water evacuation

Received from LAL

ARCLEX insulators cannot be used in humid areas

Solution

Modifications - Examples

Ex. 2: Modifications on the cooling water feed lines (normal + spare line)

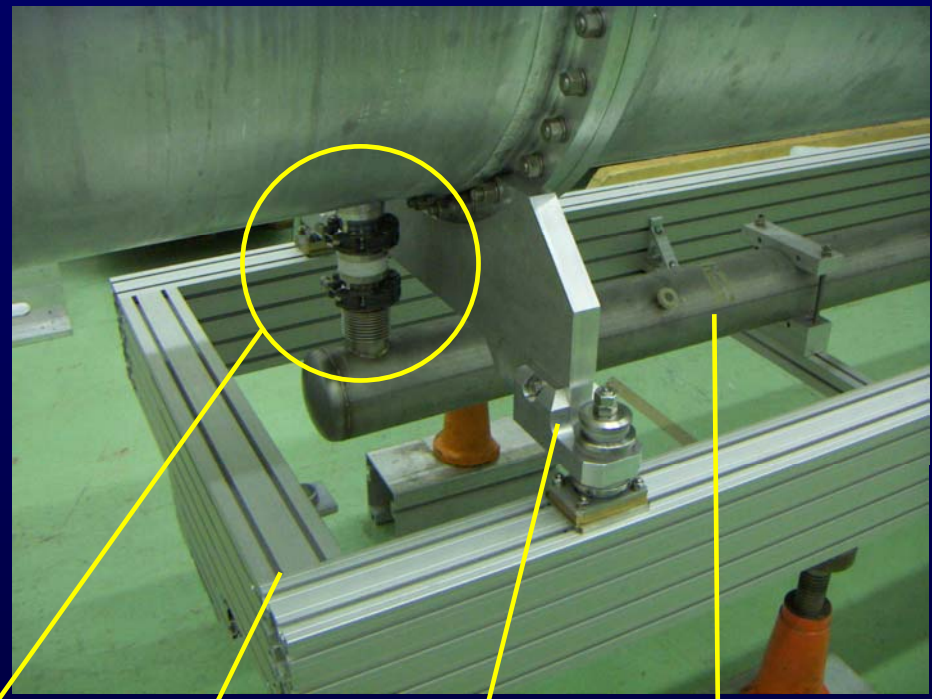
Received from LAL

(to ceramic insulators)

Brazed connection ceramic insulators broke (too much strain)

Solution

New smooth bellows to avoid stress in ceramic insulators


Châssis supérieur
Collecteur d'eau
Berceaux réusinés avec nouveaux supports
Lien isolé conducteur externe – collecteur d'eau