

ATLAS RRB-2002-055



Common Projects Status

ATLAS RRB, 23 April 2002

Marzio Nessi

List of Common Projects (annex 10 MoU)



Barrel Toroid Magnet

End-cap Toroid Magnet

Solenoid → ready

Common Magnet Infrastructure

LAr Barrel Cryostat

LAr End-cap Cryostats (2)

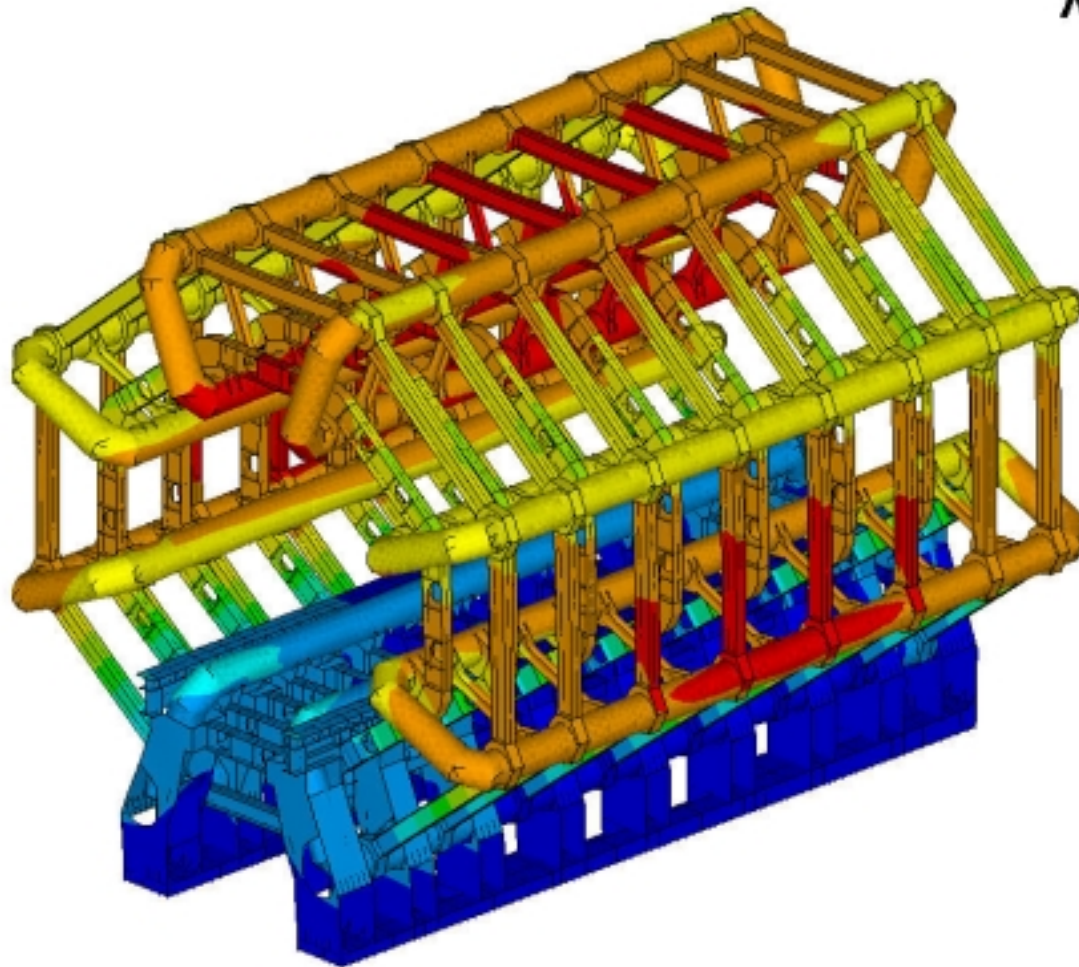
LAr Cryogenic Plant

Part of processors of the trigger

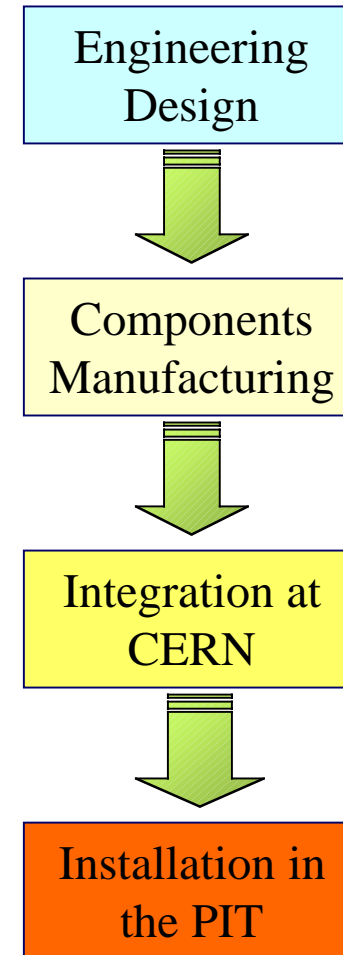
Radiation Shielding

Parts of Experimental Infrastructure

Barrel Toroid



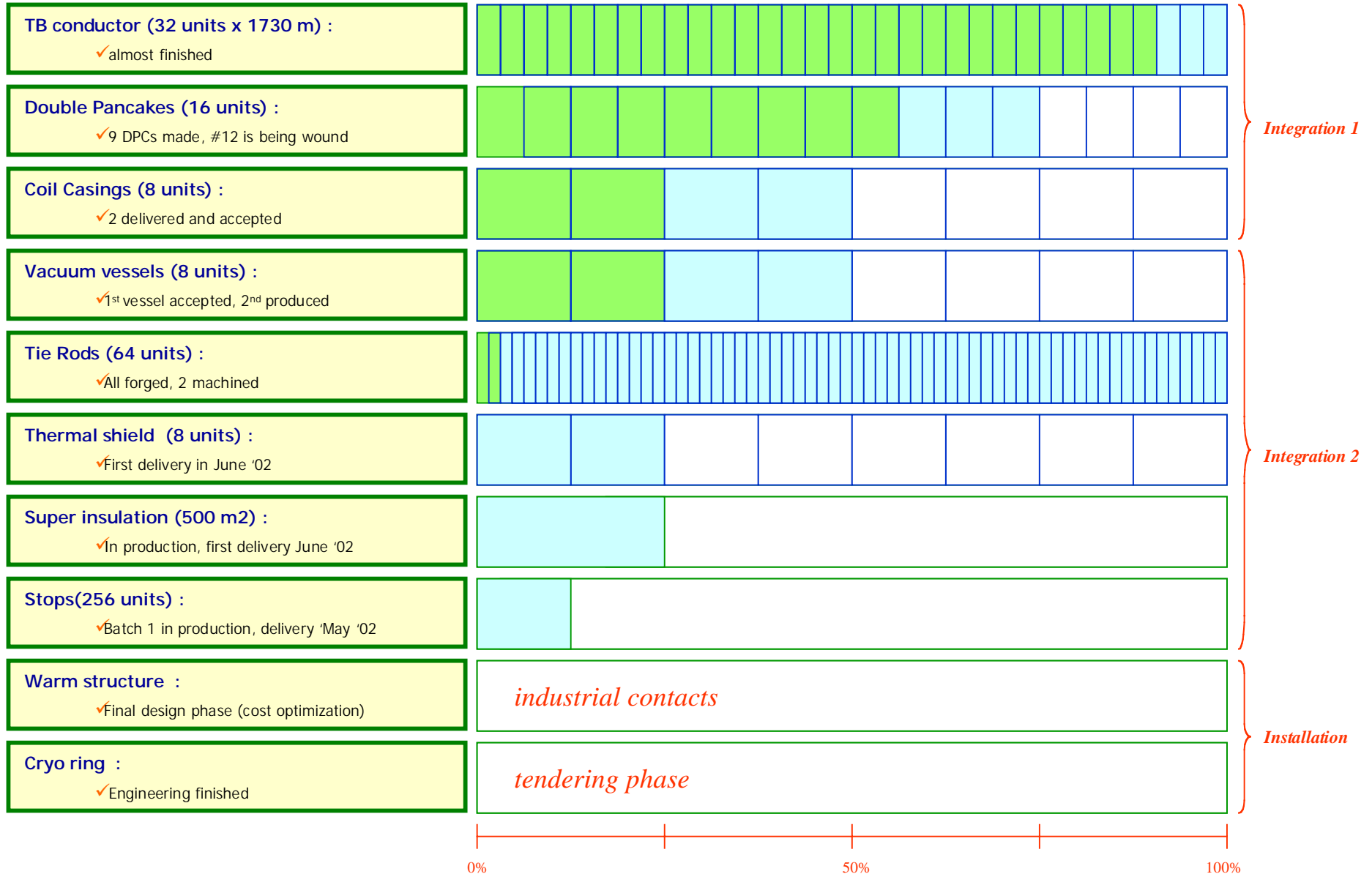
TB layout as simulated for final mechanical structural analysis



Engineering & Monitoring @ CEA, LASA

Barrel Toroid components production

■ In production
■ Finished



Barrel Toroid Integration Work @ CERN

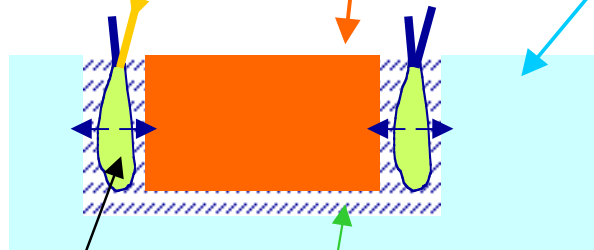


conductor pancake



Al coil casing

P(resin + μ -spheres)



bladders

prepag



cryostat

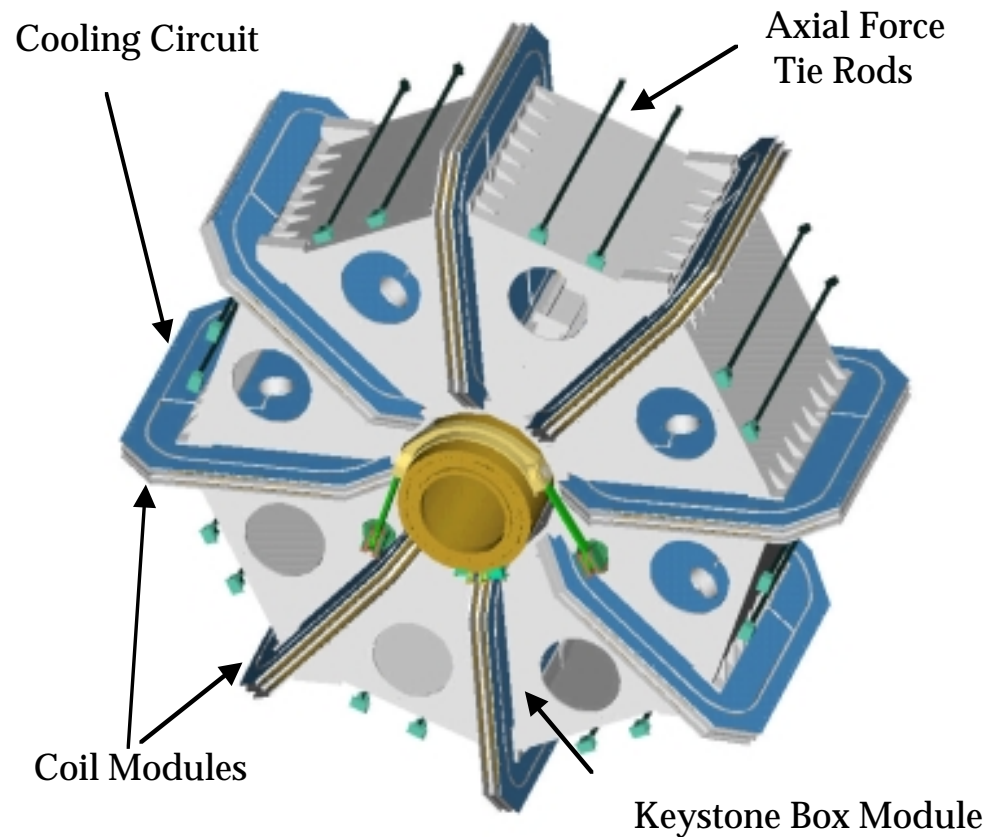
Integration 1

- ✓ Integration 1 contracted to an outside Firm in 2000 for ~ 3.5 MCHF
- ✓ End 2001 the Firm stops preparation work with substantial financial claims
- ✓ Feb 2002 ATLAS negotiated a new solution with the second bidder + CEA Saclay + JINR + ATLAS team to do the work at CERN
- ✓ Work will start in bldg 180 mid May 2002. Original cost and schedule respected.

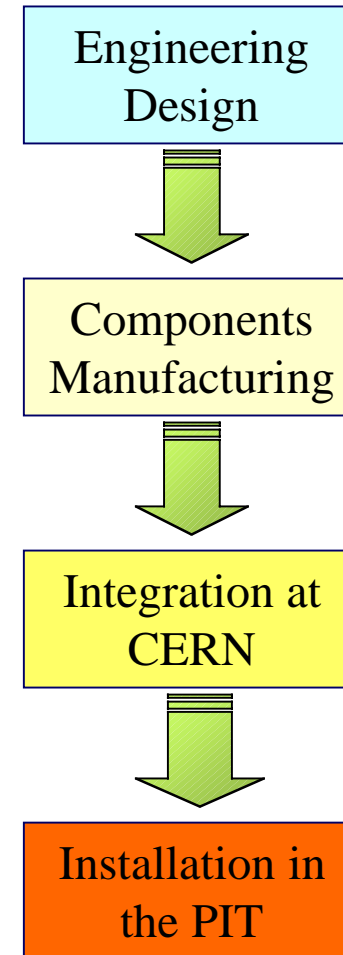
Integration 2

- ✓ Work contracted to the JINR group + CEA Saclay + ATLAS team in bldg 180.
- ✓ Tooling prepared, readiness on schedule
- ✓ Includes final functional test

End Cap Toroid

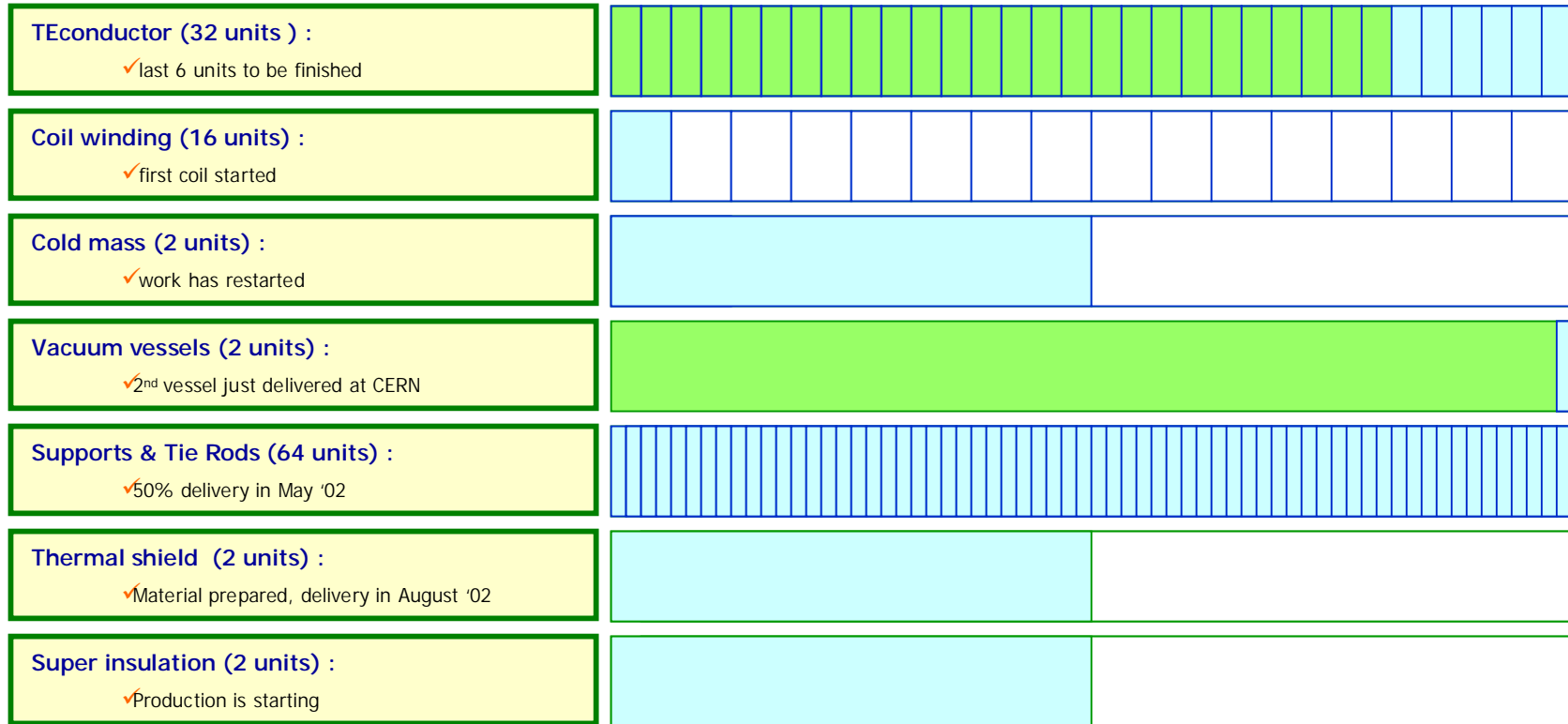
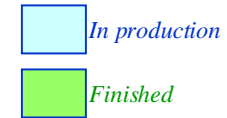


TE layout



[Engineering & Monitoring @ RAL, Nikhef](#)

End Cap Toroid components production



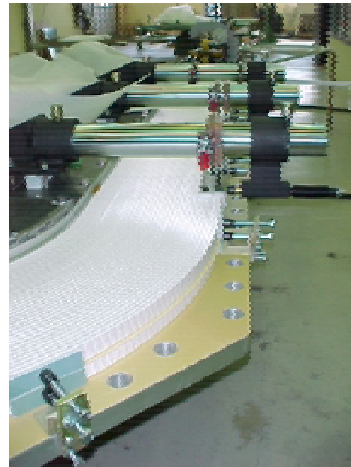
Integration at CERN



End Cap Toroid Integration Work



winding processes restarted



Impregnation vessel final qualification



Cold Mass Integration

- ✓ Integration contracted to an outside Firm, as NL in kind contribution
- ✓ In 2001 the Firm partially stop production claiming substantial over-costs
- ✓ Technical solution found in Mar '02, work will continue in the frame of the original contract, financial negotiations will continue in parallel
- ✓ Coil winding restarting, qualification of missing processes ongoing.
- ✓ New delivery dates : End '03 for TE C, End '04 or TE A

Integration @ CERN

- ✓ Work contracted to the JINR group + RAL in bldg 191
- ✓ Tooling prepared, readiness on schedule
- ✓ Includes final functional test

The second Toroid End Cap cryostat arrived @ CERN

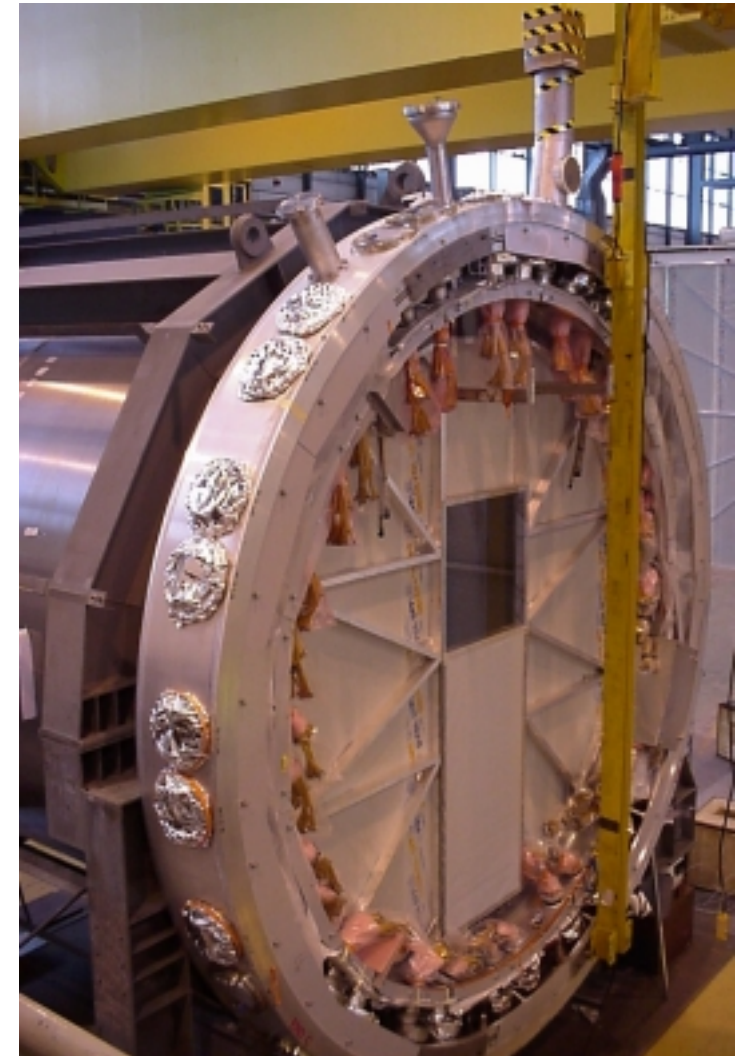


LAr Barrel Cryostat



➤ The barrel cryostat @CERN ready for the detector installation :

- ✓ Cryostat small leak repaired and no more leaks observed
- ✓ Integration work has now finished
 - ✓ All feedthroughs installed (signal + HV)
 - ✓ All cryolines installed
 - ✓ Leak tests successfully done
- ✓ Next step:
 - ✓ Installation of pedestals /or electronic boxes
 - ✓ Final acceptance tests (CERN TIS requirements) of the flange A + Feedthroughs pressure tests
 - May/Jun '02
 - ✓ EM calorimeter installation
 - Nov '02 to Jun '03
 - ✓ Install solenoid, final seals, pump line and final cryostats tests
 - Jul '03



LAr End-Cap Cryostats



➤ The first end cap cryostat (C) has been manufactured :

- ✓ Global leak and pressure tests done at the end of 2001
- ✓ Cryogenics tests done in February 2002
- ✓ Some problems found and solved
- ✓ Final cold tests to be done at CERN before final acceptance

→ May '02



LAr End-Cap Cryostats



➤ The first End-Cap Cryostat is now @CERN :

- ✓ He leak test done successfully
- ✓ He leak test at 77°K → May '02
- ✓ Integration then ready to start
 - ✓ All feedthroughs (C) delivered

- ✓ Next step:
 - ✓ Feedthroughs installation
 - May '02
 - ✓ Detectors insertion
 - Nov '02 – Aug '03
 - ✓ Final cryogenics tests
 - Sep '03



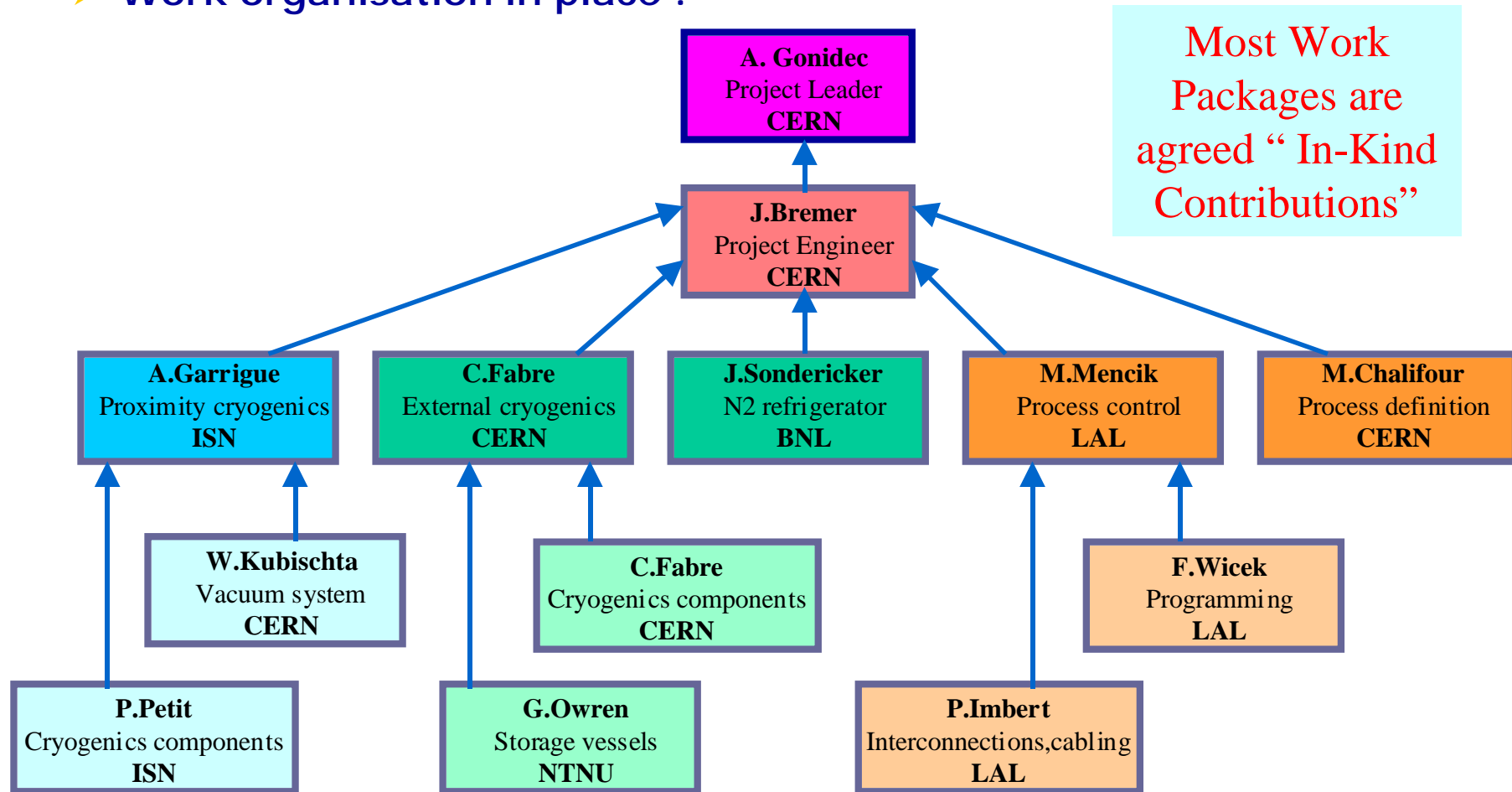
➤ The second End-Cap cryostat is planned to be delivered @CERN : → Oct '02

LAr Cryogenics Plant



- Internal Review just done and results are positive (15/4/02) :
 - ✓ few problems spotted mainly in the integration layout of services

- Work organisation in place :



LAr Cryogenics Plant



➤ External cryogenics :

- ✓ First liquid nitrogen dewar not accepted, back in the factory for repairs
- ✓ The 2nd dewar and the 2 liquid argon storage tanks production are waiting
- ✓ Storage tanks in the pit in July 2003
- ✓ Refrigerator, ordered by BNL. The commissioning is planned in January 2004
- ✓ Cryogenic lines, contract active, installation according to schedule

➤ Proximity cryogenics :

- ✓ Expansion vessels and valve boxes contracts signed. Delivery foreseen middle of 2002. Needed for the cold tests in 2003.
- ✓ Flexible Ar lines and transport system in the tendering phase, first hardware ordered.
- ✓ Vacuum material delivery has started, diffusion pump already used for the barrel acceptance test.

➤ Process control:

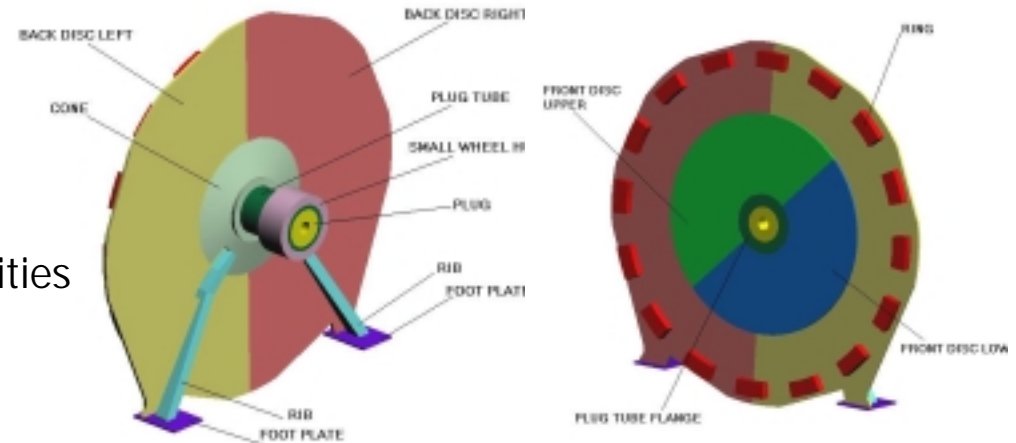
- ✓ Several hardware components delivered, local software under development and test
- ✓ Waiting for supervisors programs, procured by CERN LHC project

Radiation Shielding



➤ JD shielding :

- ✓ Final design review done end 2001
- ✓ First industrial consultation started
- ✓ Several in kind contribution possibilities under investigation

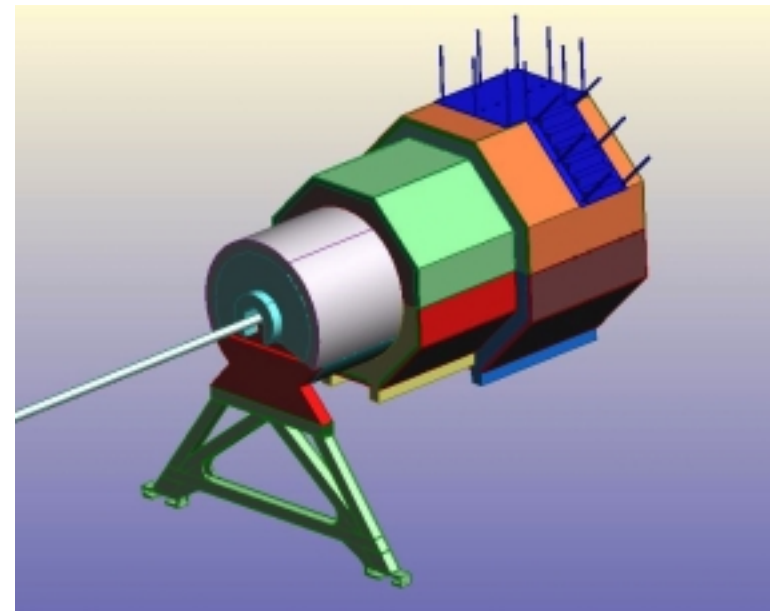


➤ JF shielding :

- ✓ Final design review done Feb 2002
- ✓ Important optimization work done, final engineering done in Prague
- ✓ Cz in-kind contribution under investigation

➤ JT shielding :

- ✓ New concept approved by the Collaboration
- ✓ Redesign done, final design review June 2002
- ✓ First industrial consultation started
- ✓ Several in-kind contribution possibilities under investigation



Parts of Experimental Infrastructure



➤ Feet & Rails :

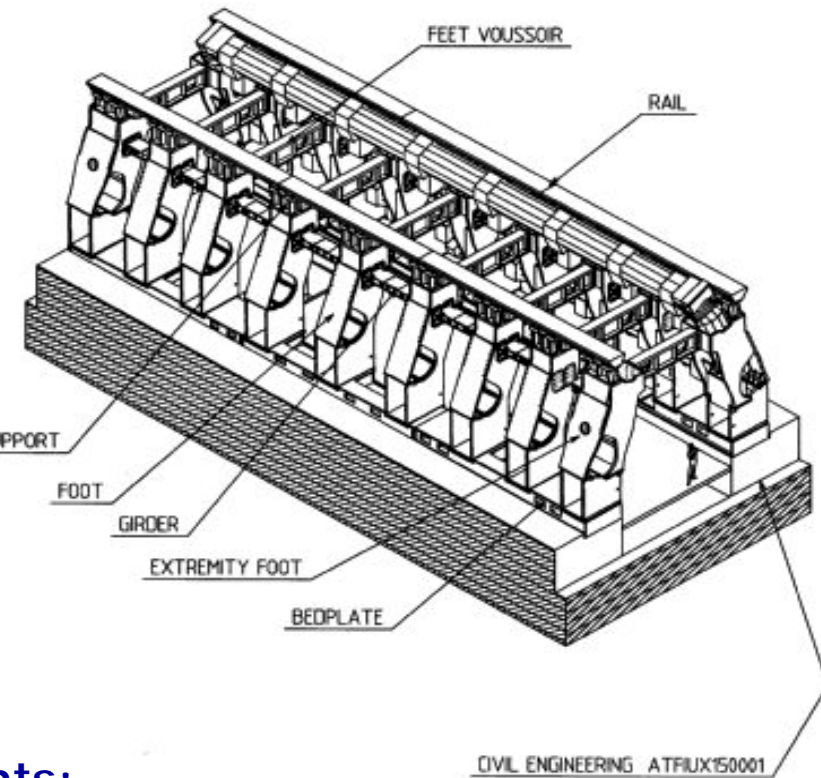
- ✓ Contract signed with Russian firm
- ✓ Large fraction of the material produced
- ✓ Manufacturing is starting
- ✓ First delivery expected still in '02

➤ External rails (trucks):

- ✓ Final engineering underway in Poland
- ✓ IK from Poland under negotiation and to be announced to the Oct RRB

➤ Major infrastructure procurements:

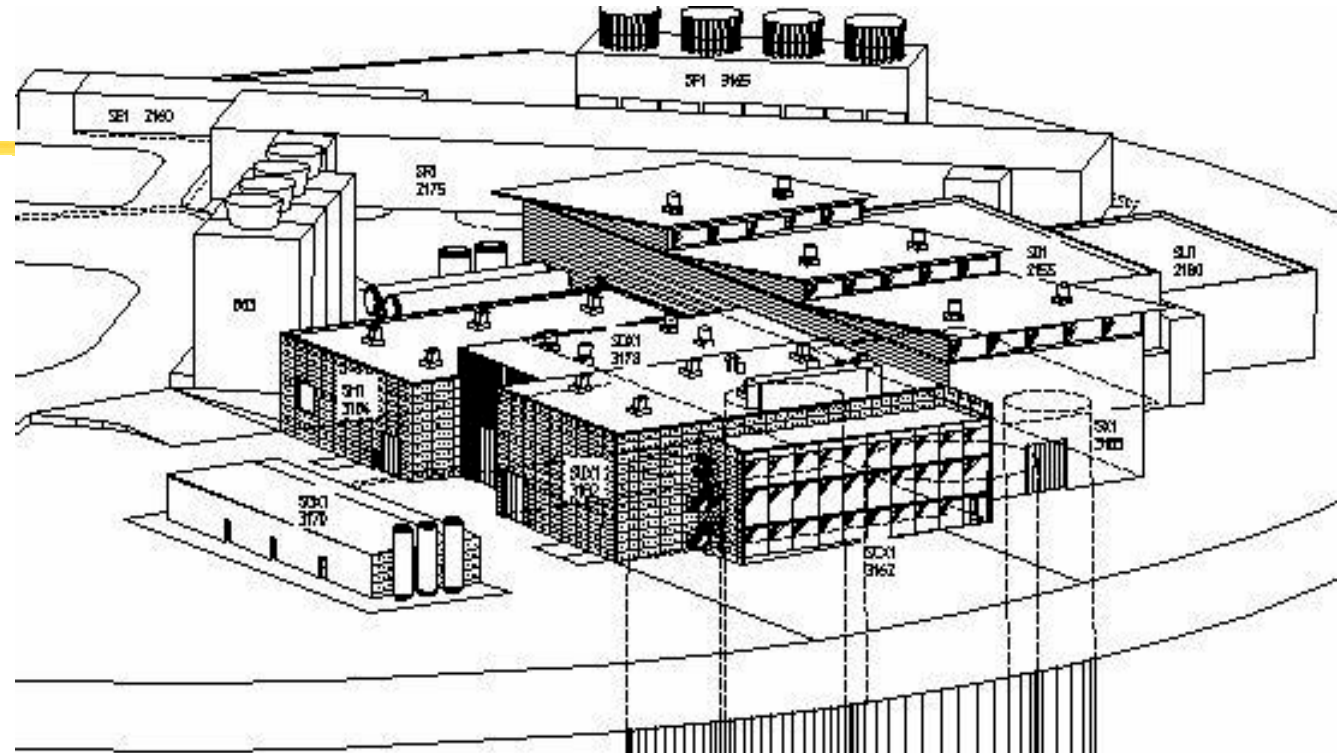
- ✓ Cranes (surface, underground)
- ✓ Area Cooling & Ventilation
- ✓ Metallic structures
- ✓ GAS pipes
- ✓ Electronics racks



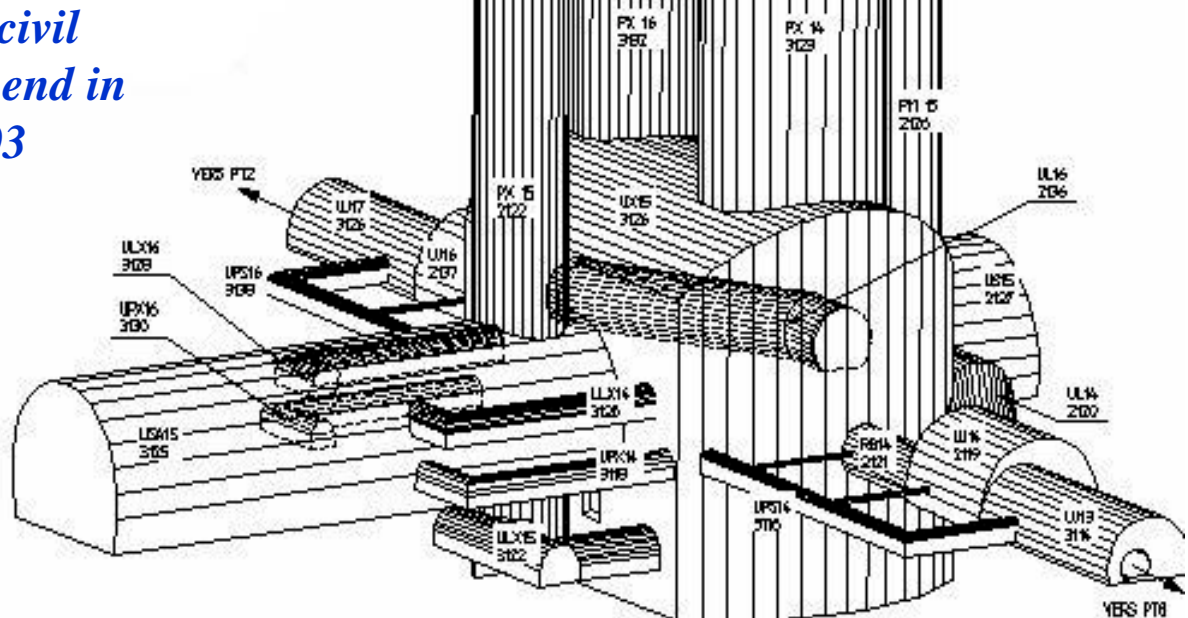
Running on schedule,
delivery Spring '03

Exp. area

Most of the surface building will be handed over to ATLAS Oct-Nov '02



Underground civil engineering will end in Spring '2003

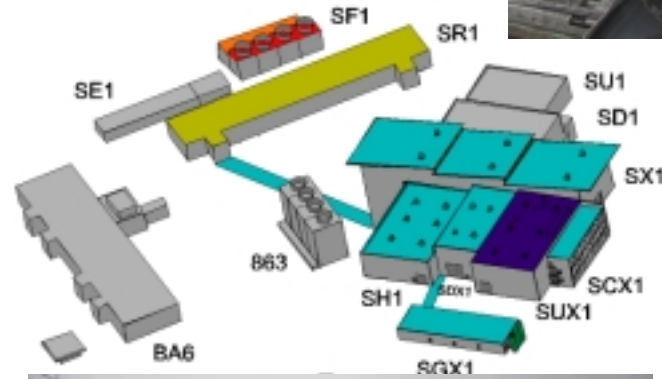
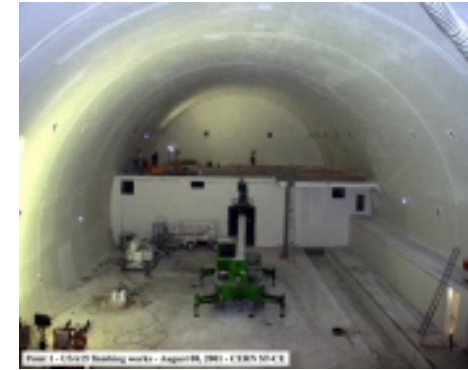


ATLAS will start installation at Point 1 in April '03

Excavation will end in May '02



... and some more pictures ...



Status of the offers for In-kind Contributions (CERN-RRB-2002-020)



In order to secure the necessary national support, the ATLAS Management has been asked to bring to the attention of the RRB the following forthcoming procurements of Common Project items and **expressions of interest** for in-kind contributions.

Common Magnet Items:

- Power circuit components
 - Busbars (0.6 MCHF; CERN, Russia)
 - Power supplies (0.4 MCHF; CERN, Israel)
 - Dump & switch system (0.4 MCHF; INFN)
- Solenoid power supplies, varia (0.9 MCHF)
- BT superinsulation assembly (150 kCHF; Russia)
- BT cryoring (1.1 MCHF)
- BT installation (1.4 MCHF)
- Proximity Cryogenics (3.5 MCHF)

Infrastructure:

- Trucks for Feet & Rails (0.6 MCHF; Poland)
- Shielding components (0.3 MCHF; Czech R)
- Movable air pads (0.6 MCHF)
- Copper shielding plugs (1.2 MCHF; Australia,...)