

# **3<sup>rd</sup> Wall for Cryogenic Vessel**

## **Activities @ MPI-HD**

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GERDA Collaboration Meeting at Tübingen  
9 -11 November 2005

# 3<sup>rd</sup> Wall - Reminder

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## Sep 05 : safety meeting in Milano - Request of 3<sup>rd</sup> wall :

- it must be not a part of the cryostat, can be part of water tank
- medium between cryostat and additional wall will be most probably 'air-like' gas (vacuum was also mentioned)
- the material for the 3<sup>rd</sup> wall can be copper
- the shape of the 3<sup>rd</sup> wall has to follow the shape of the cryostat for optimum shielding
- open issue: thermal insulation of 3<sup>rd</sup> wall

## Sep 20 : paper by Carla to consultant

- summarizes specs for 3<sup>rd</sup> wall ; proposes LEXAN besides copper

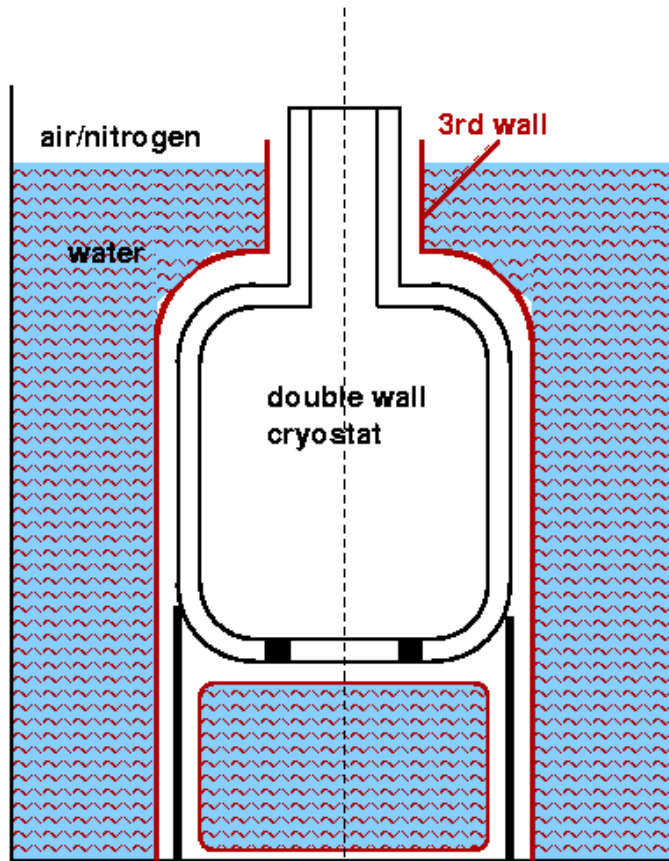
## Sep 22 : 3<sup>rd</sup> wall meeting at CERN – contributed paper by consultant:

“... Secondary containment is defined as means of surrounding the primary storage containers to collect any hazardous material spillage in the event of loss of integrity or container failure. ....

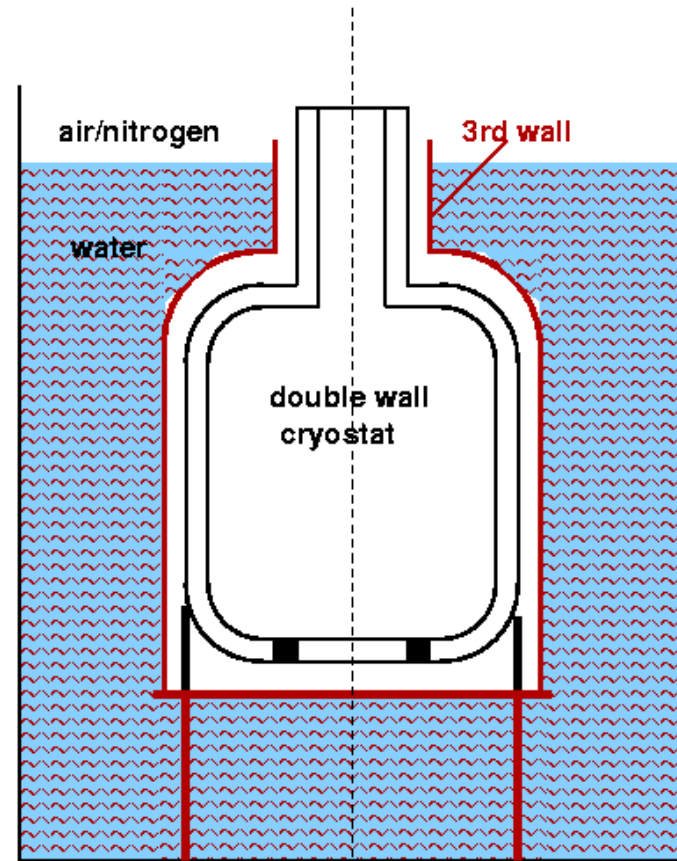
.... I have not found any particular specification as regards to the structural requirement. As a first instance, this should be the same as that of the primary containment, although for nuclear power plants .....

## Sep 28 : 3<sup>rd</sup> wall meeting at LNGS with consultant, phone conference

# 3<sup>rd</sup> Wall - Options



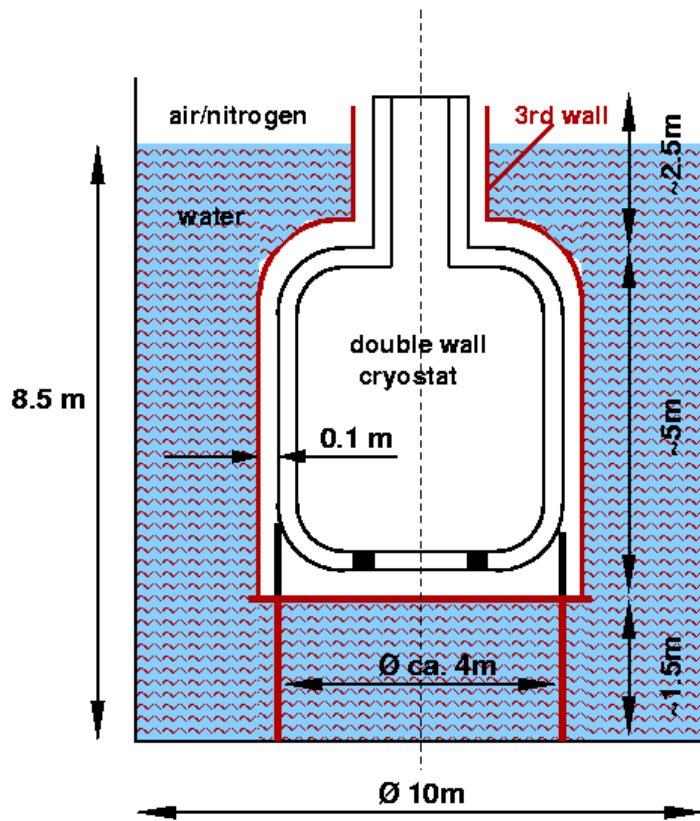
cryostat & support encased by 3rd wall  
waterbox below cryostat



cryostat & 3rd wall on table

Material either COPPER or LEXAN (radiopurity to be checked!)

## Baseline: 'cryostat and 3<sup>rd</sup> wall on table'



cryostat & 3<sup>rd</sup> wall on table

## Engineering\* study ordered to investigate:

- basics: geometry, loads, materials, installation, inspection
- comparison of materials & layouts
- consideration of further constraints
- cost estimates
- executive recommendation
- executive draft

\* experienced company for water shields from plastic and metallic materials (e.g. acrylic glass tunnels in sea worlds, Spundwände).

# Conclusions

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The engineering study - ordered on Nov 3 by MPI-HD - will help to find optimized and cost effective solution for the 3<sup>rd</sup> wall.

Estimated time: 80 working hours