

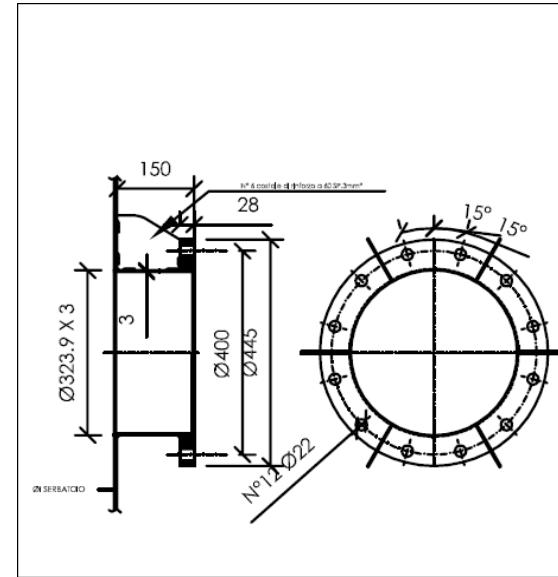
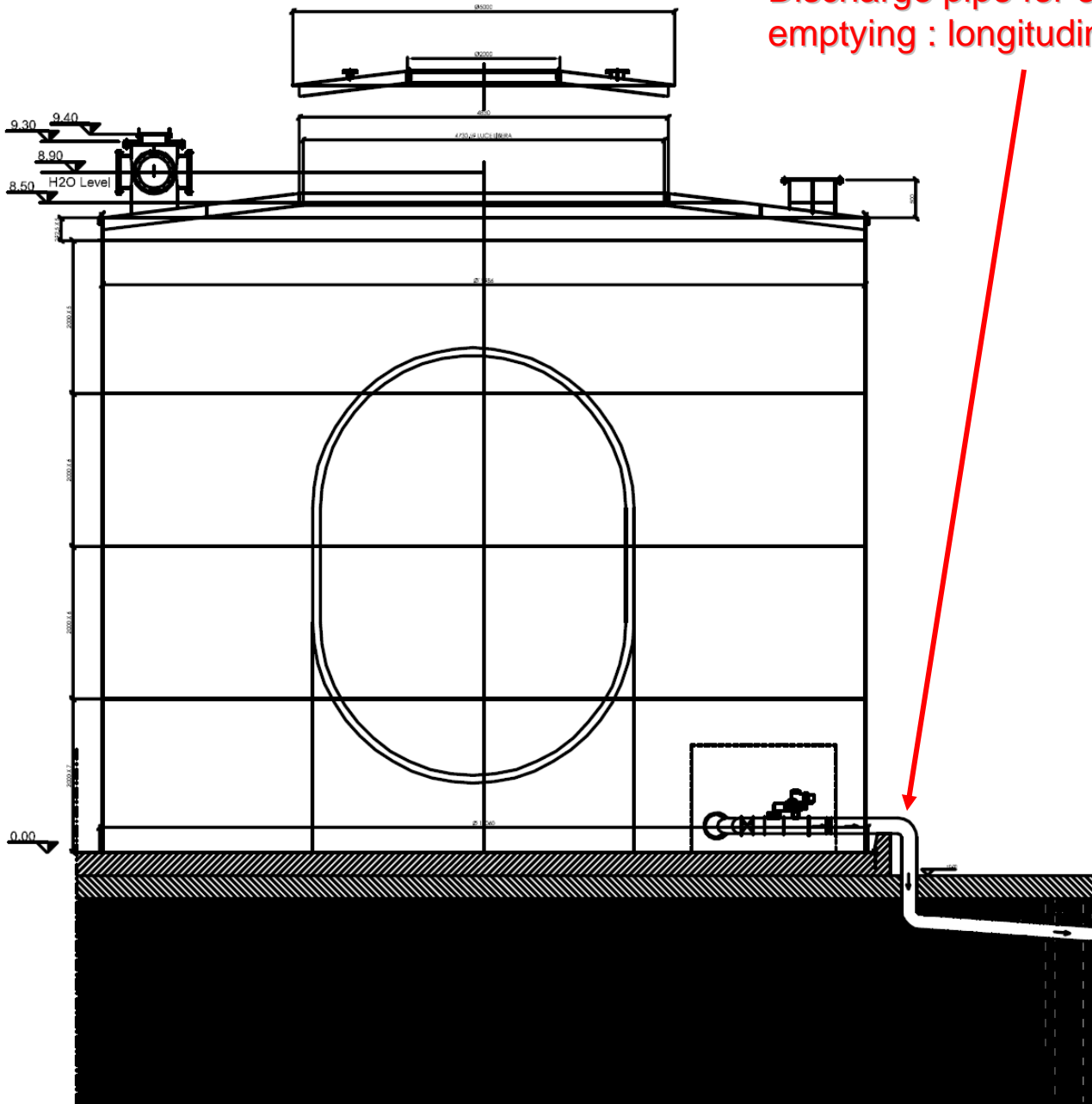
Discharge pipe
for emergency
emptying

- 2 Corr. Ø63 segnale serbatoi - pozzetti pompe Sale laboratorio
- Dn 100 provenienti dalle sale C e B
- Dn 250 acqua di sillicidio vedi planimetria generale Galleria Tir

Pozzetti di raccolta acqua di sillicidio

Pozzetti di raccolta acqua di sillicidio

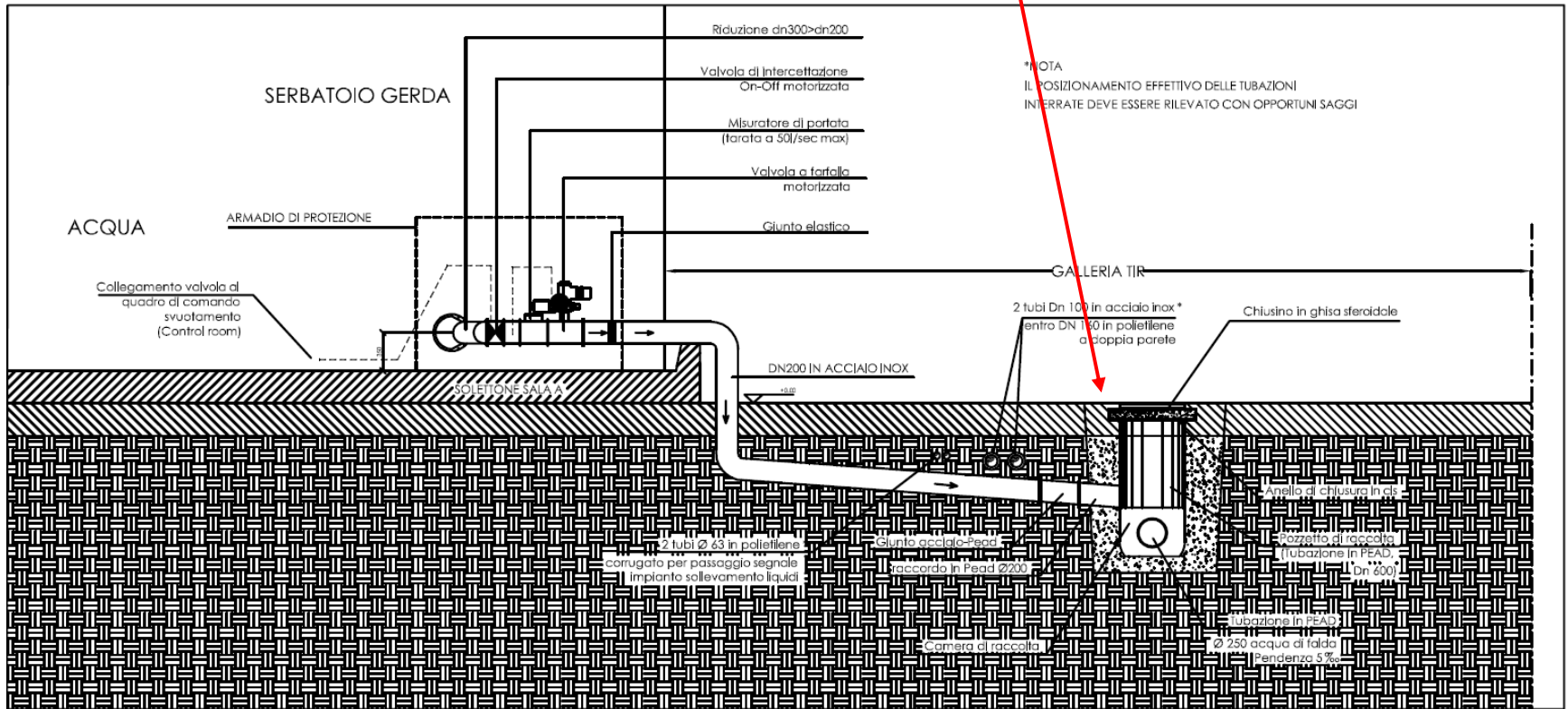
Discharge pipe for emergency emptying : longitudinal section



BOCCELLO: 75 DN300 PN10 UNI EN 1092-1
DA UTILIZZARE PER INNESTO TUBO DN200 IN ACCIAIO INOX
SCARICO GERDA IN GALLERIA TIR
Scala 1:5

SERBATOIO GERDA – SCALA 1:40

Discharge pit to be realized in TIR tunnel in front of GERDA site (LNGS will take care)



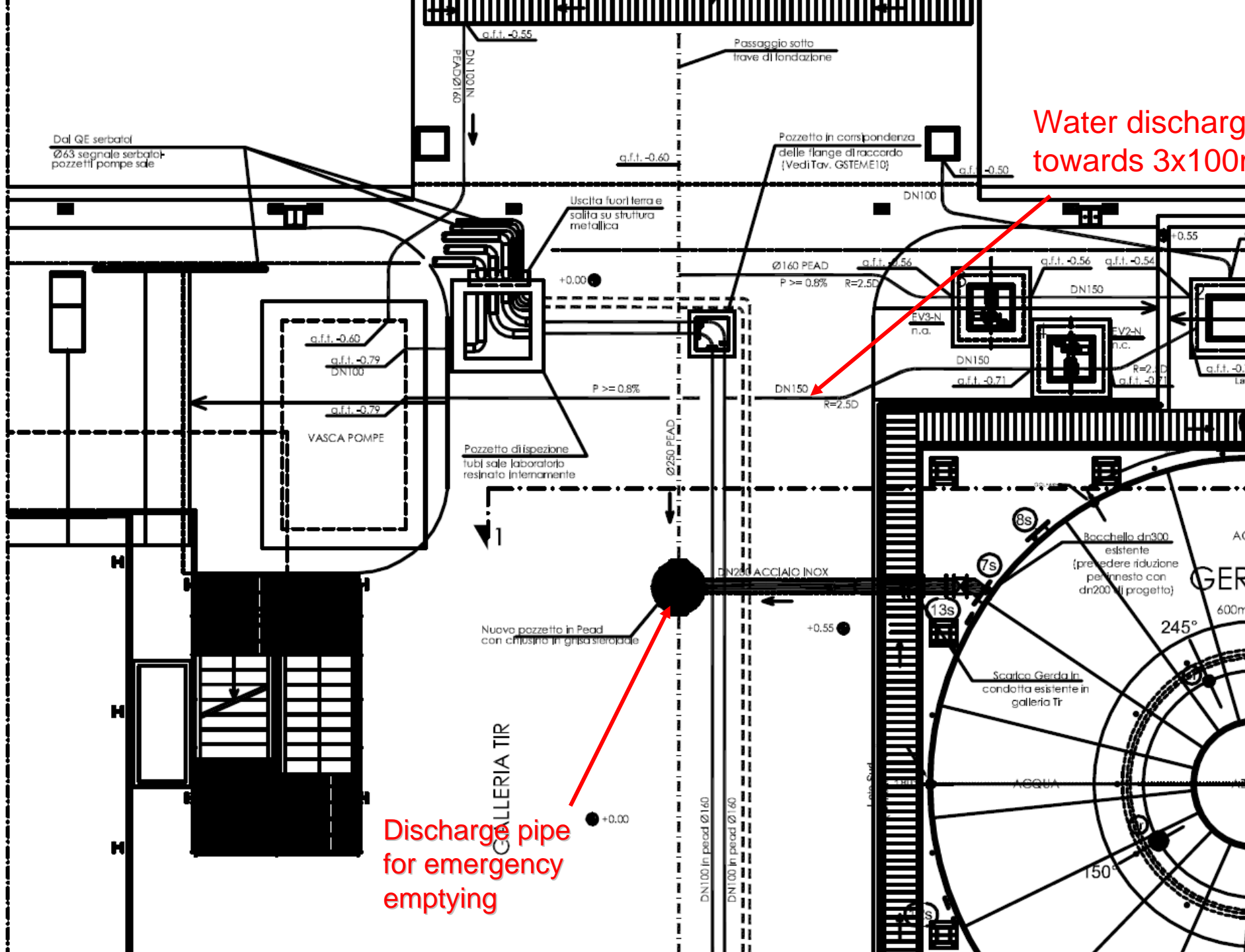
SEZIONE 1 - SCALA 1:20

Water discharge through DN250 pipe running below the TIR tunnel

- WT Total volume 600 m³.
- Water Volume to be removed to bring water level below SS Cryostat bottom ~ 450 m³.
- Characteristics of DN250 pipe
 - Material/Diameter: Pead/DN250
 - Minimal slope 0.8%
 - Flow rate (70% filling): 56 l/s
 - Exercise pressure: atmospheric (no overpressure allowed)
 - Rock water flow rate collected in TIR tunnel: ~ 10 l/s
 - Flow rate available to discharge GERDA water: ~ 45 l/s
 - Time needed to empty 600 m³ = 3.40 hours
 - Time needed to empty 450 m³ = 2.45 hours

All this hold if no bottleneck at “pozzetto 64”, the last “pozzetto” connecting new and old water collecting network.

From measurements performed in july then repeated in november 2006 by LNGS + commissioner technical staff, came out that to reach the full flow rate of the following DN400 pipe a transient of ~ 40-50 minute is needed.....



Water discharge through DN150 pipe already available at GERDA site to collect “*platform waters*”

- Characteristics of DN150 pipe
 - Material/Diameter: Inox/DN150
 - Minimal slope 0.8%
 - Flow rate (70% filling): 17 l/s
 - Exercise pressure: atmospheric (no overpressure allowed)
 - Flow rate available to discharge GERDA water: 17 l/s

The water discharged through this pipe goes to the pump pit and then is sent to the 3 x 100 m³ platform waters collecting pits, devoted to collect any fluid eventually/accidentally discharged in experimental halls (A,B,C). GERDA will have access to 1-2 pits (i.e. 200 m³).

→ Total flow rate to empty GERDA WT is

46+17 l/s = 63 l/s → 120 minutes to drain 450 m³ water

Water discharge *extrema ratio* : float the TIR tunnel opening one of the other available DN300 flange.

- Experimental halls are at +30 cm above the TIR Tunnel Floor.
- The TIR tunnel is surrounded by 30 cm “cordoli”
- Just need to agree with LNGS the draining sequence of procedures in case of
 - Operation
 - Emergency