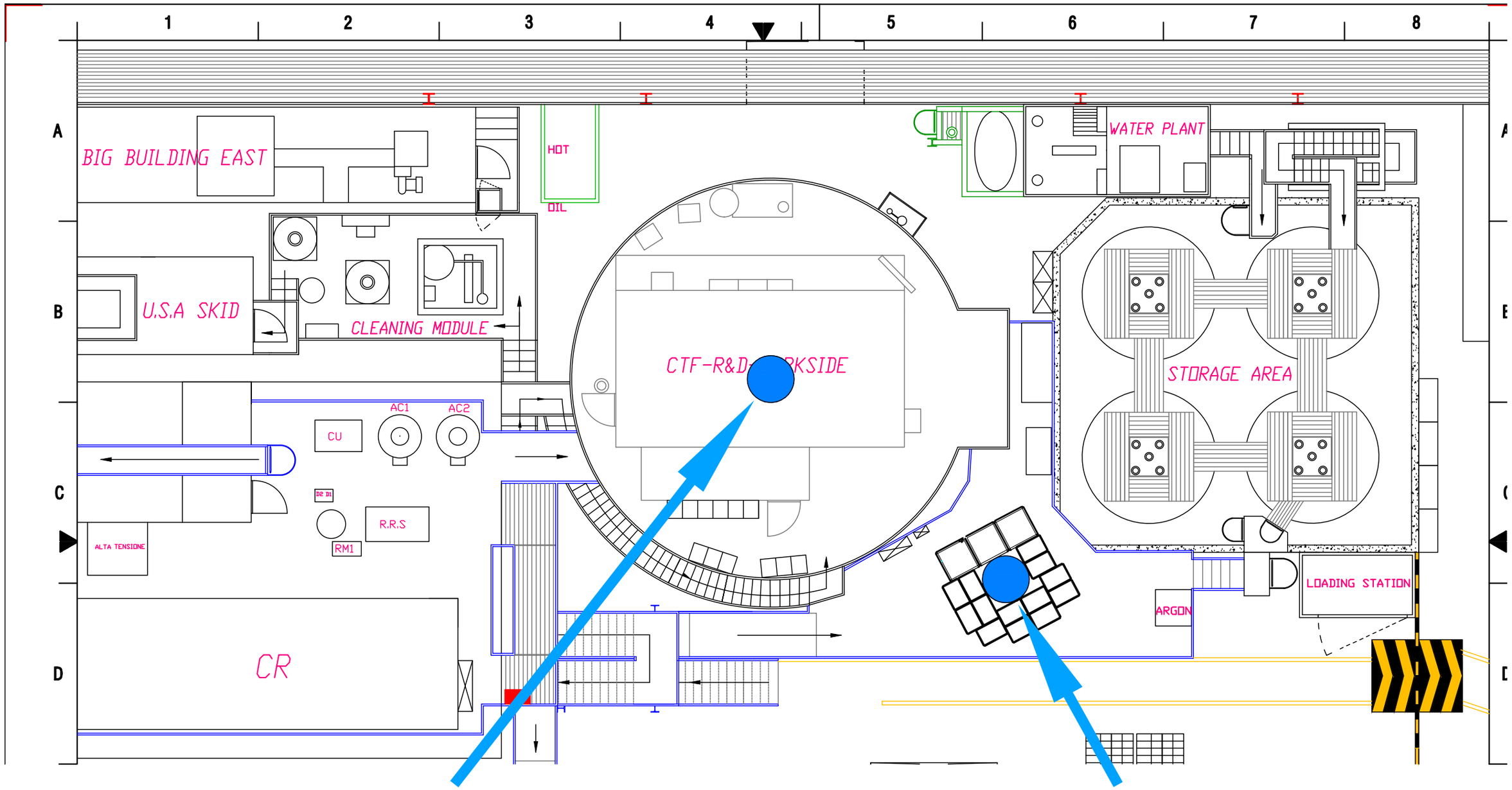
Proto installation underground
Possible alternatives
Needs

Jan. 17th, 2019

OUTLINES

DarkSide-10 platform
DarkSide-50 location
Actions

Prototype allocation in Hall C

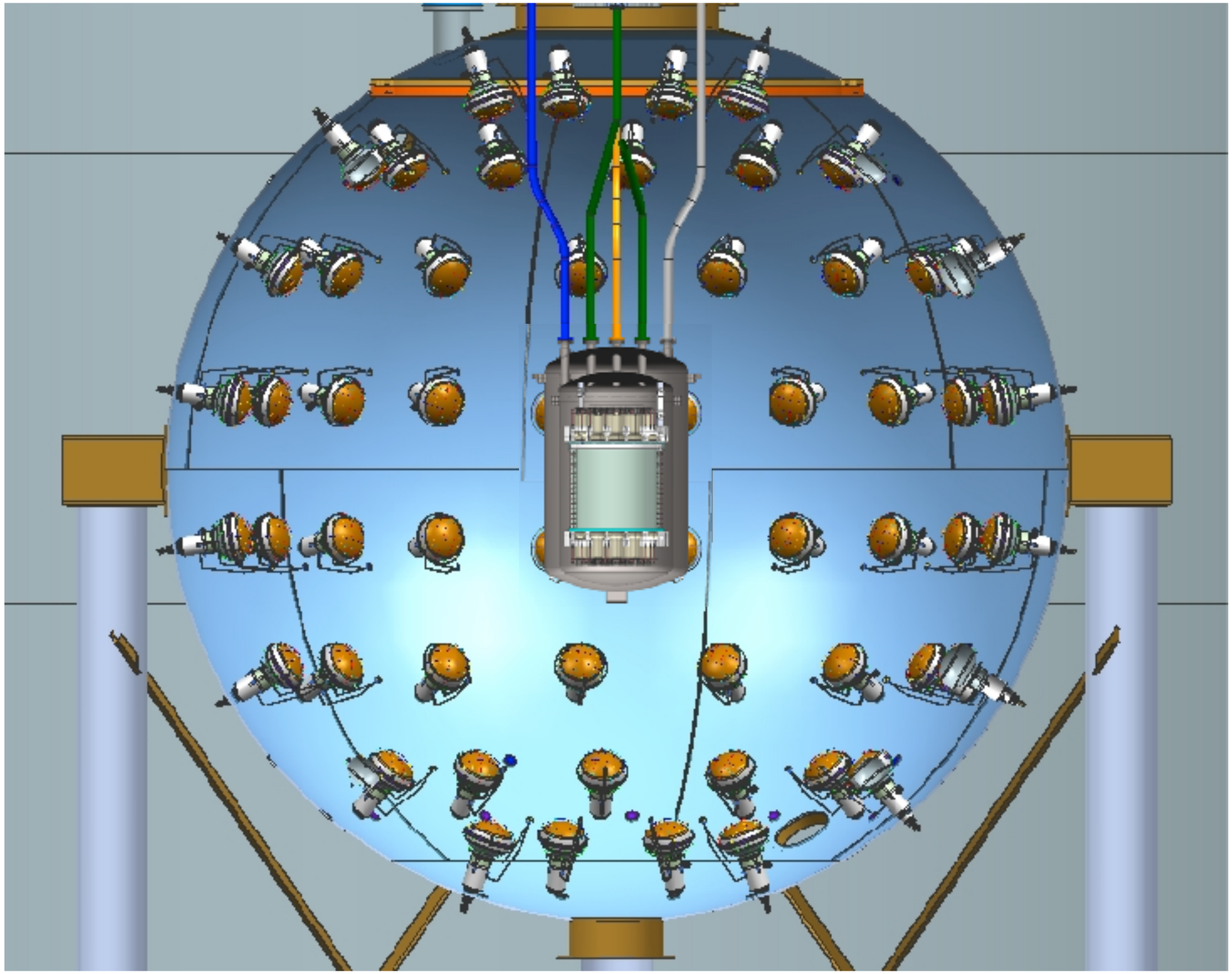


Into the DS-50 LSV

In the DS-10 area

Note: Both the allocations are provided with electrical power, UPS, gas and liquid nitrogen. All the infrastructures used by DS-50 could be re-used….

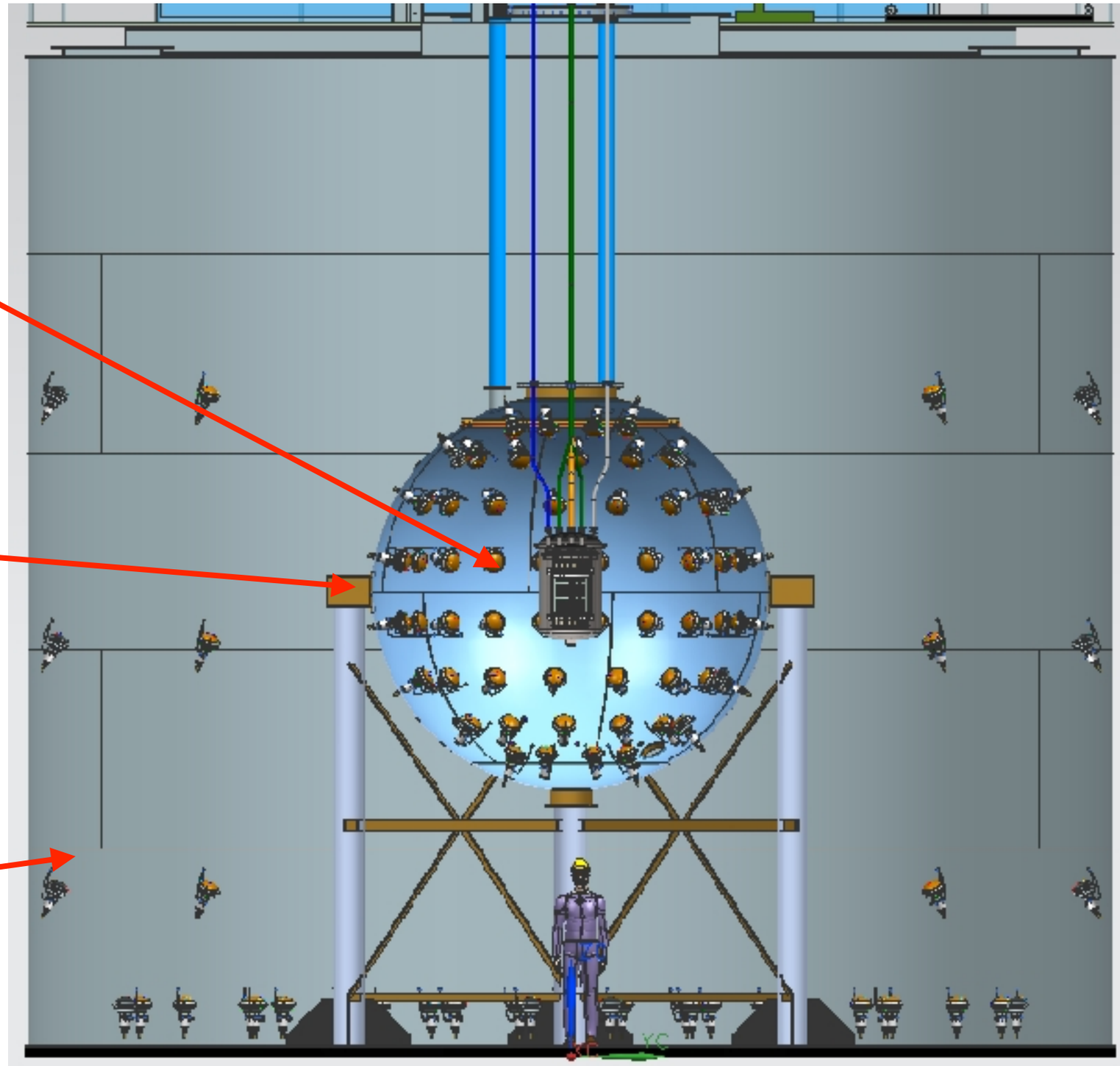
DS-50 LSV



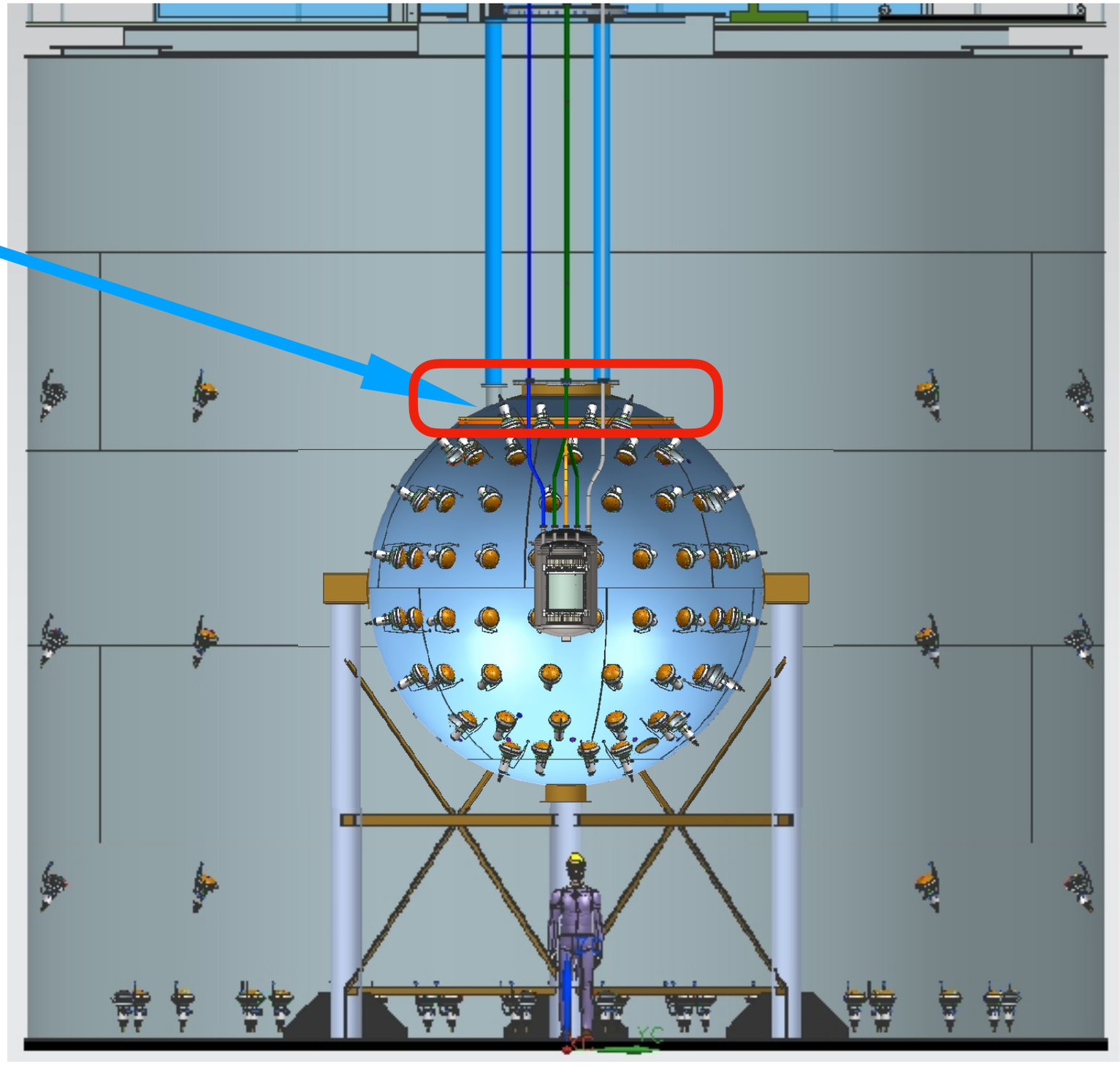
Liquid Argon TPC
153 kg ^{39}Ar-Depleted
Underground Argon
Target

4 m Diameter
30 Tonnes
Liquid Scintillator
Neutron Veto

10 m Height
11 m Diameter
1,000 Tonnes
Water Cherenkov
Muon Veto

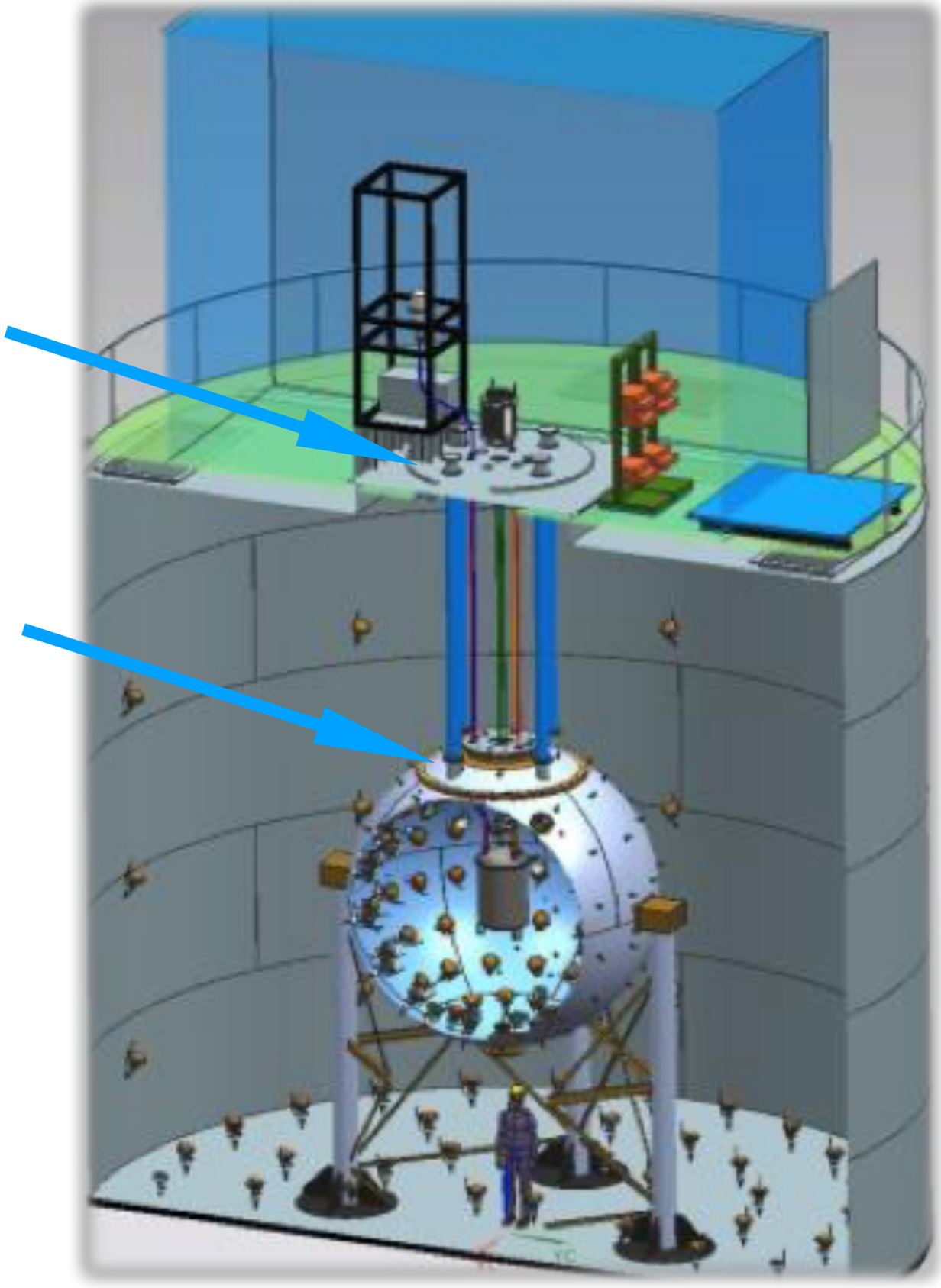


To insert the Proto into the LSV, we need to remove the upper dome



CTF Flange into the CRH to be removed

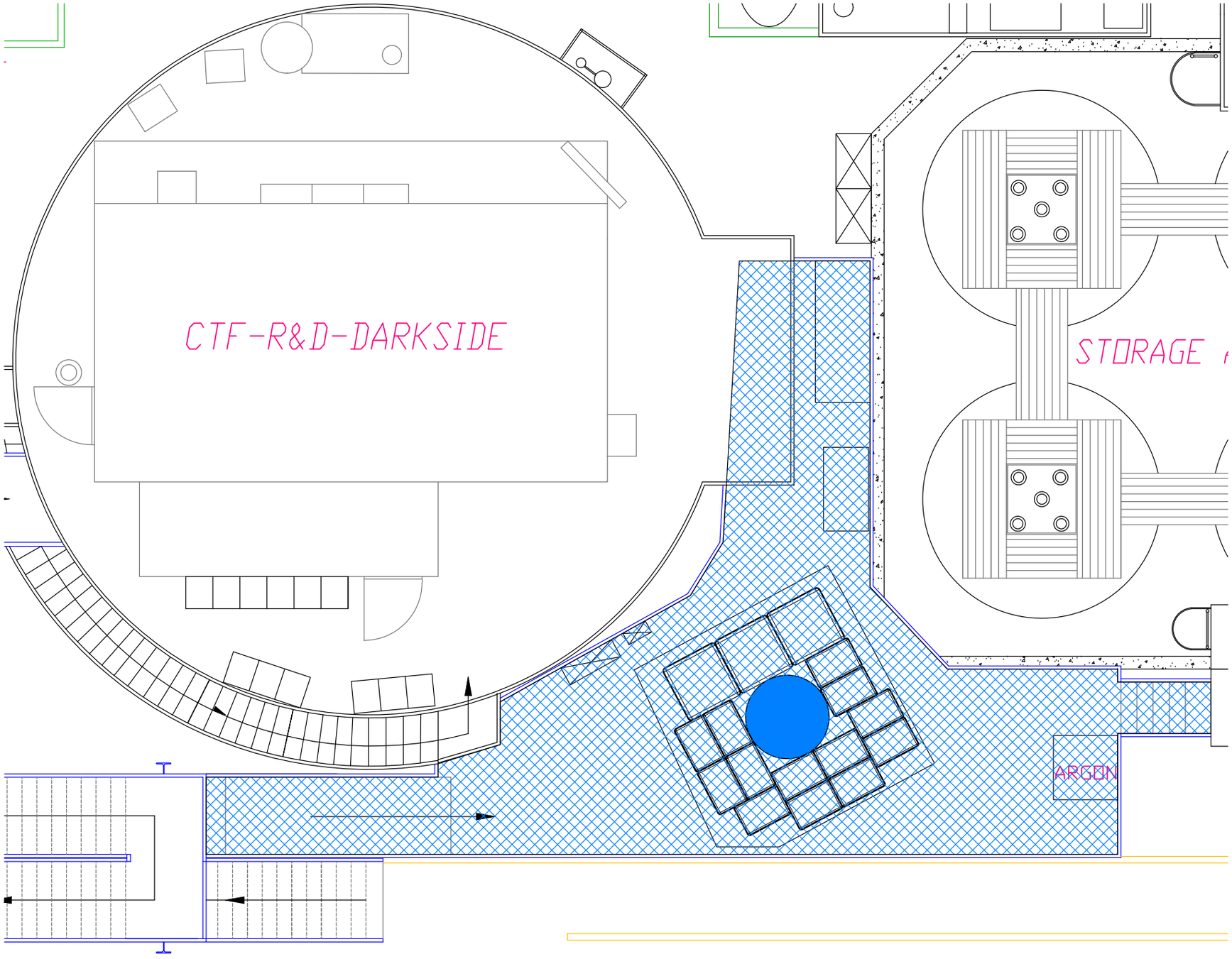
Upper Dome to be removed from LSV and then from the CRH, to perform the proper modifications



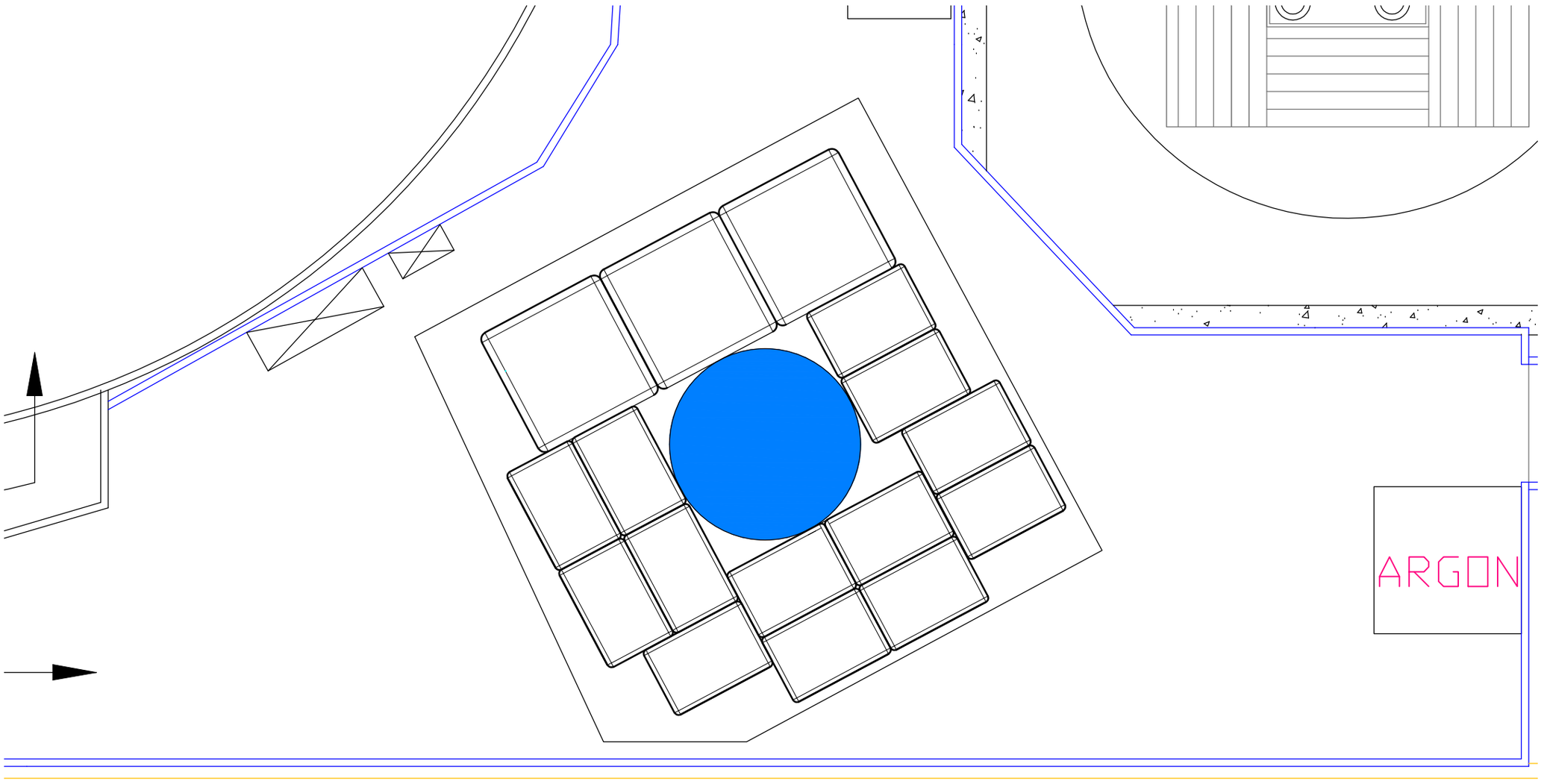
ACTIONS to replace DS-50 with DS-PROTO

- Discuss the opportunity / hypothesis with BX Collaboration
- Recover the UAr
- Drain the Water Tank and LSV
- Purge and dry properly LSV to avoid boric acid stick on the inner surface and on the PMTs
- Dismounting of the Gas Panel and make free the CRH
- Remove the upper dome for modifications
- Install the Proto
- Filling (??)

DS-10 platform



DS-Proto



Almost 50 square meters available

Almost 12-13 square meter for the Proto+shielding

ACTIONS to install DS-PROTO on DS-10 platform

- Shielding needed (surface)
- Total Weight (no more than 23-25 ton in the central space)

OPEN POINTS

- The Prototype will arrive during the proto-DUNE cryostat construction and Installation, and will be in function during the global installation of DS-20k experiment
- The possible locations for the Proto are in the Borexino area. Everything has to be discussed with BX collaboration
- Possible important interferences with Borexino, in case it will be dismounted within 2020-2021
- Location for a Control Room