UT-BATTELLE

Summary of Hg System Review at CERN

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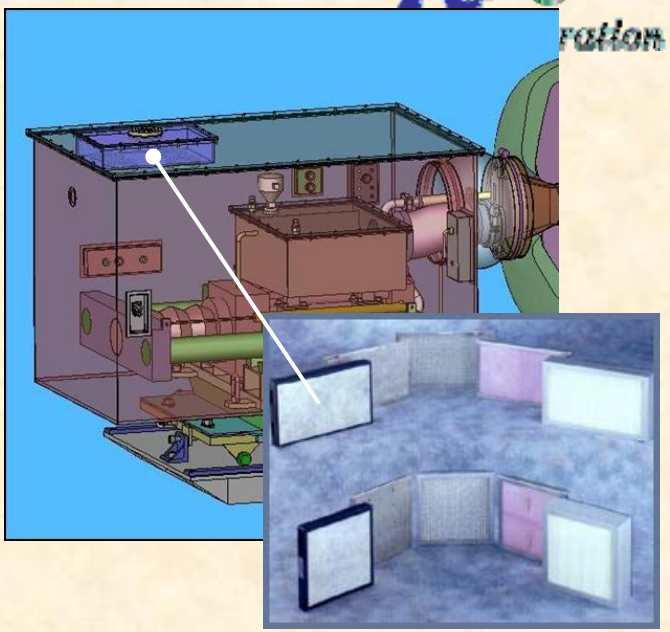
OAK RIDGE NATIONAL LABORATORY
U. S. DEPARTMENT OF ENERGY

Visit Made to CERN on Sept 5

- **Chemical safety**
  - **J. Gulley, A. Fabich, V. Graves**
- **Radiological safety**
  - **M. Silari, T. Otto, P. Carbonez, I. Efthymiopoulos, A. Fabich, V. Graves**
- **Transport issues**
  - **Y. Bernard, I. Efthymiopoulos, A. Fabich, V. Graves**
- **Current Hg system design presented, with emphasis on safety and monitoring, transport details**

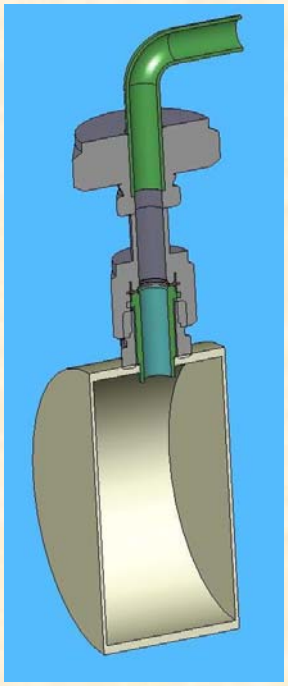
Chemical Safety Discussion Summary

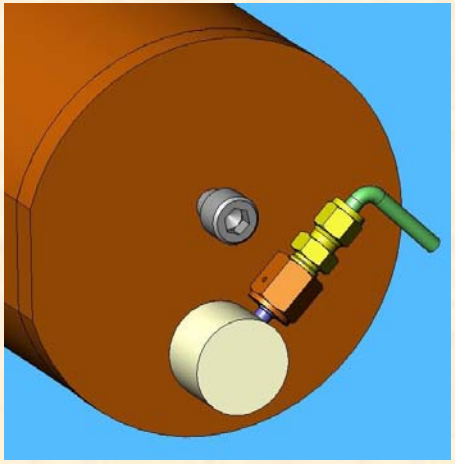
- **Details of passive & active Hg vapor filtration must be developed**
- **Replace respirator cartridges with single filter**
- **Cannot vent Hg vapor into tunnel**
  - **Monitor passive filter exit**
  - **Might require exhaust pipe to surface from passive filter**
  - **Considering keeping secondary vent closed during experiment**
- **Active system required for Hg transfer operations**

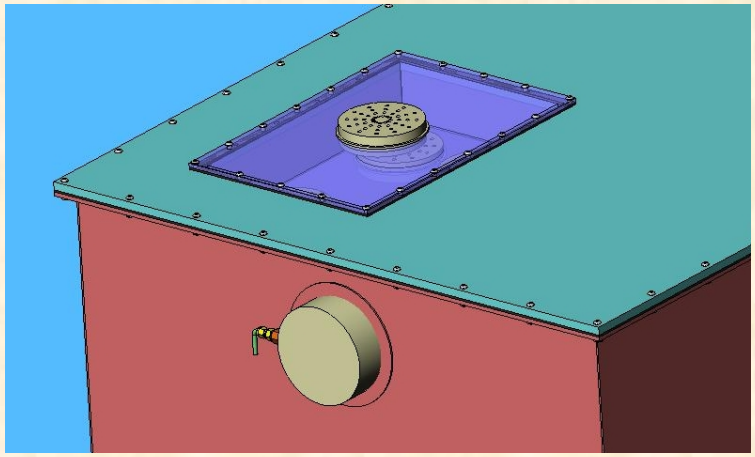


Radiological Safety Discussion Summary

- **Proposed beam window design discussed**
  - **Similar to Hg plenum design**
  - **SS pipe welded to sheet metal Ti6AlV4**
  - **Tubing fitting with hose for pressure or vacuum (prefer pressure)**
  - **Concept can be sized differently for upstream & downstream windows**





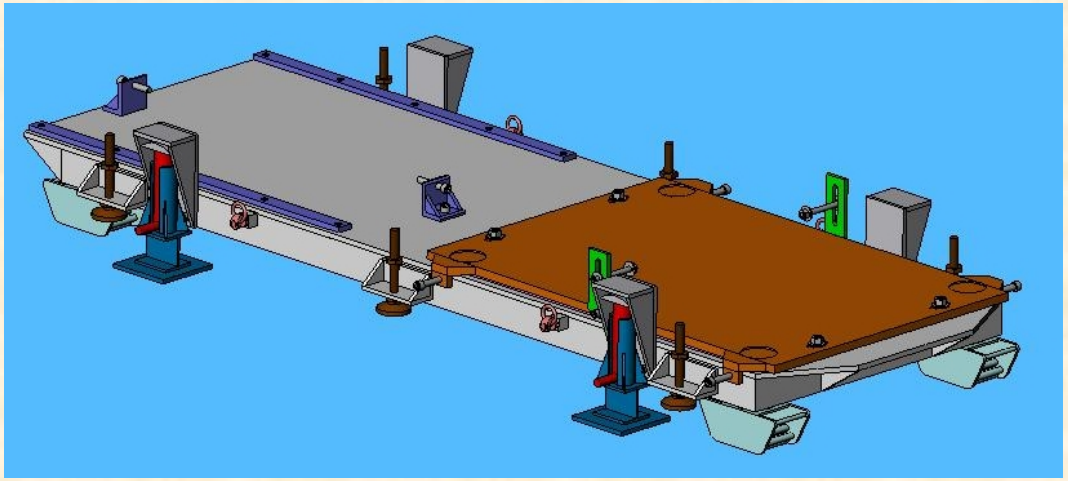


Radiological Summary II

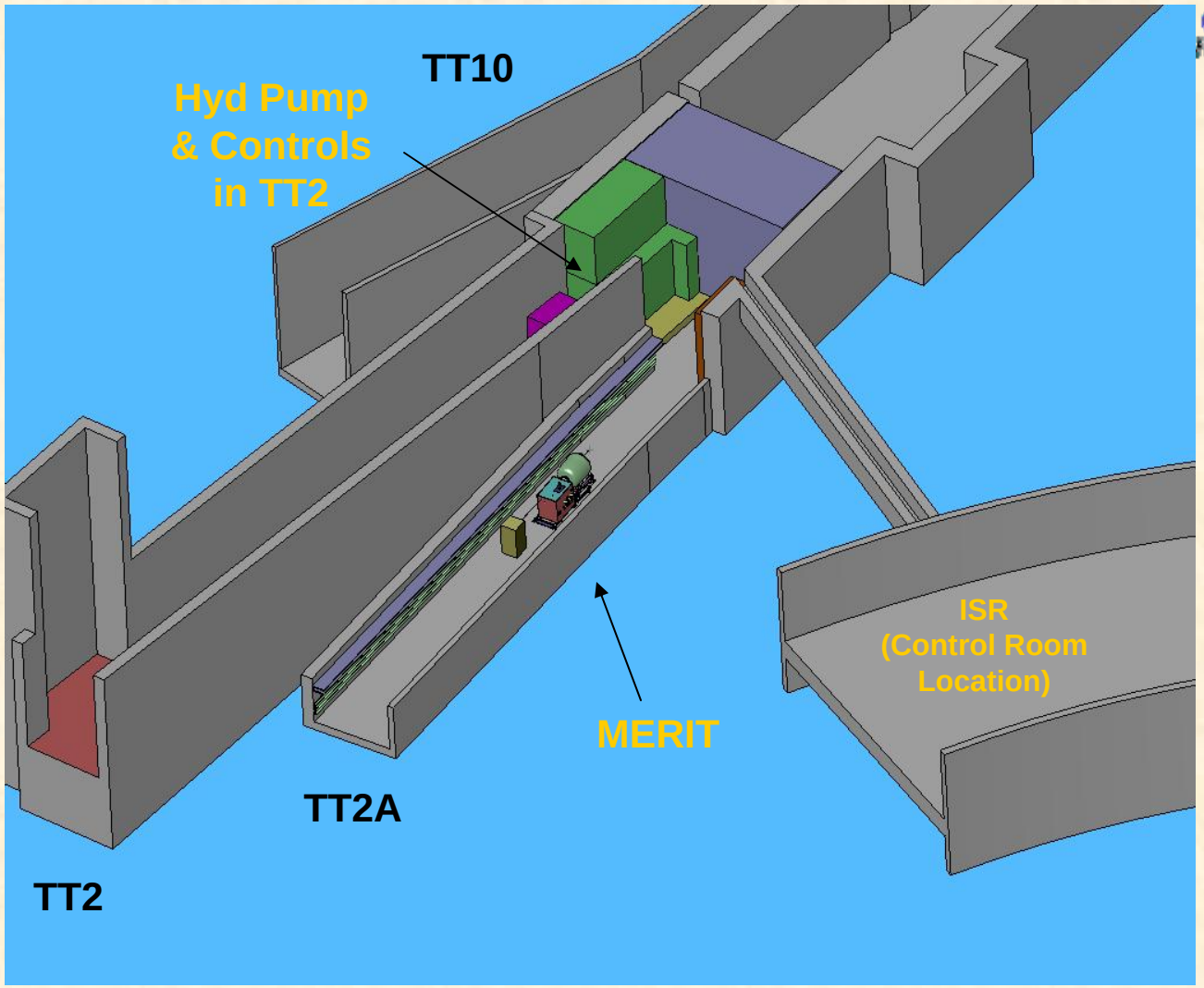
- **Prefer Hg vapor monitors close to experiment to minimize secondary volume**
  - **Shielding issues must be considered**
  - **Suggested that powering down monitors during irradiation might protect electronics Access to TT2/TT2A discussed**
- **Existing concrete blocks in TT2 pit can be removed at any time, with the condition that they be in place prior to TT2A beam**
  - **Replace with fence & access control cards**
- **(Full) tubed LN2 exhaust through TT10 to ventilation system provisionally accepted**
  - **Exhaust delay must be determined**

Transport Discussion Summary

- **Methods for lowering solenoid and baseplate into tunnels discussed**
  - **Lower baseplate, then solenoid into pit**
  - **Use rollers or turtle to carry assembly into TT2A (sequence to follow)**
- **CERN Transport personnel prefer to use their rollers and jacks**
  - **Will require slight modifications to baseplate design**
  - **CERN to provide equipment specifications to ORNL**
  - **Use three rollers instead of four**
  - **Add “tow-hooks” to ends of baseplates**

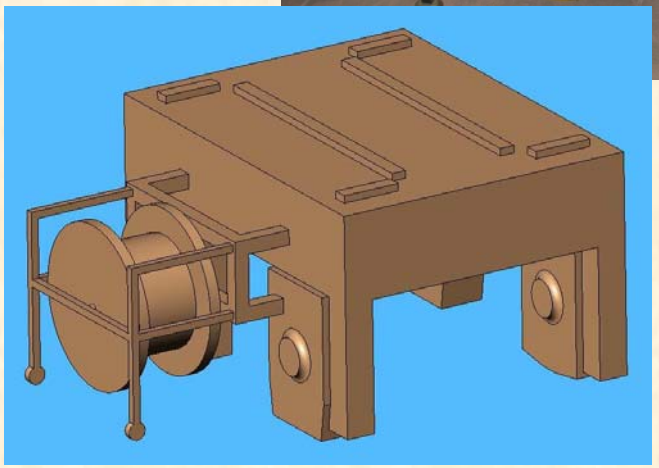


Reminder - Experiment Layout

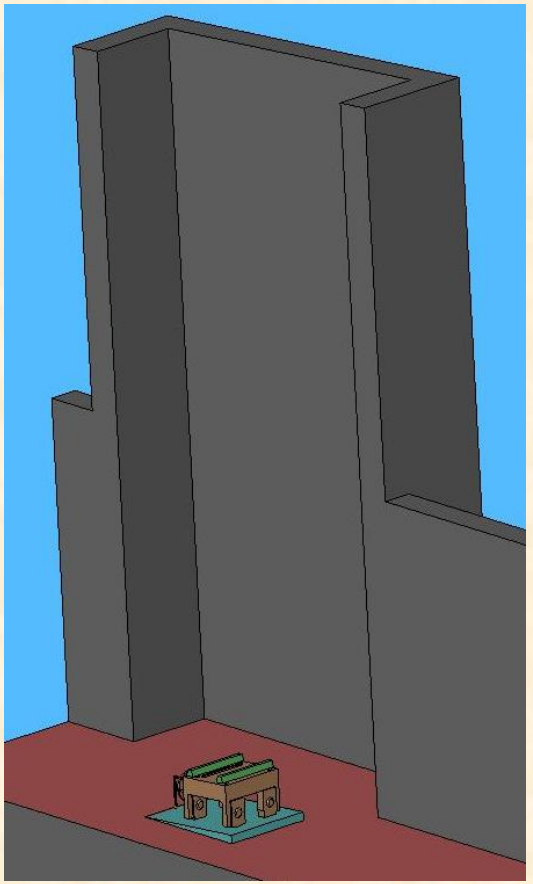


Solenoid & Baseplate Pit Installation

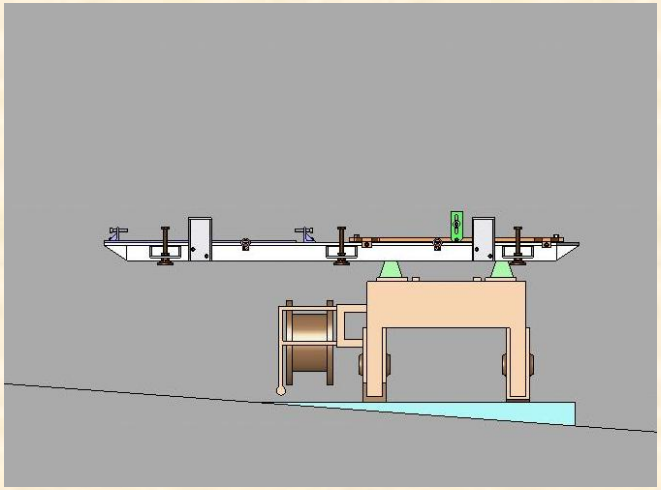
- **Existing shield blocks incorporate wedge to compensate for floor slope**
- **Must lower components onto level surface – not allowed a two-touch operation**
- **Currently no overhead lifting capability in tunnel**



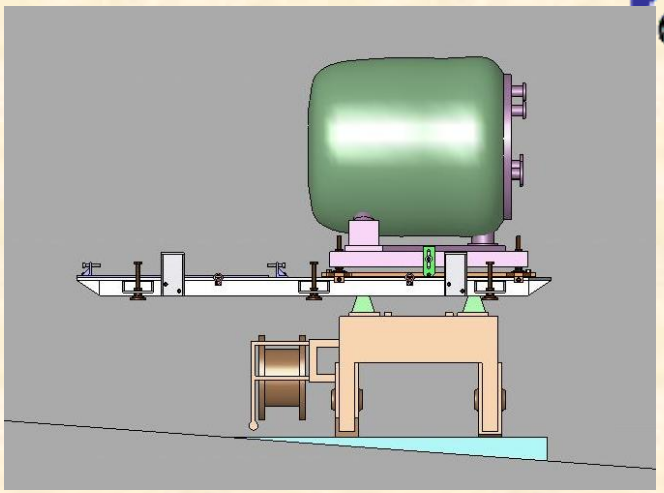
CERN "Turtle"



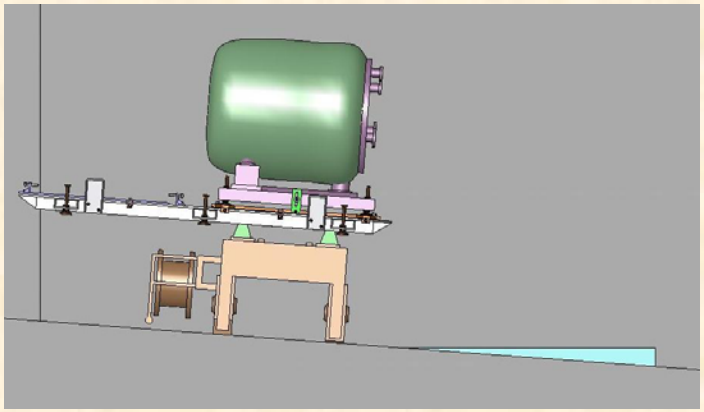
Pit Installation Sequence for Turtle Transport of Solenoid



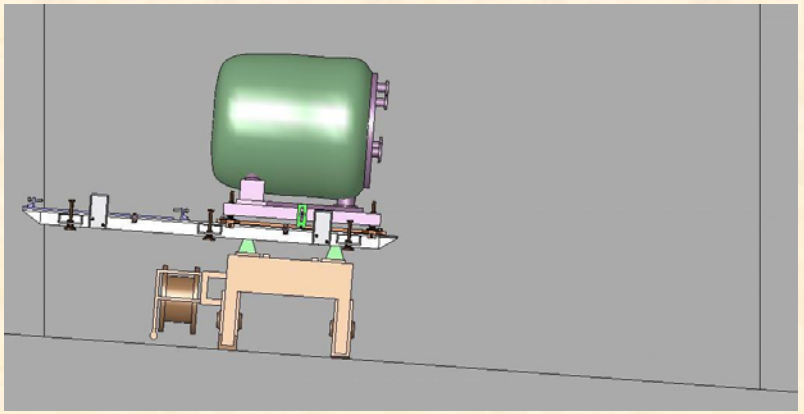
Lower baseplate onto turtle, secure



Lower solenoid onto baseplate, secure

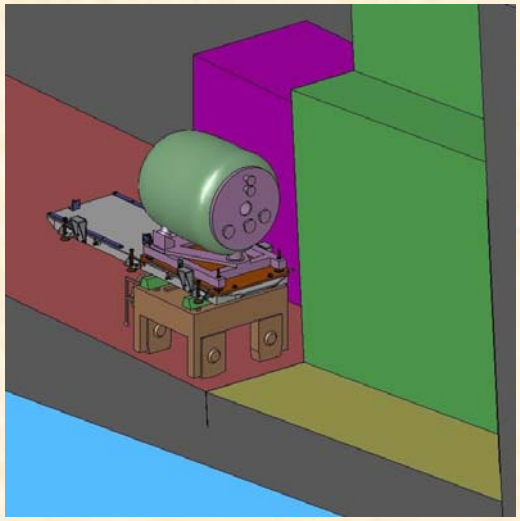


Drive turtle off wedge

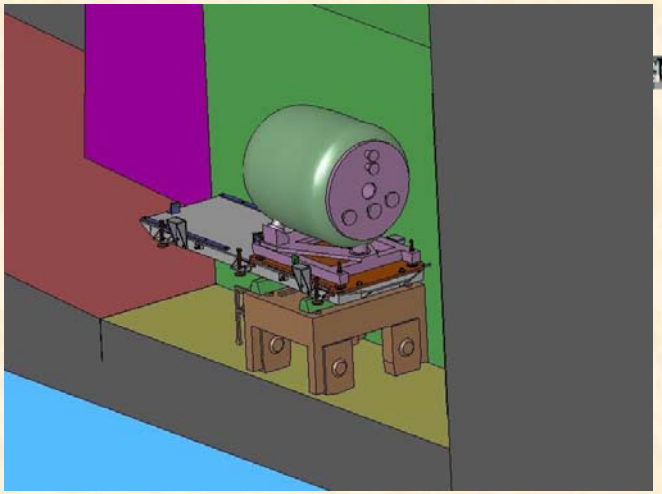


Remove wedge

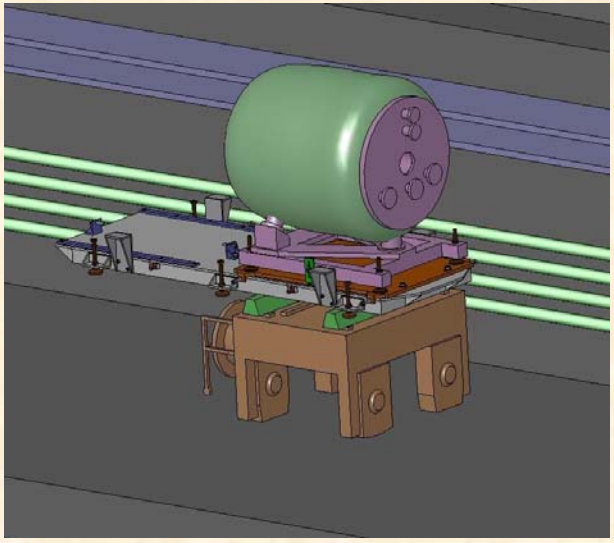
Turtle Transport of Solenoid



Drive turtle down ramp



Drive turtle onto level floor, negotiate step into TT2A



Drive turtle into approximate position in TT2A
Insert I-beams under baseplate
Use jacks to lift baseplate/solenoid off turtle
Remove turtle
Lower baseplate onto floor or rollers

Roller Transport of Solenoid

- **Turtle not used**
- **Baseplate/solenoid moved on rollers**
- **Wedge still required (perhaps larger), same basic sequence as with turtle**
- **Cable attached to fixed location, use come-along to control baseplate/solenoid roll down slope**
- **Move fixed attachment point to pull assy on level surfaces**