Preliminary Notes/Comments
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Summary Notes from the CERN Safety and Operations Review
June 19-20, 2006

June 19th Notes

1. Fire propagation requirements at CERN prohibit the use of halogens, particularly in electrical cables, in tunnel areas.
    a. Develop a list of materials and submit to CERN for: electrical, hoses, gaskets, etc., and all penetrations through the secondary containment; U.S. standards could be acceptable; Underwriters Laboratory 94B is used by CERN for general criteria for materials.
2. Define the requirement for leak-tightness and our criteria for testing?
    a. If we exceed a leak decay value after 24 hours, how do we recover?
    b. Note that a breach of primary containment is different from a breach of secondary containment, hence, different criteria should be considered.
3. Add the procurement specification for the hydraulic system to the Appendix.
4. How do we deal with failure of the check valve in the primary flow loop?
5. Does CERN provide monitoring equipment for the two secondary windows? (There was no commitment made by CERN for this.)
6. Do we need to add a port to check for vapor in the snout before opening the secondary sleeve, for laser alignment?
7. On the Transportation Schedule, remove the statement that says "replace nozzle" at CERN.
8. B. Riemer expressed concern over the aggressive schedule to meet testing in April '07
    a. Safety-related tests must not be skipped;
    b. Send a draft of our test and operations plan to the CERN group for comments.
9. Send Marco Silari the file for Sergei's MARS simulation for the activation components. – DONE

Review Committee Preliminary Comments

1. Anchor the target system to the tunnel floor.
2. Concern over use of Teflon and whether cables may have fluorocarbons.
    a. Can Teflon be replaced and are cables halogen-free?
    b. IS-23 is the CERN specification for cable compliance.
3. The Lexan cover will not survive a fire.
    a. CERN will evaluate a tunnel fire "loading" and give us feedback for a fire rating.
    b. Could we use fire-resistant glass if we cannot meet the heat load?
    c. Also consider a fire-resistant cover for the sump tank. (We could change the cover to steel after the ORNL tests.)
4. What if the pressure test results are not exactly like the test data from the ORNL and MIT tests? We should develop contingency plans for tests and operations.

5. Provide a means to contain the entire hydraulic fluid inventory should a reservoir leak occur. Options include a basin for the complete hydraulic unit or adding height to the existing drip pan walls.
6. Present the mechanical calculations for the assembly of the three cylinders; what are the bolt shear loads, bending stress in the tie beam, etc.
7. Present the qualifications of those who will load and unload mercury, and who will be available for the testing phase at CERN, i.e., taking data.
8. Develop flow charts and schematic diagrams that outline loading and unloading mercury, and filter replacement. Schematic Done.
9. Write procedures for item 8 with regard to opening the secondary enclosure.
10. Consider adding redundancy to some sensors to limit person-rem exposure.
11. Develop a "dose plan" and estimate the expected person-rem exposure for all operations.
12. Develop a schematic for vapor flow/pathways.
13. How do we know that the sump tank vent check valve is operating correctly?
14. Transportation: the same sealand container and Hg flasks should be used (that is our baseline), hence, the CERN Radiation Protection (RP) has to approve the container (and the flask) before shipping from ORNL.
    a. Note: I have already had a discussion with M. Silari on this topic and he has put me in touch with the appropriate person at CERN.
15. "EDMS" at CERN should be the repository for all safety-related materials and communications.

The chair of the review committed will send a formal report in about three weeks (by July 14?).

Merit Installation Issues

June 20th Notes

1. There are no lifting provisions for the cold-valve box; it weighs ~500 kg.
2. Solenoid lift fixture was welded by a non-certified welder.
    a. CERN is requiring x-ray or dye-penetrant inspection reports.
3. Note to us; add the MIT lift fixture to our container packing layout.
4. Question to Van; what keeps the cylinders in the "closed" position during transport? We cannot drain the cylinders without removing them from the secondary containment, so there will be fluid in the cylinders that will prevent motion.
5. Add stickers to identify where component centers of gravity are located.
6. Install anchor bolts after the final alignment of the target assembly.
7. Question to Van; are the welded brackets for lifting the hydraulic cart certified? No
8. Check if the aluminum structure weld stress analyses used annealed properties.
    a. Same for steel welds.
9. The crane for lowering the MERIT equipment into the shaft is occupied 100% through March '07 for the Large Hadron Collider (LHC) project!

10. The rigging group requested that we write our lift requirements and develop a list of equipment we area providing, and a list of what they should provide.
11. Send the rigging group the file spec for the Hilman rollers we are using.
    a. They indicated that these rollers are not good on rough concrete, but an inspection of tunnels TT2 and TT2A showed smooth, finished concrete floors. A few square meters of rough concrete exists near the 180° turn, but Ilias said that would be covered with a steel plate.
12. The group confirmed that a "front-load" sealand container is o.k. for unloading and loading the MERIT components, if the magnet is turned "sideways" and is the last item in.
    a. That has been our baseline approach even though the drawing we showed was not up to date.
    b. A method of traversing the 16-17cm step to the floor of the sealand container needs to be developed – perhaps a ramp.
13. We should send CERN a set of baseplate photos (they were taken on June 22), and updated sketches of the sealand container showing the correctly-loaded configuration.

Pts: 27Jun06