

Novec 649 project. Summary of P.Gorbounov's actions during the week 5-11.11.2014

1. Collected the "A05" container from Benoit. It is supposed to have worst deposits on the interior walls. Benoit suggested to cut it at 10-15 mm from the bottom, for a visual inspection and the assessment of a possibility of re-using the old containers for the tests with Novec 649.
2. 11.11.2014 the container was cut with a dry saw, by 3 passes over the bottle circumference. The temperature of the bottle wall during cutting did not exceed ~50°C. The edges were mechanically chamfered. I blew the interior very briefly with compressed air.
3. 07.11.2014 brief meeting with Roberto Guida (PH-DT gas group). I showed him the old container, as well as my sketch of the one to be made (see a separate file) He confirmed that we can order the containers from them (execution in January 2015, less likely in December 2014), but asked a few about the requirements on the quality of the flange and the valve.
 - Why the flange is needed?
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 - In the old bottles very expensive parts were used: the UHV flange and the NUPRO SS-4BG (or the Helium-grade Swagelok) valves. Can usual vacuum flanges and less expensive metal-metal seal valves be used? More generally: What are the requirements for the flange and the valve?
 - Why the needle valves are used in Bottle "B2"? Why not on/off (e.g. ball type)?
 - Gas connector type (Gyrolok, Swagelok, Sagana, VCR).
 - Why certification at 8 bar is required? Does 8 bar include the safety margin? R.Guida remarked that a special safety valve is normally required for such pressures.
4. 7-10.11. 2014 e-mail consultations with Federico Raviotti and Giovanni Spezia about CERN irradiation facilities. In summary:
 - The PS neutron IRRAD-2 facility does not exist anymore. Instead, a new mixed-field irradiation CHARM now operates at the PS. The next month-long run starts next week.
 - GIF has been closed in August 2014, the new GIF++ will start in spring 2015
 - For pure gamma irradiation, CERN is using Fraunhofer Institute TID facility, it is unclear to me yet when there will be the next irradiation campaign.

Thus, in the short term, there is still chance to irradiate at CHARM in December (mixed neutron+ionizing), otherwise IONISOS/Fraunhofer options remains.
5. I requested to have another meeting at TE-VSC-SCC, to decide how to proceed. In my opinion, the Novec pilot study should proceed in two direction: hydrolysis effect and radiation resistance. We have to quickly take a decision about the containers: whether or not order the new bottles, the exact specifications etc. Once the decision about the bottles has been taken, I can proceed more or less independently with the irradiations (at CERN/IONISOS/Fraunhofer).
6. I also need the following information from Mauro, Radu and Benoit:
 - What is the principal difference between Bottle A and fBottle "B2"? Do we still need the "A" type? (Here the "A" type is the one with the valve welded to the bottle, "B2" – the one with the flange only). I refer to the old pictures in <https://edms.cern.ch/document/735483><https://edms.cern.ch/document/735483> .t
 - typical sample filling sequence, to complete the exact specifications for the bottles.