1. Components

1.1 Aerogel:

1.1.1 Forniture will flow on a regular basis.

1.1.2 keep logbook of arrivals

1.1.3 store the aerogel inside the dry cabinets

1.1.4 perform visual inspection

1.1.5 Weight the tiles to get the density <--> refractive index. INFN: the scale DSG proposes is fine with us

1.1.6 (maybe) check dimensions with a mold

1.1.7 (Maybe) study optical effects with low-power lasers. INFN: going to supply information on the lasers we are using in Ferrara, to check which kind of safety regulations they would require at JLab

1.1.8 We will organize few trips in Washington to measure the aerogel transmission. We assume Italian personnel will do the trip. DSG: could be available to help in this task?

1.2 Spherical Mirrors:

1.2.1 4 mirrors have arrived at Jlab.

1.2.2 We are going to open and validate them together with DSG starting the week of 13th of June, while we will be at JLab.

1.2.3 We will concentrate in accepting tests, as likely we will not have available all the tools for characterization that week.

1.2.4 Keep logbook.

1.2.5 Perform visual inspection.

1.2.6 Perform a pointlike-source spot image measure.

1.2.7 (Maybe) perform a Shack-Hartmann surface analysis.

1.2.8 Perform a dimensional check with a CMM machine. DSG: please check availability of the 60 um CMM machine in the dates 14-17 or 21-22 June.

1.3 Planar mirror:

1.3.1 They are being produced, but will be delivered at JLab only after the summer.

1.4 Mechanics:

1.4.1 An assembling test will be performed in Italy the first half of June.

1.4.2 The RICH module + assembling structure will then be transported at JLab.

1.4.3 Except for storing, no action is foreseen at JLab before enough space in EEL-124 will become available (i.e. October).

1.5 Electronics:

1.5.1 The JLab FPGA boards should have been produced already.

1.5.2 The production of the adapter+Asics boards will start in June. A small quantity will be produced in advance to allow a final check before moving ahead with the massive production (planned in July).

1.5.3 In July Matteo Turisini will be at JLab for defining all the procedures and software tools, in collaboration with Ben and DSG, for the electronics acceptance and characterization.

1.5.4 The ideal scenario would be DSG will be available to start testing the electronics boards in August.

1.5.5 In June Paolo Musico will also visit JLab and work with Ben to the SSP protocol for RICH.

2. *Assembling:* We plan to perform the RICH assembling in EEL-124 starting not before October 2016.

2.1 Mechanics:

2.1.1 We will mount the RICH case inside the assembling structure. INFN: has to define the bolt size and lift points.

2.2 Electronics:

2.2.1 It can initially be a stand-alone item.

2.2.2 With a proper cover of the PMT side, is can run under cosmics and allow for daq, slow control and reconstruction tests.

2.2.3 With the back panel in place it will allow for cooling tests.

2.2.4 Ideally, we would like to develop/test the same systems we are going to use in the Hall. This means power supplies, cooling system, interlock system, slow control, etc. INFN: has to discuss with Hall-B management and engineers how to best proceed.

3. Cooling + Interlock

3.1 The inlet lines are designed for a typical flux of 100 slm, and a 1 inch size.

3.2 This flux was tested in a half-size prototype and in a simplified heat load configuration. We would therefore suggest to plan a typical 250 slm with a large safety coefficient (> 50 %).

3.3 DSG: it would be nice to have the pressure sets of the relief valves and the pressure regulators visible in the interlock sketch, as done for the N2 line.

3.4 DSG: should the line from compressor to tank design to sustain the full compressor flux (1200 slm)?

3.5 DSG: is the current line from tank to RICH suitable for maximum 283 slm (due to the proposed rotameter)? How complicate is to upgrade it to reach 400 or 600 slm maximum

3.6 DSG: The space inside the RICH case is limited: we assume to split the 1 inch tube into few smaller (9-10 mm diameter) plastic tubes for the last part of the line. This may

correspond to the ~4m from the patch panel till the electronic panel. Which is the maximum pressure we should aim in this last part of the line?

3.7 DSG: do we need an interlock for maximum pressure in the tank or in the inlet line or everything is set by the relief valves? The compressor has its own interlocked limit.

3.8 DSG: the tank you propose is fine with us.

3.9 The interlock logic is relative to the cooling circuit functionality. Other anables for the HV and LV power supplies should come from temperature sensors in few relevant places, i.e. inlet, inner volume, exhaust, FTOF.

3.10 DSG: may you provide information on your board controlling temperature and humidity sensors? We usually use SHT75 sensors form sensiron

3.11 INFN: should provide detailed information in the compressor and power supply hardware controls.

4. Nitrogen line

4.1 We plan to refresh the full RICH volume, close to 5000 liters, in about one day.

4.2 The current inlet lines are able to provide a maximum of 7200 l/day, with almost a 50 % safety factor. We consider it a realistic starting point.

4.3 We would anyway need to minimize the RICH vessel leaks.

4.4 The LN2 dewar provides a nitrogen with enough purity, with a water content smaller than 0.002%. The filters are just for safety.

4.5 We will need to monitor temperature + humidity with sensors inside the RICH volume.

4.6 DSG: do we need an interlock logic for the N2 line, i.e. a shutter to isolate the RICH volume in case of problems?

4.7 DSG: for example we would be in favor to use humidity sensors to monitor the inlet line quality (the N2 should be fine but we may have leaks or breaks in the line). May we implement those in an cRio interlock logic?

4.8 DSG: do we need a interlock shutting the N2 line in case of over-pressure of the RICH module or relief valves would be enough

4.9 DSG: The RICH N2 inner volume is supposed to stay at ~0.5-1 mbar higher pressure than atmospheric, to prevent water flowing in. Is the bubble control system sensible enough to prevent over- or under-pressure?

4.10 DSG: the N2 line starts with a LN2 dewar: do we need dedicated equipment to prevent moisture along the line and/or injecting low temperature gas inside the RICH?