Session 4 Surface Processing – a

Progress in understanding

- Mechanism and understanding of standard Nb EP is making good progress – insights from basic studies are feeding back to cavity production and appear to be stabilizing good performance. Suggests that standard EP works best on geometries below 15-20 microns. (JLab)
- New pursuit of surface topography evolution modeling to give predictive power to surface preparation treatments (UH)
- Continued work on vertical EP at Cornell. Small amounts of nitric acid used to decrease hydrogen bubble size and operating temperatures decreased.

Progress in options

- Floride-free EP of niobium – surface finish demonstrated on coupons – (VT, W&M)
- Electrochemical abrasive jet polishing presented as candidate (NEU)
- Faradayic electropolishing of niobium (without HF) – demonstrated on coupons (Faraday Tech)

Progress in facilities

- FNAL plans for single-cell cavity processing R&D facility presented
- New cavity surface processing by tumbling commissioned and in use @ FNAL
- JLab preparing plans for next-generation of cavity processing facilities (vertical EP + integration of processes)

- Variability in material can lead to variability bulk removal
- Coupons and statistics are valuable, to a point…
- … The real result still is inside a cavity, however
- 9- cell processing complexity
- Cheaper process test piece
- Better process control