

Americas Summary

CM Ginsburg
ILC/SO Meeting
18 May 2010

FNAL/ANL Activities (1/3)

- Tumbling machine
 - Successful with 1-cell cavities, to be commissioned with 9-cell cavities
- High-temperature furnace to be received in June; installation and commissioning to follow
- Single-cell work
 - ANL EP optimization
 - R&D: tumbling, laser re-melting, traveling wave cavity, etc.
 - Vendor qualification: RRCAT, ABLE EP, PAVAC
 - Infrastructure support: ANL furnace verification, instrumentation, etc.
 - Basic R&D

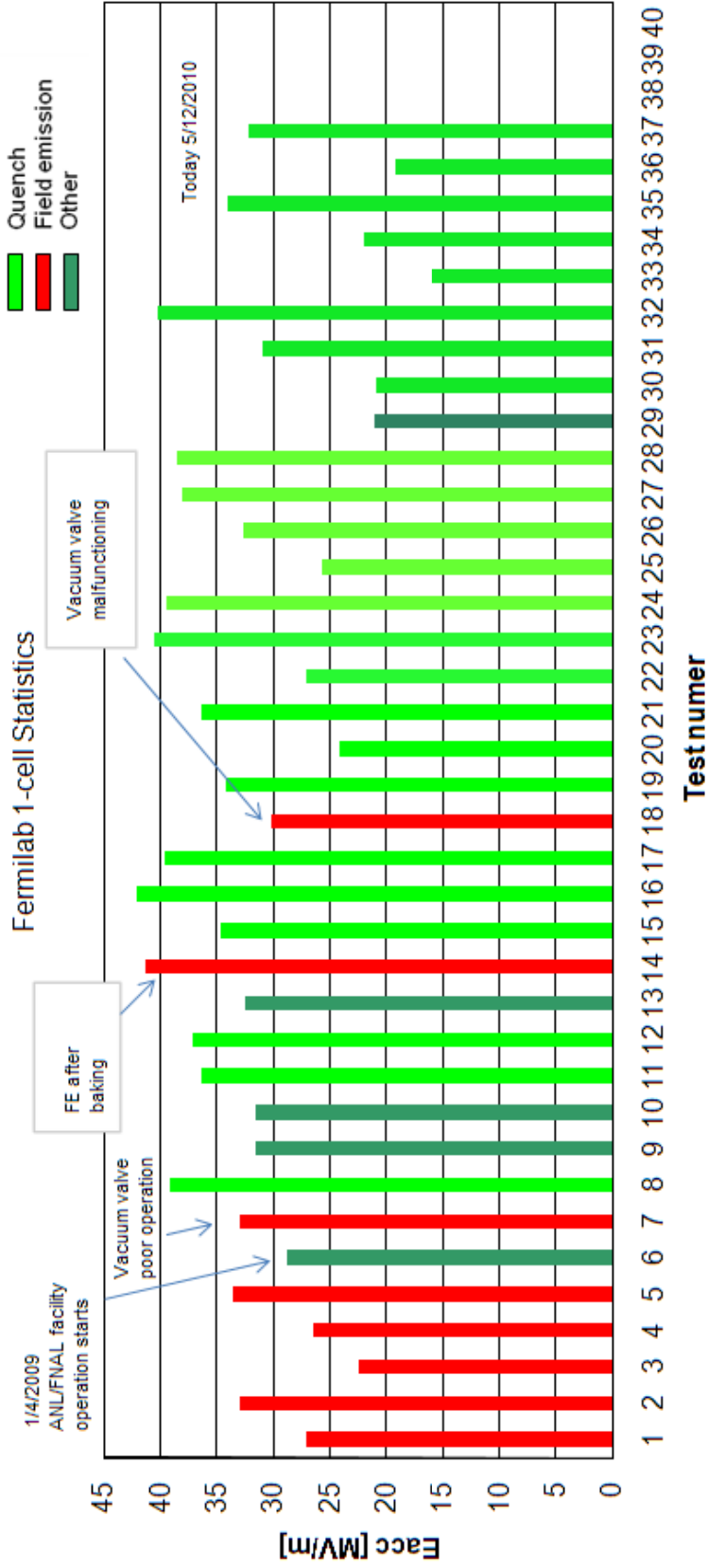
FNAL/ANL Activities (2/3)

- Two new Niowave-Roark 9-cell cavities (TB9NR001 and TB9NR002) completed QC, to be processed and tested asap
- Dressed cavities
 - TB9AES009 (dressed): Was HTS tested. 36 MV/m (JLab) quench performance confirmed w/o measured field emission
 - Cavity is “Cryomodule-ready”
 - ACCEL8 (dressed) will be installed in HTS this week
 - TB9ACC013 will be re-HPR’d and re-assembled and re-HTS’d

FNAL/ANL Activities (3/3)

- Bare 9-cell cavities process and test; tests since 4/27
 - TB9RI026
 - FNAL/ANL process, 1st VTS test 19.6 MV/m (FE), R(res)~11nOhm; crated at IB1
 - Next: field flatness, optical inspection (check iris defect between cells 8 and 9), light-EP+VTS prep, 120C, vertical re-test
 - TB9ACC014 (after dented cell was tuned to lower field)
 - Vertical test 15.Feb.: 29.0 MV/m at 2K; some FE observed. Q0 @max grad=1.4E10
 - retested with second sound and thermometry 4/29: 34.1 MV/m (quench/FE)
 - Next: vent in FNAL/ANL cleanroom, blank-off with CF in place of right-angle valve, store in MP9
 - Determine whether other modes, e.g., first dipole, are within tolerance for beam
 - TB9RI019 @JLab
 - without final EP, 32.9 MV/m at Q0 1.3E10 (quench), 800C HT alone in furnace
 - Next: light-EP, vertical test
 - AES003
 - light EP and VTS prep completed at ANL; tested at IB1 VTS 5/4: 32.2 MV/m (quench) - insignificant change from 34.5 MV/m (FE) 1/26, after FE processing no FE measured, mode measurements implicate cells 1,4,6,9
 - Next: re-test with second sound (eventually)

FNAL/ANL Activities (cont.)



- All 1-cell process/assemblies completed without field emission for a long time
- 9-cell TB9AES009 (HTS, no FE meas) and 9-cell AES003 (VTS, negligible FE),
 - 9-cell clean work is also greatly improved lately.



- **Personnel**
 - A research support specialist finished training for singel cell VEP.
 - One additional researcher will join Cornell's SRF group at the start of June and will help with VEP and testing of 9-cell cavities.
- **Infrastructure**
 - Tumbler needed strengthening. All parts have been received and are being assembled.
 - First 5-cell T-map test planned for mid June
- **Single cell VEP optimization**
 - Currently we analyze if 25C VEP is beneficial.
 - NR1-2 had 25C VEP and quenched with FE (see next page), possibly because AC was out in the clean room during perparation. It will be retested after HPR.
 - AES6 and NR1-3 received bulk VEP, and AES2 will receive 25C VEP. All will be 800C baked, micor VEPed and cold tested.
- **ILC VEP**
 - Cavities TB9AES005 (1st in line), ACCEL9, TB9ACC010, TB9ACC015, TB9AES006 (plan), ACC5 are at various stages of preparation for tumbling, VEP, firing, micro VEP, and cold testing.
- **9-cell VEP**
 - LR9-1 quenched in the 9th cell at 28MV/m and is ready for inspection.





Cornell Laboratory for
Accelerator-based Sciences and Education (CLASSE)

25C VEP for NR1-2 and test by Zack Conway

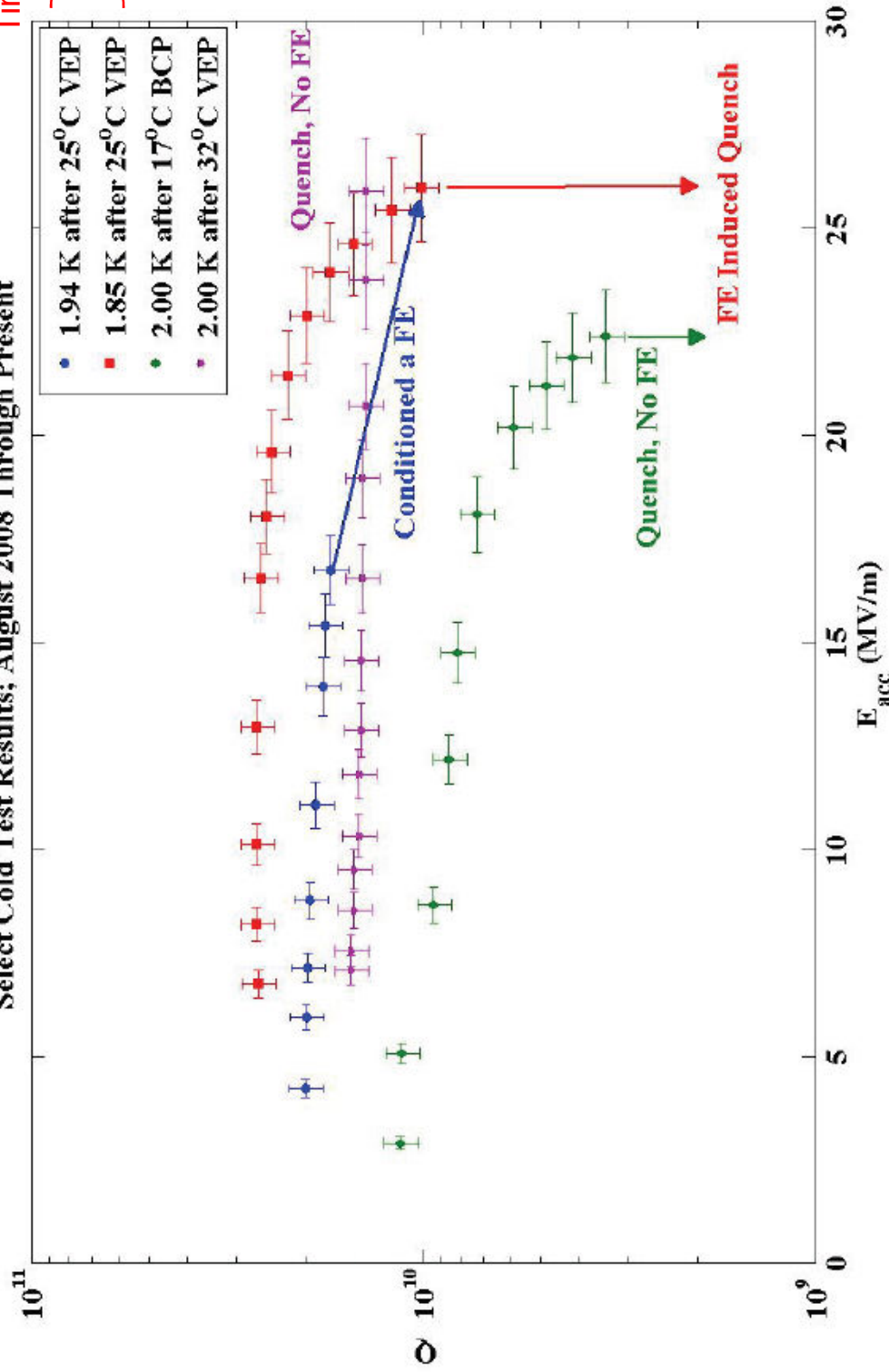


Niowave Single Cell NR1-2

Select Cold Test Results; August 2008 Through Present

Time order:

- 1.94 K after 25°C VEP
- 1.85 K after 25°C VEP
- 2.00 K after 17°C BCP
- 2.00 K after 32°C VEP



JLab updates

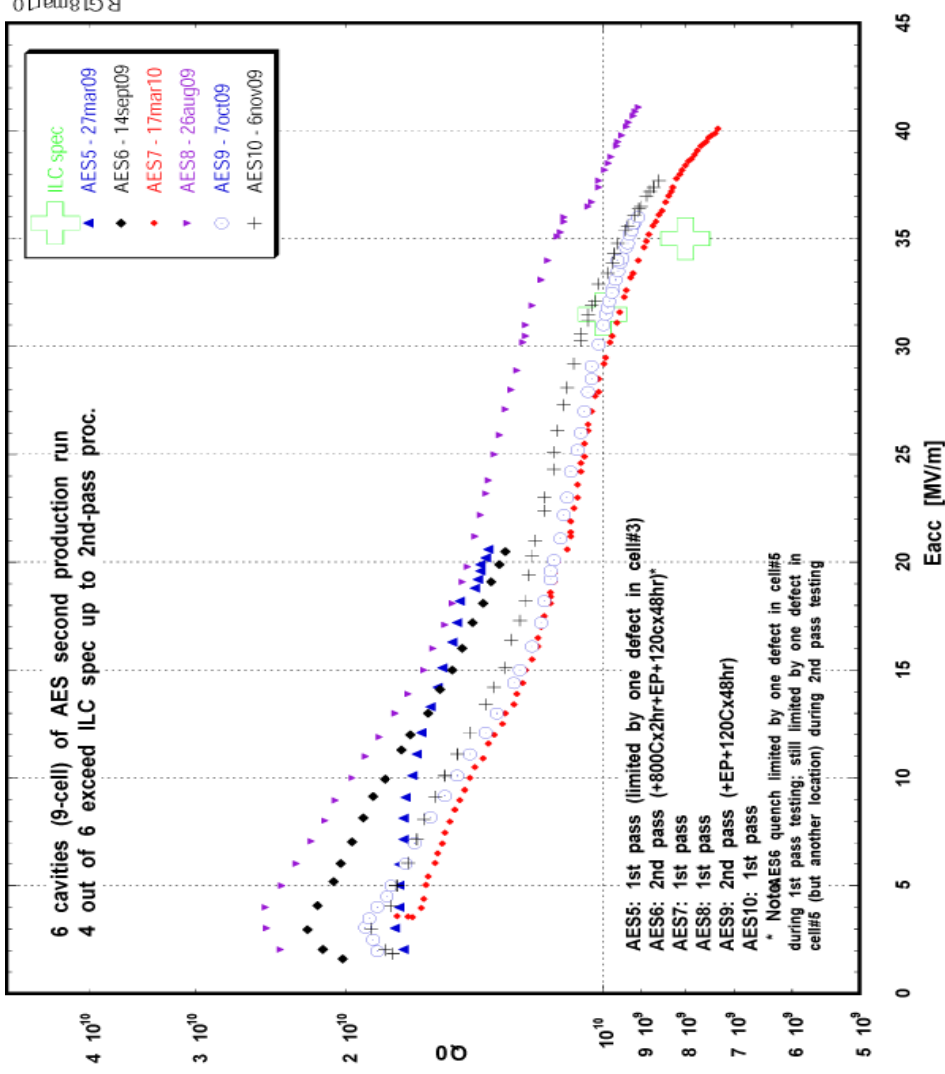
R.L. Geng

ILC Cavity Group Meeting

May 18, 2010

Qualification of all six 9-cell cavities of AES 2nd production completed

- 4 (AES7, AES8, AES9, AES10) out of 6 exceed 35 MV/m at Q0 > 8E9.
- These cavities processed with improved procedure: 10 um BCP before heavy EP; 800Cx2hr HT (instead of 600Cx10hr).
- AES5 and AES6 limited by one defect in one cell.
- AES7-10 returned to FNAL for CM2.



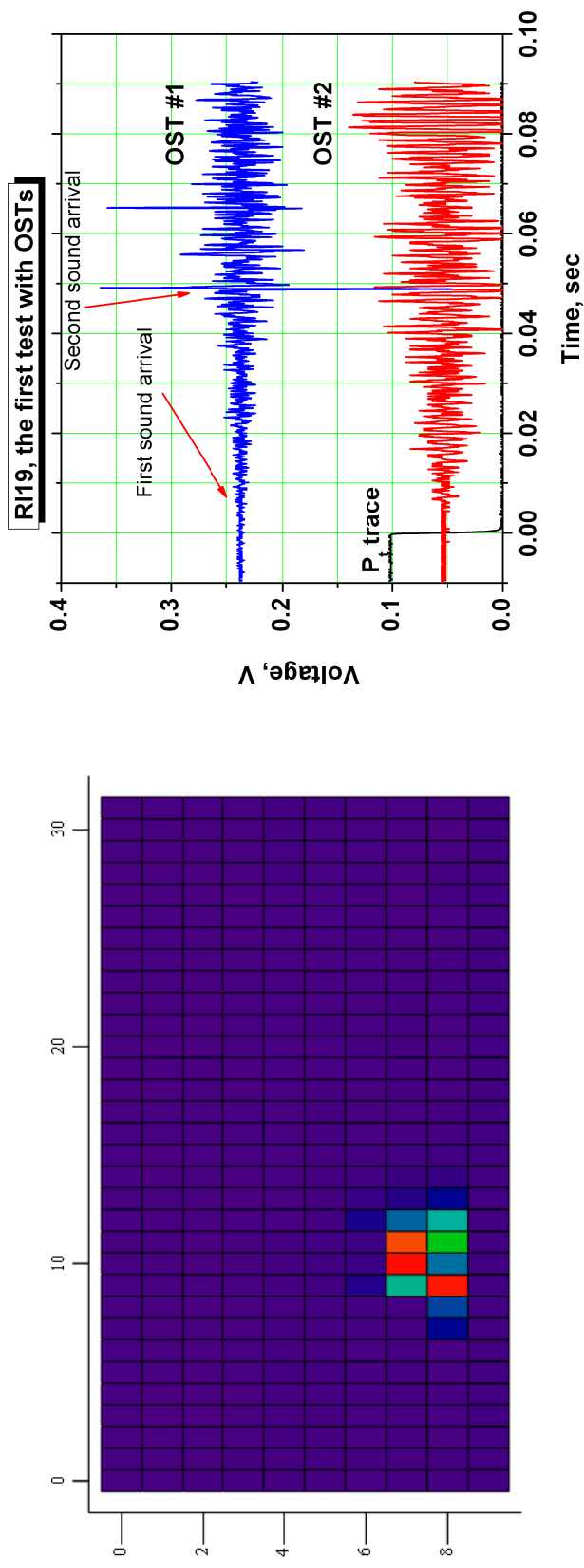
Assisting FNAL with 9-cell cavity furnace HT

- Four 9-cell cavities were HT at 800Cx2hr and returned to FNAL for final EP and VT.
 - Cavities heavy EP at RI: RI21, RI24, RI29
 - Cavity heavy EP at ANL: RI26
- The 5th cavity is at JLab under vacuum furnace HT: RI22 (heavy EP at RI).
- JLab vacuum furnace a critical resource. A re-qualification is being pursued.

Challenges

- Recover and re-train technical support personnel (lost 2 FTE's since January 2010).
- EP machine repair and maintenance due to heavy use (ILC 9-cell EP and JLAB 7-cell EP).

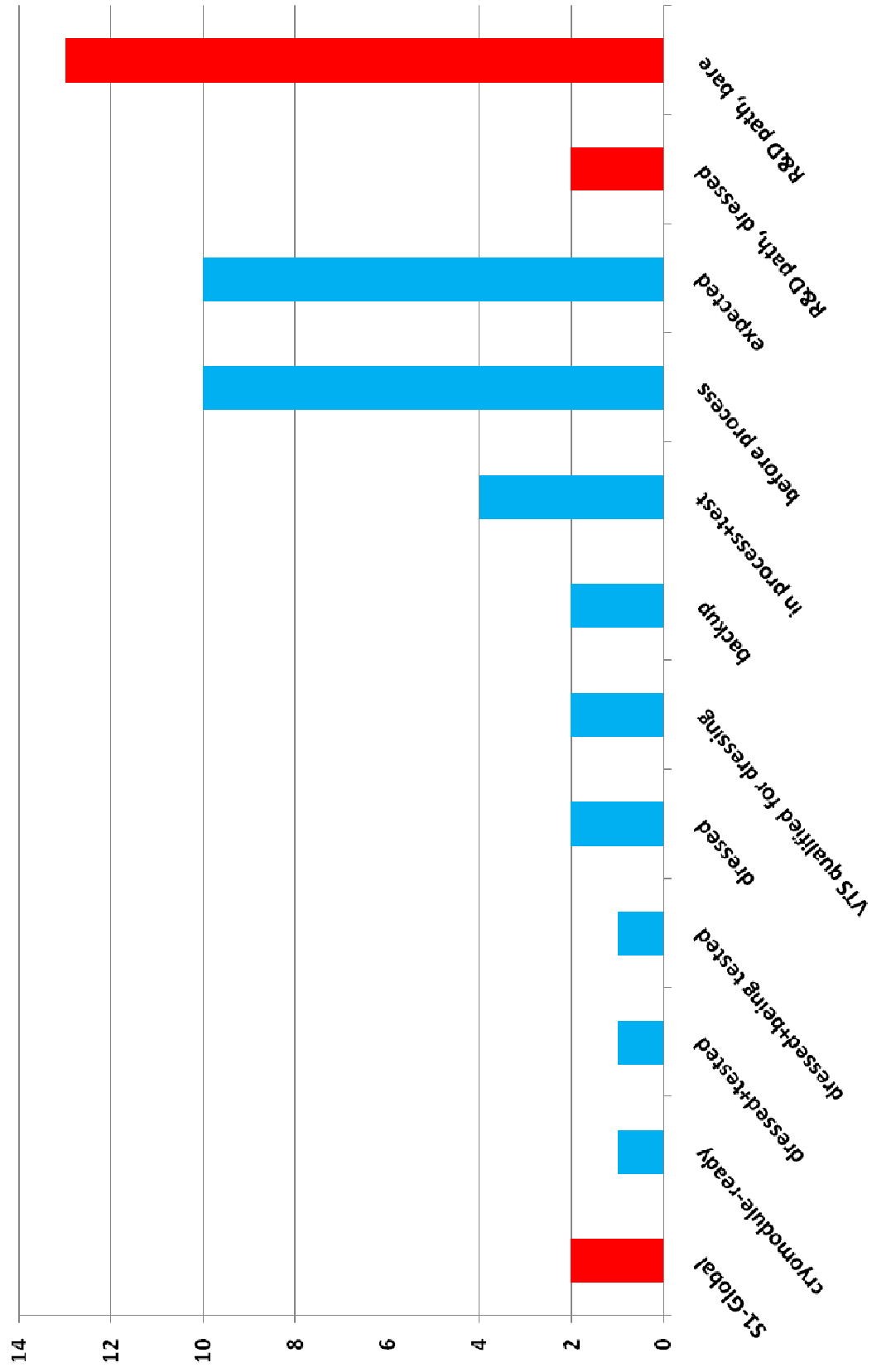
Commissioning of Cornell OST at JLab



Grigory Ereameev

Americas 9-cell Cavities

■ available for CM ■ not available



Americas S0 Cavities

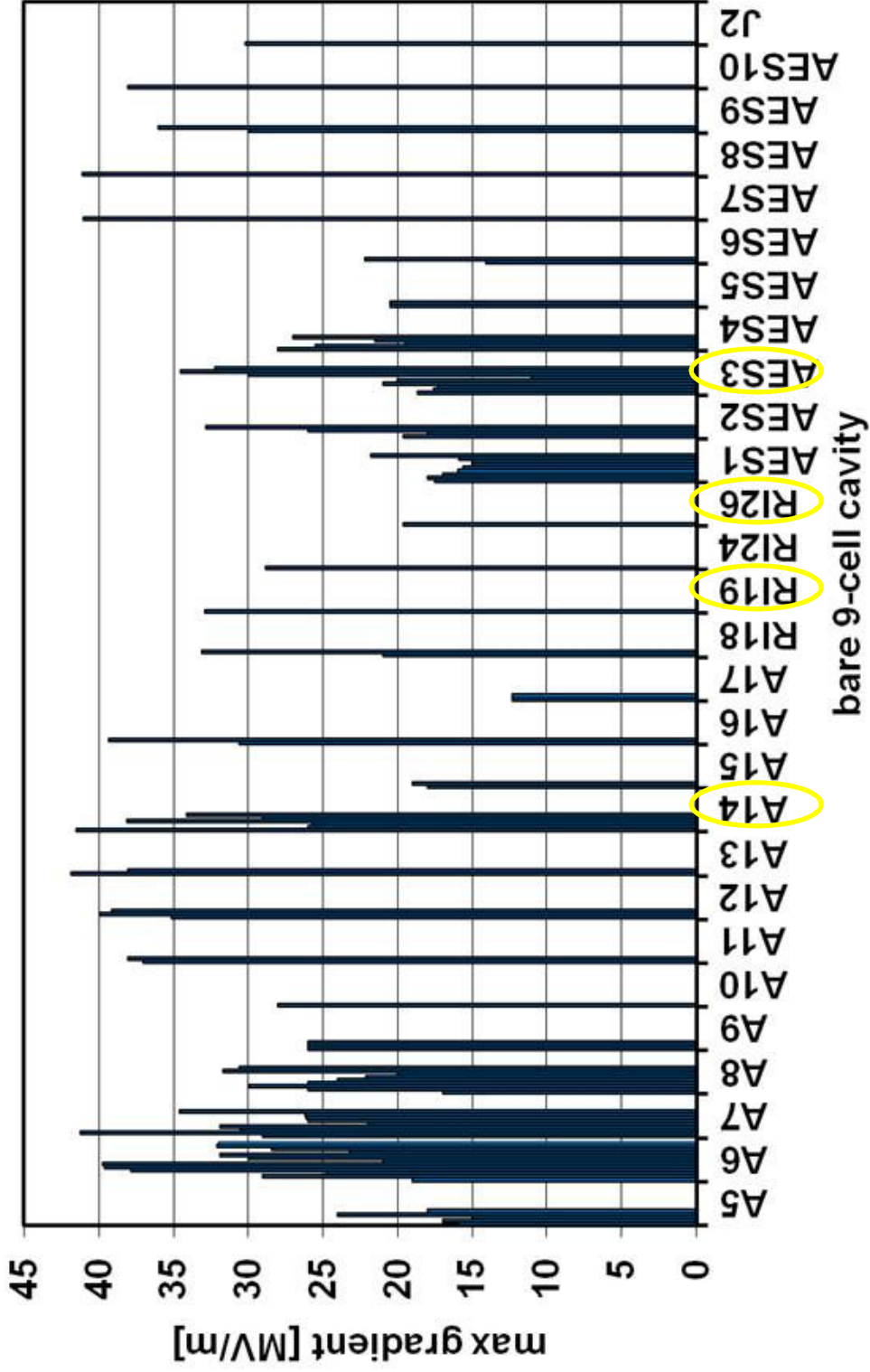
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	cryomodule -ready	dressed +test	tested	VTS qualified for dressing	backup	in process +test	before process	expected	R&D path, dressed	R&D path, bare
S1-Global AES004	TB9AES009	TB9ACC013	ACCEL8	TB9AES008	ACCEL6	TB9RI026	TB9RI023	TB9AES011	AES001	AES003
TB9ACC011				TB9AES010	ACCEL7	TB9RI024	TB9RI021	TB9AES012	AES002	JLab-1
						TB9RI018	TB9RI029	TB9AES013		JLab-2
						TB9RI019	TB9RI020	TB9AES014		ACCEL9
							TB9RI022	TB9AES015		TB9AES005
							TB9RI027	TB9AES016		TB9ACC010
							TB9RI025	TB9NR003		TB9ACC015
							TB9RI028	TB9NR004		TB9ACC014
							TB9NR001	TB9NR005		TB9ACC012
							TB9NR002	TB9NR006		TB9ACC017
										LG1
										LG2
										TB9AES006

sum	2	1	1	1	2	2	4	10	10	2	13
not available	2	0	0	0	0	0	0	0	0	2	13
available for CM	0	1	1	2	2	4	10	10	0	0	0

Changed since 4/27

Americas 9-cell Cavities



C.M. Ginsburg 6 May 2010

JLab/Cornell/FNAL/ANL Collaborative Effort
with vital assistance from KEK

Changed since 4/27

18 May 2010

CM Ginsburg S0 Mtg