Global Cavity Database Report

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On behalf of the database group (as part of S0 effort):

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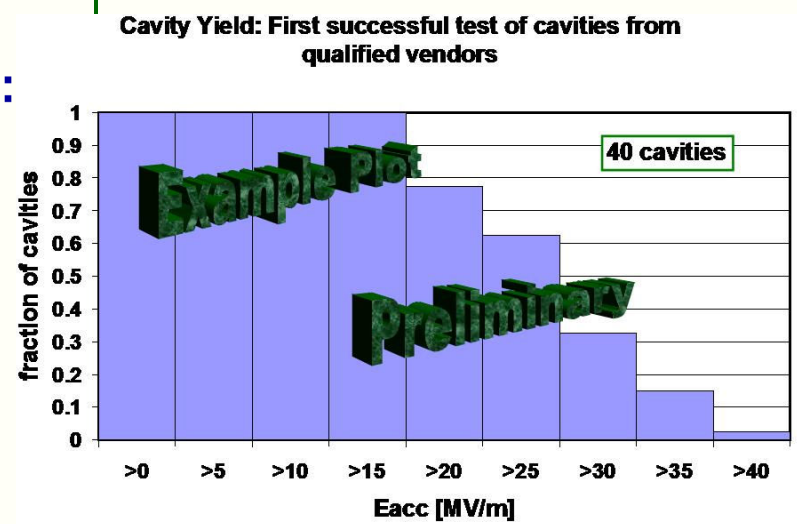
Database Implementation: Current Status

- For now, this is an Excel spreadsheet, containing data from all three regions, from the last few years
  - KEK [5 cavities]: [MHI005:MHI009]
  - JLab, Cornell, Fermilab [18 cavities]: [A5: A9], [TB9ACC010:TB9ACC015], [AES1:AES004], [TB9AES005:TB9AES006], JLAB-2
  - DESY [39 cavities]: [AC112:AC129], [Z130:Z145], [AC146:150]

    (Production batches 5, 6, &7 are represented)
- Plan to use a real database, possibly the DESY database, to store all the data together – pending agreement from all Labs
  - KEK-baseline group and Fermilab 3.9 GHz group have put some data in already (and DESY has all its data in there…)
  - DESY kindly agrees to contribute limited effort to this task at the level of putting spreadsheet data into their database
    - Data uploading method/tool and web interfaces are TBD
  - Detailed plan to be in place by July 31

Example first plot: Production yield

- Vertical axis: fraction of cavities satisfying criteria
  - Denominator (logical and of the following):
    - Qualified vendors (ACCEL and ZANON)
    - Delivered to labs within last 2-3 years
  - Numerator (logical AND of the following):
    - Denominator
    - Accepted by the lab after incoming inspection
    - 1st successful RF test, excluding any test with system failure, has max gradient > (horizontal axis bin) MV/m; ignore Q-disease, field emission
- Horizontal axis: max gradient MV/m
- Exclude cavities which are work-in-progress, i.e., before rejection or 1st successful RF test



Includes EP'd, BCP'd, and R&D processed cavities

Forensic Data Analysis of this Plot

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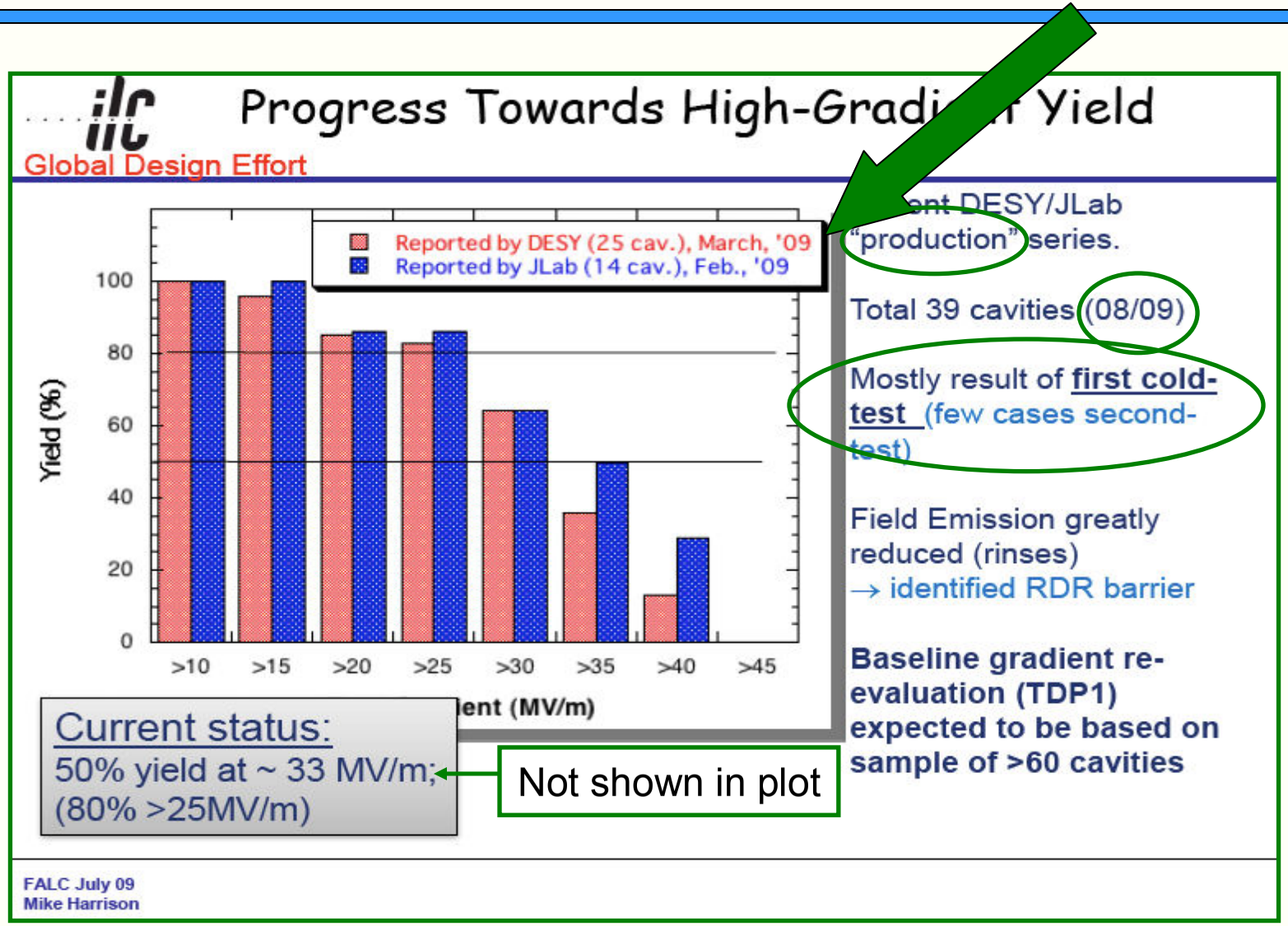
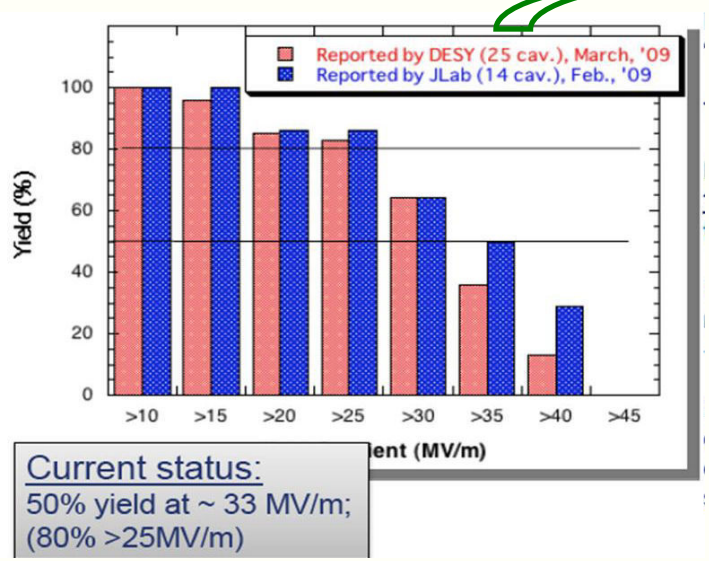


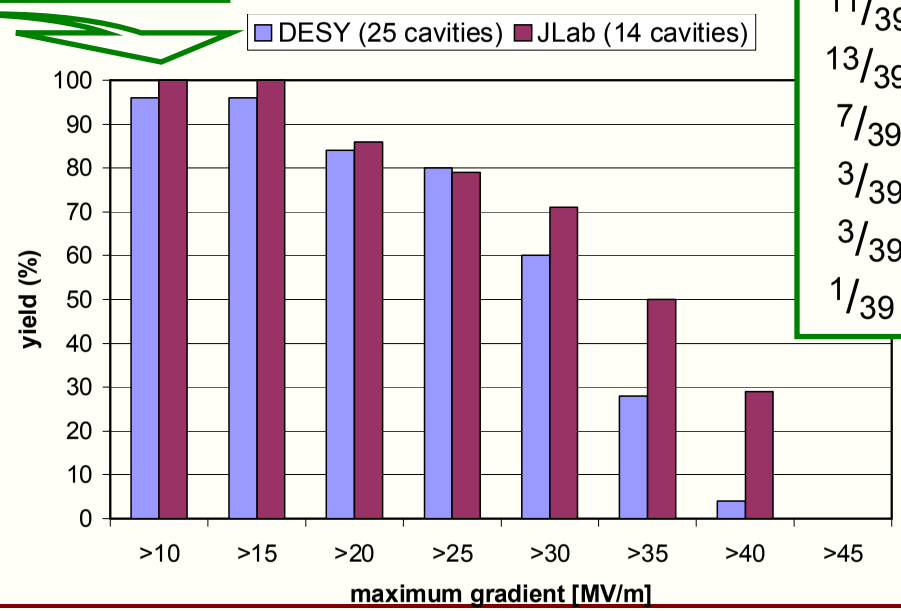
Conclusion: DESY/JLab data not described well in slide 5

- The gradients for DESY data were off by +2MV/m
- Not 08/09: large component of 2007, very small component of 2009
- Not 1st or 2nd test: instead last (DESY) or best (JLab)
- These are not the ideal data from which to infer a production yield

Corrected version



Current status:
50% yield at ~ 33 MV/m;
(80% >25MV/m)



$^{11}/_{39}$ 1st test
$^{13}/_{39}$ 2nd test
$^{7}/_{39}$ 3rd test
$^{3}/_{39}$ 4th test
$^{3}/_{39}$ 5th test
$^{1}/_{39}$ 8th test

Schedule/Plan

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✓FALC meeting July 13, 2009
- Provide an example plot of production yield (p.7), citing caveats (whatever they are at the time)
  - Using preliminary and incomplete data for past 2-3 years from the simple Excel spreadsheet format, no web interface
- Provide the people list (p.2) , and the plan

- End July 2009: Determine whether DESY DB is viable option, and timescale for implementation
- ALCPG/GDE Sept. 28 - Oct. 2, 2009
  - Dataset is web-based (support by DESY – if approved by all Labs)
  - Some well-checked, easily explainable, and near-final plots available for discussion such as
    - Production yield
      - Qualified vendors
      - All vendors
    - Process yield
    - Time evolution of some quantities
- End Nov. 2009: With colleagues' input, finalize DB tool, web interface, standard plots, possibly with longer-term tool improvement plans