Polarized Electron Source and Positron Keep Alive Source (KASD) AS Review

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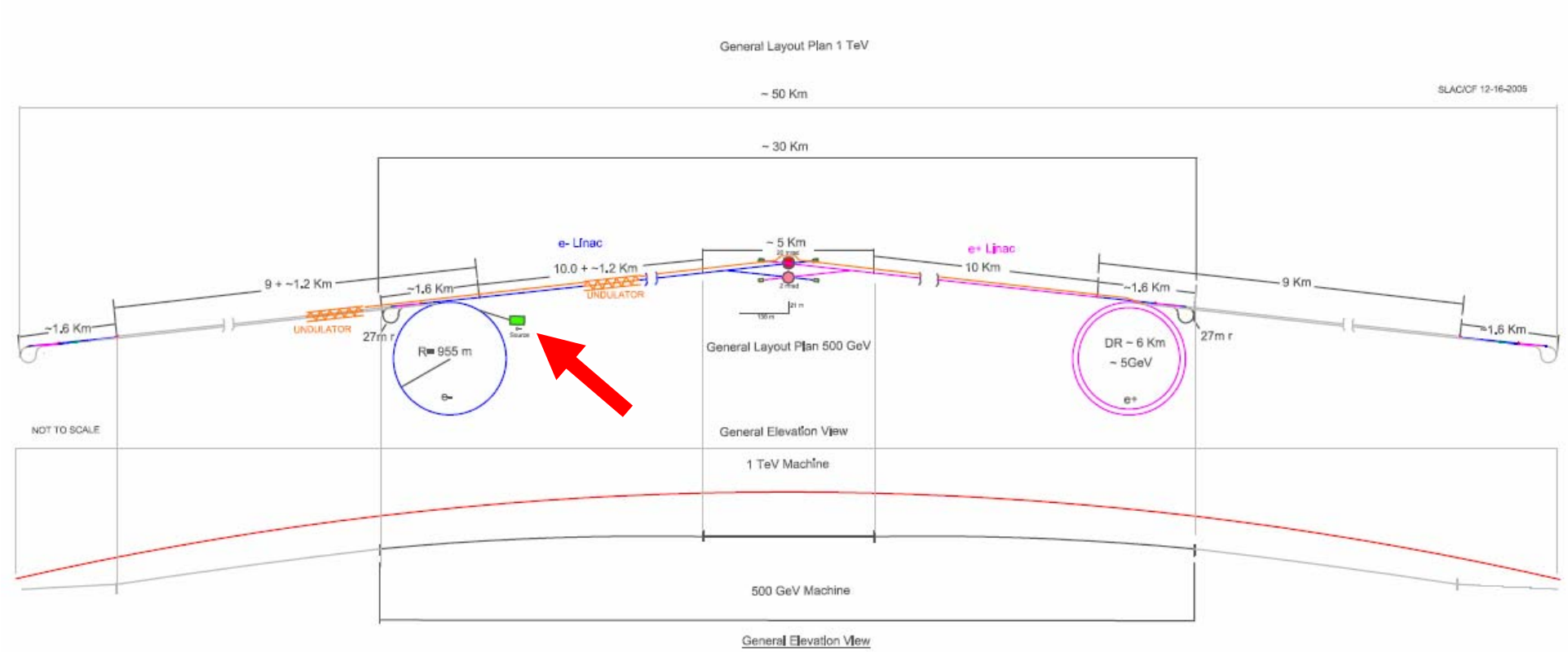
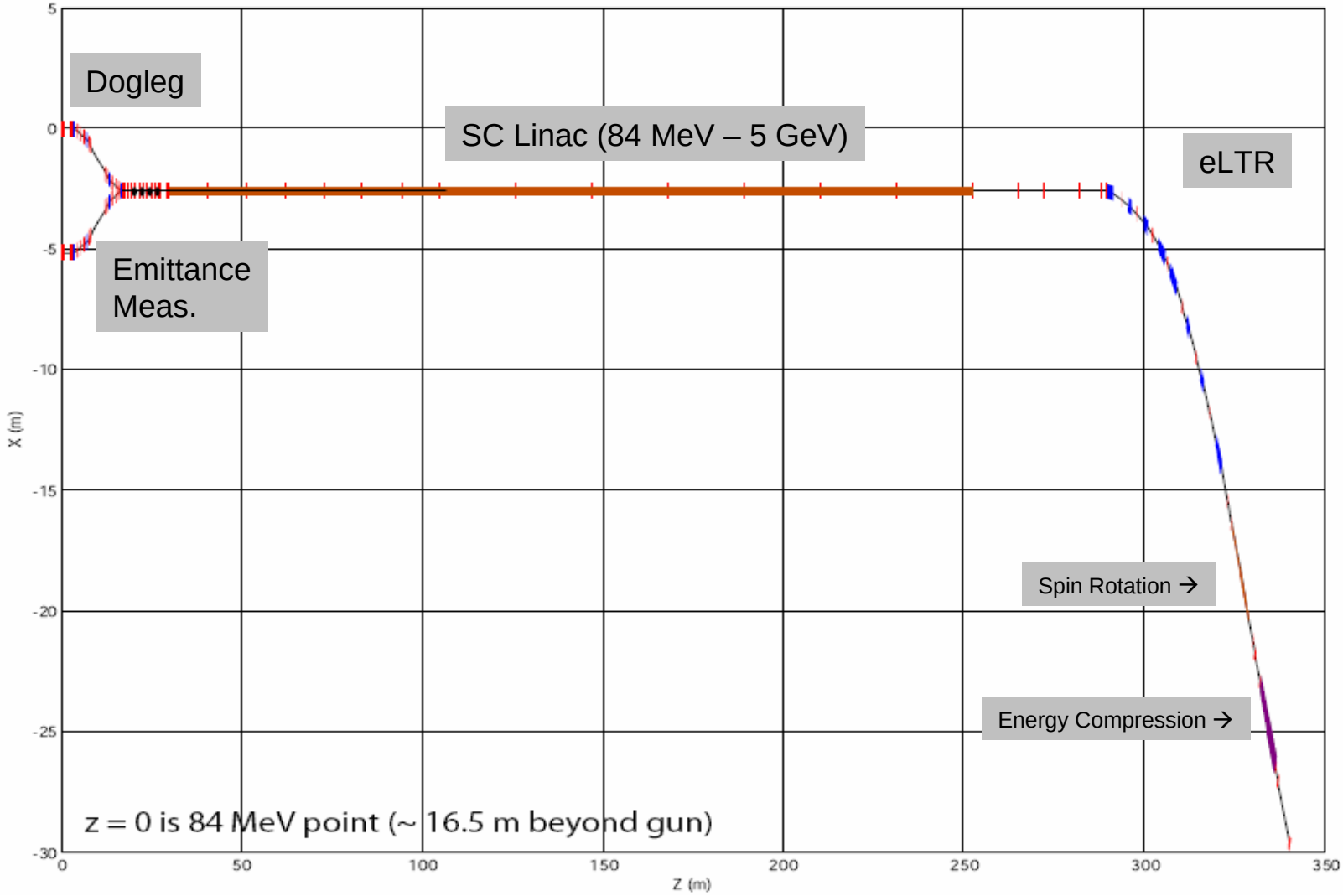
Design Status - Scale



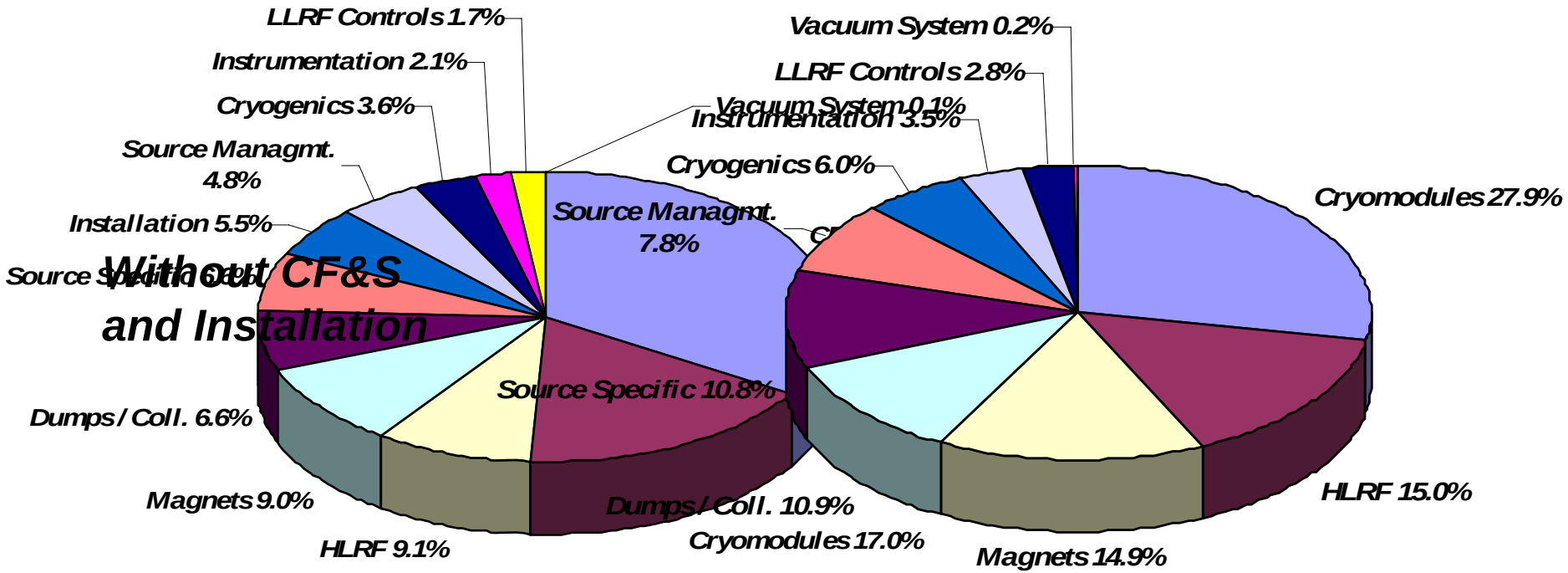
Design Status - Layout



Design Status - Inventory

- Major Systems
  - **515 m of Beam Line Tunnel**
  - **129 Magnets (Quads/Dipoles/Solenoids – NC/SC)**
  - **9 Cryomodules**
  - **16 RF Stations (HLRF/LLRF)**
  - **7 Beam Dumps / 2 Collimators**

Major Cost Drivers



Major cost drivers (~ 3/4 of cost):

- **CF&S ~ 515 m of tunnel**
- **Cryomodules and HLRF**
- **Magnet system**

Cost of KASD:

~ 30 % of e- source

Cost Roll-Up Status

- Costs estimates are available for all global, technical and area specific subsystems
- Currently, estimated fraction of overall cost: ~ 80 - 90 %
- No major missing items, further discussions regarding technical systems during this meeting
- Without major cost changes for the cost drivers overall change of cost is expected about 10 - 20 %

Possibilities for Cost Reductions

- possible system-level cost reductions (not recommended):
  - **At this point, system level cost reductions will reduce system redundancy, cost reduction is not achieved by 'clever' alternatives**
  - **'Clever' alternatives (e.g. polarized RF-gun, improved DC-gun, higher QE and robust photocathodes) require substantial R&D to become feasible**
  - **Obvious option for e- source is elimination of second low energy beam line**
    - Eliminate 2nd 0-84 MeV beam line but retain two drive laser systems and two guns, those are the most sensitive items for the e- source
    - This results in elimination of ~ 100 m of tunnel length
  - **This option will reduce cost of e- source by ~ 15-20 %.**

Plans and Goals

This workshop:

- Review and discuss recent work
- Discuss needed work to complete RDR
- Meet with TS groups and discuss inventory, costs and cost reduction options
- Outline work to be done before Valencia workshop

Between this and the Valencia workshop

- Connect e- source and DR to finalize optical design and CF&S layout – DR injection point most important to finalize CF&S layout
- Progress on detailed design of e-source (laser system, gun, buncher design)
- WBS/RDR work

Towards the TDR

- Laser R&D
  - **Develop prototype of ILC polarized source laser system**
- Technical Design
  - **Enhance baseline SLC gun design with the goal of improved HV performance**
  - **Low energy part of e- source (bunching system)**
  - **Detailed beam dynamics and transport (multi-particle tracking)**

Thanks to all contributors

Thanks to all who contributed, especially everyone in

the Technical / Global Systems groups!