Pre-Adult CEBAF
The remaining two years of adolescence

Arne Freyberger
Accelerator Operations
Accelerator Division

Jefferson Lab

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6GeV CEBAF: Milestones

1987-02-01 Construction Begins

1993-12-23 Construction Ends

1994-07-01 First Beam on Target, one-pass beam to Hall-C

1994-09-01 Freyberger starts work at CEBAF

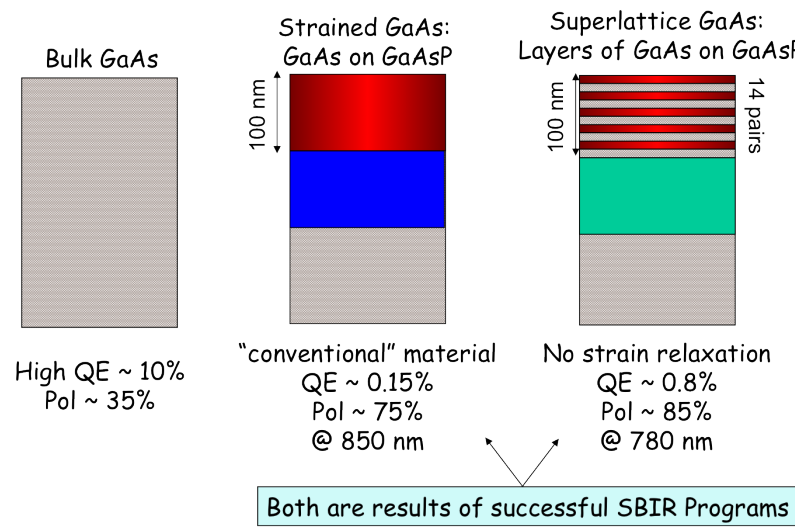
1995-02-01 First Polarized Beam

1995-11-01 CEBAF reaches design energy of 4GeV

1999-08-01 Highly polarized beam with Strained GaAs

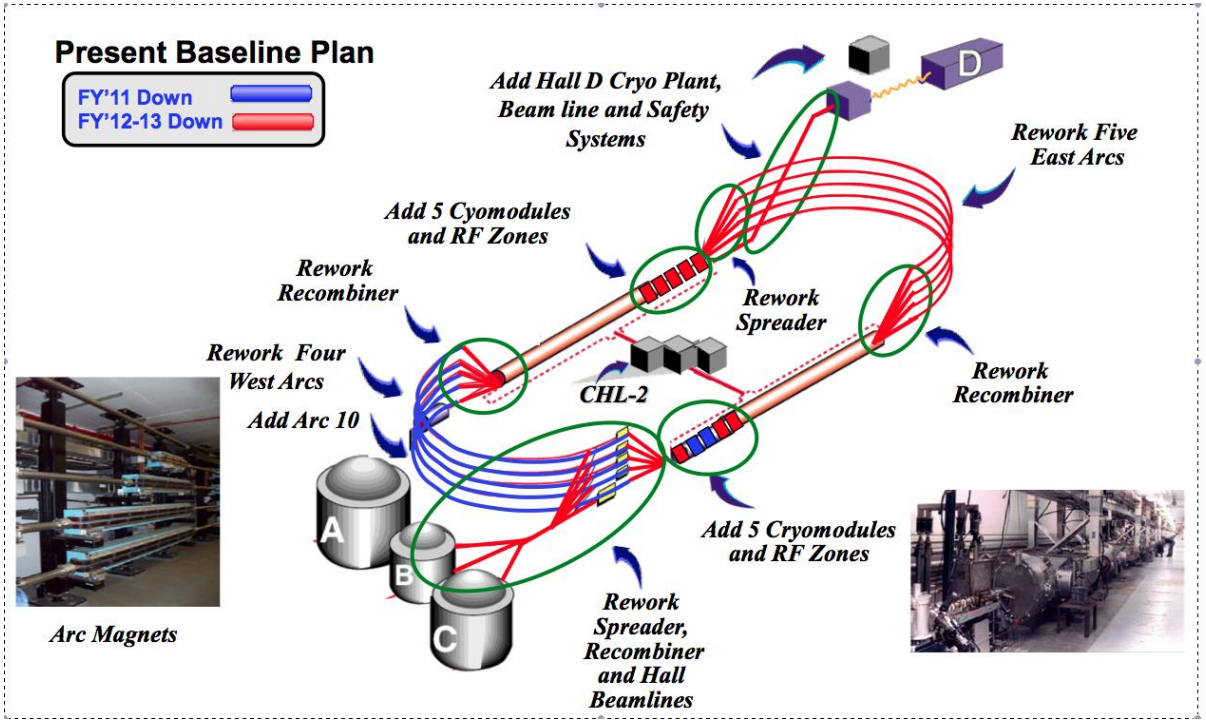
2005-01-01 Really really highly polarized beam with super-lattice photocathode

2008-09-15 CD3 approval for 12GeV project, construction begins super-lattice cathode



12GeV Upgrade

Gun/source upgrade not part of the 12GeV upgrade (except for new slits required since Hall-D is a low current hall).



- Increase the 5-pass beam energy to 11GeV
  - Install 10 C100 cryomodules, ∼doubles RF gradient
  - Upgrade magnets to handle increase in beam energy
- Add a tenth Arc and new extraction line at end of North Linac
- Add fourth transport line and hall (Hall-D)
- Maximum beam power remains at 1MW for 12GeV machine. Maximum beam current at 11GeV

6-month down: The pre-upgrade

May 2011 → Nov. 2011

12GeV activities

- LCW upgrade, no LCW until Sept. 15th
- CHL preparation for CHL-2, no 2K cryogens for the first month
- PSS upgrade, no PSS system until mid-August
- Arc Dipole Magnet modifications, require access to the North and South linac for magnet transportation
- 2 C100 installed and commissioned.
- Beam for physics in November 2011. Users expect same beam quality as if none of this work occured.

Implications on Positron Experiment

- Need to provide temporary supplemental LCW
- Need to provide for PSS system in the Injector
- Beam restoration starts October: Any invasive positron modifications must be backed out by Oct. 1. This is much longer than the nominal restoration period due to the amount of check-out that is required.

But non-invasive equipment can remain in place, this will allow for additional positron measurements if the halls are unable to receive beam.

12-month down: The upgrade

May 2012 → May 2013

12GeV activities

- Magnet modifications, require access to the North and South linac for magnet transportation
- 8 C100 installed and commissioned.
- Arc10/Injector chicane reconfiguration.
- Beam Commisioning scheduled to start May 2013, physics program resumes late 2014 or 2015.

Other activities

- C100 installed in Injector 0L03 or 0L04
- Possible other injector upgrades
  - new $\frac{1}{4}$crymodule install
  - 200keV upgrade
  - warm RF reconfiguration

Implications on Positron Experiment

- Source/Gun region will need to be available for $\frac{1}{4}$crymodule, gun and warm RF work
- Plans for this work are still very tentative at this point.

e^+ on the horizon?

- Physics potential of 4GeV CEBAF was **greatly** enhanced by:
  - the introduction of polarized beam and continual improvement in the beam polarization from 30%→85% or slightly higher.
- Beam properties in terms of Energy and Current are well constrained in the 12GeV era.
- Beam polarization presently at the high 80% will be difficult to improve and gains from any improvement will not be overly significant.

Integrating a polarized positron source with the 12GeV CEBAF will increase the physics reach of the 12GeV program. In may be the only way to go beyond the present physics scope

END HERE!!!

Thank You for your time and attention.