The 8-Pack Project

An overview of the status and schedule for the project.

Modulator commissioning in August - delayed

High power SLED operations Jan. 2003 – full power in March
## 8-Pack Project People

<table>
<thead>
<tr>
<th>Role</th>
<th>Names</th>
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<tbody>
<tr>
<td>Project Manager</td>
<td>David Schultz</td>
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<td>Assistant Project Managers</td>
<td>Joe Frisch, Ray Larsen, John Cornuelle, Clay Corvin</td>
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<td>Project Physicist</td>
<td>Chris Adolphsen</td>
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<td>Project Engineer</td>
<td>Dennis Atkinson</td>
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<td>Project System Engineering</td>
<td>Bobby McKee</td>
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<td>NLCTA Interface</td>
<td>Marc Ross, Keith Jobe</td>
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<td>Safety Liaison</td>
<td>Keith Jobe</td>
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<td>Conventional Facilities</td>
<td>Javier Sevilla, Fred Asiri, Juanito Buhain</td>
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<td>Klystrons</td>
<td>John Cornuelle, Erik Jongewaard, Chris Pearson, Saul Gold</td>
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<td>Modulators</td>
<td>Richard Cassel – SLAC, Ed Cook – LLNL, Craig Brooksby – Bechtel</td>
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<td>High Power RF</td>
<td>Carl Rago, Sami Tantawi, Chris Nantista</td>
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<td>LLRF</td>
<td>Steve Smith, Elias Andrikopoulos, Andrew Young</td>
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<td>Controls &amp; DAQ</td>
<td>Ron Chestnut, Kristi Luchini</td>
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<td>Vacuum Controls</td>
<td>Tom Porter, Earl Hamner</td>
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<td>Racks</td>
<td>Mario Ortega</td>
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<td>Cable Plant</td>
<td>Ponciano Rodriguez</td>
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<td>PPS Systems</td>
<td>Patrick Bong</td>
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<td>Special Instrumentation</td>
<td>Joe Frisch, Doug McCormick</td>
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<td>High Gradient Girders</td>
<td>Harry Carter – FNAL</td>
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The 8-Pack Project

Demonstrate full NLC RF power & stored energy

• Phase-1: 4-Pack
  – Assemble system with:
    • 4 XL-4 klystrons to power the SLED
    • A solid state modulator (from the ‘4-dog’)
    • Multimoded SLED system
    ★ Produce NLC spec. power: 600 MW 400 ns (@ source)
    Benchmark as a power source (albeit inefficient) for the NLC
  – Test station for running DLDS components at full power

• Phase-2: 8-pack
  – Assemble 8 (total) PPM (TBD) klystrons with a (new) solid state modulator
  – Attach DLDS system with a 400ns long arm reaching to a girder of high gradient accelerating structures (from FNAL).
  ★ Produce NLC spec. power & pulse length: 500 MW 400 ns (@ girder)
  – Attach a short DLDS arm reaching to a second girder (from FNAL) when available.
8-Pack Current Status

Infrastructure installation under way;

- Electrical power installed
- Modulator HVPS installed
- Electronics racks installed
- Modulator/klystron stand installed

Infrastructure complete in July.
8-Pack Status

Modulator:

‘4-Dog’ solid state modulator has successfully powered a pair of 5045 S-band klystrons.

Original IGBT’s were damaged in sparkdown tests.

New (different) IGBT’s currently being tested.

‘4-Dog’ test program is prolonged as a result.

Modulator to be installed in system in July, commissioned in August

Solid-State Modulator Update talk, R. Cassel

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8-Pack Status

Klystrons:

PPM XP3’s not successful
Would have used 2 @ 75 MW,
2.4 µsec

Klystron Department working on
XP-4’s
Can’t have these in time for
Phase 1

Current plan is to install tried
XL-4’s
Need 4 @ 50 MW, 1.6 µsec
Expect to install first one in July

Klystron Development talk, G. Caryotakis

XL-4s at NLCTA

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8-Pack Status

High power RF system:
Proceeding with the fabrication of most Phase 1 parts.
Observed power loss in a circular/rectangular taper led to a cold test program to validate modeling and calibrate component designs – this is underway.
1st set of cold test parts in lab this week.

High power RF commissioning planned in stages:
Commission modulator and klystrons in August,
Simplified, lower technical risk, RF system for SLED commissioning,
Lower - loss setup for the 600 MW milestone

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4-pack August ’02 klystron layout for Modulator & LLRF commissioning

Allows modulator and LLRF systems to be exercised while SLED system is being installed.
4-pack October ‘02 SLED commissioning layout
Full power dual-moded SLED-II system
Primary goal:
Testing DLDS through 400 ns long DLDS arm.

Connection to structures to occur after DLDS commissioning into loads.

C. Nantista

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Project schedule overview
Phase 1

Infrastructure complete 7/16
Modulator commissioned 8/20
Klystron power to loads 9/16
SLEDII installation begins 10/1
pump down SLEDII 12/10/02
High power testing begins 1/6/03
600 MW milestone 3/11/03

See details at:
http://www-project.slac.stanford.edu/lc/local/Projects/8Pack/8pack.html

PEP2 maintenance, July to October
affects manpower and facilities

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Project schedule overview
Phase 2

Begin DLDS system design 7/02
Fabrication and high power testing Jan. ‘03 – Nov. ‘03
1st FNAL girder arrives at NLCTA 7/3/03
2nd FNAL girder arrives at NLCTA 6/15/04
DLDS system installation period Oct. ‘03 - Feb. ‘04
DLDS Testing July 2004
500 MW DLDS milestone August 2004