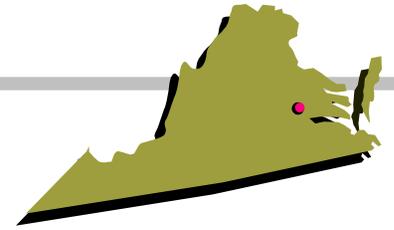


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# Presentation to the Higher Education Subcommittee House Appropriations Committee

Dr. Christoph W. Leemann  
Jefferson Lab Director  
President, Jefferson Science Associates  
January 22, 2007

# Background



## History

- In 1985, a university consortium led by three Virginia schools (University of Virginia, William & Mary, Virginia State) won the contract to locate CEBAF (now Jefferson Lab) in the Virginia.
- Virginia committed \$1 Million per year and the Federal government provided \$600 Million.

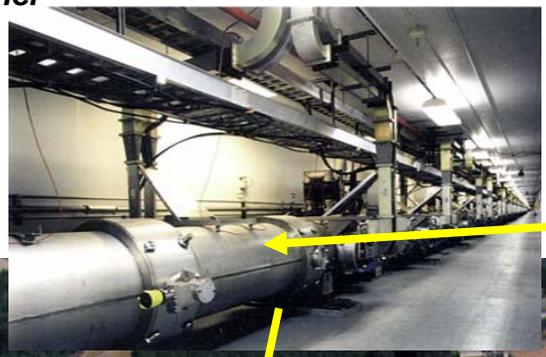
## What does JLab “do?”

- Experimental and theoretical nuclear physics
- Superconducting accelerator technology
- Free electron lasers defense, materials, nanotechnology and bioscience



# Unique Forefront Capabilities for Science

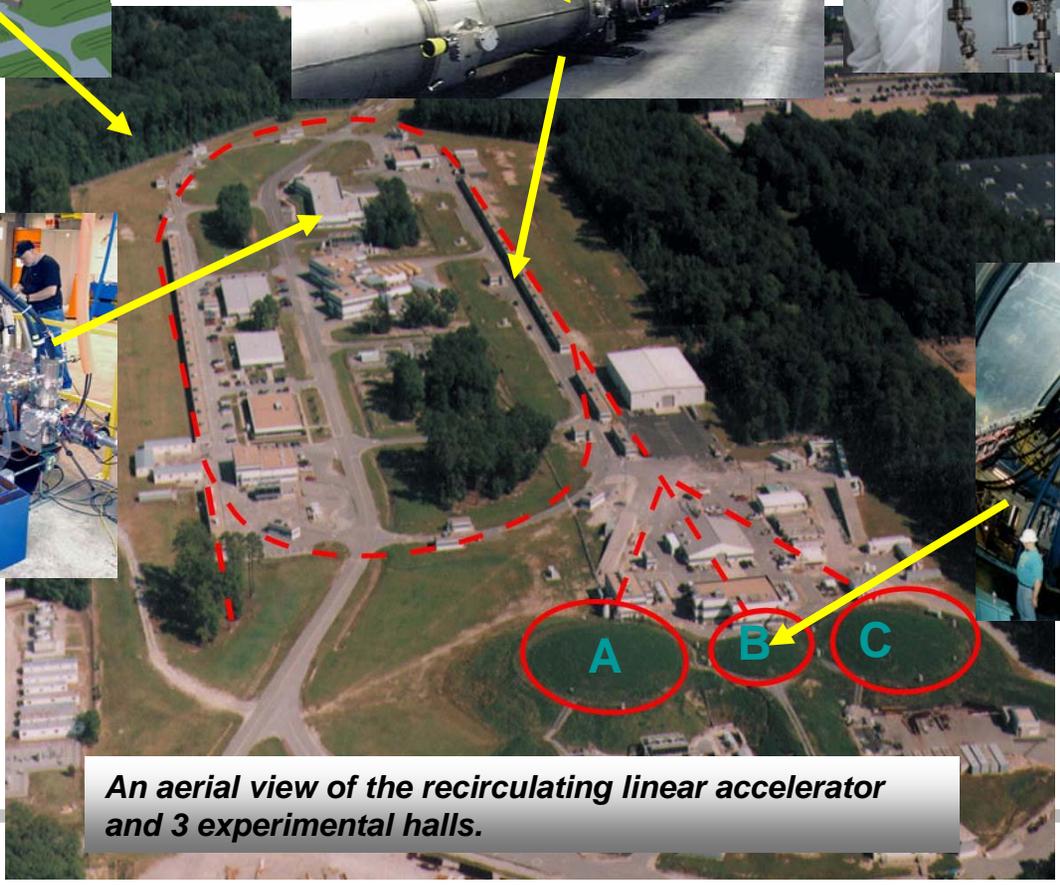
*Cryomodules in the accelerator tunnel*



*Superconducting radiofrequency (SRF) cavities undergo vertical testing.*



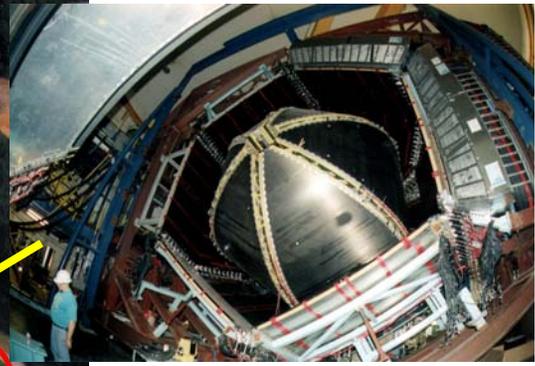
*Artist concept of the new Hall D*



*An aerial view of the recirculating linear accelerator and 3 experimental halls.*



*FEL Wiggler inside FEL tunnel*



*CEBAF Large Acceptance Spectrometer (CLAS) in Hall B*

# Snapshot

## Statistics

- \$100 Million annual budget
- 650 employees and 100 subcontractors
- \$53 Million annual payroll
- Average annual salary over \$75,000
- 58% with B.S. degree or higher, 21% Ph.D.s
- 1,200 active researchers from 180 institutions (35 states and 27 countries)
- 15 Virginia universities participate, with four of the ten most active user groups from Virginia (University of Virginia, William & Mary, Old Dominion University, Hampton University)



*Department of Energy Secretary Samuel Bodman announces DOE approval of JLab 12 GeV Upgrade and interacts with students in the BEAMS program.*

# Snapshot

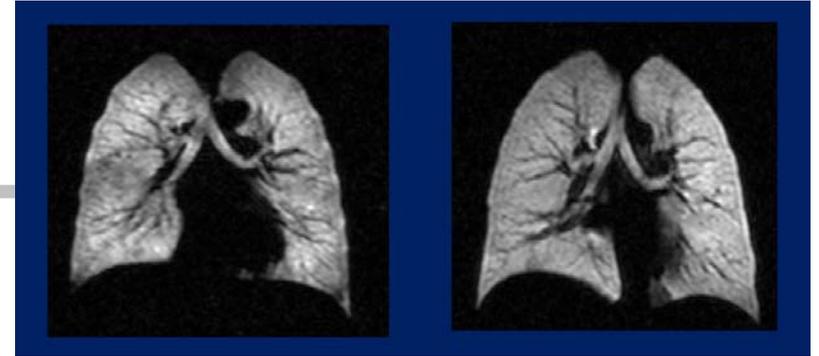
## Results

- \$20 Million in Commonwealth funds have returned \$2 Billion in federal funds to Virginia.
- Over 70 new professorships at Virginia's universities have been created.
- Over ¼ of all Ph.D.s awarded in the U.S. in Nuclear Physics are based on JLab research (69 from Virginia with another 59 in progress).
- \$20 Million per year is spent on goods and services in Virginia supporting Jefferson Lab operations.
- Over 200 visiting scientists work at the Lab daily, utilizing area airports, short-term lodging and related goods and services during their stay.



*The Applied Research Center, built by the City of Newport News, serves as an incubator for JLab-related technologies.*

# Snapshot



*High resolution image of lungs made possible by JLab detector technology.*

## Applications/Spin-Offs

- World class medical imaging effort with applications for breast cancer detection, prostate imaging, live small animal imaging for biological research, and high resolution lung imaging (Ex: Identification of cystic fibrosis gene).
- 67 patents awarded to JLab staff



- Free Electron Laser recognized by 2005 R&D 100 Award  
Dilon Technologies, a start-up company, is producing new type of mammography camera featured on ABC Evening News (October 23, 2006).

# The Future

- Jefferson Lab must upgrade its main accelerator (CEBAF) and experimental areas in order to maintain the Lab's world scientific leadership for several decades.
- FY08 request would provide \$3.5 Million (\$10 Million total needed over 3 years) which would leverage \$300 Million in Federal funds.
  - Upgrade would increase by 1/3 the number of scientific users (currently 1,200)
  - Would result in a projected increase of \$13 Million in Federal operating budget
- President Bush's 2007 budget included \$7 Million for Project Engineering and Design of the 12 GeV Upgrade at Jefferson Lab.



*Artist's concept – Hall D*

