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Hotline

The Princeton Plasma Physics Laboratory is a United States Department of Energy Facility

New Director Addresses Staff

Goldston Lays Out Plans for PPPL; Exciting Scientific Program in the Works

By Patti Wieser

Photo by Denise Applewhite

Robert Goldston

Robert Goldston is a man with a vision. As the newly appointed Director of PPPL, Goldston's vision for the Laboratory — filled with optimism for continued creativity, teamwork, and scientific breakthroughs — is expected to guide the Lab into the 21st century.

"We have an exciting scientific program ahead of us — in collaborations, understanding plasmas, and innovation," Goldston said in an energetic — and at times humorous — first address to staff during his third day on the job.

Goldston, named the Lab's fifth director on July 1, outlined his plans for a less expensive, more streamlined approach to fusion research.

PPPL continues its mission to develop fusion as an attractive, sustainable energy source, but the focus in the near term will be on medium-sized projects, collaborations, and new plasma applications.

Collaborative, National Center

"Three key words in our vision is that we are a collaborative, national center," said Goldston. "Collaboration is the way our political system assures that good science is going on all over the country. That means we have to involve people from all over the country in the types of things we do. Because we have tremendous capabilities in terms of our people and technological resources, we will be a center for them to come to."

Calling fusion a "long-term investment," Goldston said, "We will get our rewards later — hopefully not in the *next* world — but we also want to get some rewards in the nearer term." Some of these rewards will come from non-

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INSIDE ...

Director

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fusion research at the Lab, such as the Cooperative Research and Development Agreement between PPPL and Princeton Textile Research Institute for developing a diagnostic technique that uses sophisticated lasers to monitor the production process and physical characteristics of synthetic fibers. "These kinds of applications with our technology and our physics should grow," he said.

Goldston spoke about the recent reduction-in-force, which he called "painful," and lauded the Lab's historical accomplishments. But mostly, the new Lab Director concentrated on the future.

"The next challenge is to come up with ways to make fusion a practical energy source... TFTR cost hundreds of millions of dollars and produced 10 megawatts (of power), but it's not a practical energy source... We need innovation and clever ideas, and that's what this machine we're building, the NSTX, is all about," he told the *Trenton Times* in a recent interview.

Goldston said even if he had "all the money in the world" he would spend some on larger and more costly machines and some on smaller, exploratory experiments. "Now when we are cutting back, this kind of stuff — innovation and understanding — is the higher priority," he added.

Teamwork is Crucial

The new Director told staff that teamwork, among PPPL'ers as well as with the Lab's collaborators, will be imperative. "Teamwork is going to be crucial and I think teams will be somewhat more fluid," he said.

In addition, special attention will given to training to keep staff skills "sharp and up-to-date," as well as to environmental stewardship and outreach. "We need to get our message out better — to Congress, to the Department of Energy (DOE), to the scientific community, and to the public," said Goldston.

He said a "steady and positive presence" is needed on Capitol Hill and in Germantown, where DOE has its headquarters. In addition, there is a need for well-prepared talks in specific areas of scientific accomplishment that can be presented in colleges and universities. "We already have talks reasonably well prepared — overviews of what fusion is all about. But that's not what gets another scientist excited. They get excited about such things as the beautiful results of fast-particle interactions with waves, new turbulence calculations, and things like that," said the Director.

Internal communications are equally important. "I promise to keep you informed and involved," said Goldston, adding, "But don't leave me in the dark. If I don't know, I can't help."

Goldston praised the Lab's Environmental, Safety, and Health (ES&H) staff. "ES&H is an integral part of our culture and we need to keep it that way. Environmental

PROFILE: Robert J. Goldston, PPPL Director

AGE: 47

FAMILY: *Married to Ruth Goldston, psychologist*
Two sons, Josh and Jake

EDUCATION:

1977	*Ph.D., Princeton University*
	Astrophysics, Program in Plasma Physics
1972	*B.A., Harvard College*
	Physics, Magna cum Laude

EMPLOYMENT:

Princeton Plasma Physics Laboratory

1997-Present	*Director*
1992-Present	*Professor of Astrophysical Sciences*
1984-1992	*Principal Research Physicist*
1981-1984	*Research Physicist*
1977-1981	*Research Staff*
1972-1977	*Research Assistant*

Francis Bitter National Magnet Laboratory, M.I.T.

1971-1972	*Research Aide*

RESEARCH ACTIVITIES:

1995-1997	*Associate Director for Research*
1993-1995	*TPX Chief Scientist*
1991-Present	*Head, PPPL Research Council*
1991-1992	*Head, Core TPX Physics Team*
1990-1991	*Division Head,*
	BPX Project Physics
1986-1989	*Division Head, TFTR*
	Physics Program Division
1983-1986	*Branch Head, Physics*
	Coordination, TFTR Experimental
	Research Division
1981-1983	*PDX Tokamak*
1977-1981	*PLT Tokamak*
1972-1977	*ATC Tokamak*
Ph.D. Thesis:	*Fast Ion Diagnostic Experiment on ATC. Thesis advisors: Harold P. Eubank, Harold P. Furth*

AWARDS:

1986	*American Physical Society (APS) Fellow*
1988	*APS Prize for Excellence in Plasma Physics (with Richard Hawryluk and James Strachan)*

PUBLICATIONS:

Papers: 205

Books, chapters in books: 5

stewardship is especially important for a fusion laboratory. Our reputation rests on the fact that fusion is a safe, clean energy source," he said.

Goldston, who came to PPPL as a graduate student in 1972, said he sees himself "standing on the shoulders of giants" and thanked the previous directors, including Interim Director John Schmidt, for their work. "This Lab has a wonderful reputation for our science, our innovation, for the progress we've made in fusion, and for the high quality of work we do in terms of the environment and safety."

One of his main charges as the Lab's top official will be to strengthen ties with the sources of funding. He said that to accomplish his vision and the Lab's mission, the continued support of Congress and DOE is needed. "The Director must constantly get out the message of the value of our research so that our funding sources understand the importance of their continued support," said Goldston.

The Director applauded staff for its creativity, teamwork, and commitment to success, particularly on the TFTR experiments, which were a "tremendous accomplishment" of the Lab's physics, engineering, and safety staffs. "Our staff is our most important asset. We have skills that nobody else in the world brings together," Goldston said.

"Together, I believe we can continue PPPL's outstanding tradition of excellence, creativity, innovation, and safe operation. I am personally looking forward with optimism to a lot of hard work... And I think we're going to have some fun," he added. ●

Laboratory Reduces Staff

By Anthony DeMeo

On July 1, PPPL issued layoff notices to 35 regular employees. This reduction came in anticipation of an approximately 15 percent decrease in funding for the Lab for fiscal year 1998, which begins October 1, 1998.

PPPL employed approximately 555 workers as of October 1, 1996, including regular staff and 50 personnel hired through subcontractors. The current reduction-in-force, which includes both voluntary and involuntary components, affected physicists, engineers, technicians, administrators, and clerical staff. In total, the Laboratory's work force was reduced by approximately 160, including 45 subcontract staff.

Loss of Many Talented Individuals

"Regrettably, the anticipated decline in funding for the Princeton Plasma Physics Laboratory in fiscal year 1998 is resulting in the loss of many talented individuals who have contributed substantially to our outstanding successes in fusion research. Many of these individuals have dedicated decades of their careers to this challenging research," noted John A. Schmidt, who had been PPPL's Interim Director at the time of the announcement.

In April, the Laboratory offered employees voluntary separation options. These programs, established to minimize the number of staff involuntarily separated, were very successful. Approximately 80 employees chose to participate. PPPL's voluntary separation programs, severance pay, and outplacement assistance will lessen the impacts of the reduction on affected employees and alleviate economic impact on the community.

The exact 1998 funding allocation for the U.S. Fusion Energy Sciences Program will not be known until later this year. However, funding reduction during the last two years have necessitated a restructuring of the national fusion research effort. One of the consequences of the restructuring was the shutdown of PPPL's Tokamak Fusion Test Reactor in April this year, after an extremely successful 15-year period of experimental operations.

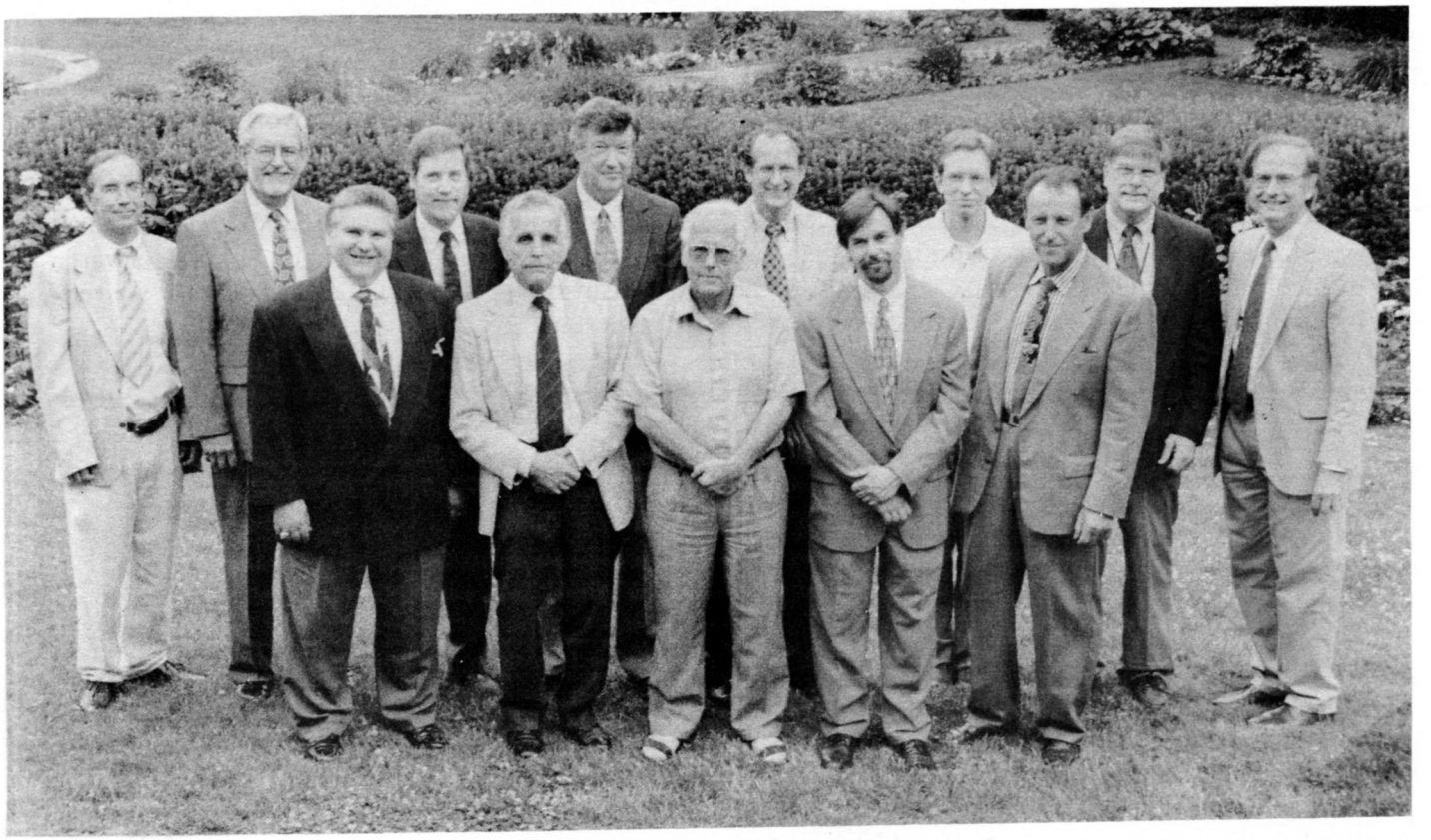
"Our strengths are closely aligned with the goals of the newly restructured fusion sciences program, and a vibrant scientific effort will continue here at PPPL," said Schmidt.

PPPL scientists envisage a diverse program of experimental and theoretical plasma science, emphasizing understanding of the physics of plasmas and innovation in plasma confinement concepts.

With the help of the Department of Energy, PPPL has developed a strong program for the future, including the fabrication and operation of a new advanced device, the National Spherical Torus Experiment (NSTX), along with continued work on advanced concepts development, plasma theory, participation in the International Thermonuclear Experimental Reactor project, and collaborations on moderate and large-scale fusion experiments in the U.S. and abroad. Researchers at PPPL will also continue work on non-fusion applications of plasma science. ●

Lab Inventors Lauded at Annual Patent Dinner

Photo by Dietmar Krause



In June, the Laboratory honored its inventors for Fiscal Year 1996 during the annual Patent Recognition Dinner at Princeton University's Prospect House. Those recognized are, from left, (front row) Frank Tulipano, Schwickhard von Goeler, Manfred Bitter, Richard Majeski, and Szymon Suckewer; (back row) Joseph Bartolick, Charles Ancher, Ronald Bell, John Schmidt, Nathaniel Fisch, Gennady Shvets, Robert Woolley, and Sam Cohen. Not pictured are Richard Rossmassler, Lloyd Ciebiera, Sylvester Vinson, R. Thomas Walters, John Timberlake, Stephen Paul, Long-poe Ku, Matthew Goeckner, Charles Neumeyer, Stephen Jardin, A. Lane Roquemore, Keith Rule, Geoff Gettelfinger, Paul Kivler, Anatoli Morozov, Boris Grek, Joseph Bartolick, Alan Kennedy, Jean Rax, and Tim Bennett.

The Laboratory honored thirty-three inventors for Fiscal Year 1996 during the fifteenth annual Patent Recognition Dinner on June 24 at Princeton's Prospect House. Following remarks by Patent Committee Chair Peter Bonanos, then Interim Director John Schmidt and then Deputy Director Dale Meade, plaques were distributed to the inventors by Schmidt and Meade. Said Meade, "I congratulate those tonight who have filed, issued, and disclosed their inventions. Inventions and innovation are the keys to carry the Laboratory forward." ●

"Invention breeds invention"
—Ralph Waldo Emerson

Committee on Inventions

Peter Bonanos, C.Z. Cheng, Sam Cohen, Marilyn Hondorp, Steve Jardin, Henry Kugel, Dale Meade, Lewis Meixler, Ken Young, and Stewart Zweben.

Congratulations to PPPL's 1996 Inventors!

Patents Issued in Fiscal Year 1996

PPPL Tritium Waste Package
Richard Rossmassler, Lloyd Ciebiera Frank Tulipano, Sylvester Vinson, and R. Thomas Walters

Method for Sputtering with Low Frequency Alternating Current
John Timberlake

Patents Applied for in Fiscal Year 1996

Method and Apparatus for Steady-State Magnetic Measurement of Poloidal Magnetic Field Near a Tokamak Plasma
Robert Woolley

Inventions Disclosed in Fiscal Year 1996

Gasket Alignment Tab
R. Thomas Walters and Lloyd Ciebiera

An Invention to Pyrolize Unburned Hydrocarbons Emitted from an Internal Combustion Engine
Stephen Paul

An Inversion to Obtain Poloidal Velocity Profiles in a Plasma with Improved Spatial Resolution
Ronald Bell

Program for Calculating Electron Trajectories in Photocathode Electron Projection Lithography with Pattern Reduction
Long-poe Ku

Inductively Heated Magnetron
Matthew Goeckner and Sam Cohen

Arc Furnace Power Supply
Charles Neumeyer

Neutral Beam Assisted Deposition
Matthew Goeckner and Sam Cohen

Pulsed Sputtering Magnetron Ion Beam Source
Sam Cohen and Richard Majeski

Halo Current Position Control
John Schmidt and Stephen Jardin

Heat Shrink Tubing with Imbedded Conductive Braid
Charles Ancher

Layered Neutron Detector
Schwickhard von Goeler, Manfred Bitter, A. Lane Roquemore, and Long-poe Ku

Tritium Oxide Processing Through Water Aeration
Keith Rule, Geoff Gettelfinger, and Paul Kivler

Microcapillary Target for Soft X-ray Laser
Szymon Suckewer and Anatoli Morozov

Microcapillary Target for Two-Laser Approach to X-ray Laser Using Powerful Subpicosecond Laser
Szymon Suckewer

Use of Laser Scattered Light to Measure Fiber Diameters, Necking, Shape, and Cladding Thicknesses
Boris Grek, Joseph Bartolick, and Alan Kennedy

Use of Laser Scattered Light to Measure Microstructures in Fibers
Boris Grek, Joseph Bartolick, and Alan Kennedy

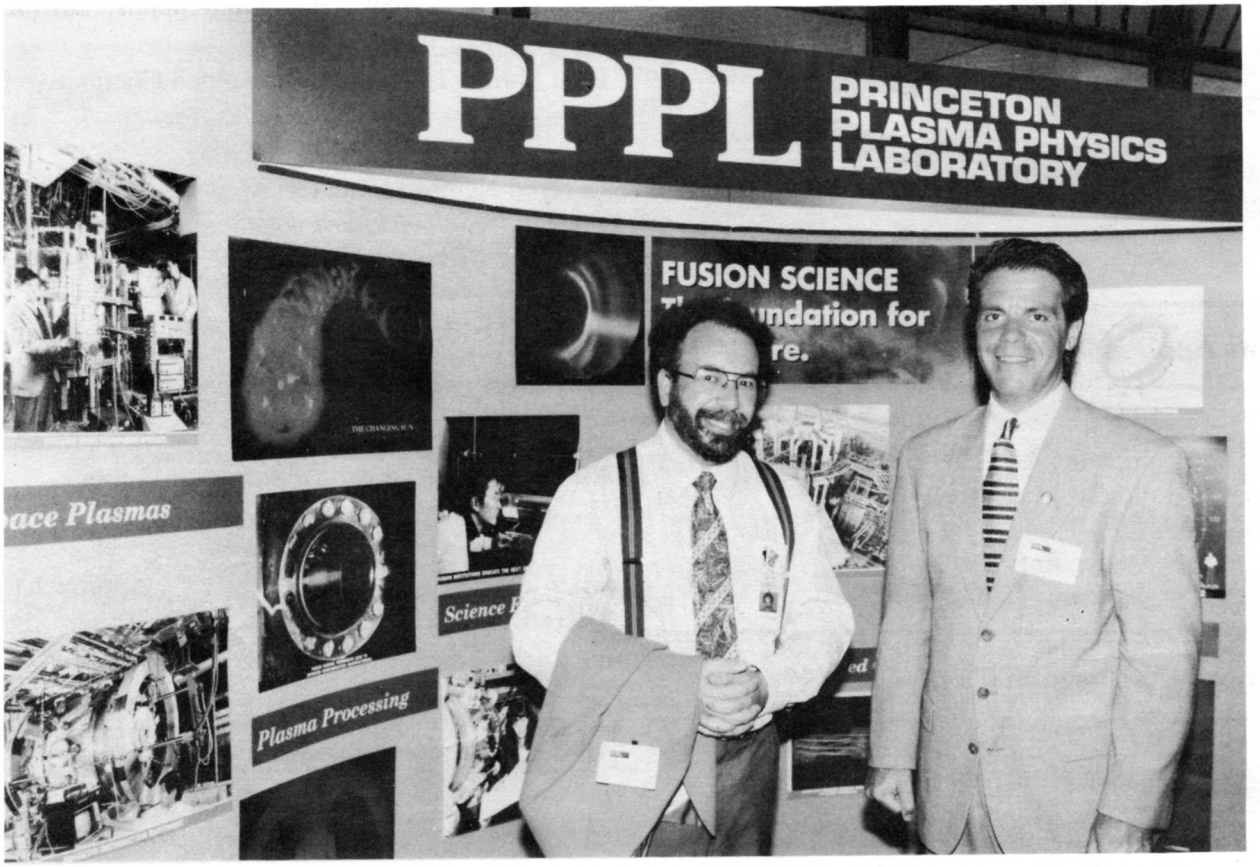
Use of Laser Scattered Light to Measure Optical Anisotropy and Birefringences in Fiber
Boris Grek, Joseph Bartolick, and Alan Kennedy

Beam Channeled Laser Wakefield Accelerator
Gennady Shvets and Nathaniel Fisch

Stochastic Free-Electron Laser
Gennady Shvets, Nathaniel Fisch, and Jean Rax

High Intensity Hyperthermal Neutral Sources
Sam Cohen, Matthew Goeckner, and Tim Bennett

Congressman Pappas Visits PPPL



PPPL Director Robert Goldston (left) discusses fusion with Congressman Michael Pappas during the Congressman's visit.

Congressman Michael Pappas, NJ District 12, visited PPPL in his home district on July 14. Pappas received a briefing on the Laboratory's research projects and the fabrication of the National Spherical Torus Experiment (NSTX). Following a tour conducted by PPPL Director Robert J. Goldston, Representative Pappas noted, "I am very impressed by the work that goes on here and what it means for the U.S. and the entire world." The Congressman expressed concern regarding the federal funding cutbacks of the last two years and the impact these reductions might have on PPPL's ability to attract the brightest students into fusion research. Pappas said he intends to promote greater cooperation among industrial and other research institutions in New Jersey to work together to improve science awareness among students, especially on the elementary level. ●

HOTLINE

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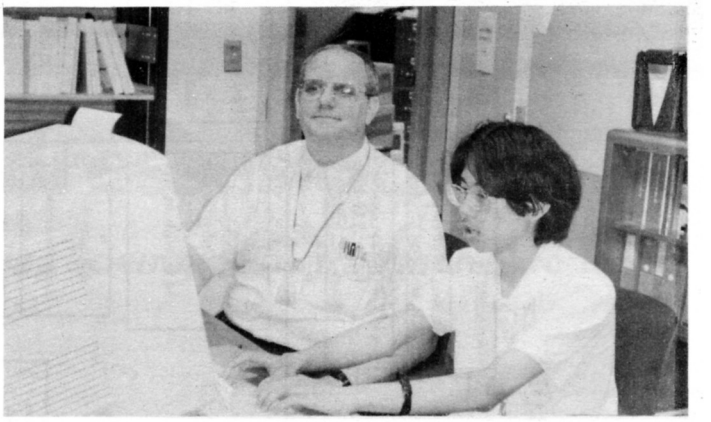
Interns Offer Fresh Approach

By Albert Vazquez, PREP Intern

High school student Sachin Patel helped in planning the configuration of a new tritium monitoring device for the Tritium Operations Group at the Laboratory. Juan Calles worked on Internet layout at PPPL's Computer Resource Center. And Albert Vazquez learned news-writing and page layout at the Lab's Information Services.

They are among seven high-schoolers who participated in the Princeton Research Enrichment Program (PREP), a six-week summer residential scientific research program coordinated by PPPL's Science Education staff. The students resided on the Princeton University campus and traveled to PPPL to study under mentors in such fields as physics, engineering, computers, and chemistry.



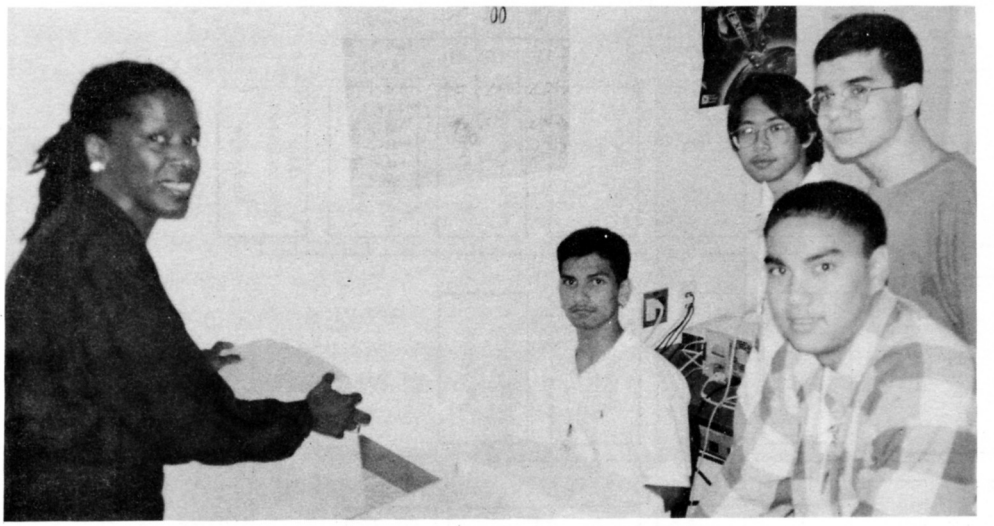
PPPL's Harry Towner (left) works with intern Jason Liao.

Special Set of Talent and Strengths

Pamela Lucas, Program Leader for Science Education, said, "Each group of students is unique. I find each student brings his or her own talents and strengths. I am quite pleased with this summer's group."

This year's students attended the second year of the PREP program in which mentors taught their students how to function in the working world. In addition, the mentors found out a few things through their younger counterparts. "New students help give us a fresh perspective on our work projects," commented Charlie Gentile, Head of the Tritium Operations Group. Gentile, who worked with Patel, said, "Sachin performed data analysis on tritium inventory quantities and helped design a real time tritium monitor. He's done some insightful work."

Other mentors have also commented favorably about their apprentices. Information Officer Carol Phillips, who worked with two students, notes, "The students' support came at a time when any help was appreciated. One of our students worked on creating a basic information slip we can put into our publications and another designed public outreach brochures. Whether they worked on basic office tasks or their short-term projects, they were of great help."



Science Education Program Leader Pamela Lucas, one of the organizers of the PREP/PPPL program, chats with interns. From left are Lucas, Sachin Patel, Jason Liao, Albert Vazquez, and Mark Ferraris. The other PREP students include Juan Calles, Jazlyn Carvajal, Eli Gervacio, DaJin Wang, and Adrinne Vassell. Ferraris was an intern through the Partners in Science Program, Liberty Science Center, and Liao was through the The Hun School Internship Program.

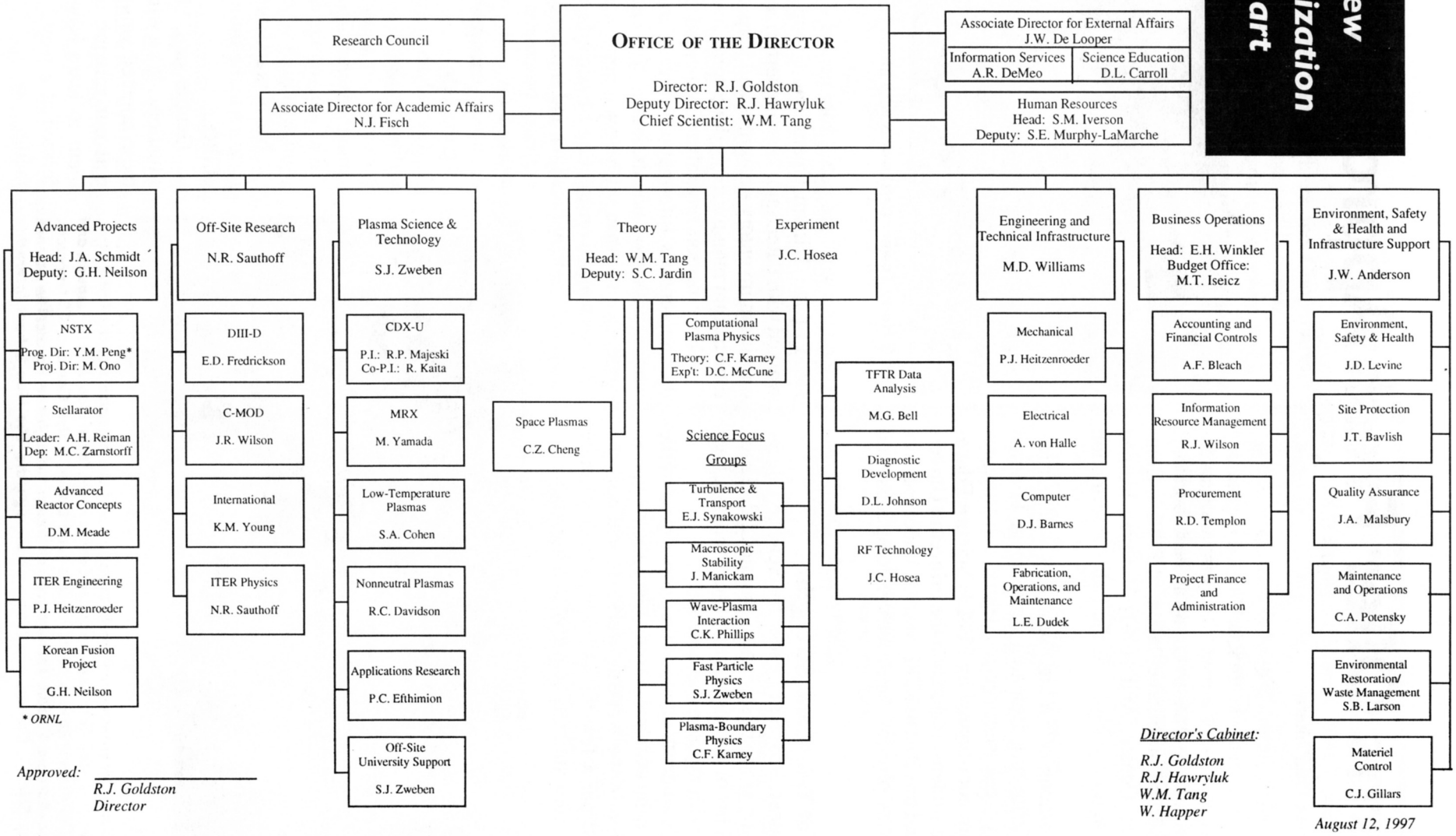
Candidates were selected based on their academic and personal performance in school, as well as through teacher recommendations. All of the youngsters are students from area high schools.

Mentors and students alike look forward to the future continuation of PREP.

Gentile said, "It's a win-win situation... It's a win for us to have these talented young people support our mission and a win for them to learn how work is performed at a world class research facility." ●

New Organization Chart

PRINCETON PLASMA PHYSICS LABORATORY



Approved: _____
R.J. Goldston
Director

Director's Cabinet:
R.J. Goldston
R.J. Hawryluk
W.M. Tang
W. Happer

August 12, 1997