

Hotline

PPPL is a research facility supported by the United States Department of Energy

TFTR Results Noted at IAEA Meeting

PPPPL's recent successes with deuterium-tritium (D-T) experiments on the Tokamak Fusion Test Reactor (TFTR) highlighted the Fifteenth International Conference on Plasma Physics and Controlled Nuclear Fusion Research last month. The conference is sponsored by the International Atomic Energy Agency (IAEA).

"The Princeton papers were very well received. We heard many compliments about the quality of the work and the presentations. It was a great year for us."

—Rich Hawryluk

The D-T results, which produced record-breaking levels of fusion power in December and May, were summarized in the opening technical paper presented by PPPL's Dr. Richard Hawryluk. Hawryluk's paper was one

of 18 presented by PPPL physicists at the bi-annual meeting, which drew 500 participants to Seville, Spain, from September 26 to October 1.

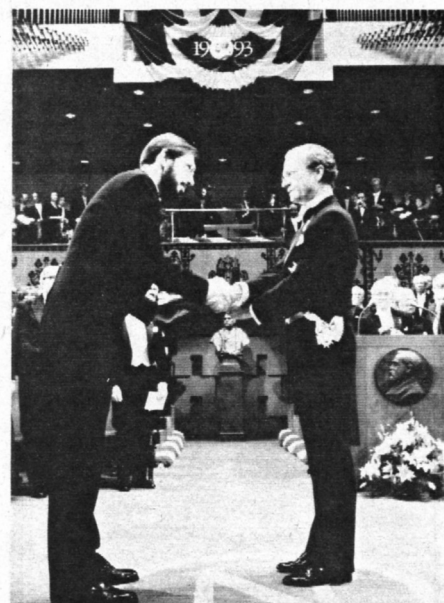
Laboratory Director Dr. Ronald Davidson, who was among the 25 PPPL physicists attending the conference, said, "The exciting experimental results presented by the TFTR team were viewed by the meeting participants as a major milestone in fusion energy development."

Great Year

Added Hawryluk, "The Princeton papers were very well received. We heard many compliments about the quality of the work and the presentations. It was a great year for us."

The opening presentation is usually reserved for a member of the host country or region, but because of the recent strides in fusion made by PPPL with the D-T experiments, the Laboratory was asked to present.

"I gave an overview of the year's activity on D-T experiments, from the initial experiments in November and December to the most recent data. Shortly before the meeting, we had new results on measurements on confined alphas in the plasma by two different approaches," said Hawryluk, who is Head of the Tokamak



The King of Sweden (right) shakes hands with Russell Hulse at the Nobel ceremonies.

A Year in Review

Russell Hulse Discusses His Year as a Nobel Laureate

Before last October, blocks in the slim, black calendar remained largely unmarked. Noted were the yearly American Physical Society meeting, the birthdays of family and friends, and vacation time.

But shortly after October 13, 1993, the squares on Russell Hulse's datebook quickly filled up. That was the day Hulse, a Principal Research Physicist at PPPL, found out he had won the 1993 Nobel Prize in Physics, along with Princeton University Professor Joseph Taylor.

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IAEA

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Confinement Systems Department at PPPL. His paper noted that the past year of D-T experiments on TFTR



Richard Hawryluk

has allowed the direct examination of many critical issues of physics and technology for the International Thermonuclear Experimental Reactor (ITER), and has clarified what new technical features

would be helpful to an advanced tokamak reactor. Of particular interest, in addition to the high fusion power results, were the results showing alpha particles to be well confined. However, during a tokamak disruption, localized alpha loss is observed, which may impose special design requirements for in-vessel components.

Highlight of Conference

The Lab's Dr. Robert Goldston, who gave a summary talk on tokamak experiments, commented, "The TFTR D-T results were indeed the

highlight of the conference. There were exciting results from the Joint European Torus, JT60U, and DIII-D as well, both supportive of ITER and of the advanced tokamak concept embodied in the Tokamak Physics Experiment (TPX)."

The next major meeting on plasma physics that will draw PPPL participants is the American Physical Society (APS) conference next month. The thirty-sixth annual meeting of the APS's Division of Plasma Physics is scheduled for November 7-11 in Minneapolis. ●

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Soon his rarely consulted calendar was cramped with speaking engagements, receptions, dinners, and such social events as tea at the White House and Nobel Week in Stockholm, where he mingled with Swedish royalty.

"Now I can't commit to anything without pulling out my calendar," said Hulse.

One-year Anniversary

Hulse took time this month, which marks the one-year anniversary of the 1993 Nobel announcements, to reflect on his life since being named a Nobel Laureate.

The year has been characterized by much travel, lectures at home and abroad, an increase in social engagements, pageantry, intense excitement and fun, a little stress, a steady diet of adrenaline, introductions to students, professors, politicians, and others he would otherwise not have met, and the reception of stacks of mail from friends and people he has known along the way.



Russell Hulse and Jeanne Kuhlman are chauffeured in a stretch Volvo limo during Nobel Week in Sweden.

The past year has also been filled with glaring TV camera lights and countless interviews with members of the media.

Celebrityhood

"For someone like me who has never had public exposure, the week in Stockholm for the Nobel ceremonies was an intense introduction into being a celebrity. TV cameras followed me around and I was interviewed by all sorts of newspapers and radio stations," said Hulse.

Hulse, who won the Nobel for the discovery of the binary pulsar, had been interviewed in 1974 at the time of the discovery. Back then, as

a University of Massachusetts graduate student, Hulse had gone pulsar hunting at the urging of his thesis advisor, Joseph Taylor, then a professor at the University of Massachusetts.

Discovery of Binary Pulsar

While using a 300-meter-diameter radio telescope at an observatory in Arecibo, Puerto Rico, Hulse discovered a binary pulsar, which is a twin star system that serves as a rare natural laboratory in which to test Albert Einstein's prediction that moving objects emit gravitational waves, as well as other aspects of Einstein's general theory of relativity.

Hulse's brief experience with the press two decades ago, however, had not prepared him for the immediate explosion of interest in him when he won the Nobel. Minutes after hearing the radio broadcast that he had won, a reporter was on his doorstep in Plainsboro. His phone rang non-stop. Messages filled tapes at home and work. Press conferences were held. An incident

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at a reception in Stockholm crystallized his nascent fame. He was followed by a TV cameraperson when he went to get another glass of chablis. "Nobody ever recorded the event of me getting a glass of wine before," said Hulse with a chuckle.

He described Nobel Week in Stockholm, which was in December, as one of the highlights of his life.

"Nobel Day itself was just an extraordinary experience ... being on the stage and receiving the medal from His Majesty the King, and trying to remember to bow three times—to the King, to the Royal Swedish Academy members and Nobel Foundation, and then to the audience," said the Nobel Laureate.

Medieval Pageant

Calling the banquet following the awards ceremony "a wonderful experience," he said, "It was like being dropped into the middle of a medieval pageant." Preceding each course of the meal that was brought down a long marble staircase into the Blue Hall of Stockholm's City Hall were young men and women dancing and singing Elizabethan ballads. "In this cavernous hall it resonated so wonderfully," he noted, adding that the waiters who served the wine were from the Upsala Men's Chorus.

"I had been seated next to Queen Sylvia at dinner at the Nobel banquet," recalled Hulse, who met the Swedish Queen's 16-year-old daughter, Princess Victoria, the next night. The Princess had spent the

previous summer at camp in Colorado and had become fascinated by astronomy, which she talked about at length with Hulse.

In Sweden, Hulse was chauffeured in a stretch Volvo limo to luncheons—one during which he was asked to give an impromptu opening toast—press conferences, receptions, concerts, and dinners. "You're busy every minute, every



Russell Hulse (at left) shakes hands with President Bill Clinton during a tea at the White House in December.

second. You have a printed schedule for everything you do," said Hulse, who was also required to present an oral lecture on the binary pulsar discovery.

Intense Preparations

The two months leading up to the Nobel ceremonies included "intense" preparations for the lecture as well as "frustrating" shopping expeditions for formalwear for his girlfriend, Jeanne Kuhlman. The Stockholm itinerary included three white-tie-and-tails affairs as well as other semi-formal events.

"There were many days that I spent intensely working on my lecture and then got in the car with Jeanne to go shopping. We had an enormously difficult time finding gowns ... We looked for long, straightforward, and elegant gowns, which are practically impossible to find. There are shops with party dresses that are not sufficiently formal and wedding shops that offer clothes that are not quite right either," he said, noting that they were eventually successful in their search. Following twelve packed days in Sweden, activities remained robust when the laureate arrived home. "When I returned, I had an intense round of travel in response to invitations to talk about pulsars and the Nobel," said the Nobel recipient.

He delivered speeches while touring Texas for the Princeton University Alumni Association, gave various university lectures across the nation, participated in the Nobel Laureate Lecture series in England, and delivered the commencement addresses at his high school and college alma maters, the Bronx High School of Science and Cooper Union, both of which are in New York.

One Trip a Week

"For awhile last spring, I had at least one trip a week for a lecture, commencement speech, or after dinner speeches at alumni clubs," said Hulse, noting that public lectures and commencement speeches are "a different sort of thing than giving a physics talk."

He was also the guest of honor at a dinner party thrown by Prince-

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ton University President Harold Shapiro, dined with the Clintons, and was honored at PPPL by a reception and a standing ovation, all of which he adds to the list of lifetime "highlights." He recalled walking into the MBG Auditorium at the Lab the day after winning the Nobel — a place he'd walked into "hundreds of times" — and receiving the standing ovation. "I was really moved," he said.

Along with the pleasures of receiving a Nobel, however, are a few "pitfalls." "You're expected to opine on any subject and that can be a hazardous activity," said Hulse. "I tend to forget that I have this label attached to me, which can make my comments carry more weight or perhaps be overinterpreted." For instance, he was dismayed to find his casual use of the word "geek" during a lecture show up in a newspaper headline over a story about the talk.

Science in Society

One topic he is happy to discuss, and brought up at the two commencement speeches, is the role

of science in society. Hulse said he believes science needs to be re-integrated with other pursuits in life, as it was during Thomas Jefferson's time — a time when rational thought was believed to be the fundamental source of good for society.

"I think that science is not as well integrated into the fabric of American society as it needs to be. People no longer have any direct experience with the natural world. Science is no longer a part of parents' lives, and kids don't get a chance to take things apart and see how they work," he said.

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most is that my
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has made so many
people happy."**

—Russell Hulse

Science has always played a pivotal role in Hulse's life, spent growing up in the Bronx. "From the earliest age I wanted to be a scientist ... I was always interested in knowing how the world worked," he said.

During the summer, he and his parents left the city for their summer home in southern New York, where his parents have retired. It was the home he helped his dad — a technical representative for Eastman Kodak — build, where he got his first taste of the natural world, and where, as a high school student, he built his first radio telescope.



Russell Hulse dines with Queen Sylvia of Sweden at the Nobel banquet.

His parents, he said, have always been supportive of their self-directed son and his interest in science, buying him chemistry sets and encouraging him to build a telescope. They still have the drawing he did as a youngster of microbes under a microscope. Below the picture, Hulse had written in block letters, "These are the bugs I saw under the microscope." It was signed, "Russell Hulse, scientist."

After earning a Ph.D. from the University of Massachusetts in 1975, Hulse changed from the field of astrophysics to plasma physics and came to PPPL in 1977. Since entering plasma physics, he has become a leading expert in computational modelling of impurity transport in tokamaks.

Computer Modeling Group

He is currently establishing an advanced computer modeling group at the Lab, which is developing new approaches to scientific computing that encourage innovative work by enabling the creation of powerful yet easily modifiable computer codes. The group is developing the technology for these modeling software environments as part of a Cooperative Research and Development Agreement (CRADA). In addition, the group is exploring the

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At the Nobel ceremonies are, from left, (front row), Ashley Armstrong, Jeanne Kuhlman, Russell Hulse, and Cynthia and Michael Phillips; (back row) Ray Fonck, Rosalie Migas, Cathy and John Armstrong, and Heléne and Erik Forsberg.

Hulse

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educational potential of computer modeling, which can serve as a unique tool for teaching science and the process of scientific investigation.

Although Hulse's lecturing schedule is not as frantic as during

the months following the Nobel ceremonies, his life, he concedes, is "never going back to being normal — at least not normal the way it was before."

Special Award

The Nobel Laureate called the prize a "special award" that gave

him opportunities to "talk about the excitement of doing science." It has also been an award that he has shared with his parents, friends, and co-workers at the Laboratory.

"One of the things I've enjoyed the most is that my receiving the Nobel has made so many people happy," said Hulse. ●

PPPL's Gulay Organizes Ukrainian Relief Efforts

When PPPL's Robert Gulay saw the dim corridors, ailing youngsters, and broken-down wheelchair, he knew he had made the right decision.

Gulay, who heads the Adopt-a-Hospital Program, had pegged the Regional Children's Hospital in Zaporizhya, Ukraine, as the first medical facility to be "adopted" by an American hospital. The Adopt-a-Hospital Program was initiated by the Ukrainian American Veterans (UAV) of New Jersey and the Southern Ocean County Hospital of Manahawkin, New Jersey, to provide medical relief efforts to Ukraine. Before finalizing the delivery of more than \$2 million worth of medical equipment and supplies, Gulay had organized an American team of medical specialists to evaluate the needs of the children's facility. The team included Gulay and his son, Robert.

Inside the century-old building, the group traveled down darkened hallways to find hospital rooms for eight children being lit by a single bulb. In a three-floor area, Gulay saw only one wheelchair, its wheels and axle bent.

Shortage of Everything

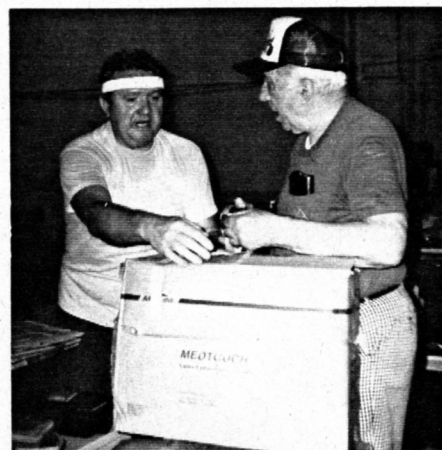
"It's just incredible what they try to get by with," said Gulay, who is the Energy/Utilities Manager in the Lab's Facilities Engineering Divi-

sion. "What they had was so tired and old. Needles that were dull from usage were sterilized and reused again and again, and medical equipment was fixed repeatedly. They literally had a shortage of everything. Not having light bulbs made everything much worse."

Prior to the visit, eight cardiac monitors and a central monitoring station arrived at the children's hospital in the historic Kozak region of Ukraine's steppes. "Since our ethnic veteran roots come from this area (of Ukraine), we just wanted to give something back," said Gulay, who was born in Ukraine during World War II and is a member of the UAV of New Jersey.

Surplus Equipment

He recalled the creation of the program, noting that he received a phone call from an old acquaintance — a New Jersey pediatrician — at the same time his UAV post was discussing possible relief efforts for Ukraine. The pediatrician, Dr. William Toreki, is vice president of medical affairs at the Southern Ocean County Hospital. Toreki told Gulay the hospital was being renovated and expanded, and would be replacing useable cardiac monitors with state-of-the-art equipment. This surplus equipment could be donated to a hospital in Eastern Europe, he said.



Robert Gulay (left) and another Ukrainian-American veteran pack medicines to be shipped to Ukraine.

"We had been seriously looking at how to medically help those in Ukraine, especially the children," said Gulay.

Once the surplus cardiac monitors and medical supplies became available, a way had to be found to get it to Ukraine. "You just don't send sophisticated medical equipment to anyone," said Gulay, who served in the Army during the early 1960's. "So we looked for a recipient children's hospital that could be 'adopted' and made an agreement between the American and Ukrainian hospitals so that they would collaborate."

Match Up

Gulay said the object of the program is to match up an American

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hospital with a Ukrainian hospital to encourage interaction among the staffs of both. "This is educational for both sides," said Gulay. American interns can get hands-on experience at Ukrainian hospitals and Ukrainian doctors can learn new techniques using modern equipment. "It's a two-way street," said Gulay, adding that the program also focuses on getting vital medical supplies to Ukraine.

He said the mission of the program entailed so much that the help of the other UAV Posts in New Jersey was enlisted. Those posts in Freehold, Trenton, Passaic, and Newark became a team, serving as the interface between the hospitals, he added.

Since the program began last year, UAV volunteers have gathered and

sent more than 120 tons of medical supplies and equipment worth more than \$2 million to three Ukrainian hospitals. The UAV also sponsored four Ukrainian doctors to come to New Jersey for two weeks of hands-on training on X-ray and CATSCAN equipment. In addition, the Adopt-a-Hospital Foundation was established to help other veterans groups organize similar efforts.

Started with Nothing

"So here we were. We started with nothing, not even one dollar, and in six months we had Ukrainian doctors here for training. We had shipped the cardiac monitors, sought donations from churches and other places, and filled a 32,000-square-foot warehouse in Hightstown with donations of equipment and supplies. All the supplies are now being used

by the Ukrainians," said Gulay, whose recent visit to Ukraine was his first since he had left as a three year old.

Served as Translator

The varied missions of the program, from collecting and shipping medical supplies to fund raising and training, reflect the varied roles Gulay has played as head of the program. He has served as a translator — when he was in Ukraine, as well as when the Ukrainian doctors visited New Jersey — hauled equipment, organized press conferences and meetings with various hospital, church, business, and government officials, and raised funds for the program.

His efforts, he said, are paralleled by the other Ukrainian American veterans and the staffs from the donating hospitals. Said Gulay, "It's not a one-person operation. It's teamwork."●

United Way Campaign Seeking Slogan, Gifts



The United Way Campaign Committee is seeking a slogan for the 1994 campaign, as well as donations of gifts to be drawn during the United Way Campaign Drive and Wrap-up meetings. The committee is sponsoring a *Slogan Contest* for a catchy "Burma Shave" type jingle that will be used along the entrance road to the Laboratory. All you have to do is come up with an original slogan that has a rhyme pertaining to the United Way Campaign, its goals, and objectives. The creator of the winning entry will receive a \$25 gift certificate to Scanticon. Everyone, including staff, subcontractors, consultants,

visitors, temporaries, and immediate next of kin, is eligible. Send signed entries to Mary Ann Brown, 1994 United Way Campaign Co-Chairperson, LOB B374, C-Site, by November 8.

If you have a gift to donate for the drawings, call Mary Ann at ext.3045. Contributions in the past have included homemade craft items, tennis lessons, and gift certificates to area restaurants, exercise classes, and hair salons.

HOTLINE

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What's Happening at PPPL?



Retirees were honored this spring at the Retired Staff Award Ceremony and Reception at the Laboratory. Retirees are, from left, (front row) Martin Stefano, Claire Siflinger, Robert Kneeshaw, Thomas Devine, Herbert Puckett, William Osborne, Barbara Norton, Donald Muschal, and Marion Mincarelli; (back row) Salvatore Mendola, Halsey Allen, Robert Shoemaker, Milton Pelovitz, Robert Fleming, Richard Terhune, Daniel Zydorski, Donald Carter, and George de Pagnier. Retirees not pictured are Clarence Bosley, Warren Class, Harry Creacy, George Cutsogeorge, Robert Dempsey, Roger Gould, Leon Green, Harry Howard, Richard LaBaw, Silvester Luyber, Walter Maciolek, Robert Majeski, Alejandro Melendez, Madeline Michalowski Eleanor Schmitt, and Earle Sheaffer.

Woody Kay Addresses PPPL'ers

Northeastern University Professor Woody Kay urged researchers at PPPL to reach beyond the usual constituencies for support. Addressing about 100 at the MBG Auditorium in September, Kay suggested building a political consensus that stretches beyond Congress to include such groups as environmental, business, and labor.

"Maybe it's time to take the show on the road," said Kay, an Assistant Professor of Political Science. Speaking on "Group Politics and the Future of the Fusion Energy Program," the lecturer also said the government should "either fish or cut bait" with the fusion energy program.

Kay is the author of numerous articles, as well as of **Can Democracies Fly in Space? The Challenge of Revitalizing the U.S. Space Program**. In 1991, he wrote a controversial piece entitled "The Politics of Fusion Research," which was published in *Issues in Science and Technology*.



Woody Kay

TRANSITIONS

Births

Congratulations to **David L. Speed** of ES&H and his wife, Lynn, on the birth of their son, William David, on August 15.

Retirements

H. Thomas Deverell, a machinist, retired on September 1. Deverell had worked at the Laboratory for 15 years.

PPPL Bus Trip

Don't forget to get your tickets for the next PPPL Bus Trip, a **Holiday Shopping Spree** at the Vanity Fair Outlet in Reading, Pennsylvania. The bus is scheduled to leave the Lab at 9 A.M. on Saturday, November 12, and return at 8 P.M. Tickets, which are \$12, are available at the C-Site Reception Desk.

Blood Donor Drive

PPPL is sponsoring a *Special Blood Drive* at the Laboratory to ease the current blood shortage. The blood collection is scheduled for:

Thursday, November 3

9 A.M. to 2 P.M.

ESU Building Fire Bay

Lab personnel are asked to donate blood. To participate, call the Dispensary at ext. 3200.

Holiday Dinner Dance

The Holiday Dinner Dance is scheduled for Saturday, December 17, at La Villa Restaurant in Hamilton Township. Tickets will go on sale early next month. They will be available at the C-Site Reception Desk. Watch for details — such as time and price — in upcoming issues of **PPPL News Alert** and **HOTLINE**.

