Fusion Power Report

Complete Coverage Of Worldwide Fusion Developments

Vol. 26 No. 7/8 **July/August 2005** **Page 139**

SLANTS & TRENDS

France has been selected as the site for the ITER fusion experimental reactor project. **Japan** will receive preferred status in the six party international project

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MIT's Ian Hutchinson cautions, "It is also important for the United States to maintain fundamental research and innovative initiatives into the basic science of magnetically confined plasmas, which may lead to breakthroughs that eventually enable faster fusion development and more cost-effective fusion systems."

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First ITER Full Power Shots Projected for 2021. Assuming initiation of the project in early 2006, ITER would make first burning (DT) plasma in 2020 (first plasma operation in 2016) and first full power (500 Megawatts thermal) operation in 2021, according to Y. Shimomura, head of the international ITER design team.

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Published by Fusion Power Associates – 2 Professional Drive – Suite 249 – Gaithersburg, MD 20879 – Stephen O. Dean, President
Editor: Stephen O. Dean **Managing Editor:** Ruth A. Watkins
Fusion Power Report (ISSN 0276-2919) published bi-monthly. Subscription rate: $775 per year (includes shipping).
Multiyear or email rates available on request. Send address changes or other requests to above address or by phone/fax/email:
(301)258-0545; FAX (301)975-9869; fpa@compuserve.com
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France Designated as ITER Site

Representatives of the governments of the European Atomic Energy Community, Japan, Russian Federation, People's Republic of China, Republic of Korea and the United States, meeting in Moscow on June 28, signed a Joint Declaration designating Caderache, France, as the site for constructing the International Thermonuclear Experimental Reactor, ITER. The group emphasized "the importance of exploring the long-term potential of fusion energy as a virtually limitless, environmentally acceptable and economically competitive source of energy" and said they advocated "wide international cooperation in developing this source of energy for all mankind."

The group ratified an agreement on cost sharing and other items negotiated between representatives from France and Japan over the past year. That agreement specified that the "host" will contribute 50% of the construction cost with the other five parties bearing 10% each. In addition the host will bear the costs of site preparation. In addition the host party will make procurements in Japan of components equivalent to 10% of its 50% contribution. The host party will provide 40% of the ITER staff, Japan will provide 20% and the other four parties will provide 10% each. Japan will provide "a suitably qualified candidate" for the post of ITER Director-General. The host will also provide contributions for a new fusion support facility in Japan for a facility to be decided later by Japan. In addition the group endorsed that "If a future demonstration reactor, Demo, is realized in the framework of an international co-operation" that facility would be built in Japan.

Details of the agreement and other related news articles on the ITER site selection are posted at http://fire.pppl.gov

ITER and Fusion

Writing for MIT's Technology Review, Ian Hutchinson notes that the recent announcement that agreement has been reached to construct ITER in France "is a source of relief and anticipation to nuclear fusion researchers worldwide." He says, "It also removes perhaps the last major impediment to embarking on a project that has been under consideration for nearly 20 years." Hutchinson says, "Decades of fundamental scientific research and detailed engineering design have bolstered confidence that this project can succeed."

Hutchinson cautions, "It is also important for the United States to maintain fundamental research and innovative initiatives into the basic science of magnetically confined plasmas, which may lead to breakthroughs that eventually enable faster fusion development and more cost-effective fusion systems." He says, "If this (ITER construction) funding were drawn from the already overconstrained budget of $290 million, the drain would devastate fusion research. That is the reason the overwhelming consensus of the U.S. fusion community in favor of ITER is predicated on the maintenance of strong domestic fusion and plasma physics research, plus additional funds for ITER construction." He notes, "The United States spends close to $1 trillion per year on the energy it consumes. In the context of that economic reality, fusion research would be cheap at twice its (currently $290 million per year) price."

Hutchinson is chair of the Nuclear Science and Engineering Department at MIT and a member of Fusion Power Associates Board of Directors.

His complete Technology Review article is posted at http://fire.pppl.gov

Heavy Ion Fusion Advance

Scientists at the Lawrence Berkeley National Laboratory (LBNL) have made important advances toward the goal of improving the attractiveness of heavy ion beams for high energy density physics (HEDP) research and as drivers for inertial confinement fusion power plants in the future.

Dramatic success was recently achieved in a laboratory experiment by compressing an intense an ion beam fifty-fold. The resulting 4 nanosecond pulse puts heavy ion beams, for the first time, within range of the pulse lengths necessary for meaningful HEDP experiments and for fusion power application. The result adds great flexibility for the design of the high energy end of heavy ion fusion drivers for inertial fusion, lowering the cost, and potentially shortening the development timetable, The result is even more impressive when one considers it involves a new approach that was first conceived only 12 months ago.

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In the NDCX-1a facility, which began operation December 9, 2004, an induction "tilt" core was used to place a velocity ramp on a 25 mA, 255 keV beam, inducing compression. Space charge repulsion during compression was essentially eliminated by neutralizing the beam with a pre-formed plasma downstream of the core. Modeling showed good agreement between the data and particle-in-cell simulations.

Grant Logan, director of the Heavy Ion Fusion Virtual National Laboratory, said that these new results "may revolutionize high peak power accelerators in a manner analogous to the role frequency chirp played in ultra-high power lasers."

The next step is to accelerate the beam before compression. For this, a new accelerator concept is being developed called the "Pulse-Line Ion Accelerator" (PLIA). First proposed by LBNL consultant Dick Briggs (Patent Disclosure August 2004), the PLIA is a traveling-wave accelerator, with a helical winding around the beam pipe acting as a transmission line to produce the wave which accelerates the beam. The novel idea here is to use dielectric around the helix to slow the wave to nearly match the ion speed. First operation of experiments using a 1 meter PLIA test accelerator section began May 5, 2005. The experimental PLIA test section delivers 0.2 volt-seconds of acceleration capability at 10x lower overall total cost per MeV compared to induction acceleration. This technique would greatly lower the cost of heavy ion accelerators for both high energy density physics experiments and for fusion power plants. In addition, it is likely that the low-energy ends of many other accelerators can benefit from this concept.

For further information, contact Grant Logan (bglogan@lbl.gov).

House Panel Ups Ante for Fusion

In a stringent fiscal environment, when most U. S. government domestic spending is being cut, the U. S. House of Representatives Committee on Appropriations voted to increase Fiscal Year 2006 funding for fusion above the amounts appropriated in FY 2005 and above the FY 2006 amounts requested by the President.

For the Office of Fusion Energy Sciences (OFES), which funds primarily magnetic confinement fusion, the Committee recommended $295 million, an increase of $21 million over FY 2005 and $5.6 million more than the President requested. Furthermore, the Committee directed that cuts the President proposed to the domestic fusion effort in order to provide funding for construction of the International Themonuclear Experimental Reactor (ITER) be restored to the domestic program. The Committee issued a stern warning to the Executive Branch regarding such a policy saying, "As in previous years, the Committee directs the Department (of Energy) to fund the U. S. share of ITER through additional resources rather than through reductions to domestic fusion research or to other Office of Science programs. If the Department does not follow this guidance in its fiscal year 2007 budget submission, the Committee is prepared to eliminate all U. S. funding for the ITER project in the future."

For the inertial confinement fusion program, funded as part of the Department's National Nuclear Security Agency (NNSA), the Committee recommended $541 million, an increase of $6 million over FY 2005 and $81 million above the President's request. The Committee restored funds the Department planned to cut from the Naval Research Laboratory and University of Rochester laser programs and from efforts to develop high average power drivers which are essential for energy applications.

The complete text of the Committee's report is provided below:

Fusion Energy Sciences

The Committee recommendation for fusion energy sciences is $295,155,000, an increase of $5,605,000 over the budget request but with a significant redirection of funds as outlined below. The Committee is concerned that two-thirds of the proposed increase for the International Thermonuclear Experimental Reactor (ITER) would be achieved by reducing domestic fusion research and operating time on domestic use facilities. Under the proposed fiscal year 2006 budget, operating time at the three major fusion research facilities (DIII-D, Alcator C-Mod, and NSTX) would be reduced from 48 weeks in fiscal year 2005 to a total of only 17 weeks in fiscal year 2006. If the United States expects to be a serious contributor to international fusion research in general and to ITER in particular, the Nation needs to maintain strong domestic research programs and user facilities to train the next gen-

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erations of fusion scientists and engineers. The Department's proposal to increase support for ITER at the expense of domestic fusion research is unwise and unacceptable. Such an approach is not only short-sighted, but inconsistent with prior Congressional guidance. Therefore, the Committee directs the Department to utilize $29,900,000 of funding proposed for ITER and the additional $5,605,000 to restore U.S.-based fusion funding to fiscal year 2005 levels as follows: $7,300,000 for high performance materials for fusion; $14,305,000 to restore operation of the three major user facilities to fiscal year 2005 operating levels; $7,200,000 for intense heavy ion beams and fast ignition studies; $5,100,000 for compact stellarators and small-scale experiments; and $1,600,000 for theory. As in previous years, the Committee directs the Department to fund the U.S. share of ITER through additional resources rather than through reductions to domestic fusion research or to other Office of Science programs. If the Department does not follow this guidance in its fiscal year 2007 budget submission, the Committee is prepared to eliminate all U.S. funding for the ITER project in the future.

Inertial Confinement Fusion (ICF) Ignition and High Yield

The Committee recommends $541,418,000 for the inertial confinement fusion and high yield program, which maintains the program at the current year level and is an increase of $81,000,000 over the budget request.

The Committee supports the Department1s response to the Congressional concern expressed last year regarding the fiscal year 2005 budget request proposed schedule slip to the program goal of ignition demonstration in 2010 for the National Ignition Facility (NIF). The Committee continues to view ignition demonstration as the primary benchmark for success in the program. The Committee commends the Department's effort to projectize the ICF program consistent with DOE Order 413.3, and to manage the ignition, diagnostic, cryogenic and experimental programs as projects incorporating a work breakdown structure to track scope, cost, and schedule milestones, within a project management control system. The Committee directs the NNSA to report quarterly on the milestone cost and schedule variance within the respective experimental programs on progress toward the NIF 2000 rebaselined program.

The Committee recommendation includes a total of $69,623,000 for Facility Operations and Target Production, of which $15,000,000 shall be available to accelerate target fabrication. The Committee believes that a target that meets all the NIF ignition criteria should be produced and characterized in a cryogenic environment. NNSA should provide the Committee with a detailed schedule by March 2006 to accomplish this requirement. Should fabrication of the new beryllium target prove too high risk to ensure meeting the NIF milestones, NNSA is required to provide the Committee with the alternative that will be pursued in order to keep to the 2010 ignition schedule. The Committee recommendation includes $25,000,000 to continue development of high average power lasers and supporting science and technology within the Inertial Fusion Technology program line; within that amount, the Committee includes $2,000,000 for the high density matter laser at the Ohio State University Technology Park. The Committee recommendation includes $15,000,000 for the Naval Research Laboratory, and $71,558,000 for the University of Rochester's Laboratory for Laser Energetics (LLE), an increase of $26,000,000 over the budget request. The LLE is the principal research and experimentation laser facility for NNSA Science-based Stockpile stewardship activities. The Committee increase includes an additional $4,000,000 for OMEGA operations to provide additional shots to support the ICF campaign goal of an ignition demonstration in 2010 and an additional $22,000,000 to accelerate the OMEGA Extended Performance capability project, a four beam super-high-intensity, high-energy laser facility to support the nation's stockpile stewardship program. The Committee notes that the University of Rochester is providing $21 million for the building to house the OMEGA EP.

The Committee recommendation provides $141,913,000 for construction of the National Ignition Facility (NIF), the same as the budget request.

House Adopts Amendment

On May 25, the full U. S. House House of Representatives approved, by voice vote, an amendment by Science Committee Chairman Sherwood Boehlert (R-NY) to prevent the U.S.from entering into an agreement on ITER, the international fusion experiment, before March 1, 2006. Boehlert's action, taken with the endorsement of House Appropriations Committee Chair David Hobson (R-OH),

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reflects a growing gap between the fusion policy presented by the Department of Energy (DOE) and that advocated by the U. S. fusion community and the Congress. The latter, a hard won consensus, advocates a policy in which ITER is funded by funds over and above the existing core domestic fusion budget, while the DOE seems determined to fund much of the ITER costs by cutting the domestic fusion effort.

The problem began two years ago when the U. S. decided to rejoin the international ITER effort in a flat FY 2004 budget request. This prompted the DOE's Fusion Energy Sciences Advisory Committee (FESAC), in a March 5, 2003 letter, to tell DOE Office of Science Director Ray Orbach regarding the FY 2004 budget request, "Both its total amount and its devastating cuts in certain program elements are alarming. This note expresses our most serious concerns." Although Congress subsequently added over $10 million to the fusion request, it did so with the admonition that funds for fusion technology (which were targeted for most of the cuts) be restored and that "if the Department intends to recommend ITER participation in the Fiscal Year 2005 budget request, the Committee expects the Department will do so without harm to domestic fusion research or to other programs in the DOE Science budget."

When submitting the FY 2005 request, however, the DOE ignored this advice. Once again the DOE submitted a flat budget request but indicated its intent to terminate all long-range fusion technology work and to redirect much of the remaining research effort to support for ITER. Research on inertial fusion energy (IFE) was especially targeted by DOE in this request, prompting the FESAC to urge DOE to carry out "a coordinated (IFE) program with some level of research on all the key components (targets, drivers and chambers) always keeping the end product in mind." Once more the Congress added over $10 million to the request, indicating that the planned reductions in the domestic program should not be implemented . When submitting the FY 2006 budget request, it became clear that DOE had no intention of following Congressional guidance on not cutting the domestic fusion budget to fund ITER. In that request, DOE indicated its plan to continue termination of fusion technology and cuts to IFE and also to cut domestic magnetic fusion research to fund ITER. In acting on the FY 2006, the House of Representatives has threatened to not fund ITER at all if this practice continues.

Boehlert made the following statement on the floor to explain his amendment:

"Mr. Chairman,

"Let me start by thanking Chairman Hobson for working with us on this entire bill and on our amendment. I understand that the amendment will be accepted, and I appreciate that.

"But I do want to explain this amendment because its purpose is to bring to a head an important issue that might otherwise be overlooked.

"The Department of Energy is moving ahead with negotiating U.S. participation in ITER, the international fusion energy project, which is all to the good. I support U.S. participation in ITER, a critical experiment that will help determine, finally, if fusion is a realistic option for energy production. If it is, fusion might go a long way toward solving our looming energy supply shortfall.

"But ITER is expensive. The U.S. contribution is expected to exceed $1 billion. And I want to make sure that before we commit a dime to ITER that we have a consensus on how we will find that money.

"I am very, very tired of the U.S. signing on to international science agreements that we later come to regret. We're then left with the Hobson's choice - the Chairman will excuse the expression - the Hobson's choice of either reneging on our international agreement or funneling money into a project we don't actually need.

"So this time we have a chance to avoid that uncomfortable choice. We have time to ensure that the Administration and the Congress and the fusion science community agree on how we're going to pay for ITER before we sign on the dotted line. And that's exactly what this amendment is designed to guarantee.

"The amendment says, in effect, that we can't finalize an agreement on ITER before March 1 of next year. By then we will have in hand both the proposed ITER agreement and the President's fiscal 2007 budget request. With that information, we should be able to determine if there is a consensus on moving forward.

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"I don't think there is a consensus now. The Department of Energy says that ITER is its top science facility priority, and that other programs, including other fusion programs may have to be cut to fund it. In any event, the domestic fusion program will have to change for ITER to move forward. That makes sense to me.

"But the fusion community and apparently the appropriators seem to be saying that the domestic fusion program has to be held harmless for ITER to move forward. That's simply not realistic, and we cannot move forward with ITER with that presumption. So we need to decide before we commit to ITER whether we're willing to make the necessary sacrifices to pay for it.

"Again, my amendment will give us time to do that, and I look forward to working with everyone concerned to try to reach a consensus. But the U.S. must not finalize an agreement on ITER until we have consensus on how to pay for it - not just an Administration plan - a consensus.

"In the meantime, the site selection and planning process and negotiations on ITER can and should continue. But I will do all I can to prevent the U.S. from entering into an agreement if no one is willing to make the sacrifices necessary to pay for it.

"Moving ahead without consensus will mean either reneging on our agreement or killing other worthy programs within the Office of Science to pay the disproportionate costs of the fusion program. Let's avoid that.

"Again, I look forward to working with Chairman Hobson and everyone concerned with this issue to build a strong and balanced fusion program."

The following is the text of the amendment to the FY 2006 Appropriations Bill, adopted by voice vote in the U. S. House of Representatives on May 25:

"None of the funds made available by this Act may be used before March 1, 2006, to enter into an agreement obligating the United States to contribute funds to ITER, the international burning plasma fusion research project in which the President announced United States participation on January 30, 2003." - House Amendment 200 to H.R. 2419

The amendment was offered by House Science Committee Chair Sherwood Boehlert with the concurrence of House Appropriations Chair David Hobson. House Science Committee staff told Fusion Power Associates that Boehlert is concerned about the lack of agreement between the policy advocated by the Department of Energy, which would fund ITER in part by cutting the domestic fusion program, and that policy advocated by the fusion community, which would require that ITER construction funds not come at the expense of the domestic program. Staff told FPA that Boehlert believes it is "unrealistic" for the fusion community to expect the domestic program "to be held harmless" if ITER goes forward. The March 2006 date was chosen to ensure that Congress has the FY 2007 Presidential request in hand before allowing the Executive Branch to make a financial commitment to ITER.

Before becoming Law, the House Bill must be merged with a corresponding appropriations bill yet to emerge from the Senate. Differences would then be resolved in a House-Senate conference before being sent to the President for signature. Completion of the FY 2006 appropriations process is not expected for several months.

First ITER Full Power Shots Projected for 2021

Assuming initiation of the project in early 2006, ITER (the International Thermonuclear Experimental Reactor) would make first burning (DT) plasma in 2020 (first plasma operation in 2016) and first full power (500 Megawatts thermal) operation in 2021, according to Y. Shimomura, head of the international ITER design team. Shimomura made the projections in a talk to the 7th International Symposium on Fusion Nuclear Technology, May 23-27 in Tokyo. Shimomura acknowledged, however, that the Final Design Report (completed in 2001) was "not sufficiently detailed for call for tender" and said the international design team "has been developing further the design where it was not developed in sufficient detail for call to tender." He said there are still "about 200 design issues" remaining to be resolved. Shimomura's talk is posted at http://fire.pppl.gov/isfnt7_shimomura.ppt

Meanwhile, the May 28 edition of the Daily Yomiuri (posted at http://fire.pppl.gov) reported that they were privy to the details of the agreement on the

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roles of host and non-hosting countries and speculated "The view that the reactor will be hosted in France increasingly has been shared in Japan, even among ruling parties who made efforts to win the ITER bid." They said, "The final decision on the location of ITER is expected to be made during ministerial-level talks among the six nations involved, scheduled to be held late next month (June) in Russia."

According to the paper, the unsuccessful bidder will be given the post of secretary general at ITER headquarters and "ITER-related facilities" will be built in the non-host country. The host country will shoulder 50 percent of the construction and operation costs while the unsuccessful candidate country will bear 10 percent of the costs. The remainder will be funded by the other four participating countries, the paper said. According to the paper, the agreement specifies that the unsuccessful bidder "will house reactor-related facilities, such a a remote experiment facility and a material research laboratory" and will also supply 20 percent of the workers to the main ITER facility. According to the paper, "Senior members of the Liberal Democratic Party's Policy Research Council said they have acknowledged that Rokkashomura is unlikely to win the bid, and that government and ruling parties would soon start coordinating with the intention to concede the ITER site to France."

In his conference talk, Shimomura said "One Party may in time accept the importance, responsibility and benefit of hosting the complementary activities of the broader approach are the same as those of hosting the ITER facility."

Power Plant Study Completed

"A first commercial fusion power plant . . . will be economically acceptable, with major safety and environmental advantages. These models rely on plasma performance marginally better than the design basis for ITER." So concludes a 3-year "Conceptual Study of Commercial Fusion Power Plants," sponsored by the European Commission within the framework of the European Fusion Development Agreement (EFDA). The final report of the study is available for download at http:www.efda.org click on "downloads" and then click on "EFDA Reports."

Around 100 individuals contributed to the study, which was prepared by an 11-member team headed by D. Maisonnier of the EFDA. The report says, "These studies showed that fusion power has very promising potential to provide inherent safety and favourable environmental features, to address global climate change and gain public acceptance. In particular, fusion energy has the potential of becoming a clean, zero-CO2 emission and inexhaustible energy source. The cost of fusion electricity is likely to be comparable with that from other environmentally responsible sources of electricity generation."

The report concludes that "the main thrusts of the European fusion development programme are on the right lines," and recommends a "performance study" for a fusion Demonstration Power Plant. "The time is now ripe for such a study to give guidance to the (fusion) programme," the report says.

Anti-terrorism Device

Princeton University and InSitech, Inc. have signed a licensing agreement for InSitech to commercialize an anti-terrorism device developed by the Princeton Plasma Physics Laboratory (PPPL). PPPL is the site of the largest component of fusion research in the U. S. The device, the Miniature Integrated Nuclear Detection System (MINDS), would have applications in transportation and site security.

MINDS would be used to scan moving vehicles, luggage, cargo vessels, and the like for specific nuclear signatures associated with materials employed in radiological weapons. The system could be employed at workplace entrances, post offices, tollbooths, airports, and commercial shipping ports, as well as in police cruisers, to detect the transportation of unauthorized nuclear materials.

A team of PPPL researchers led by Charles Gentile designed a prototype system and InSitech, through the licensing agreement signed March 28, has certain rights to the commercial development, manufacture, use, and sale of the product.

While InSitech proceeds with commercialization of the product, PPPL will continue to develop the library for MINDS, collecting data for radionuclides. The MINDS system is configured to employ a laptop computer and can also be used with other types of processors for the storage of radionuclide databases.

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For further information, contact:

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Presidential Award

Fusion scientist Hong Qin received the Presidential Early Career Award for Scientists and Engineers at a ceremony in Washington, D.C.on June 13. Qin, a physicist at the U.S. Department of Energy's Princeton Plasma Physics Laboratory (PPPL), was among 58 researchers supported by eight federal departments and agencies who received the award. The Presidential award is the highest honor bestowed by the U.S. government on outstanding scientists and engineers who are beginning their independent careers. Each Presidential award winner received a citation, a plaque, and a commitment for continued funding of their work from their agency for five years. John H. Marburger III, Science Advisor to the President and Director of the Office of Science and Technology Policy, presented the awards.

Qin also received the DOE's Office of Science Early Career Scientist and Engineer Award at a separate ceremony at DOE Headquarters. He was among six from DOE national laboratories to receive the Office of Science honors, as well as the Presidential award.

Both the Presidential and DOE awards cite Qin for his contributions to the physics of high-intensity particle beams, with application to ion-beam (inertial) fusion energy (IFE), and for his work on electromagnetic effects in magnetically confined plasmas, with application to magnetic fusion energy.

After receiving a B.S. and an M.S. in Space Physics from Beijing University in 1990 and 1993, respectively, Qin went on to receive an M.A. and a Ph.D. in Astrophysical Sciences from Princeton University in 1997 and 1998, respectively. He conducted post-doctoral research at PPPL before joining the research staff in 2000. Presently, he is a Research Physicist in PPPL's Theory Department and the Nonlinear Beam Dynamics and Nonneutral Plasma Division.

Symposium to Honor Norman Rostoker, August 22

Fusion pioneer scientist Norman Rostoker will be honored on his 80th birthday at a symposium sponsored by the University of California, Irvine, and Tri Alpha Energy. The symposium will take place August 22 at the Beckman Center of the National Academies of Science and Engineering on the campus of UC Irvine.

Details of the symposium and how to register to attend are posted at
http://fusion.ps.uci.edu:16080/rostoker-symposium

A DVD dedicated to Norman's life and career, including pictures, live messages and wishes from his friends is being produced. Please send your material to OrganizingCommittee@trialphaenergy.com

Norman received his D.Sc. in physics from Carnegie Institute of Technology in 1950. After a stint at the Armour Research Foundation (1953-1956) he joined an outstanding group of privately funded fusion researchers at General Atomics in San Diego (1956-1967) where he became Manager of Fusion and Plasma Physics and a Professor of Physics at the University of California, San Diego. He then became Chairman of the Applied Physics Department at Cornell University. From 1972 to the present time he has been a Professor of Physics at UC Irvine and was chairman of that department, 1973-1976. He was also chair of the Plasma Physics Division of the American Physical Society in 1972 and in 1988 was recipient of its James Clerk Maxwell Prize.

Norman has published countless pioneering papers on fusion and plasma physics and is especially known for his tenacious search for a more economically attractive magnetic fusion confinement configuration.

He can be reached at nrostoke@uci.edu

Meade, Schmidt to Retire

Veteran fusion researchers Dale Meade and John Schmidt will retire from the Princeton Plasma Physics Laboratory (PPPL) July 31. They are among 29 persons taking advantage of a special Voluntary Separation Program announced recently by the laboratory. The program was open to per-

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sons 55 and older with 10 or more years of service at the laboratory. Several other DOE Office of Science laboratories, including the Lawrence Berkeley National Laboratory, are engaged in offering similar incentive programs, stimulated by potential funding cuts in DOE Office of Science programs, as proposed in the President's FY 2006 budget request to Congress.

Three other PPPL physicists, Chio-Zong Cheng, Martha Redi and Gerd Schlling, will also take advantage of the program. They can be reached at:

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dmeade@pppl.gov
mredi@pppl.gov
jschmidt@pppl.gov
gschilling@pppl.gov

Looney, Holland Leave OSTP

Pat Looney and Mike Holland left the White House Office of Science and Technology Policy (OSTP) effective mid June and early July, respectively. For the past several years they have been responsible for setting and overseeing U.S, fusion policy and other science and technology policy issues at OSTP, which is headed by the President's Science Advisor, Jack Marburger. Looney reported directly to Marburger and Holland reported to Looney.

They will be replaced by Michael Salamon, a physicist from NASA and Rob Dimeo from the National Institutes of Science and Technology (NIST), respectively.

Looney will take a post at the Brookhaven National Laboratory and Holland will join the staff of the Committee on Science of the U. S. House of Representatives.

FPA Annual Meeting, Oct 11-12

Fusion Power Associates Annual Meeting and Symposium: Fusion and Energy Policy will be held October 11-12, 2005 at the Capitol Hill Club, 300 First Street SE, Washington, DC. The conference hotel is a block away: Capitol Hill Suites, 200 C Street SE, Registration information is posted at http:fusionpower.org and click on Annual Meeting, Agenda and Registration.

In Memoriam: Vladimir K. Chernyshev

Professor Vladimir K. Chernyshev, a Deputy Scientific Leader at the All-Russian Research Institute of Experimental Physics (VNIIEF) at Sarov (formerly Arzamas-16) died on April 30 after a short illness at the age of 78.

For many years until his recent semi-retirement, Prof. Chernyshev was the head of the Electrophysical Department at VNIIEF, the Russian counterpart of Los Alamos National Laboratory (LANL) and the institute where the first nuclear weapons of the Soviet Union were developed. Joint LANL/VNIIEF experiments conducted under Chernyshev's leadership set a LANL record for the number of deuterium-tritium fusion neutrons produced in a single experiment and a US record for the highest current and highest kinetic energy ever delivered to an imploding liner. Experimental data obtained by the Chernyshev team on fusion plasma formation and on ultrahigh kinetic energy imploding liners for plasma heating to fusion temperatures, combined with theoretical work conducted by Chernyshev's VNIIEF colleagues, rekindled a US interest in an unexplored approach to fusion now known in the US as Magnetized Target Fusion (MTF) and in Russia as MAGO (magnitnoye obzhatiye, i.e., "magnetic compression"). MAGO/MTF is an approach that combines the magnetothermal insulation of magnetic confinement fusion (MCF) with the implosion heating of inertial confinement fusion (ICF) and operates at a fusion plasma density that is the geometric mean of the 10-12 orders of magnitude in density that separates the two more conventional approaches.

For his service to the defense program of the Soviet Union, Chernyshev was a recipient of the Orders of Stalin and Lenin and a recipient of the Stalin, Lenin, and State awards. In 2003, he was awarded the Erwin Marx Award by the Institute of Electrical and Electronic Engineers (IEEE), but the US bureaucracy's failure to issue a visa, even though Chernyshev had held many US visas previously and had spent much time in the US, prevented Chernyshev from traveling to the US to receive the plaque and monetary award.

Condolences may be sent to Chernyshev's family and colleagues at ivanovsky@elph.vniief.ru.

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Calendar

July 25-28 6th International Conference on Numerical Simulation of Plasmas (ICNSP) and 7th Asia Pacific Plasma Theory Conference (APPTC). Nara, Japan. http://www.tcsc.nifs.ac.jp/icnsp/index.html

July 25-Aug 6. 6th International Workshop on Strong Microwaves in Plasmas. St. Petersburg, Russia. http://www.smp.sci_nnov.ru

Aug 21-26 12th International Conference on Emerging Nuclear Energy Systems (ICENES-2005). Brussels. http://www.sckcen.be/sckcen_en/activities/conf/conferences/icenes2005/index.shtml

Aug 22 Norman Rostoker 80th Birthday Symposium. Irvine, CA http://fusion.ps.uci.edu:16080/rostoker-symposium

Sep 4-9 Fourth International Conference on Inertial Fusion Sciences and Applications. Biarritz, France. http://www.celila.u-bordeaux1.fr/ifsa05/

Sep 5-8 Euromat2005: Materials Processing, Properties and Applications. Biarritz, France. http://www.celia.u-bordeaux1.fr/ifsa05/

Sep 5-16 Carolus Magnus Summer School on Plasma and Fusion Physics. Mechelen, The Netherlands. http://www.carolusmagnus.net

Sep 5-30 Autumn College on Plasma Physics: Collective Processes. Trieste, Italy. http://www.ictp.it

Sep 19-24 3rd International Conference on Superstrong Fields in Plasmas. Varenna, Italy. http://www.ispp.it

Sep 26-29 21st IEEE/NPSS Symposium on Fusion Engineering (SOFE2005). Knoxville, Tennessee. http://www.ornl.gov/fed/sofe05

Sep 26-28 11th European Fusion Theory Conference. Aiz-en-Provence. France. http://www/fusion.magnetique.cea.fr/eftc11/index.html

Sep 26-30 5th International Symposium on Applied Science. Hilo Hawaiian Hotel, Hawaii. Contact: kobayasi@jwri.osaka-u.ac.jp

Sep 28-30 10th IAEA Technical Meeteing on H-Mode Physics and Transport Barriers. St. Petersburg, Russia. http://www.ioffe.ru/H-mode_WS-2005/

October 3-11 15th International Stellarator Workshop and IAEA Technical Workshop on Innovative Concepts and Theory of Stellarators. http://www-fusion.ciemat.es/sw2005

October 10-11 International Workshop on Experimental Performance of KTM Tokamak and Research Program. Astan, Kazakhstan. Contact: tanya@ntsc.kz

October 11-12 Fusion Power Associates Annual Meeting and Symposium: Fusion and Energy Policy. Washington, DC. http://fusionpower.org

Oct 16-19 10th International Workshop on Plasma Edge Theory in Fusion Devices. Julich, Germany. http://www.fz-jeulich.de/pet

Oct 24-28 47th APS Division of Plasma Physics Meeting. Denver, Colorado. http://www.aps.org/meet/DPP05

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