

# The Fossil Report

Oak Ridge National Laboratory Fossil Energy Program

May - June 2000

## Energy Technology for the Future...and for the World

### House Committee Reports on FY 2001 Appropriations

On June 1, the House Committee on Appropriations reported on the Interior and Related Agencies Appropriations bill [H.R. 4578] for Fiscal Year 2001 in H. Rept. 106-646.

In its report, the Committee recommends that \$67-million previously appropriated to the Clean Coal Technology Program be deferred to FY 2002. As a result of premature project terminations, the Committee indicated its intention to continue the practice of rescinding excess funds. The Committee has authorized the use of up to \$14-million for the Clean Coal Technology Program in FY 2001.

The Strategic Petroleum Reserve did not fare well in the report. The Committee has

recommended a budget of \$157-million for the operation of the Strategic Petroleum Reserve in FY 2001—\$1.4-million below the FY 2000 level and \$1-million below the Administration's request.

In the FY 2001 appropriations bill, Fossil Energy Research & Development and Energy Conservation have been combined under a new category—Energy Resource, Supply, and Efficiency.

Activities related to solar and renewable energy research and nuclear energy research are included in the Energy and Water Appropriations bill.

The Committee recommends in its report a level of \$1.4-billion

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### Carbon Credits Is Focus of ORNL Activity

Led by [Thomas Klasson](#), ORNL Chemical Technology Division, an old activity has a new focus this year with a goal to examine the potential role of innovative bioprocessing concepts for the mitigation of carbon dioxide.

The activity, formerly with the charter to examine fundamental bioprocessing concepts for fossil energy applications, will assist the National Energy Technology Laboratory in the evaluation of different engineered carbon dioxide sequestration activities.

The work will establish a blueprint for estimating effects of carbon mitigation strategies, based on sequestration method, the

[See Carbon Credits - page 2](#)

### New Horizons

Friday, June 9, marked [Judy Fair](#)'s last day as Fossil Energy Program Office Secretary. Judy has accepted a position in the Office of the Associate Director for Energy and Engineering Sciences.

Judy joined Oak Ridge National Laboratory in April 1991 as Secretary to the Fossil Energy Materials Program Manager and worked in that capacity until July 1997, at which time she assumed her position as Fossil Energy Program Secretary.

Judy will be greatly missed. Her joyful spirit and seemingly endless enthusiasm have been an inspiration, not only to us in the Fossil Energy Program Office, but also to everyone with whom she came in contact.

Please join us in wishing [Judy](#) the very best in her new responsibilities.

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### Methane Hydrate Act Becomes Law

The Methane Hydrate Research and Development Act of 1999 became Public Law No. 106-193 on May 2.

The legislation has as its purpose to "provide the research, identification, assessment, exploration, and development of methane hydrate resources, and for other purposes." Appropriations are authorized for Fiscal Years 2002 through 2005.

*The Fossil Report is published bimonthly for Oak Ridge National Laboratory Fossil Energy Program staff.*

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**Carbon Credits - from page 1**

duration of sequestration cycles, and other variables.

It is now well understood that generating and emitting carbon dioxide carries a price in terms of climate change. This increased awareness has led to a reexamination of the technologies used to produce carbon dioxide and other greenhouse gases.

Policies to address this concern may be the most influential consideration in energy use in the United States in this century.

Even a return to and stabilization at 1990 greenhouse gas emission levels would still lead to a significantly increasing atmospheric concentration of these gases and a great potential for climate and social changes and economic losses.

To address global carbon management, Congress is considering carbon credits, analogous to credits for SO<sub>x</sub> and NO<sub>x</sub>, as a way to reduce carbon dioxide emissions.

The value of a carbon credit depends on the interrelationship between the cost of the reduction activities and the tax or penalty related to the emission.

Although the U.S. presently has no carbon tax, some European countries have imposed carbon taxes. Denmark, for example, has a carbon tax of \$25/ton carbon and Norway, a tax of \$50/ton.

Even in the absence of a carbon tax, however, a systematic evaluation of the relative effects of various carbon mitigation strategies is of significant value.

Work this year will focus on model development.

Activities next fiscal year will address pertinent data for various sequestration scenarios, based on input from other researchers and organizations worldwide.

For more information on this activity, contact [Thomas Klasson](#).

**FY 2001 Budget - from page 1**

lion for energy resource, supply, and efficiency—an increase of \$35.9-million above the FY 2000 appropriations, but \$84.5-million below the Administration’s request for FY 2001.

Highlights of the budget recommendations are shown in the table below.

The Committee stipulated that the \$2-million “provided for materials research in the innovations for existing plants activity are to be used for highly cost-shared applied

materials R&D programs, applicable to both existing and Vision 21 plants, to address critical materials related problems.”

The multi-layer fuel cell program would be continued under the Innovative Concepts activity.

DOE is required to report to Congress by December 15 on potential R&D which could contribute significantly to the reduction of emissions for coal-fired power plants and to increased generation efficiency.

AREA	INCREASE	DECREASE
<b>Central Systems</b>		
<b>Materials research in innovations for existing plants</b>	<b>\$2,000,000</b>	
<b>Super-clean systems for existing plants</b>		<b>\$500,000</b>
<b>Low-emissions boiler systems</b>		<b>\$2,000,000</b>
<b>Advanced turbine systems</b>		<b>\$18,188,000</b>
<b>Distributed Generation and Fuel Cells</b>		
<b>Advanced research</b>	<b>\$1,600,000</b>	
<b>Vision 21/Hybrids</b>	<b>\$9,864,000</b>	
<b>Innovative concepts</b>	<b>\$3,500,000</b>	
<b>Systems Development</b>		<b>\$15,263,000</b>
<b>Greenhouse gas control</b>	<b>\$6,600,000</b>	
<b>Center for Excellence at the National Energy Technology Laboratory</b>	<b>\$2,970,000</b>	
<b>Natural Gas</b>		
<b>Storage technology</b>	<b>\$2,178,000</b>	
<b>Infrastructure technology</b>	<b>\$4,950,000</b>	
<b>Environmental protection</b>		<b>\$597,000</b>
<b>Petroleum</b>		
<b>Ultra-clean fuels initiative</b>	<b>\$10,000,000</b>	
<b>Processing technology for biodesulfurization of diesel fuel</b>		<b>\$3,330,000</b>
<b>Other</b>		
<b>Black Liquor Gasification Program</b>		<b>\$13,500,000</b>
<b>Advanced metallurgical processes</b>	<b>\$225,000</b>	

## Online Privacy Legislation Recommended

On May 19, the [Federal Trade Commission](#) recommended to Congress that it enact new legislation to protect private data and information on commercial Web sites.

The commissioners voted by a margin of 3-2 to ask Congress to mandate that privacy notices be posted on Web sites; to require Web site owners to provide the consumer with options regarding how their private information is to be used; to allow for consumer access to those pieces of personal data collected by Web sites; and to require that Web site operators take necessary steps to ensure the security of personal data collected online.

Results of a survey performed earlier this year revealed that only 42% of 90 of the most popular Web sites adhere to FTC's privacy policies and guidelines.

The FTC has repeatedly held to the position that industry self-regulation was the way to proceed to guarantee consumer privacy.

But, it has become increasingly clear that the industry has not done enough to ensure that personal information provided to Web sites is not further disseminated to the detriment of the consumer.

In view of this changing situation, Robert Pitofsky, Chairman of the FTC, recommended to Congress, in testimony given before the Senate Committee on Commerce, Science and Transportation, that legislation be enacted to maintain reasonable levels of security for personal information provided online.

## ORNL to Provide Support to Oil Spill Workshops

[Bob Shelton](#), Energy Division Director, is heading up a team to provide support to the Department of Energy, in its assistance to the environmental initiatives in the [Black](#)

## Legislation in Committee for Credits for Greenhouse Gas Emissions Reductions

Introduced by Rep. Rick Lazio on July 14, 1999, H.R. 2520 provides legislation to enable the President to enter into agreements to provide regulatory credit for voluntary action to mitigate potential environmental impacts from greenhouse gas emissions.

A greenhouse gas reduction credit will be provided under the terms of this legislation if an organization reduces greenhouse gas emissions or sequesters carbon.

The bill was referred to the House Committee on Commerce on July 14, 1999, and subsequently referred to the Subcommittee on Energy and Power on July 30.

## Upgraded Web Sites a Must-See

Fossil Energy Program researchers are encouraged to visit two recently-upgraded Web sites, sponsored by the Chemical Technology Division, which offer assistance in the areas of chemical separations and processing applications and physicochemical properties measurement.

The [Physical Properties Research Facility](#) is a DOE National User Facility, which addresses a wide range of physicochemical properties measurements over a full range of temperatures and pressures. Data obtained by the facility is used to model processes and to understand fundamental properties in an effort to optimize industrial processes. [Bill Steele](#) is the PPRF Director.

The [Center for Separations and Chemical Processing](#) is involved in conceiving new processes, improving product quality, increasing energy and carbon efficiency, and cost-effectively managing effluents and wastes. [Sharon Robinson](#) and [Tom Schmidt](#) are Co-directors of the Center.

Visit each of these upgraded sites to learn more about the variety of capabilities they offer.

[Sea](#) and [Caspian Sea](#) regions.

Although oil production has taken place in these parts of the world for over a century, the dissolution of the Soviet Union, together with the discovery of significant new oil and gas reserves in the region, has increased attention of the

world on environmental issues surrounding oil production.

Key participants will include oil spill contingency planning and environmental officials from the Black Sea and Caspian Sea coastal states and participants from sponsoring organizations.

**Report Predicts Long-Term Effects of Global Warming**

After four years of study, a report, released on June 12, predicts that the United States will suffer from the effects of global warming into the next century, even if mitigation measures are adopted in the near future.

The report, *Climate Change Impacts on the United States*, is a summary of the work of hundreds of scientists on the subject of global warming and was prepared by a panel comprised of representatives from government, academia, and industry.

As might be expected, the lead culprit in the dire set of predictions put forth by the report is air pollution. And the worst of the offenders is carbon dioxide, generated by the combustion of fossil fuels.

The report stresses that even near-term mitigation measures can not reduce the level of gases already in the atmosphere, leading to the prediction that the world—and the United States in particular—will be affected by climate changes of a negative character well into the next century.

[The Kyoto Protocol](#), an international effort to address ways to reduce climate change and not yet completed, has the objective to reduce the global fossil fuel emissions to 1990 levels by 2010-2012.

The report is the first national assessment of the effect of global warming on the United States. It predicts an average temperature rise over the next century of 5 to 10 degrees Fahrenheit, significantly higher than predicted rises in temperature for the rest of the world—typically 2 to 6.3 degrees Fahrenheit.

After a public comment period, the report will be finalized and presented to Congress and the President in Fall 2000.

**Low-Temperature Fuel Cell Developed**

Researchers in Japan have developed a solid oxide fuel cell that can operate at temperatures as low as 500 C.

The implication of this achievement is that the cell can operate with normal hydrocarbon fuels—methane, for one—without the risk of carbon accumulations which can impair the operation of the cell.

A report of the work can be found in the June 16 issue of [Science](#).

The research team, led by Takashi Hibino at the [National Industrial Research Institute of Nagoya](#), was able to achieve the low temperatures without loss of generation efficiency through the use of special materials which operate at temperatures sufficiently low to deter carbon buildup.

In the United States, the [DOE Solid State Energy Conversion Alliance](#) has the mission to bring low-temperature fuel cell technology to industry, and, with the achievement of that objective, fuel cells which operate on regular hydrocarbon fuels could be a reality within the next 10 years.

**Some Predictions from Climate Change Report**

- More extreme precipitation/evaporation cycles*
- Extensive damage to some ecosystems*
- Increased drought in some regions of the country, with greater probability of floods in other regions*
- Rising sea levels in coastal areas*
- More heat waves*
- Hotter cities, due to increased absorption of heat by buildings and streets*

**Oil & Gas Subprogram Changes**

The Oil & Gas Subprogram of the ORNL Fossil Energy Program is subdivided into Oil & Gas Production and Oil & Gas Environmental Areas.

[Tom Schmidt](#) is the subprogram manager for production-related activities, and [Sharon Robinson](#) is subprogram manager for the environmental activities.

**Coming Soon**

The [Fossil Energy Program Annual Progress Report](#) for the period ending March 2000 is in preparation and will be uploaded to the [Fossil Energy Program Web site](#) in the very near future. The report covers Oak Ridge National Laboratory materials research, environmental analysis support, fuel cells & functional materials

research, bioprocessing, oil & gas production and environmental research, and work supporting the Strategic Petroleum Reserve.

Also in preparation, the [Proceedings of the Fourteenth Annual Conference on Fossil Energy Materials](#) will include the papers and presentations from the conference, held in April 2000. This report will also be uploaded to the Fossil Energy Program Web site.