

“(G) for purposes of this section and sections 202 through 205 only, methane hydrate; and”;

(2) by redesignating paragraph (7) as paragraph (8); and

(3) by inserting after paragraph (6) the following:

“(7) The term ‘methane hydrate’ means—

“(A) a methane clathrate that is in the form of a methane-water ice-like crystalline material and is stable and occurs naturally in deep-ocean and permafrost areas; and

“(B) other natural gas hydrates found in association with deep-ocean and permafrost deposits of methane hydrate.”.

SEC. 5. AUTHORIZATION OF APPROPRIATIONS.

There are authorized to be appropriated to the Secretary of Energy to carry out this Act—

(1) \$5,000,000 for fiscal year 2001;

(2) \$7,500,000 for fiscal year 2002;

(3) \$11,000,000 for fiscal year 2003;

(4) \$12,000,000 for fiscal year 2004; and

(5) \$12,000,000 for fiscal year 2005.

Amounts authorized under this section shall remain available until expended.

SEC. 6. SUNSET.

Section 3 of this Act shall cease to be effective after the end of fiscal year 2005.

SEC. 7. NATIONAL RESEARCH COUNCIL STUDY.

The Secretary shall enter into an agreement with the National Research Council for such council to conduct a study of the progress made under the methane hydrate research and development program implemented pursuant to this Act, and to make recommendations for future methane hydrate research and development needs. The Secretary shall transmit to the Congress, not later than September 30, 2004, a report containing the findings and recommendations of the National Research Council under this section.

SEC. 8. REPORTS AND STUDIES.

The Secretary of Energy shall provide to the Committee on Science of the House of Representatives copies of any report or study that the Department of Energy prepares at the direction of any committee of the Congress.

Mr. MURKOWSKI. Mr. President, we have a number of bills from my Committee on the Calendar that are ready for consideration, but I want to take a moment to say a few words about a bill I think has real potential for addressing the long-term energy needs of our nation. H.R. 1753, the Methane Hydrate Research and Development Act of 2000, would establish a small research program with the potential for a major payoff—energy security for the foreseeable future. Methane hydrates are rigid, ice-like solids of water surrounding a gas molecule, found at low temperatures and high pressures. When melted or depressurized, they release methane, pure natural gas, the same fuel we use to heat our homes and power our economy.

Significant quantities of methane hydrates have been detected all over the world. In the U.S., marine geologists have detected deposits of methane hydrates in deep sea sediments that lie off the coasts of the Carolinas, Louisiana, Texas, California, Oregon, and my home state of Alaska. We've also detected methane hydrates under the permafrost during conventional oil drilling operations in my home state of Alaska. The U.S. Geological Survey estimates that nearly 320,000 trillion

cubic feet of natural gas can be extracted from the methane hydrates found in the U.S. alone. Compare that to our existing reserves of cheap, clean natural gas—1,300 trillion cubic feet—and our annual use of natural gas—just 20 trillion cubic feet per year. Even if we can learn to recover just 1 percent of our methane hydrate reserves, we will more than triple our available natural gas reserves and guarantee a source of cheap, secure and clean energy for the next century and well beyond.

The problem is: we need fundamental research on these hydrates to understand how they form, and how the gas molecule can be released in a way that we can use. Even now, methane hydrates pose hazards to conventional oil and gas recovery. Hydrates determine the stability and strength of the sea floor—when the hydrates are destabilized, the resulting gas release can undermine oil platforms and sink drilling ships. Methane hydrates release 160 volumes of gas for every volume of hydrate—and many existing hydrate formations are very unstable. Even a small disturbance—an unintentional landslide—could release massive quantities of gas. Oil platforms in the Caspian Sea have been destroyed as a result of this kind of accidental release.

Methane hydrates also play a significant role in global climate change. Recent scientific research suggests that abrupt climate changes have occurred in the past as a result of release of methane gas from hydrates. They are an important part of the global carbon cycle, which we must ultimately understand in detail if we want to act responsibly to address the risk of climate change. Since natural gas releases fewer carbon atoms per unit of energy, replacing coal and oil usage with natural gas from methane hydrates also reduces our risk of climate change—some experts estimate we can reduce our carbon dioxide emissions by 20 percent just by fuel substitution alone. We can also learn about carbon sequestration through studying how methane hydrates form—perhaps even replacing methane hydrates used for energy with hydrates using carbon dioxide sequestered from the atmosphere.

All of these things point to the need for a fundamental methane hydrate research program of the kind proposed in this bill. I want to thank my good friends and colleagues on the Energy Committee, Senators AKAKA and CRAIG, for their leadership and recognition of the potential for methane hydrates to satisfy our future energy needs, enable our long-term energy security, and help us responsibly address the risk of climate change. Working with our colleagues in the House, we have been able to develop legislation that would authorize \$45 million in new funding for research in this important area. Anticipating passage of a bill like

this one, the Department of Energy has prepared an excellent multi-year research and development program plan that addresses all of the issues involved—with the goal of safe commercial production of energy from hydrates by 2010.

It is clear that we are not doing enough to explore the possibility of this exciting new energy source. Other nations of the world—Japan, Canada, India, Korea and Norway—are starting ambitious research programs. The Japanese began a drilling project of their own in November 1999, and expect that production can begin within 10 years, maybe sooner. The technology exists—Syntroleum, an Oklahoma company—has recently acquired a patent for a gas hydrate recovery system. All we need now is the sustained research to make it commercially viable.

For those reasons, Mr. President, I am glad that my colleagues here in the Senate will agree to pass the bill in the form passed by the House two weeks ago, so we can send it to the President for signature and get going on this important research program. Thanks to the leadership of Senators AKAKA and CRAIG, we may look back years from now on this day as the day we broke free of our dependence on foreign oil and guaranteed ourselves a clean energy source for many years to come.

Mr. SESSIONS. Mr. President, I ask unanimous consent the Senate agree to the amendment of the House to the Senate amendment.

The PRESIDING OFFICER. Without objection, it is so ordered.

THE CALENDAR

Mr. SESSIONS. Mr. President, I ask unanimous consent that the Senate now proceed to consideration en bloc of the following Energy Committee matters:

S. 1705, Calendar 492;

S. 1727, Calendar 493;

S. 1836, Calendar 495;

S. 1849, Calendar 496;

S. 1910, Calendar 498;

H.R. 1615, Calendar 499;

H.R. 3063, Calendar 500;

S. 1778, Calendar 508.

The PRESIDING OFFICER. Without objection, it is so ordered.

Mr. SESSIONS. Mr. President, I ask unanimous consent that any committee amendments, where applicable, be agreed to, with the exception of S. 1727, which should be withdrawn, and a substitute amendment to S. 1727, which is at the desk, be agreed to, the bills be read three times and passed, as amended, if amended, any title amendments be agreed to, the motions to reconsider be laid upon the table, and that any statements related to any of these bills be printed in the RECORD, with the above occurring en bloc.

The PRESIDING OFFICER. Without objection, it is so ordered.