The President's private accounts pose a serious threat to the future economic security of all Americans. Private accounts would cut Social Security's funding, weaken the program, and make its financial problems worse, not better. Federal Reserve Chairman Alan Greenspan told Congress that private accounts would do absolutely nothing to improve Social Security's solvency. The government would have to borrow nearly $5 trillion over 20 years to fund private accounts. That would increase interest rates, harm our economy, and lead to large tax increases.

Democrats want to work with President Bush to strengthen Social Security for the long term, but we need to get it right. Clearly, women are disadvantaged when facing retirement. They are paid less and work fewer years than men, on average. Any reform that is enacted must keep the safety net intact. Our mothers, our daughters, and our granddaughters are counting on us.

REPORT ON RESOLUTION PROVIDING FOR CONSIDERATION OF H.R. 2360, DEPARTMENT OF HOMELAND SECURITY APPROPRIATIONS ACT, 2006

Mr. SESSIONS, from the Committee on Rules, submitted a privileged report (Rept. No. 109–83) on the resolution (H. Res. 278) providing for consideration of the bill (H.R. 2360) making appropriations for the Department of Homeland Security for the fiscal year ending September 30, 2006, and for other purposes, which was referred to the House Calendar and ordered to be printed.

A SCIENTIFIC PERSPECTIVE ON ENERGY

The SPEAKER pro tempore (Mr. KUHL of New York). Under the Speaker's announced policy of January 4, 2005, the gentleman from Michigan (Mr. EHLERS) is recognized for 60 minutes as the designee of the majority leader.

Mr. EHLERS. Mr. Speaker, it is a pleasure to rise again to address a topic of immediate and great importance to our Nation. I will be joined this evening in this discussion by my fellow scientist, the gentleman from Maryland (Mr. BARTLETT). He is in the life sciences primarily, although he has done work in the physical sciences. I am a physicist by training, a nuclear physicist to be more precise, and we hope to give a scientific perspective on the issue of energy.

There are a number of topics I wish to discuss relating to this, but let me first say that as scientists we have a unique perspective on energy, because we have had to deal with it in both a theoretical and a pragmatic way. As a result of this, and our scientific training and analysis, and graphing, we developed a perspective which I believe is accurate, but which is not widely held, except by a few far-seeing energy companies and energy analysts.

And I would also like to mention, if I may, that we covered much of this material last week, and I apologize to my colleagues for repeating it, but I have received a lot of questions and comments regarding the comments we made, and I felt in order to review it appropriately we would have to cover all of the material, but in a somewhat more cursory fashion. In addition, this evening we are going to add another dimension to the topic, and that is to discuss its relevance for national and economic security. So I hope that those who have listened to and seen the presentation last week will enjoy this one, again, because it will be somewhat modified.

The first point I would like to make about energy is that it is unique. Energy is unique, and unique means there is nothing else like it. That is very true about energy. Let me describe two, just two factors about energy that demonstrate this.

First of all, energy is our most basic natural resource. Why? Because without it, we cannot use our other natural resources. Just think about any natural resource you might wish to use, whether it is copper or iron or some other natural resource. Suppose you want to use some copper, you want to do some plumbing in your house or you want to run some copper wires through your house. Where do you get the copper? You have to dig copper ore out of the ground. It takes energy to do that. Once you get the copper out of the ground, you have to process it. You have to smelt it or use some similar process for that to purify the copper. That takes energy. Then you have to transport it to the fabrication plant. If you are going to use copper for plumbing, then you have to transport it to a plant that can convert it to tubing. It takes energy to transport it to the plant, and then it takes energy to manufacture the tubing from the copper. And when you finally finish, it takes energy to transport the copper to the store near your home, and it takes energy for you and your car to drive down and buy it and drive it back home, and finally, you install the copper. Every single step of the way of using that natural resource, that copper, involved the use of energy, and that is why I say energy is our most basic natural resource, because without it we cannot access and use our other natural resources.

The second unique aspect to energy as a resource is that it is a nonrecyclable resource. Once you use it, it is gone. Now, that is not true of copper. You use copper tubing, and eventually the house may be demolished, you can save the copper and recycle it and use it over and over. The same with iron. The same with many other natural resources. But with energy, it is different. The laws of thermodynamics are very explicit and the laws of thermodynamics are laws of physics that have been known for over a century, well over a century, and there have been no violations observed to those laws. These are laws of nature governing our creation.

One aspect of that energy is it is a nonrecyclable resource. Once you use it, it is gone. You put a tank full of gasoline into your car, you drive your car around, and a week later it is all gone. There is nothing left to recycle. It is energy that has been converted into kinetic energy of motion into friction, and eventually all of it gets converted into heat and radiates out into space.

Now, an important side effect of this, of our dependence on energy as being the most basic natural resource and something we cannot recycle, is that the price of energy affects our economy more than the price of almost any other resource. So when the price of gasoline goes up, it has a dramatic affect on us, but even more than that, and an even more dramatic affect, is the price of energy affects the cost of manufacturing something, the cost of digging it out of the ground. So when the price of energy goes up, the cost of living goes up because the price of almost everything goes up.

Let us take a look at something else about energy, another aspect. Energy appears to be intangible. You cannot really detect energy very well with your senses, and energy has many, many different forms. But you cannot touch it, see it, feel it, smell it, or taste it, except for light and heat; those are pretty obvious to our senses of seeing and the sense of feeling something hot. But energy is largely intangible. And, for most people, the only tangible aspect of energy is the price at the gas pump and the utility bill at the end of the month, and that is how you tell when you have used energy and how much you have used.

Now, it is different for scientists. The gentleman from Maryland (Mr. BARTLETT) and I recognize the nature of energy because we have worked with it so much. To us energy is very tangible and we can develop a sense of feeling for energy and when it is being used, but for most people it is not. That leads me to a comment that I made a number of times: I wish energy were purple. I really wish energy were purple, because if energy were purple we could see it, we could all see it. We could see when it is being used, when it is being wasted. And if in the middle of winter you drive up to your house and you look at your house and see purple oozing through the walls, you say, I better get better insulation in this house. Or you see rivulets of purple running from your windows and doors, you say, I have to tighten up those windows and doors. I cannot have all that money being wasted in energy. But we cannot see it, so we do not know it. If energy were purple, we would see how cars use it when they go by us on the freeway, we would see it around us in many different ways, and we would certainly treat it more carefully and certainly try to save more money by saving more energy.

Something else about energy I have pointed out before is how important it

is, that energy actually, as its very base, affects civilization. And by proof of that statement, I just offer two things. The reason it does affect civilization, by the way, is because energy represents the ability to do work. That is the actual definition in physics, and that relates to some of the ways that we use energy in everyday language. Have you ever gotten up in the morning and said, boy, I am full of energy today. I cannot wait to get out there and chop some wood. Or other mornings you wake up and you say, oh, I am so tired, I do not have any energy today; I do not think I can do anything. That is reflecting this statement.

Now, how does energy affect civilization? As I said, I give two examples. The first is use of nonhuman energy; in other words, the use of domesticated animals led to the agricultural revolution. People tried agriculture before the agricultural revolution took hold. It did not work. But once they developed a way to use nonhuman energy, they had animals pulling the plows, then it worked, because there was enough more energy added to the mix so that it actually helped advance the agricultural revolution and changed civilization.

Thousands of years later, we developed another use of energy, the first use of nonanimal energy. We turned away from domestic animals and we started developing engines, motors, tractors, things that could do work for us, and we ran those by using fossil fuels, first coal and then petroleum, oil, and natural gas. And that led to the industrial revolution, the second major revolution that historians talk about.

□ 2030

So energy has a dramatic effect on civilization. Now, how do we deal with energy use? And I have been amazed at the number of comments and telephone calls that I have received since we have put this on the board last week and talked about it, people who are intrigued by this as a very useful model.

And let me talk about this. Let us just look at the left-hand side first. We will talk about income savings and inheritance. Now, these terms are all familiar to everyone. Most of us try to get a job so that we have some income. This is the way we handle our money. We try to live within our means, within our income.

We also try to build up the savings account for special occasions, special events, saving money towards a car or a refrigerator, washing machine. And then some of us are fortunate enough to get an inheritance. So that is the way we handle our money.

Now, a model for responsible energy use is to look at energy in the same way. We have an income of energy on this planet. Where does it come from? Most of it comes from the sun. We have what is called solar energy which has many different forms. We receive it mostly as light from the sun. And it takes 8 minutes to get here from the sun.

But the sun produces vast amounts of energy. And so we have a lot of solar energy impinging on the Earth at all times. That energy, a lot of it, goes into growing plants. We refer to that as biomass. And we take these plants, and we can burn that to extract energy from it.

Solar energy through differential heating of the atmosphere creates wind. And we can tap into wind energy. That is another way of using solar energy. Hydropower. Building big dams and backing up the water behind them, and having them turn the turbines so we generate the electricity. That again is solar energy. The sun's energy evaporating the water from the oceans and the lakes gets into the atmosphere, it rains down on the Earth behind the dams, and the water shed, we get to collect it behind the dams. So that is another way of using solar energy.

Wave energy. Waves are generated by the winds, which are generated by the sun's energy. So another way to tap solar energy. And, finally, tidal energy, which comes from the tides, which are generated by the motion of the Moon.

Now, all of those are sources of income for our energy mix. And if we are wise, we will try to live within our energy income, just as we try to have our families live within our personal income. So that is the best use of energy, try to use our income energy.

What about the savings? What does that represent? Well, first of all, in wood, solar energy helps grow the trees. The trees become very large. There is a lot of energy there. We can burn the wood as the people in this planet did for many millennia. But also there are other savings accounts we have below the surface.

Coal, oil, natural gas, all of them are captured solar energy. Energy that grows plants, the plants died, they decayed. And in the process of decaying, they are transformed into other chemicals. But they still return energy from the sun. And so we have a savings account on the surface of the Earth; we have the wood.

Underneath the Earth, underneath the surface we have coal, oil, natural gas. And this is over-simplified. I can name other examples.

Finally, an inheritance. These came with the Earth. As the Earth was created, it was very hot. Hot body. And a lot of that heat is still there underneath the surface of the Earth. In fact, the center of the Earth is molten iron. So it has a lot of heat there. And we could tap that inheritance, if we wish.

Also nuclear energy. That was there from the beginning of the Earth, and through radioactive decay. It has changed over the years. Nevertheless there is still a lot of nuclear energy available to us if we mine appropriate ores and use it properly.

So income, savings, inheritance. We should live within our income. We should use our savings only for emergencies, and inheritance, tap into that when we need it; but if you have a good inheritance, you can tap into it for quite a while. The savings is where we are exceeding our quota; and my colleague, the gentleman from Maryland (Mr. BARTLETT) will talk about that a bit later, and particularly the fact that we have finite resources of coal and natural gas and we should be quite careful in how we use those resources because there are not that many.

I am not saying we should not use them; but the point is, if we use them, we should use them to help develop other energy sources so that our children and grandchildren will have energy available for use.

Now, let me add something else that is of extreme importance on this issue. And these are quotes that are taken from the document prepared by the Energy Future Coalition and contained in a letter addressed to President Bush from representatives of this Energy Future Coalition. I cannot list all of the names corresponding to this, but Frank Gaffney was a leader in this, and James Woolsey, former Director of the CIA, certainly someone who knows about security, C. Boyden Gray, Robert McFarlane, and many others signed this document, including a number of our military people.

And I bring this forward because too many people in America have this idea somehow that conserving energy, using energy carefully, living within your income is some fuzzy-headed liberal idea. I am only pointing out here it is a national security issue as well, and we have got some very conservative individuals and military people who are signing and saying, well, the policy we are pursuing is not a good one.

First quote: ''U.S. dependence on foreign petroleum poses a serious risk to our national and homeland security as well as our economic well-being.'' Why is that? Because if it is from foreign countries, first of all, we have to buy it. That contributes to an economic problem, namely, our deficit, a trade deficit.

But, secondly, much of the money is going to people who really are not that friendly to us, and, in fact, some are downright enemies. So dependence on foreign petroleum poses a serious risk to our national and homeland security.

Another quote from the document: ''Some foreign interests have used oil revenues to purchase destabilizing weapons or to support terrorism.'' Where do you think Osama bin Laden got the money that he used to attack New York, destroy the Twin Towers and kill 3,000 Americans? It was not his personal fortune, although that also came from oil; but it came from many, many of the dollars that we sent overseas to buy oil.

And it really irritates me. It burns me up that our Nation is sending money abroad to people who are using it to, in turn, attack us. I would also say the same, incidentally, about the

drug trade, because much of the drug money has been used also in the war on terror against us.

Two other quotes in the document from the Energy Future Coalition, and the letter addressed to the President: ''We must act now. Technologies exist today that can improve efficiency and produce clean domestic petroleum substitutes.'' There is no question about that. But they need some development money to really get going.

And some of these technologies are, for example, improved nuclear reactors. They will be safer and operate more efficiently. No green-house gases produced. We can do a much better job with that, but also with photovoltaics.

I have a report here which appeared in the American Physical Society News in April, about photovoltaics, so-called solar cells, which are now becoming very efficient and very soon will reach the point where they can be used, for example, as shingles on houses.

So on a house, you cannot only put shingles on your house to protect it from the rain, but also to generate electricity, to operate your appliances, your lights and everything inside the house.

Another important point from the Energy Future Coalition, and that is that the cost of action is far smaller than the risk of inaction. And there is no excuse for further delay. I totally agree with the comments in their letter; and I hope that we can, as a Nation, act on this, these ideas, and not only improve our energy future but also improve our national security.

Well, basically, I have been talking about energy because I hope this will help all of my colleagues and our Nation to appreciate energy. My hope is that a better understanding of energy will lead to a wiser use of it by our citizens.

Mr. Speaker, at this point, I am pleased to turn it over to my colleague, the gentleman from Maryland (Mr. BARTLETT); and he will talk, as I said earlier, about petroleum reserves and what we are doing with our petroleum, and how we are using it so rapidly that the price is going up, as we know every time we go to the gas station, and it is going to get worse and worse until we take appropriate action.

I am pleased to yield to the gentleman from Maryland (Mr. BARTLETT).

Mr. BARTLETT of Maryland. Mr. Speaker, the data that led these 30 people you mentioned, Jim Woolsey and Frank Gaffney, and there were about a dozen admirals and generals, and several retired heads of agencies in the government that signed that letter, these were really thought leaders in the country.

And the data that they quoted that led them to write that letter is what is on the board here. We have only 2 percent of the world's oil reserves. But we use 25 percent of the world's oil. And let me digress for just a moment. I have not been enthusiastic about drilling in ANWR, because if you have only 2 percent of the known reserves of oil in the world, and if ANWR is a part of that 2 percent, I am having some trouble understanding why it is a good idea to use that 2 percent up as quickly as possible.

Certainly we need oil, but we will need it in the future if our economy continues to grow even more than we need it now. So I think we need to reflect a bit on whether it is a good idea to exploit that resource now.

We import about two-thirds of the oil we use. And the gentleman from Michigan (Mr. EHLERS) said that is just going down hill from the direction we ought to be going, because during the Arab oil embargo, we imported only about a third of the oil that we used, and you may remember then the long lines at the service stations and a few fights over it, I think a death or two.

And you may remember that gas guzzling cars, you could hardly give them away. And now when we are importing two-thirds of our oil rather than a third of our oil, suddenly SUVs and pickup trucks represent more than half of the personal vehicles sold in the country.

So these 30 world and United States leaders who wrote this letter referred to this data. They said, Mr. President, this is an unacceptable national security risk. We cannot be using 25 percent of the world's oil, have only 2 percent of the reserves, and import two-thirds of what we use from other countries without having a big unacceptable national security risk.

And they noted, and the President agreed, because I have heard him say it more than once, that much of that oil we imported comes from countries that do not even like us very much.

This is indeed a big national security concern. Two other bullets on the chart point out some relevant factors that we need to be concerned with. First of all, the bullet here that says we are 5 percent, we are a bit less than that, actually about 1 percent out of 22 in the world, less than 5 percent of the world's population, and having only 2 percent of the known reserves, and using 25 percent of the world's oil, two-thirds of it coming to us from other countries, much of it from across the seas.

If those shipping lanes were interrupted or if there was some impediment to the flow of oil through some choke points in the world, we really could have an economy at risk.

One other thing that I wanted to denote, and that is from this little 2 percent of the reserves that we have, we are producing 8 percent of the world's oil. We are pretty good at pumping oil. That is both good news and bad news. It is good news in that we are importing only two-thirds of what we use. If we were not so good at sucking that oil out of the ground, we would be importing more than two-thirds of what we use.

The bad news is that it is going to be gone sooner doing that. And the more efficient we become at pumping these reserves the more quickly they will be exhausted.

□ 2045

The Chinese recognize that we are pretty good at this, and as the next chart shows here, they have been scouring the world for oil. And they were in our country a week or two ago and what they were doing is talking with our technical people, how do you could it? How do you get that oil out of the ground from these wells that were nearly exhausted?

This chart shows the world, and by the way, this green here for Russia should come around the other side because that is Russia there right next to Alaska. Russia spans 11 time zones. They are now a major oil exporter.

One of the few countries that probably has several years before they peak in their, they have peaked but that peak is being stretched out because of very poor performance when the Soviet Union was disintegrating. So they have a ways to go before they are on the steep down slope of a curve that we are going to talk about in a minute. But what this shows is all of the places in the world that they have gone to and secured contracts, and in some places bought assets to make sure that they have access to the world's oil.

They are in our backyard. They have contracts in Canada. They have contracts in Colombia, in Venezuela, in Brazil, in Argentina, in Africa, several in the Middle East. They are now meeting with Russia to build a very large pipeline from the Sakhalin Island region, the Russian far east to get oil down to China and perhaps on down to the Korean Peninsula.

China's economy is growing very rapidly, 10 percent last year, about the same the year before. They increased their oil imports last year about 25 percent. I have a set of exponential curves that we will show in a moment that show what those growth rates mean, but we are focusing on energy this evening with particular reference to national security. And China recognizes their dependence on oil, not only are they scouring the world for oil, they have noted that they are dependent on the shipping lanes to get their oil. And they are now aggressively building a blue water navy.

There is no other country other than the United States that has a blue water navy. By that I mean a Navy that patrols the seven seas, that controls access to those shipping lanes.

A couple of years ago, one of the senior members of the Pentagon sent some interrogators to China and India to ask people, men on the street, up and down, from the workers up to the leaders of the country, questions about oil and what they saw as China's future. And they were surprised that most of the people they talked to in China recognized the dependence that China had on oil and recognized how vulnerable they were to disruption of that and how essential it was for them to develop the

capability so that they would have some assurance that they would continue to have oil in the future.

India is also growing rapidly. The next chart I want to show you is the one that brought us here. It is knowledge that we have had for half a century now, actually just about half a century, and this is a chart that was developed by a scientist called M. King Hubbert who worked for the Shell Oil Company. And he was observing the production of oil from oil fields in the United States and he was observing the exhaustion of those oil fields, and he noted that they all follow a bell curve way was not too surprising.

There are many things that follow a bell curve. How tall we are, how long we live. Most things in our world, the most of the data, most of the individuals, most of the length, most of the heights fall in a fairly narrow range in the future, but there are some that were very much less and some that were very much more and we call this a bell curve.

M. King Hubbert rationalized that if he added up all the individual bell curves in the country that he could predict when we would reach that peak. And he noted that when we reach the peak in these individual fields that about half of the oil had been exhausted.

Now, it is reasonable that the first half of the oil is going to be easier to get than the last half and it takes more and more energy to get the last part of the oil and it comes with more difficulty and so you cannot pull it out of the ground as fast. After observing this for a number of years, he made a prediction in 1956 that the United States would peak in oil production in the early seventies. As a matter of fact, it was 1970 that we peaked in oil production, and this smooth green curve here is his prediction. The more ragged green curve, the actual data points show how close to the predicted curve the data points fell.

It did peak in 1970 and we are now sliding down Hubbert Peak. As a matter of fact, we now are producing only about half as much oil as we produced in 1970, when we were self-sufficient in oil. The red curve here shows a similar Hubbert's Peak curve for the Soviet Union, Russia. It was the Soviet Union early on. Now it is Russia. You see how poorly they performed and how they deviated from the projected curve with the collapse of the Soviet Union. They now are getting their act together and they will have a second little peak here. This is larger, the peak back here is higher than the second peak will be.

Most other countries have a single peak and several of them have already peaked in oil production. The little blue line here that does not show up very well on this chart shows what happened with ANWR. And the next chart that shows all of the places that we get oil from in our country. I am sorry. I said ANWR. I am thinking Alaska. This is Prudhoe Bay. Two places in Alaska, one we are getting oil from. That is Prudhoe Bay, and one we could get oil from if we drill there, which is ANWR.

This chart shows the contributions of Texas and the rest of the United States and this is liquids here. And notice what Prudhoe Bay did. We already reached our peak, and we are starting to slide down the peak, and there is a little blip as we slide down that peak from Prudhoe Bay. About a fourth of our oil production in our country comes from Prudhoe Bay. We are now reaching the end of the production from that field.

I am sure all of you can remember a little bit after that there was a lot of optimism because of what was supposed to be a major oil find in the Gulf of Mexico. That is this yellow. That is all it amounted to. We are still sliding down Hubbert's Peak. This did not stop the slide down Hubbert's Peak.

I would like to again mention ANWR. Mr. Speaker, you may be supportive of drilling in ANWR or you may not be supportive of drilling in ANWR, but the reality is that it will not make much difference whether we drill or not in ANWR. That will not come on line until maybe as much as 10 years, certainly not before 5 years. And when it comes on line, it is almost certainly going to be less than Prudhoe Bay was, and you see the fairly small contribution that Prudhoe Bay made.

Drilling in ANWR will not solve our oil problems, which is another concern about drilling there because if it gives people the illusion that we have solved our oil problem then we will have done a great disservice.

The next chart shows a generic curve and this is one that we really need to focus on. It shows a 2 percent rise. Let me show you this one next because this one shows some exponential curves and most people do not really understand the exponential function.

The story is told of the ancient kingdom in which one of its citizens invented the game of chess. It was very popular and the king was very pleased and he told his subject that I would like to reward you for what you have done. Anything which is reasonable I will give you for your contribution to our society.

And the inventor of the chess board said, I am a simple man with simple needs. And if you will simply take my chess board and put one grain of wheat on the first square and two grains of wheat on the second square and four grains of wheat on the third square and eight on the fourth square and just keep doubling the wheat until you have covered all the squares on my chess board, that will be adequate compensation for my contribution.

Well, the king was elated. How simple. All he wants is one grain of wheat and double it for each one after that. What he did not know was of course that there was no way that he could comply with that wish. My understanding is that that would represent more wheat than is grown in the last 4 years in all of the world.

This is the exponential function.

Albert Einstein was asked about the next great energy source in the world after nuclear. What will be next, Dr. Einstein? And he said the most powerful force of the universe is the force of compound interest.

So here we see some curves where you have compound growth. The lower curve here is a 2 percent growth. This 2 percent growth rate represents the rate about the rate at which we have been growing.

Now, some people think you can represent a 2 percent growth with a straight line. But if that is what you project, then each year you have a lesser percentage growth rate than the year before. All of us who have interest in the bank and it is compounded know that what you get at the end of the year is more than the simple interest rate because you get interest on interest if it is compounded. Sometimes it is compounded almost instantaneously by computers. Sometimes it is compounded every month.

But when it is compounded, instead of having this lower flat curve, the 2 percent growth rate follows the second curve. In just a moment we will show you a generic curve that shows how that relates to where we are now.

This next growth rate is 4 percent growth, and this first dotted line here is 5 percent growth. And what I really want to focus on is this steep line here, and that is 10 percent growth and that is the way China has been growing.

Now, at 10 percent growth it doubles in 7 years. That means it is four times bigger in 14 years. That means it is eight times bigger in 21 years. Now, I think that it is unlikely that China will continue this 10 percent growth rate for 21 years. But if they did, they would be using eight times the energy that they are using today.

Where will they find that energy?

I would like to look at a couple of recognitions in news weeklies and they are fairly recent. This one is U.S. News and World Report. It is May 16. This is the last one. And I have here Time Magazine and I think May 9, so these are very current.

I think it is significant that two of our major news weeklies are focusing on the energy problem, particularly the oil and gas part of the energy problem.

The article in U.S. News and World Report is about Exxon Mobil. This is really a giant. ''In the past year the corporate titan began pumping oil and natural gas from eight major new fields, including challenging projects in the deep water off Angola's coast, the icy depths of the North Sea, and the tough terrain of landlocked Chad.'' Yet Exxon's production continued to slip in spite of these new fields. Even these significant additions could not make up for the inexorable decline of the company's fast mature fields around the world.

Then the article goes on to note, ''The company's production eroded nearly 5 percent in the first quarter.''

By the way, in spite of this spectacular production of oil their stocks fell and they have enormous profits. Their stocks fell because they did not reach the expectations and that was because the company's production eroded nearly 5 percent in the first quarter, a rate that surprised analysts and caused Exxon to miss earning projections and therefore their stock fell.

It says here that Exxon has shown ''little concern about its reserves, even though by the government's accounting method it replaced only 83 percent of the reserves it depleted last year.''

They did pretty well because worldwide we are pumping about six barrels of every new barrel of oil that we find.

□ 2100

In a few moments, we will show you a chart which shows that the major oil discoveries from which we are pumping today occurred roughly 30, 40 years ago.

From a national security perspective, which is what we are focussing on relative to energy this evening, this phenomenal growth in China has to be a major concern. Where will they get that oil?

The next curve, the generic curve, shows what is probably the situation today or will shortly be in the near future. Notice that the past bell curves were pretty steep, and you can make them as high and steep as you want. You simply change the abscissas and the ordinate.

This is a 2 percent growth curve, and M.K. Hubbert predicted that the world would peak in its oil production about the turn of the millennium. That was delayed a little because he could not have known of the Arab oil embargo and the oil price hikes and the worldwide recession that occurred. Because of that, we reduced the consumption of oil, and there are now many people who believe that oil may be peaking in the world today.

As a matter of fact, yesterday there was what I think to be a fairly significant book that came out, written by the CEO of the largest energy investment bank in the world, Matt Simmons, and the title of the book is ''Twilight in the Desert.'' The content of the book addresses Saudi Arabia and production of oil there. He believes that Saudi Arabia has probably peaked in their oil production. My colleagues may have noticed that a couple of weeks ago when the Saudi oil prince was here that he did not promise the President that they would increase oil production. That may be the right verb. It may very well be that he could not promise the President that they would increase oil production because many people believe that they cannot increase oil production.

This is just that little leisurely 2 percent growth curve. China is growing very much more rapidly you will remember. By the way, when this doubles, which goes from about here to here, that represents 35 years. So you get some idea of the scale here because a 2 percent growth rate doubles in about 35 years.

So you see that the real problem begins not when you reach peak oil, but it begins when you are nearing the peak, and the increase in production shows that it cannot keep pace with the increasing growth of demand. There is some belief that the peak production may, as a matter of fact, be several years off in the future. The latest I have heard is 2037. Even if it was 2037, it is really quite past time that we should have been addressing this.

Mr. EHLERS. Mr. Speaker, if I may reclaim the time for just a moment, I want to explain something that I discover often confuses individuals, and that is, when you reach the peak, they say, well, we have only used half of it, but the problem is that showed beautifully in that chart there, we are already in a habit of using so much oil, and it is going up yet. So even though we only used half, the demand is going to be so high, and as we go over the peak, production decreases, the oil becomes more expensive to retrieve because we may be tapping tar sands or shales at some point there. So you have double effect. It is going to be more expensive to find and produce, but at the same time, the demand keeps increasing. The demand versus supply gets worse, and so the price, of course, goes up and the wealthiest people can buy it.

To contrast that, we are talking a bit about solar energy. The best estimate we have at the moment is that the sun will probably continue for roughly 1 billion years, producing just as much energy as it is producing today. After that time, we have to start worrying. That is quite a contrast with the short-time scales here, and I find that much of the difficulty that we have is that most people have very short time horizons. If they have got enough for next week or next year, everything is fine.

This is a case where I think we have a particular responsibility, as the leaders of the Nation to recognize the long-time scale problems that are involved and change course so that we do not enter this catastrophic period where we are getting reduced production and increased demand. Prices are going to go skyrocketing. We will have at least a recession, probably a depression at that point, and so I think it is incumbent upon the Congress to recognize the situation we are in and take action now so to avoid disaster later.

With that, I will be happy to yield back to the gentleman from Maryland (Mr. BARTLETT).

Mr. BARTLETT of Maryland. Mr. Speaker, I thank the gentleman for yielding to me again and thank him for that clarification. He is right.

At the top of Hubbert's peak, still about half the oil remains, and the problem is that it is not that we are going to run out of oil. What we have run out of is high quality, readily available, cheap oil, and when the world's demand for oil keeps increasing along this curve, and the production of oil is the blue curve, then you see there is an ever increasing discrepancy between what we would like to burn and what there is to use.

The real question is: What will the world do; what will we do; what will China do; what will Russia do; what will the world do when it is recognized that, in fact, there will be no increased production of oil? The Third World is trying to industrialize. India and China are rapidly increasing their economies and using more and more energy, and by the way, not very efficiently.

One of the things that we might very well do to help ourselves in the end, and everybody, is to show them how to use energy more efficiently. Not only do we use 25 percent of the world's energy, we use it pretty efficiently. You might question, do we really need to use that much energy? We have a chart which we will show a little later that shows that people in California use only 60 percent of the energy of the rest of us in the country, and it would be hard to argue with California that they do not have a quality of life equivalent to ours. So you can use less energy.

I promised a slide, and the next one shows when we found this oil. It shows how long it is between when you find the oil and when you pump it. Of course, we might have pumped it a little sooner, because you are not going to pump oil that people are not demanding, and the world's economy grew. There were enough resources there in the oil in the ground that we could pump it out, but this shows when the peak occurred. This is worldwide. It shows that the peak occurred way back in the 1960s, well before 1970, and now we are peaking in production out here about 2000. So you see it is roughly 30, 40 years after the peak discoveries that we are peaking in the production of oil.

The next chart is a very interesting one, and it shows that drilling more will not necessarily get you more oil. By the way, even the oil companies now have fabulous profits, and ExxonMobil has billions of dollars in reserves. Their turnover is greater than most of the countries in the world. Why are they not out drilling for more oil? It is probably because they recognize what this little chart shows, and this shows what happens to oil drilling with the Reagan administration.

Remember, Hubbert's Peak peaked in 1970. By 1980, when Reagan came to office, we are already sliding down Hubbert's Peak, and that administration recognized that we were producing less oil. Their solution to that was to give the oil companies an incentive to go out and drill more. This yellow line here represents the number of wells drilled, and notice, there is a big spike

just after 1980 when they came in. They drilled a lot more wells but look what happened.

The green here represents the additional finds, as compared to the oil that we are pumping, and except for this one little brief green blip, there is just nothing but red after they started drilling for oil and kept on drilling for oil. Notice where it is now. It is way down. They recognize that there is not much return for aggressive drilling of oil, and so none of the major oil companies now are aggressively drilling for oil.

I mentioned the articles in these two magazines, and both of them reflect the reality that we really do have a national security implication here. This is the May 9 of this year Time magazine, and it has a good article that has questions and answers, and it makes it easy to read that way.

Is the world running out of oil? And the answer is, no, half the oil is left. That is not the problem. The problem is that you cannot get it out fast enough to meet the demands of our growing economies.

So cheap oil is now just part of history? And their answer is, yes, it is going to be expensive from now on.

Mr. Speaker, I appreciate very much the time that the gentleman from Michigan (Mr. EHLERS) yielded me.

Mr. EHLERS. Mr. Speaker, I thank the gentleman from Maryland (Mr. BARTLETT), and I am pleased to reclaim the time. I would like to make a few additional points and see if he has any additional comments.

One thing we have not discussed tonight, which I think is very, very important, is to ask what is the highest and best use of the energy resources we have. Take, for example, natural gas, which many in this country use to heat their homes.

I live in Michigan, the so-called ''Frozen North.'' We use natural gas to heat our homes, and it is wonderful. It is clean burning and so forth, but what has happened with natural gas, because it is clean burning, the power plants, which now have to meet strong environmental requirements if they are burning coal, say, well, let us burn natural gas, it is nice and clean, and we do not have these environmental requirements that we have with coal, and we will save money. So copious amounts of natural gas are being burned in electric power plants to produce electricity. At the same time, those of us who heat it with our homes, our heating bills double because there is just not that much natural gas available.

It is even more serious than that. I have often said that natural gas really is too valuable to burn. Why is that? Because natural gas is a beautiful feed stock for the petrochemical industry. We use a lot of fertilizer on our farms, and so do other countries and that is why we had the Green Revolution. We are able to feed far more people today than anyone anticipated because we are using a lot of chemical fertilizer. Much of it is made from natural gas or petroleum.

Now, if we run short on supplies of natural gas and petroleum, as the gentleman from Maryland (Mr. BARTLETT) was showing us with his Hubbert curve, then you have a problem because where are we going to get the feed stocks for our petrochemical industry? Where will the plastic manufacturers get their materials, because that is all made from natural gas or petroleum? Where will the farmers get their agriculture because that is made from natural gas and oil? And so on and down the line. So we really as a Nation should be asking ourselves, what is the highest and best use of the energy resources we have.

We have huge amounts of coal available in this country. Russia, incidentally, has far more coal available than we do, but coal is dirty. But why do we not investigate ways that we can use that to provide for our electrical needs in a very clean way and reserve the natural gas in the oil for higher and better use?

There are other issues that arise from this, and again, recognizing the time spans available, we have not talked much about Europe tonight, but recognize that the reason we have not is because Europe basically has very little natural gas and oil left. They are importing virtually all of it. They still have some coal but not a huge amount of it. So we have not been talking about them, but they still use a lot of energy. Europe has a greater population than the U.S., and they use a great deal of energy.

Where are they getting it? They turned to nuclear energy. In the midst of all the discussion and upheaval in the United States about nuclear energy and the dangers and so forth, we produce only 20 percent of our electricity from nuclear energy. France, I believe, is at 80 percent now, and I believe India is even higher than that. These other Nations have turned to nuclear energy for two reasons.

First of all, they do not have supplies of fossil fuels such as coal, oil and natural gas.

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Secondly, they have decided it is safer because it does not give off greenhouse gases. Maybe we have to learn a lesson from these other nations and say, look, oil and coal and natural gas are too valuable to just burn to produce electricity. Let us produce our electricity in other ways, perhaps nuclear fusion reactors, as France, India, and other nations are doing. Perhaps we should work more actively on fusion research so that we can build nuclear fusion reactors, which should be cleaner and safer by far. So there are a lot of different options to investigate.

Also, I mentioned earlier photo cells, or photovoltaics, and I mentioned this article from the American Physical Society News, excellent article, written by Dr. Alvin Compaan from the University of Toledo. I did not realize he had written it until I reached the end of the article when I was reading it, and I was delighted because he was a former student of mine some years ago at Calvin College. But he points out here, toward the end, that we have made so much progress in developing solar cells, or photovoltaics cells, that he envisions that by the year 2015 the electricity produced by photovoltaic cells, or solar cells, will cost only about 6 cents per kilowatt hour.

Well, that is more than competitive with the energy producing power plants today using coal, oil or natural gas, because they have transmission costs and transmission lines, whereas the photovoltaic cells can be in your back yard or on your roof.

He also says the current predictions are that half of all new U.S. electricity generation will be produced by photovoltaics by the year 2025. That will be an amazing growth, and it will be interesting to watch that and see if it happens, because that will definitely give us a heads-up and the opportunity to greatly improve our energy situation.

There are other ways, as I have outlined, of using solar energy, other ways of using our savings and our inheritance. But always keep in mind it is our responsibility to provide for our children and grandchildren the resources that they are going to need in this world to do their work, to grow plants, to produce products, to manufacture. And if we run away with all this coal, oil, and natural gas and do not leave our kids and grandkids any, and we do not do the research necessary now to provide alternatives, we are not helping our kids and grandkids. In fact, we are depriving them of things that they will need to go forward in life.

So I urge the Congress to adopt legislation that will help develop alternative energy sources that will make certain that our kids and grandkids have enough energy to use and can live a decent lifestyle, as we do today, and that we not waste our resources but shepherd them and use them wisely as a means of producing new energy resources that our children and grandchildren can use.

SENATE FILIBUSTER

The SPEAKER pro tempore (Mr. DENT). Under the Speaker's announced policy of January 4, 2005, the gentleman from New Jersey (Mr. PALLONE) is recognized for 60 minutes as the designee of the minority leader.

Mr. PALLONE. Mr. Speaker, I do not intend to use all the time this evening, but I did want to take to the floor this evening on the first day of this week because of my concern of what may be happening in the Senate on the issue of the filibuster.

I know that the word filibuster to many may seem a little obscure. People ask what it is about, why it is significant, but I do want to say that in