

**BREAKFAST PRESENTATION
UNITED STATES SENATE
APRIL 12, 1988**

SLIDE 1: TITLE SLIDE

- o Good Morning. I'm Tim Dowd and I'm the Executive Director of the Interstate Oil Compact Commission. The Interstate Oil Compact Commission is the organization of the Governors of the Oil and Gas Producing States. With me today, are Dr. Bill Fisher, Director of the Texas Bureau of Economic Geology, and Dr. Charles Mankin, State Geologist of Oklahoma and Director of the Oklahoma Geological Survey.

- o Before we get started, I'd like to thank you on behalf of the IOCC for coming here so early in the morning. In addition to breakfast, we have an important message we think you, our leaders here on Capitol Hill, should be aware of. Many of you in this room have legislative, budgetary, or oversight responsibility for energy programs and many of you come from energy producing states. We believe that these issues are of increasingly critical importance to our entire nation. But first, I would like to tell you what the IOCC is and tell you a little bit about our work.

SLIDE 2: PICTURE OF OVERCROWDED DERRICKS AT TURN OF CENTURY

- o The first 30 years of this century were wild ones in the oil producing regions of this country. Alternating booms and busts made and broke millionaires-- and local economies -- every few years. The production practices of the time wasted vast quantities of precious oil and gas resources. Wells were drilled so close together that oil fields resembled forests of derricks. Wild-catters over-produced, "topping the cream" to beat the next bust.

SLIDE 3: IOCC MEMBERSHIP MAP

- o By 1935, the waste of these precious resources had reached such proportions as to cause governments to take action. In that year, the Governors of Texas, Oklahoma, Colorado, Illinois, New Mexico, and Kansas joined in chartering the

Interstate Oil Compact Commission. Since then, these six states have been joined by 23 other producing states and 6 associate members.

- o Under the IOCC's guidance, state conservation statutes and regulations were developed and coordinated to achieve both relative stability and maximum feasible recovery. At that time maximum recovery was generally in the range of 10 to 15% of the original-oil-in-place.

SLIDE 4: TWO THIRDS OF THE RESOURCE WILL REMAIN AFTER CONVENTIONAL PRODUCTION

- o During the 1940's and 1950's -- through its research and outreach programs-- the IOCC actively promoted expanded use of what was then new technology of waterflooding and other efficiency improvement techniques. These efforts helped to stem the decline in domestic production and ultimately raised maximum feasible recovery to about 1/3.
- o To date, we have discovered some 493 BILLION barrels of original oil-in-place in this country. As of last year we had produced about 142 billion barrels. Another 27 billion barrels of proved reserves could be produced with current technologies. We'll talk in a few minutes about recovering the 300 billion barrels that make up the remaining 2/3 of the pie.
- o During the 1960's and 1970's, while continuing to encourage conservation and efficiency in the production of oil and gas, the IOCC began to address issues of environmental protection and safety in the oil patch.
- o While it is not the topic of our discussion today, I am proud to say the IOCC has been able to play an important role in the current review of environmental regulations for drilling wastes. Our membership is convinced that costly new regulations can be avoided if the states will step up monitoring and enforcement of their regulations already on the books. And it looks like Congress and EPA will agree.
- o But we're not here this morning to talk about the IOCC and the great things it's done over the last 50 years. We are here to talk about the ragged state of the domestic petroleum industry and what we can do to pull our oil and gas

production out of its current free-fall. I am sad this morning to tell you that the picture of our industry today is even worse than when many of us met for this function last year.

- o Yes, oil prices have recovered a little bit, but not enough to stimulate new drilling and production. The data on 1987 is beginning to trickle in now. It's not a pretty sight. We've lost another 52,000 jobs in oil and gas related service industries. We've plugged and abandoned more stripper wells. We've watched 98 more commercial banks fail in Texas, Oklahoma, Louisiana, & Colorado alone. Many have been from bad energy loans gone sour. The rest have been from real estate loans gone sour due to the slow death of the once thriving oil industry.

SLIDE 5: THE ONLY REAL ENERGY "SHORTAGE" IN THIS COUNTRY IS ONE OF LIQUID TRANSPORTATION FUELS

- o This point is of critical importance to this nation, so I ask you to listen well. The only serious energy shortage facing the United States now -- or for the foreseeable future -- is the severe shortage we face in domestically produced liquid transportation fuels.

SLIDE 6: ROLE OF OIL IN TRANSPORTATION SECTOR

- o And those fuels come from OIL. OIL provides 40% of America's primary energy demand. As of the end of 1987, just 3 months ago, more than 40% of our OIL came from foreign sources. Given our experience in the 1970's and 80's, that level is far too high.
- o Almost two thirds of our oil demand is for use in transportation. The remainder goes for industrial use and some to home heating and electric generation.
- o But, to put it another way, the transportation sector is 97% dependent on oil and refined products. Cars, ships, aircraft, buses, taxi cabs, trains, tractors, trucks -- ALL DEPEND ON OIL. The significance of this fact is so simple it is lost on us. No oil,... no commerce. OIL is the commercial and strategic life-blood of this country, whether we like it or not.

- o Since the energy shortages of the 70's and early 80's we have taken a few small steps. Conservation measures have helped reduce demand for home heating oil and technology advances have helped reduce the environmental impact of coal burning for electric generation. For the most part these programs are good. The hardy souls here on the Hill and out in the private sector who have kept the government's attention on conservation and alternative energy deserve our respect and admiration.

- o But what's happened to liquid transportation fuels ? Synfuels proved far too expensive. Marginal economics, bad press, and erosion of government support effectively killed the gasohol movement that began in the mid-seventies. And there is some interest being generated on the Hill and elsewhere for methanol fueled cars. But the fact that we must stress to you today is that for the foreseeable future we have no real alternative to oil for our liquid transportation fuels. It will take decades for other fuels to make appreciable inroads.

SLIDE 7: OIL PRICE TRENDS 1970 - 87

- o Given our dependence on oil, it should not sit well with the American people or the United States Congress to know that AMERICA DOES NOT CONTROL ITS OIL FUTURE. In a 15 year period -- from 1973 to 1988 -- OPEC has crafted no less than 3 economic crises or insecurities for our nation. The first two times involved precipitous price increases and supply disruption. But the most recent case is perhaps the most dangerous. By dumping enormous amounts of oil on the world market OPEC has forced oil prices down to a level where it is difficult for high cost producers in the U.S. and elsewhere to continue to operate.

- o Not only has the low price lulled Americans into complacency, it threatens to destroy the infrastructure that will be needed for America to respond when OPEC decides to jack prices back up, or new technology makes domestic oil competitive again.

SLIDE 8: LOWER 48 CRUDE OIL PRODUCTION AND RESERVES HAVE DROPPED DRAMATICALLY

- o The price decline has caused a dramatic decline in Lower-48 production and a severe drop in L-48 reserve additions.

SLIDE 9: SINCE EARLY 1986, THE OIL PRICE DECLINE HAS :

- o Taken the jobs of 175,900 workers in oil and gas extraction alone, not including related service industries
- o Reduced severance tax revenues to states by more than \$1.5 Billion per year
- o Caused 80,000 wells to be shut in, 20,000 permanently abandoned
- o In 1987 88 commercial banks -- in Texas, Oklahoma, New Mexico, and Colorado alone -- failed due to bad energy loans or bad real estate loans made bad by the recession of the domestic oil industry.

SLIDE 10:U.S. RELIANCE ON IMPORTS.:

- o Another insidious effect of OPEC's engineered price decline is that lower prices have stimulated increased demand for transportation fuels -- at the same time these prices are undercutting our ability to produce oil at home. Today we are more than 40% dependent on foreign oil. Some sources predict we will approach 50% dependence in just a few years. Even the most conservative estimates-- (including this one from the National Petroleum Council) -- show our dependence surpassing the 50% mark by 1995. Others predict we will reach this point even sooner -- perhaps as early as next year !

Slide 11:OIL IMPORTS ARE STILL A MAJOR COMPONENT OF THE MERCHANDISE D E BALANCE

- o The only glimmer of positive news emerging from the price decline is that at lower prices the effect of importing oil on the trade deficit is less devastating. But oil is still a major component of the trade deficit. And soon, the increase

in volumes imported will send the contribution of oil imports to the deficit back up to -- and perhaps far beyond -- its peak level.

- o Let me say just one more thing about the cost of all of this "cheap oil". It's not cheap, regardless of how you look at it. Its not cheap in the \$ 19.5 million we spend every day to maintain the ships, and the aircraft protecting shipping lanes in the Persian Gulf and deterring Soviet incursions. Nor my friends, is it cheap in the toll its taking on the marines and sailors and airmen who man that police force.
- o Yes, they are playing an important -- albeit deadly -- role. But I for one can think of more important roles to which their strength and courage could be applied at home -- as doctors and teachers, engineers and scientists, as farmers and entrepreneurs, as parents and community leaders.
- o Ladies and Gentlemen, these are public issues. They are not only the parochial provinces of the states hardest-hit, they are also basic bread and butter issues that effect each and every American. And I fear that the degree to which they effect all Americans is about to become substantially more severe.
- o As I see it, this nation has but two choices. We can increase domestic oil production to more nearly meet demand, OR, we can allow domestic production to continue its decline and become ever more dependent on foreign imports, ever more vulnerable to supply disruptions. Based on the statistics of the last few years, it would seem that America has regrettably chosen the latter course.
- o By now you're asking yourselves 'What is the IOCC's role in all this? What do they want us to do' We've asked ourselves the same questions and come up with some answers. The IOCC has been, since its inception, "Dedicated To The Conservation of Oil and Gas". That is, in fact our motto. And to that end, the IOCC continues to promote conservation of our resources, efficiency in their discovery and production, and environmental protection and public safety in all aspects of oil and gas operations.

But we are also determined to go further in pursuing the public well-being. As the organization of the governors of 35 states, we have a duty not only to the people of these states, but to the nation that is best met if the IOCC directly

addresses the central problem -- that of how to increase domestic petroleum production.

- o So, we have undertaken some new projects. They focus on advancement of the technologies for producing domestic oil with the goal of making more oil producible while reducing the costs of advanced production. To be successful, initiatives need to be supported that will first develop advanced understanding and technology, and secondly, provide the economic incentives essential for their implementation.

I'd like to ask Charlie Mankin to describe these technologies and their potential. Then I'll tell you what we need Congress, the Administration, the States, and the Industry to do to make it happen. Charlie

-- CHARLIE MANKIN --

- o Thank you, Tim. I am the state geologist of Oklahoma. I also wear a few other hats. I am currently the Chairman of the Board on Mineral and Energy Resources of the National Academy of Sciences and Past-President of the American Institute of Professional Geologists. Last year, when Tim and I talked to Capitol Hill, I told you folks that I was concerned -- to the point of alarm -- about our continuing loss of domestic production. While a few things have begun to change, they are having little or no tangible effect on production.
- o What Tim has spelled out really does represent a "clear and present danger" to this nation, but it seems that the public, parts of the federal government, and even parts of the oil industry, want to ignore it. A recent survey showed that less than 1 percent of those polled consider energy to be an issue of national concern. I think that substantiates Tim's remark that we have become complacent. Tim and Bill Fisher and I, and a few others have laid out what we think is a pretty good plan. I hope we as a nation will wake up and put it into action before it is too late.

SLIDE 12: AVERAGE OIL WELL PRODUCING RATES:

- o In terms of oil production, the U.S. is the most mature area in the world. In the past fifteen years more than 800,000 wells have been drilled in this country alone. That's four times as many as in the rest of the free world combined.
- o The maturity of the resource is illustrated by this chart prepared by the Society of Petroleum Engineers. It shows that although we have the largest number of producing wells in the world, the average production per well is the lowest.

SLIDE 13: OIL PRICE DECLINE INCREASES STRIPPER WELL ABANDONMENTS

SLIDE 14: STRIPPER WELL PERCENT OF TOTAL PRODUCING WELLS

- o We need to learn how to produce more oil from our known reservoirs.

SLIDE 15: USGS ESTIMATES OF UNDISCOVERED OIL

- o My concerns were amplified this past week, and my convictions strengthened, by reports that the U.S. Geological Survey has revised downward -- by more than 40% -- its estimates of the remaining undiscovered oil and gas resources in this country. That means that if we are to continue to produce oil in this country, we will have to do so by improving recovery efficiency in existing fields.

SLIDE 16: PIE CHART OF ORIGINAL OIL IN PLACE

- o As Tim mentioned earlier, current maximum recovery is still only about 35% of the oil in the reservoir. The other two-thirds of the known oil is bypassed by current methods or trapped in the rock even after technology has been applied. We call these two categories of residual oil "unswept mobile oil" and "immobile oil". If we could reach even a portion of it, this residual oil could represent an incredible national energy resource.

SLIDE 17: DISTRIBUTION OF EOR ECONOMIC AT \$30/BBL

SLIDE 18: DISTRIBUTION OF UNSWEPT MOBILE OIL

SLIDE 19: DISTRIBUTION OF IMMOBILE OIL

SLIDE 20: POTENTIAL RESERVES BARREL CHART

- o New technologies are the key here. They include vastly improved geological data acquisition interpretation and modeling on a basin-specific basis; substantially improved infill-well location techniques; and significantly improved enhanced oil recovery processes and models. For these technologies to become available, significant amounts of closely integrated research and development are required.
- o Estimates of the potential additions to U.S. reserves and production from development of improved understanding and new technology vary. But based on estimates by the National Petroleum Council, the Texas Bureau of Economic Geology, and the Energy research Advisory Board (ERAB), the overall potential of these resources could be in the neighborhood of 90 to 100 billion barrels producible over the next 30 years. That would still leave about 200 billion barrels for which yet more advanced novel technologies would be required. Perhaps half of that could ultimately be produced.
- o 90 Billion barrels would more than triple our current proved reserves.
- o The petroleum research community recognizes the need to develop alternative transportation fuels and we support efforts to develop clean and economic fuels such as methanol and vehicles that can run on compressed natural gas. But we realize that these are still decades away from commercial deployment. Ironically, DOE's own experts say that the resources for methanol (derived from methane gas) and CNG will come from foreign sources. Where? You guessed it, the Persian Gulf. Why ? Because it costs less.
- o The answer to our debacle is literally in our back yards. If we can produce this 90 billion barrels the U.S. could sustain its current levels of production well in to the next century, long enough to commercialize economic alternatives. These numbers are not drawn from wild speculation. They are the product of serious, detailed analysis performed by leading experts of industry, academia, and the government laboratories.
- o And the advanced technologies they recommend are high tech, but they're not science fiction. Highly targeted and focused R&D, performed in concert with state entities, universities, and private industry is what's called for. By

comparison with the Clean Coal Initiative or the Superconducting Super Collider, the financial requirements are quite modest.

- o Increased oil recovery in known reservoirs will require application of two techniques:
 - Tertiary recovery (EOR) to produce the immobile oil trapped in the portion of the reservoir already swept by secondary recovery (water flood), and
 - Geologically targeted infill drilling to produce mobile oil that was unswept during secondary recovery.
- o That sounds simple, but its not. Both of these techniques require a substantial improvement in our knowledge of the geology of the reservoirs. Technology advances in geology will help to improve recovery not only of light and heavy oil, but of natural gas, shale oil, tar sands, and other resources.

We know what needs to be done. The question is how can we make it happen. At current prices application of EOR is uneconomic except in the most favorable fields (primarily heavy oil fields in California highly amenable to thermal injection). Enhanced understanding of Geosciences will help make EOR less risky but the economics still play the major role in the decision process.

SLIDE 21: INCREMENTAL RESERVES DUE TO EOR IN OKLAHOMA [WE NEED THE COLOR TRANSPARENCY FOR THIS]

- o One of the new projects of the IOCC that Tim Dowd referred to earlier is an analysis of the costs and benefits to individual states and the nation as a whole of granting severance tax relief for enhanced recovery projects, at least to the point where a project breaks even.
- o The IOCC, working with the National Petroleum Council's data and models in conjunction with the Department of Energy's Bartlesville Project Office, has recently completed a study of the potential of EOR in my own home state of Oklahoma. This is the second in the series of state-level reports of the IOCC project, based on detailed reservoir-by-reservoir analysis.

- o The IOCC examined the impact that state tax incentives and R&D to advance technology could have on incremental production. This chart summarizes a very detailed report.
- o The dashed line represents Oklahoma's current proved reserves for reference.
- o The solid bars are incremental reserves at the respective oil prices if there are NO incentives and NO advanced technology.
- o The next bars show what happens with state tax incentives, but no technology advances. The tax incentives show a major increase in incremental reserves. Incidentally, this increase comes at no loss in state revenues as the incremental production more than pays for the incentives -- a true case of "non-zero-sum" situation for private-public cooperation.
- o The third bars show what research alone can do. Here the gain in incremental reserves is even greater than it was for tax incentives alone.
- o The clear bars, those to the far right, show how a combination of state tax incentives and advanced technology. Clearly, significant incremental reserves can be had at oil prices as low as \$20/bbl. If prices should rise as high as \$28/bbl the reserves of Oklahoma can be more than doubled. And these estimates are for application of EOR only. If infill drilling were included it could equal or exceed the EOR estimates, especially at lower prices.
- o I have said that economic incentives and technology advancement have important roles to play in increasing domestic production. The Oklahoma results suggest that perhaps we should worry about technology first. Estimates made by the National Petroleum Council in 1984 reached the same conclusion.
- o Technology advances can be achieved only through focused long-range research.
- o Ladies and Gentlemen, private industry cannot and will not carry the ball. The majors must look out for their bottom lines -- the short-term interests of their shareholders. Those interests do not always coincide with the long term interests of this nation. Now, with foreign finding and lifting costs

significantly lower than at home, their research is focused neither on the domestic resource, nor on fundamental oil and gas geosciences. Exploration abroad or "drilling on Wall Street" are more profitable. The independents have neither the funds nor the facilities to perform the basic research required.

SLIDE 22: INDEPENDENTS PERFORM DOMINANT SHARE OF DOMESTIC PETROLEUM RESERVES ACTIVITY

SLIDE 23: CRUDE PRODUCTION BY COMPANY SIZE

SLIDE 24: RESERVES BY COMPANY SIZE

SLIDE 25: CUMULATIVE INVESTMENT IN PETROLEUM COMPANY MERGERS AND ACQUISITIONS OVER \$ 1 BILLION

Tim, I'm frustrated by this. We know what needs to be done, yet its not getting done. I think I can speak for the other state geologists when I say that. We're willing to do our part, but we need to get government and industry to cooperate.

-- TIM DOWD --

- o So, if the research is essential, the independents can't do it, and the majors won't do it, the duty legitimately falls to governments, state and federal, to pick up the slack and see that the essential work gets done in the public interest. We have heard the arguments that say government should not intervene in the free-market. We agree. But this is not a free market. Production levels and prices are determined by governments in almost every other producing country in the world. The IOCC states have resolved to do what they can at the state level, but we agree that federal support and cooperation is an essential ingredient. If Congress would allow states to apply some of the overcharge funds to this research, states could cost share with the government.

SLIDE 26: ERAB REPORT COVER:

- o Last spring, the Energy Research Advisory Board (ERAB), the scientific advisors to the Secretary of Energy issued a report entitled "Geoscience Research for Energy Security". Recognizing the important long-term role oil and gas must play in the American economy, and aware of the effects of the price decline on production, reserves, demand, and imports, ERAB closely re-examined the role of the federal government assuring performance of essential long-term, high risk,

research and development. ERAB agreed with us that neither the major companies nor the independents will get the all the needed work done.

- o ERAB evaluated existing programs to determine whether they were focused on the right questions, unified in their collective long-term goals, sufficiently funded to get the job done in a reasonable time frame. ERAB found 17 programs under 3 assistant secretaries all doing work, albeit at ridiculously low levels, related vaguely to oil and gas geosciences. Here's what ERAB had to say about them.

SLIDE 27: FINDINGS OF THE SOLID EARTH PANEL OF ERAB

SLIDE 28: BUDGET HISTORY OF EOR

- o ERAB's concerns about funding levels are well substantiated by this chart showing the history of funding for Enhanced Oil Recovery research and development since the program began. The program has not grown, it has been systematically pared to the bone while America's interest in oil and gas issues has waned. It took the price decline of 1986 to open peoples eyes again.
- o When will we learn that long-term research, in order to be effective and achieve productive results, must have a stable funding base? I guarantee you that when people are sitting in gasoline lines a few years from now, waiting to pay \$2.00 a gallon, they will not look charitably upon government leaders who ignored promising long term solutions to our oil and gas supply problems.

SLIDE 29: ERAB'S RECOMMENDATIONS

- o ERAB recommended that DOE take immediate Action to:
 - Redirect R&D Priorities to Areas that will Increase U.S. Oil and Gas Production
 - Integrate currently disparate R&D projects, especially in oil and gas, and related geosciences, into a high level Office of Geoscience Research (OGR) to develop and manage an analytically based strategic plan.
 - Establish six "Centers of Excellence" on in each major U.S. petroleum

province, to conduct and coordinate interdisciplinary and problem oriented oil and gas R&D; and

- Enact a Fiscal Year 1988 budget for the integrated re-focused program that is \$50 million greater than the FY87 level, rising to an incremental \$100 million by FY90.

That ERAB made the study and issued its findings and recommendations so objectively is nothing short of a miracle in this town. ERAB's views were not presented in doubletalk, they were clear and precise.

SLIDE 30: ENDORSERS OF ERAB RECOMMENDATIONS:

- o In response, the IOCC spearheaded a major effort to seek endorsements of the ERAB recommendations. More than 60 groups and distinguished individuals in industry, research, academia, and government jumped on the wagon, speaking with one strong voice to applaud ERAB's recommendations. We took their message to the Department of Energy and we took it to the Congress. Now its time to evaluate the progress we've made in the past year and to discuss our goals for FY89 and beyond. (A copy of the full list of Endorsers is enclosed in your handouts.)

SLIDE 31: FED ACTION TO DATE BASED ON ERAB RECOMMENDATIONS

- o Requests for action by DOE and Congress yielded several results. Chairman Marilyn Lloyd of the Subcommittee on Energy Research in the Science and Technology Committee, prompted by testimony and by Congressman Chapman, called special hearings to look into the ERAB findings and recommendations.
- o Assistant Secretary Wampler used his appearance at the hearings to announce several DOE actions., specifically, creation of an Office of Geoscience Research reporting directly to the Assistant Secretary for Fossil Energy. Today the office has staff, a Deputy Director Mr. Bob Terrell, and will soon have a full-time director.
- o Mr. Wampler announced Secretary Herrington's creation of a Hydrocarbon Geoscience Coordinating Committee, chaired by the Assistant Secretary, with a charter to evaluate all geoscience related programs in DOE. We all know about

coordinating committees. They're a great alternative to taking real action. They're like debating societies and if they produce anything, they produce camels. You know the camel. It's a horse designed by committee.

- o Finally, Mr. Wampler announced that the Secretary has asked the National Petroleum Council to report to him on the advisability of creating a Petroleum Research Institute. A report is due out in the summer, but the outlook for a positive responses is bleak.
- o Mr. Wampler also announced that there would be a major geosciences-related Enhanced Oil Recovery Initiative in the FY89 budget request. We'll get to that in a moment, but let's first look at a few more things that have happened since we last met.
- o ERAB's recommendation for six centers of excellence was misunderstood. Congress and the Administration interpreted it as a set of bricks and mortar projects to build, equip, and staff centers at a variety of state universities. The recommendation was quickly rejected.
- o I would like to applaud the success of my colleague Bill Fisher, in putting together a consortium of universities, energy centers, and state conservation agencies that will be known as the Oil and Gas Geoscience Research Institute. Mr. Wampler has signed a letter of intent to assist and work with the Geoscience Research Institute.

SLIDE 32: LAST YEAR'S APPROPRIATION MARKS AND THE FY89 REQUEST

- o The Science and Technology Committee did not report out an authorization bill for fossil energy R&D. But key members and staff of the subcommittee on energy R&D did voice their concerns to Mr. Yates' Appropriations subcommittee on Interior and Related Agencies. That resulted in several earmarks in the FY88 budget that begin to pave the way for an improved oil and gas geosciences program. This table shows the breakout of the recent history of funding for the entire oil and gas research program.
- o It shows that while some small movement has been made to bring these programs up to a more meaningful level, much still remains to be done to

achieve the ERAB recommendations of incremental levels of \$50 million by 1988 and \$100 million by FY90.

- o If you look at the far right column, you will see that DOE's clearly stated support for a new EOR initiative and for oil and gas extraction and geoscience research in general is not reflected in the Department's FY89 budget request. Whether that is the work of the Department or the work of OMB, I don't know. I am inclined to believe that Mr. Herrington and Mr. Wampler want a stronger program but can't muster the financial support of OMB. But I do think that, regardless of OMB's action, you in Congress should hold the Department's feet to the fire on this critical issue.

SLIDE 33: DISTRIBUTION OF DOE FY89 REQUEST FOR ENERGY R&D BY CATEGORY

- o This graph shows the entire DOE research budget on the left. The fossil energy portion of that is broken out in the right hand pie. DOE has become the Department of Defense Energy. The defense portion of this pie consists of weapons and naval reactors research and half of the high energy physics request. The civilian nuclear portion of the pie (27%) includes the other half of the high energy physics program. Regardless of how you split high energy physics though, Fossil Energy Research, the program expected to provide the majority of our energy demand for the next several decades, is allocated only (11.1%) of the DOE Research Pie. And that includes a \$525 million request for the Clean Coal Technology Initiative. Even at this highly aggregated level of analysis something is beginning to look rotten.
- o Looking at the right pie, our worst fears are substantiated. Oil gas and shale make up only 3.2% of the fossil energy research budget. We do not object to a strong program of coal research. We do object to a ridiculously low request for oil and gas when those are the fuels that will keep our economy moving for the foreseeable future.

SLIDE 34: SUMMARY RECOMMENDATIONS

- o Therefore, we make the following recommendations for FY89 funding of oil and gas extraction and geoscience research programs.

- o **Maintain funding authorization for existing programs at not less than \$40 million per year, prioritized to emphasize Light Oil EOR, Heavy Oil EOR, Unconventional Gas, and Advanced Exploratory Research.** Funding for tar sands and oil shale should be provided after the needs of the preceding programs have been fully met. If these latter programs are to be given substantial funding the existing programs should be funded at a level closer to \$50 million.
- o **Special attention should be paid to the Advanced Process Technology (APT) Program.** Despite its non-descriptive name, this program consists largely of the cross-resource basic geoscience work that is so severely needed. The proposed cut in APT funding should be reversed; the program should be expanded in coordination with the next recommendation.
- o **Create a distinct and separate line item in the petroleum research budget for Geoscience Research at an incremental level of not less than \$20 million per year.** Although this is substantially less than the incremental \$50 million recommended by the Energy Research Advisory Board, it reflects the likelihood that a strategic plan for the Geoscience Research program will be ready for final review by the end of FY88 and that several projects of potential near term pay-offs could begin early in FY89. Higher incremental authorizations and appropriations would be called for in future years based on the recommendations of the strategic plan.
- o **Support the Geosciences Institute for Oil and Gas Recovery Research** recently created by a consortium of 15 established universities, state geologic surveys, and energy centers under the leadership of the University of Texas. We recommend up to \$20 million be earmarked to the Institute from incremental geoscience research funds, upon approval of an acceptable programmatic proposal. Cost-shared research, co-funded by the states and private industry on a 50/50 basis with DOE, would help "leverage" federal funds. A portion of the state share of oil certain overcharge funds should be made available for this resource conservation research.
- o **Direct the Hydrocarbon Geoscience Coordinating Committee to submit an Annual Progress Report to Congress** detailing DOE/DOI/USGS geoscience research activities, results, and future plans
- o **Continue Technology Transfer Directive.** These forums will transfer results/technology and help identify gaps in public and private research. Gov't can help fill gaps.

The IOCC and other endorsers of the ERAB report and recommendations, including more than 60 organizations of oil and gas producers, consumers and research endorse these recommendations. We believe they comprise the kind of program DOE would have requested were it not for the restrictions placed on it by OMB. We urge you to act decisively to begin to turn the tables on OPEC and restore America's ability to meet its fuel demands until alternatives are feasible. The IOCC appreciates your efforts last year to review, and begin acting upon, the recommendations of the Energy Research Advisory Board. We look forward to working with the both Chambers of Congress to see that our

nation's oil and gas research needs are met. We hope you will join us in conveying these concerns and recommendations to your colleagues and your opposite numbers in the other distinguished chamber of Congress.

Thank you again for joining us this morning. Bill and Charlie and I would be happy to take any questions you may have.