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"Powering Prosperity, Enabling Growth: Saudi Aramco's Perspective on Global Energy Security"

Distinguished guests, ladies and gentlemen, good morning. It is a great privilege to be with you today, and I would like to begin by thanking John Hamre and CSIS for their invitation as well as their hospitality. We had the privilege of hosting John and his colleagues in Dhahran a few weeks ago, and it's a pleasure to see them again here in DC.

Ladies and gentlemen, today the financial and economic crises are on all our minds, and rightfully so. The impact of the global downturn, the restorative effects of various economic stimulus packages, and the timing, strength and breadth of the eventual recovery are all issues of the highest order. But to my mind, one of the most significant and enduring lessons from this painful downturn is the reminder that ours is one, highly integrated and mutually dependent world. What impacts one country, business or industrial sector ultimately touches us all, and whether we realize it or not, we're all navigating the same rough seas in the same boat.

Global interconnections are abundantly clear to those of us in the petroleum industry, and we understand that in an interconnected, interdependent global petroleum market, the strategies and actions of even a single major supplier or consumer have implications for us all. That is why the decisions about energy that we make as companies, institutions and nations have ramifications which know no

borders, which touch the lives of everyone on the planet, and which will be felt for many, many years to come.

Today, much of the talk in the petroleum industry is about faltering demand and markedly lower prices for crude oil and refined products. There is plenty of oil in the market, and in some cases it appears to be storage capacity that is in short supply rather than the petroleum that goes into those tanks. That's quite a different picture than we saw just a year ago, when the *perception* of supply shortages and the *fear* of interruptions opened the door for speculation which played a significant role in driving oil prices to record highs.

But these snapshot indicators of a crude oil market awash in barrels are just that: a snapshot taken at a particular point in the cycle, rather than the shape of things to come. In the future, as before, I believe that crude oil markets will be impacted by significant trends on both sides of the supply-demand ledger. Furthermore, given the need for wise and timely investments in all segments of the petroleum industry, I believe we must collectively adopt a more *pragmatic* approach to energy and oil, particularly when it comes to long-term prospects for global energy security and environmental stewardship.

My friends, although global petroleum consumption has exhibited considerable volatility in the short term, it is rising worldwide oil demand that is the surest feature in the future energy landscape. The combination of a growing global population and greater prosperity and affluence in developing economies point the way toward a relentless increase in petroleum demand over the next several decades. And given that six out of every seven units of energy the world will consume over the next two decades will come from fossil fuel sources, it is clear

that the world will be looking to producers like Saudi Aramco for significantly more petroleum than is the case today.

Now some may argue that rising demand for oil in the developing world is a matter for those economies to worry about, but given that petroleum is a fungible commodity which is traded in highly integrated global markets, demand growth in China, India and other countries has a direct impact on consumers in industrialized nations as well, including the United States. As I noted a moment ago, we are all in the same boat, and when it comes to petroleum, we are all subject to the same rising and falling tides.

To meet this increased future demand, the petroleum industry must be ready—and given the long lead times associated with petroleum sector projects, that means investing *now* in various segments of the value chain. It is true that the industry has just come off a high in the investment cycle, and that for the next several years supply is set to outpace demand. But the economic cost to the world will be considerable if the industry is not well-prepared for future growth in consumption: we all know that potential supply-demand imbalances have the potential to trigger another cycle of steep price rises and debilitating market volatility. That, in turn, would spell trouble for the green shoots of a nascent economic recovery.

At the moment, though, the low price, low demand environment discourages substantive investment in petroleum development and infrastructure projects—a situation which is compounded by high development costs and tight credit markets. Furthermore, the talk in some quarters about moving away from oil and toward energy self-sufficiency and unproven alternatives which still face significant technical, economic and environmental hurdles, are creating greater uncertainty

about the future prospects for fossil fuels in general and petroleum in particular. Capital dislikes uncertainty, and indecision related to energy policies may serve to exacerbate the trend of underinvestment—which is particularly dire in an extractive industry like petroleum. The underinvestment risk is especially worrying because large, timely oil investments are necessary to meet not just one but *three* requirements. First, as you produce resources, you have to continue to invest simply to maintain current capacity, or in other words, you have to keep running just to stand still. Second, you need to build new capacity as well as infrastructure to meet future growth. And third, we also need to maintain a cushion of spare production capacity, the very existence of which plays a vital role in tempering market volatility.

Given these dynamics, I believe we should commit ourselves to a more pragmatic approach to shaping our energy future, especially considering the central role that energy plays in our economies, our societies, and indeed our daily lives.

Let me elaborate on what I mean by a pragmatic, less risky and more assured approach. In my view, the optimal strategy is to support continued enhancements in *proven* technologies and fossil fuels—most important of which is oil—while concurrently supporting the development of *a number* of alternatives to a reasonable level of maturity, as opposed to favoring one option to the exclusion of others. Then, let us expose the most promising alternative sources to the rigors of market competition and consumer preferences, and compete on a level playing field with other sources. Thus we will increase the variety of options available for the long term without premature commitments, and maximize the range of viable approaches to realizing greater global energy security.

But continuing to utilize conventional energy sources doesn't mean we must continue to operate as we have, particularly when it comes to the environmental impacts that are associated with the production and consumption of fossil fuels. While working to meet growing energy demand, we must address global and local environmental concerns, particularly carbon emissions. Ideally this would be accomplished through R&D and technological solutions such as a combination of enhanced conservation measures and more fuel-efficient end-use technologies, cleaner burning petroleum products, the development of carbon capture and sequestration technologies applied to both stationary and mobile emission sources, and the use of alternative energy sources in ways which complement coal, oil and gas. Of course, such utilization of alternatives should be based not on *optimistic* assessments of their future potential, but on realistic expectations consistent with *actual* progress made in resolving the various issues restricting their greater use.

In terms of carbon management, much will depend on the policy environment surrounding these issues. I believe that policymakers and regulators must acknowledge the complexity of implementing alternative mechanisms, as well as the ultimate costs for consumers and the far-ranging impacts on our global, regional and national economies. A high degree of uncertainty and inconsistency surrounding carbon management legislation and policies is in the interest of neither producers nor consumers, nor are risky policy initiatives and overly hasty legislation. As in so many matters, a pragmatic and holistic approach that stabilizes the energy market *and* achieves the sought-after reductions is likely to be the best path to achieve not just one-off, short-term gains, but meaningful, long-term, and sustainable benefits.

Ladies and gentlemen, it is within this broader industry context and with our sights firmly fixed on the future that we at Saudi Aramco are striving to enhance energy security in an environmentally sensible manner, and partnering with other companies and institutions which share these strategic objectives. That's why I would like to outline some of the many steps we are taking to bring about a brighter energy future—one in which we are able to grow our economies and enrich our societies while simultaneously protecting our natural ecosystems.

First and foremost, we are continuing to invest all along the petroleum value chain, on a scale never before seen in the history of our industry. In the area of exploration for crude oil and natural gas, for example, we are continuing our efforts to locate additional resources across Saudi Arabia, including new frontier areas both on land and offshore, despite the large resource base we already possess. We believe there is tremendous potential to locate substantial new hydrocarbon resources in various regions of the Kingdom, and are bullish on these prospects.

In terms of production, Saudi Aramco is on the verge of attaining its goal of a 12 million-barrel-per-day crude oil production capacity, once we complete our Khurais oil field program a few weeks from today. This project is the largest single crude oil increment ever commissioned, and will be capable of producing as much oil as the entire State of Texas—something I don't say too loudly when I am in Houston, I might add. But Khurais is only one aspect of our overall crude oil development program, and Saudi Aramco alone will ultimately account for more than half of the grassroots crude oil production capacity brought on-stream worldwide this decade. We will also be expanding our natural gas production capability, which is important given the role that gas plays in the Saudi economy, supplying utilities and a wide range of industries, fueling greater economic

development and diversification, and encouraging the development of value-added enterprises based on gas and its associated feedstocks.

And while we've been known since the 1940s primarily as a leader in the upstream segment of the business, we are also a major player when it comes to refining. Today, we are constructing additional refining capacity both in the Kingdom and abroad, including here in the United States through our Motiva joint venture with Royal Dutch Shell. Once the current expansion of our Port Arthur, Texas refinery is complete, it will be the single largest refinery in the country. In fact, Saudi Aramco will be behind one out of every three barrels of firm commitments to new refinery capacity to be built worldwide over the coming five years.

Even further downstream, we are moving forward with integrated refining and petrochemical ventures in collaboration with some of the world's leading chemical companies, including Dow Chemical, our partner in the landmark Ras Tanura Integrated Project. These new facilities not only add value to the Kingdom's hydrocarbon production by converting refined product streams into both base and specialty petrochemicals, but also form the hubs of new industrial clusters which will house conversion industries and manufacturing companies in purpose-built business parks. As such, they will help to strengthen the Saudi economy, open up new business and investment opportunities for international investors and the Kingdom's enterprises alike, attract foreign direct investment, and create high-quality jobs for our nation's youth.

Major investments such as these, including the maintenance of significant spare production capacity to respond to unforeseen circumstances elsewhere in the global petroleum industry, allow us to play our part in meeting the world's demand

for energy responsibly and reliably. But some people question the wisdom of pressing ahead with these mammoth projects even in a challenging business environment and at a time when oil consumption has fallen for the first time in 25 years. Certainly we read the same economic forecasts as you do, and we have been negatively impacted by the crisis along with the rest of the petroleum industry.

But we continue to invest across the cycle, in good times and bad, because we are maintaining our long-term focus rather than being swayed by the volatility of short-term conditions. Given the combination of geology, geography, history, and economics, Saudi Arabia and Saudi Aramco have been fated to play a dominant role on the world's energy stage. This is a duty that we have embraced just as generations of Aramcons before us did, and it is a responsibility we take very, very seriously indeed. So we build with confidence today, knowing that tomorrow we will be able to meet our commitments to all of our various stakeholders.

At the same time, our world-scale infrastructure development projects and programs are coupled with investments in advanced technology and applied research. Saudi Aramco is particularly active in the area of cutting-edge upstream technologies relevant to our operations, including the first development of giga-cell reservoir simulators which allow us to optimize our production strategies to ensure outstanding reservoir sustainability over several decades using a range of scenarios; we are also developing extreme reservoir contact well technologies that enable us to produce our hydrocarbon resources more effectively and more efficiently. We are also continuing to push forward and further develop our Intelligent Field—or I-Field— vision, which serves to enhance the efficiency of our production operations, lower production costs, and help further improve the

recovery of precious in-place resources. And this is not just talk, or something that might happen in the future; in fact, all of our new field developments are I-Fields, and we are retrofitting our older fields to become I-Fields as well. Within our EXPEC Advanced Research Center focusing on upstream technologies, we are also developing futuristic technologies like “res-bots”: tiny, intelligent nano robots which will be injected directly into the reservoir to provide a hitherto undreamed of direct sensing of the subsurface, and a much greater understanding of the reservoir properties and varying conditions over time.

Innovation is also helping us meet global energy needs with less impact on the environment, and programs designed to lighten the environmental footprint of hydrocarbon production and consumption are central to the mission of our Research & Development Center that focuses its efforts on downstream technologies and surface facilities. Our commitment to environmental stewardship is nothing new—the company’s first environmental policy statement was published more than 35 years ago—but today, advanced technology and innovation are enabling us to do much more with much less impact.

At the moment, we are focusing our research on significant key initiatives with widespread applications affording Saudi Aramco a future global leadership position in select areas, including carbon capture and storage techniques, the pre-refining desulfurization of whole crude oils, new refining technologies, novel fuel formulations to power next-generation engine technologies, and production of hydrogen out of liquid fuels in a cost-effective manner. All of this will help to reduce the environmental ramifications of petroleum consumption while prudently and creatively building on acquired human knowledge, existing infrastructure and expanding intellectual capital. Energy and the environment are closely bound

together, and at Saudi Aramco we're applying cutting-edge R&D and advanced technology to both sides of this vital equation.

Ladies and gentlemen, let me close my remarks this morning with four brief points related directly to our interactions with the US market.

First, "energy security" is a two-way street involving not only security of supply for consumers, but also security of demand for producers. Given the billions of dollars and millions of man-hours required to bring petroleum projects and crude oil developments onstream, unrealistic expectations and pronouncements could indeed undermine energy security, instead of enhancing it, simply because they cloud the demand picture and thus could possibly put into question our investment decisions.

As you are aware, Saudi Aramco has contributed significantly to this country's past, present and future energy security. We have contributed through our sustained investments in world-scale upstream projects, and our maintenance of at least 1 ½ to two million barrels of expensive spare production capacity—which has been brought onstream many times to make up shortfalls in global supplies, including in the wake of Hurricanes Katrina and Rita which shut in US Gulf of Mexico production. We have contributed through significant and ongoing investments in US domestic refining capacity, and in the construction of one of the world's largest and most modern fleet of double-hulled supertankers, devoted primarily to brining our crude oil to these shores, with the explicit aim of providing America and Americans with the petroleum energy they need to maintain their prosperity.

Second, I think it would be very, very risky to bet the farm on one or two unproven alternative sources of energy, because the stakes for this economy and this society are extremely high, given the central role of energy in every aspect of modern life and contemporary economies. The risks would be compounded if tried and tested energy sources and technologies were de-emphasized and *big* bets placed on unproven and upcoming technologies. A more rational approach would make the fossil fuels the base on which the energy future is built, *of course* complemented by alternatives whose contributions would gradually and steadily grow, as their technical limitations are resolved.

Third, we need to work together more closely and collaboratively on the development of sensible environmental measures which protect and preserve natural ecosystems while supporting the conditions necessary for economic growth and development. Enhancing the environmental performance of fossil fuels, including oil, through R&D and the development of groundbreaking technologies, is perhaps the single most important step we can take in this regard, given the overwhelming proportion that will continue to be met by conventional fuel sources. Clearly, such enhancements are in everyone's interest, whichever side of the producer-consumer line we find ourselves, because a cleaner environment and more effective and efficient energy use benefits everyone. Other levers with minimum economic impact, high chances of success and potential for rapid implementation include improving the efficiency of energy use, minimizing waste and promoting conservation.

My fourth, final and perhaps most important point is that Saudi Aramco firmly believes that the United States *will* adopt a pragmatic, realistic and balanced approach to energy issues, and eventually arrive at a basket of solutions that serve

to simultaneously enhance energy security, economic competitiveness, and environmental protection. Winston Churchill once said, “The United States invariably does the right thing, after having exhausted every other alternative.” Certainly in this case the complexity of the issues in play, the number of stakeholders involved, and the sometimes rough-and-tumble nature of the processes involved may make for a difficult route, but I believe it is one which will ultimately lead to the right place. For some seven decades, Saudi Aramco has been among the foremost providers of energy to the world and to the United States of America, and we look forward to continuing to meet a substantial portion of this nation’s energy needs for another century—or more.

Thank you for your attention today, and I look forward to addressing any questions you may have.