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Esso Resources Canada Limited

Business and Technology Outlook

by

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Slide 1 - Introduction

- Good morning, my name is Roy Millar and I am the General Manger of Research and Technology with Esso Resources Canada Limited.

- ERCL is headquartered in Calgary, Alberta and is the wholly owned upstream affiliate of Imperial Oil Limited, which is in turn 69 percent owned by Exxon.

- In the next half hour, I'll cover the topics shown on this first slide with reference to recent events and comment on our prospects for the future.

- 1989 has been an historic year for our company with the 5G$ acquisition of Texaco Canada and our subsequent merger to form a brand new company

- I'll talk about the scope of our new company's operation, our volume outlook and key business and technology strategies.

- I'll elaborate on our technology strategy with reference to our major resource opportunities and the hurdles and challenges that we must overcome if we are to realize these opportunities.

- When one considers the rapid depletion of existing reserves, the price-cost squeeze on new supplies and the growth in global environmental concerns, it is clear that we are facing unprecedented change over the next decade. In this context, we must become more adept at identifying and applying new technology if we are to secure competitive advantage and meet our long term business goals.

Slide #2 - Esso - Texaco Merger Vision

- Technology is critical for success but an even more critical factor for success is the commitment and capability of our people, and this determined the way in which we approached our merger with Texaco Canada.

- Rather that taking the straight forward acquisition approach, we committed ourselves to build a new company that would be ... "The best in Canada: the best in the business, the best for our people, the best for our shareholders, customers and the community."

- Our primary objective being to create a new company that will be better than the sum of the parts.

- To achieve this, we involved our people in literally hundreds of study teams to redesign not only our organization structure, but also every process and procedure that we use.

- To date we have been successful in meeting our major deadline of placing all employees in the new company by January 1, 1990, using a unique self enrollment process.

- Only time will tell if we will fully realize our vision. At this time, we are confident we have achieved the alignment and the commitment for this to happen.

Slide #3 - 1989 Statistics

- This slide will give you a feel for the scale of the merger operation I have just described, as well as the scope of the new upstream company.

- A good rule of thumb is that Texaco Canada was about one-third the size of Esso, so that most of our numbers have been increased by about 25 percent.

- We are now a company of 4500 employees, and produce about 350 K b/d of liquids and 630 MMCFD of natural gas.

- Last year, our combined capital expenditure (excluding acquisitions) was about 550M$.

- By merging the top two Canadian oil procedures we are by far the top ranked hydrocarbon liquid producer in Canada and we are now the third ranked gas producer.

- In terms of gross proved reserves, our liquid reserves have been increased by 20 percent to 2.3 billion barrels, and our natural gas reserves by about 70 percent to 5.1 TCF.

Slide #4 - ERCL and TCR Operations in Western Canada

- More for visual impact than anything, here is a map showing the extent of Texaco's (in yellow) and Esso's (in blue) operations at the time of the merger. It gives you a sense of the task that we faced in integrating Canada's two biggest oil companies.

- I think you can also see that there is a remarkably good fit geographically in terms of the opportunity to achieve synergies in managing our combined operations.

- Part of that integration effort has involved the sale of non-core resource properties and this had generated close to 300M$ to date to reduce our acquisition debt.

Slide #5 - Sedimentary Basins of Canada

- Esso's resource activities in Canada are focused on the three major sedimentary basins shown on this slide - i.e. the Southern basin in Western Canada, the Beaufort Basin and the East Coast Offshore.

- As evident from the previous slide, virtually all of Canada's production is generated in the Southern Basin which extends from southeast Saskatchewan, through Alberta and into northeast British Columbia and parts of the North West Territories.

- The traditional production is mainly from carbonate reefs, many of which were discovered 30-40 years ago and are now in an advanced stage of depletion. Discoveries in recent years have been relatively small in poor quality tight sands.

- The major growth area in the Southern Basin is the oilsand area around Cold Lake and at Fort McMurray near the Alberta-Saskatchewan border. Esso is the major player in this area and this is certain to dominate our future activity.

- The Beaufort and East Coast basins hold great promise for discoveries but require improved prices, firm markets and transportation infrastructure before they can be economically developed. Of these frontier regions, the Beaufort seems to hold the greatest promise for Esso by virtue of our large stake in the 11 TCF of proven gas reserves in that region.

- I plan to take a close look at each of our major producing areas and their corresponding technology needs.

Slide #6 - ERCL Production/Outlook

- First, here is a snapshot of our current production distribution in 1990 and where we see it going by the end of the decade.

- Conventional production is around 220 K b/d and this is expected to remain relatively flat over the coming years as productivity improvements in old fields, continued enhanced recovery and new discoveries offset declines in primary and secondary production.

- Cold Lake is our major insitu heavy oil operation, where we lead the industry with 90 K b/d of bitumen production via the steam stimulation process. Our growth targets for doubling our production here are highly dependent on favourable prices and continued application of new technology.

- At Ft. McMurray where the oil sand deposits are shallow, we have 25% interest in the Syncrude heavy oil mining and upgrading project which nets us 40 K b/d production.

- We have a similar interest in the new OSLO mining project which is currently in design/feasibility stages and if all goes well should add close to 30 K b/d to our production by 1997.

- In natural gas we have made extensive gains through acquisitions and discoveries to move from ninth to third place with 620 MMCF/D of sales. The major event to achieve our more than doubling of this production will be the development of our Beaufort gas reserves before the end of the decade.

Slide #7 - Business Strategies

- The business strategies behind these projections really have not changed in the past few years.

- The first and foremost of these is to maximize cash flow from our existing operations to provide funds for new opportunities.

- We are being highly selective with our investment in near term opportunities. Basically we will invest only if it is obligatory, if there is a significant cost of opportunity deferral, or if there is payout within the calendar year. Our objective here is to maximize cash flow to reduce our acquisition debt.

- The third strategy is to position ourselves strategically for future investment opportunities while minimizing current commitments.

- As Doug Baldwin will describe later, the key to all these strategies is the involvement and commitment of all our people to continuously improving all aspects of our business.

Slide #8 - Technology Strategic Thrusts

- Here are our corresponding technology thrusts

- First we must pursue technologies to continuously improve our conventional operations by reducing costs and increasing volumes.

- Secondly, we need to focus on recovery efficiencies both in conventional areas where up to 60 percent of the OOIP may not be recovered, and in the oil sands at Cold Lake where we are only getting 20 percent with current technology.

- Our conventional production in the longer term will be from the frontier regions and we need to develop low cost methods of exploration and development to deal with those unique environments

- Finally in all our operations, sustaining environmental quality is of paramount importance. All aspects of air, soil and water protection need to be addressed with both proactive and reactive capabilities.

- I now plan to give you a quick walk through our major operations and resource opportunities with reference to these strategies.

Slide #9 - Improving Conventional Operations

- In our conventional operations, there is no single technological panacea. Rather, we need to sustain an attack on all technological fronts to maximize production rates, minimize downtime and deal with high trouble cost events. This chart gives a flavour of the kind of programs we have underway.

- We have initiated a major collaborative effort to optimize the pumping performance of production wells with a high emphasis on rod pumps and multiphase pumping.

- We also have an extensive effort in the area of material corrosion and erosion prevention. We have developed and widely implemented a remote corrosion rate monitoring systems and have initiatives with non-metallic materials, hard coatings and corrosion resistant alloys.

- We see a lot of promise in computerized surveillance and control to both de-man facilities and improve response time to operating problems. Our "New Operating Environment" technology provides an intuitive interface to access real-time operating data and other data bases -- and is on display at the poster session.

Slide #10 - Esso Resources' Miscible Floods

- The second key thrust in conventional operations is to improve the performance of our enhanced recovery schemes.

- As can be seen from this slide we have a substantial number of hydrocarbon miscible EOR projects in Alberta and we are achieving commercial and technical success.

- However, we see considerable scope for improvement in sweep efficiency and access to by-passed oil.

- Keys to success here are designing and controlling solvent miscibility, improving interwell reservoir description and describing and controlling both areal and vertical flow patterns.

- Our work in this area combines physical model experimentation with theoretical and field work to characterize the gravity override phenomenon and to shed light on the effectiveness of blocking and diverting strategies to combat override and channelling.

- In addition we have extensive field tracer programs to better describe flow patterns and optimize our solvent use.

Slide #11 - Oil Sands Deposits

- I would now like to shift my focus to the oil sands deposits in Alberta which in sheer magnitude (i.e. 1.7 trillion barrels in place) rival the resource base in the Middle East.

- The problem, of course, is that its viscosity is over 100,000 centipoise at room temperature and its gravity is 10.5 degrees API.

- Esso has extensive involvement with this resource both at Cold Lake where we employ insitu recovery processes and in the Athabasca region where the oil sands outcrop, and surface mining is possible.

Slide #12 - Cold Lake Operations Photo

- Here we see an areal view of the operations at Cold Lake where the deposits are 1500 feet below the surface and depletion is achieved by drilling directional wells on tight spacing from centralized pads and using cyclic steam stimulation.

- Once produced, the bitumen is diluted with condensate to enable it to be pipelined to various markets, and the produced water is treated and reused for steam stimulation.

Slide #13 - Cold Lake Operation Status

- Of the 200 billion barrels in place in the Cold Lake area, 47 billion barrels lie under our leases and it is estimated that only 5 percent (or 2.5 billion barrels) is recoverable with current technology.

- We are currently producing about 90 K b/d from six phases of commercial operation in the high quality portion of the deposit and at best we are achieving 20 percent recovery levels in those areas.

- Development Phases 7 and 8 are complete, but production start-up has been deferred pending improvements in crude prices and market conditions.

- To improve bitumen recovery, we have an extensive research effort consisting of laboratory physical modelling and numerical simulation work to history match field pilot and laboratory results. In this work, the EPR thermal simulator MARSTHERM is a great asset.

- A number of significant technology pilots are underway (or are in the implementation stage) to demonstrate new technology to follow-up steam stimulation recovery and to extend commercial production to poorer quality deposits, Field pilots will test steam displacement, basal plane heating, horizontal well configurations and insitu combustion.

  With these methods we believe we can increase recovery efficiency to 50 percent of the original bitumen in place.

Slide # 14 - Syncrude Project

- Moving now to the Ft. McMurray area, this slide shows the scale of the huge Syncrude (joint venture) project that averages 160 K b/d of synthetic crude production.

- Here the production process involves surface mining, bitumen/sand separation and upgrading of the bitumen to produce synthetic crude oil.

Slide #15 - OSLO Oil Sands Mining Project

- The next major oil sands project in this area will be the OSLO project which Esso will operate as the participant manager with 25 percent interest. This is a 4.5 G$ project.

- The OSLO bitumen resource is believed to be superior to Syncrude's and the project team is developing enhanced technology for mining and extraction.

- The participants are scheduled to conclude definitive planning, basic design and pre appropriation work by the middle of 1991.

- Once again feasibility will depend largely on a favourable price outlook and fiscal terms.

- Production start-up could commence as early as 1997, although it is fair to say that there is considerable uncertainty in the timing of this project.

Slide # 16 - Photo of Arctic Offshore Drilling

- Turning now to frontier development, ERCL has been a world leader in cold region exploration since the mid 1960's and has pioneered the use of various drilling island structures including dredging, spray ice, and caissons.

- This is a picture of the successful well we drilled last year at South Isserk using the Gulf caisson structure. (The well was a modest oil and gas discovery.)

- Currently we have no plans for offshore Arctic drilling this year.

Slide #17 - Beaufort Gas Project

- Our major focus in the Arctic is advancing the development of our extensive Beaufort gas reserves.

- The current reserve base in the area can support 1200 MCFD for a period of 20 years and tentative plans would tie this gas into southern markets via a 36 inch pipeline down the MacKenzie Valley. The initial cost of this project would be in the order of 6G$.

- A major technological challenge is to develop a reliable geotechnical pipeline design for the full range of permafrost thaw/freeze conditions.

- A major achievement in the past year was the receipt of a license to export the gas. We are now proceeding to firm up markets, and we are pursuing a producer and pipeline joint venture agreement.

- Our hope is that this has can be brought on stream before the end of the decade.

Slide #18 - Environmental Issues

- I mentioned earlier that a key ERCL strategy is to be proactive in the sustainment of environmental quality.

- We have developed unique expertise in remote sensing and tracking of spills, methods to deal with spills under ice or in cold, fresh water, and in the use of dispersants and oil burning. Our large outdoor test basin in Calgary has been a major asset in testing these techniques. We have also developed a powerful computer-assisted training tool to develop spill response capabilities of the major oil spill cooperatives.

- Beyond the normal concerns for air, soil and water protection, by far the greatest issue facing us is the potential for global warming. Concern over this issue is now mobilizing the development of public policy in Canada and this is sure to have a significant impact on energy production and use.

- The possibility of global warming is a complex and potentially serious issue; however it is fraught with many scientific contradictions and uncertainties. A high priority needs to be placed on improving deficiencies in our scientific understanding to better guide potential responses.

- In this context, Imperial has prepared a position paper and launched an extensive work program to advance understanding of the issue and to assist in the consultative process with the Canadian Government.

- It is now clear that every major project we propose will be judged in terms of its contribution to greenhouse gases.

Slide #19 - Research and Technology Challenge

- In closing, I would like to re-emphasize the point that the degree to which we are able to gain competitive advantage and achieve our long term goals will be largely determined by our success in developing and applying new technology.

- In other words we need to relentlessly focus our technology efforts on business needs.

- We also need to improve our innovation performance by focusing on breakthrough opportunities and by shortening the innovation cycle.

- Finally, we believe that closer collaboration between researchers and operators at all phases of the innovation process is key to improved implementation.

Slide #20 - New ERCL Research Centre

- At Esso Resources, we strongly believe that technical excellence and innovation are critical to our future success.

- For this reason, we have made a large commitment to technology in our new organization with the formation of our new Research and Technology Division and with the completion of our new Calgary Research Centre. Here we are addressing research issues unique to our Canadian operating environment and complimentary to the research underway at EPR.

- That concludes my prepared remarks. Questions?