



# 5.1

# FINANCE, OPERATIONS AND RESOURCE MANAGEMENT



## PERFORMANCE OVERVIEW

97.5 million barrels of crude oil shipped; 11 per cent below estimate due to reliability and maintenance issues

29,000 cubic metres of recycle water spilled within lease boundaries; no release or impact to surrounding environment

Syncrude recognized among top 20 spenders on R&D in Canada

## OUR APPROACH

Syncrude is obligated by Canadians to manage our operations in a responsible and efficient manner that extracts sustained economic and societal value from the oil sands resource. This is accomplished through a continued focus on improved safety, reliability and environmental performance, and reduced unit costs. We recognize we are measured on not just how much crude oil we produce but, more importantly, how well we do it.

## 35 YEARS OF PRODUCTION

Syncrude celebrated 35 years of production on July 30<sup>th</sup>. On that date in 1978, 14 years after the company was formed, the first barrel of synthetic crude oil was shipped from our Mildred Lake facility. Today, Syncrude is one of the largest producers of crude oil from the oil sands with total production exceeding 2.5 billion barrels. Syncrude's leases are one of the highest-yielding sources of oil in Canada's history.

## 797 MINING TRUCK ACHIEVES RECORD MILESTONE

On May 31<sup>st</sup>, the first-ever Caterpillar 797 to work in the oil sands industry surpassed 100,000 hours of operation at our Aurora mine. Arriving in 1999, the truck was the result of extensive collaboration between Syncrude and Caterpillar to design a heavy hauler that can withstand the harsh temperatures and terrain of an oil sands mine. The new line of trucks was initially expected to last no more than 60,000 hours. The unit has undergone seven engine replacements since its delivery and operates at over 80 per cent availability. Our 797 fleet has hauled, in total, the equivalent of about 13 million barrels of oil during its years of service.



The first-ever Caterpillar 797 to work in the oil sands industry surpassed 100,000 hours of operation in May 2013.

## SPILL OF RECYCLE WATER CONTAINED ON-SITE

Syncrude reported 59 spills in 2013 to Alberta Environment and Resource Sustainable Development (ESRD) and/or the Alberta Energy Regulator (AER). Spills were comprised of hydrocarbons, chemicals or wastewater, and none occurred off our lease or into the environment. Human factors, such as failure to ensure valves were closed, sending material through wrong piping, and equipment failure or accidental breakage, accounted for the majority of spills. One of these incidents was an overflow of 29,000 cubic metres of recycle water from a sump, containing trace amounts of hydrocarbon. Refer to our [Water chapter](#) for more information. All spills were cleaned up and either disposed of as per normal operating procedures or directed into the process or the industrial wastewater system.

## ONE OF CANADA'S TOP R&D COMPANIES

Syncrude operates the oil sands industry's only dedicated research and development (R&D) centre. We invested \$192 million in 2013 to pursue new technologies and processes and were recognized as one of the top 20 R&D spenders in Canada.

Our program focuses on improving the reliability and capacity of our operation, reducing costs and addressing environmental issues. In fact, over half of our research expenditures are directed to projects that will improve environmental performance.

Syncrude has received over 150 Canadian and U.S. patents for our technology developments. Technologies related to tailings management, water use and reclamation are published and shared openly through collaborative industry



Syncrude is one of the top 20 spenders on research and development in Canada.

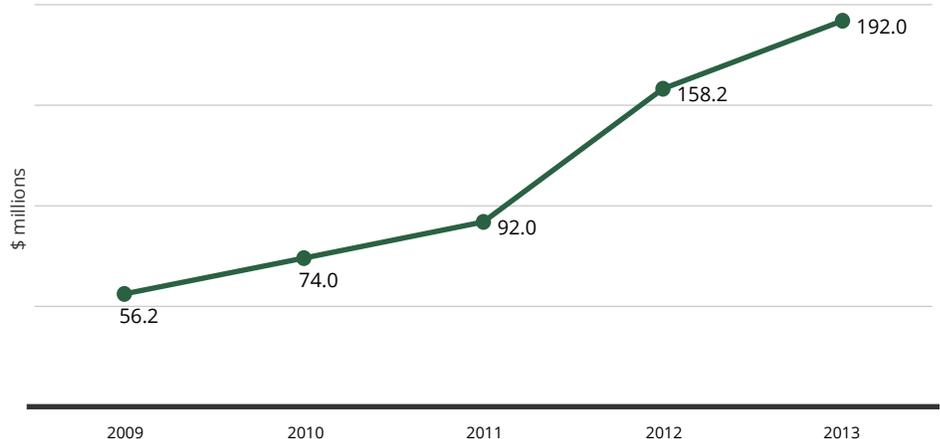
groups such as [Canada's Oil Sands Innovation Alliance \(COSIA\)](#). We also collaborate with entities that offer resources unavailable in our own research centre. These include universities, government laboratories and agencies, industrial research networks and

consortia, private research organizations, and our Joint Venture owners. Syncrude has also provided financial and in-kind support for the following Natural Science and Engineering Research Council of Canada (NSERC) industrial research chairs at universities across Canada:

- Oil Sands Engineering (University of Alberta)
- Pipeline Transport Processes (University of Alberta)
- Forest Land Reclamation (University of Alberta)
- Intelligent Sensing Systems (University of Alberta)
- Control of Oil Sands Processes (University of Alberta)
- Oil Sands Tailings Water Treatment (University of Alberta)
- Hydrogeological Characterization of Oil Sands Mine Closure Landforms (University of Saskatchewan)
- Mine Closure Geochemistry (University of Saskatchewan)
- Fluid Coking Technologies (Western University)

Updates on key research activities are included throughout this report, specifically in the chapters related to [land use](#), [biodiversity](#), [water use](#) and [tailings management](#).

## Research and Development Expenditures



## MAJOR PROJECTS PROCEEDING

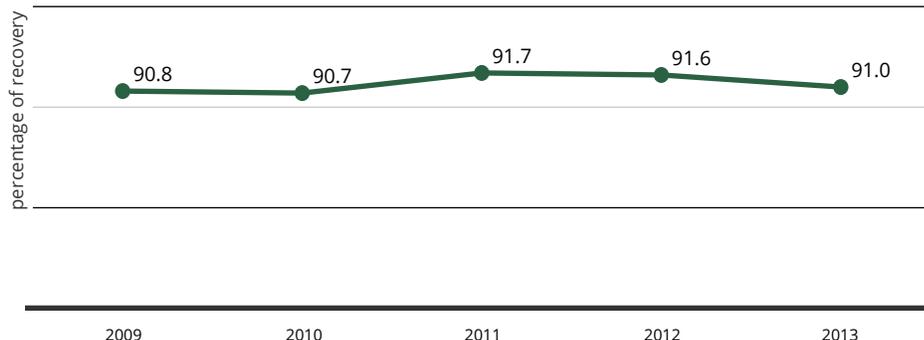
Two major projects are now underway at our sites:

Construction of the two new mine trains at Mildred Lake is estimated at \$3.9 billion, \$300 million lower than the original projected cost. These trains will incorporate new wet crushing technology, which is anticipated to increase production reliability and bitumen recovery, and reduce maintenance requirements. Start-up is scheduled for late 2014.

Construction of a \$1.9 billion tailings centrifuge plant began in 2012. It will dewater fluid fine tails (FFT) and produce a clay-rich soil material that can be used in the reclamation of former mine areas. Start-up is scheduled for early 2015.

Research and development projects continue to focus on improving bitumen recovery rates, which are directly linked to energy efficiency and responsible resource extraction.

## Bitumen Recovery



## FUTURE DEVELOPMENT PLANS

We will be focused for the next number of years on improving the operational efficiency to take full advantage of our production capacity. Our owners believe this approach is the best opportunity to add near-term value.

The Aurora South mine leases will now likely remain undeveloped until the early 2020s or later. We are instead proposing to develop the Mildred Lake Extension (MLX) project to sustain bitumen production levels upon depletion of the currently approved Mildred Lake mining area. Initial project scoping and stakeholder consultation is underway and we anticipate filing a formal regulatory submission in 2014.

## Operations Summary

	2009	2010	2011	2012	2013
<b>Crude oil production<sup>1</sup></b>					
Millions of barrels per year	102.2	107.0	105.2	104.9	97.5
Thousands of barrels per day	280	293	288	286	267
Millions of cubic metres per year	16.25	17.01	16.70	16.70	15.50
Realized SCO selling price (\$ per barrel) <sup>4</sup>	69.47	80.53	101.20	91.90	99.55
Average West Texas Intermediate (\$ per barrel)	62.09	79.61	95.11	94.15	98.05
<b>Total operating costs<sup>2</sup></b>					
Millions of dollars	3,645.8	4,040.2	4,344.4	4,428.7	4,379.8
\$ per barrel of production	35.69	37.74	41.28	42.24	44.94
<b>Expenditures and revenue</b>					
Capital expenditures <sup>3</sup> (\$ millions)	1,198.1	1,376.7	1,477.4	2,501.7	3,232.6
Research and development expenditures (\$ millions)	56.2	74.0	92.0	158.2	192.0
Revenues <sup>4</sup> (\$ millions)	7,118	8,655	10,708	9,706	9,703
Retained earnings <sup>5</sup>	-	-	-	-	-
<b>Operations</b>					
Bitumen produced (million barrels)	120.0	126.3	125.2	121.2	117.8
Bitumen produced (million cubic metres)	19.1	20.1	19.9	19.3	18.7
Bitumen recovery (%)	90.8	90.7	91.7	91.6	91.0
Upgrading yield (%)	86.9	85.8	85.7	86.3	85.3
Spills <sup>6</sup> (cubic metres)	885	3,607	6,572	4,126	37,626
Environmental compliance incidents <sup>7</sup>	6	5	4	17	28
Environmental fines (\$ millions)	0	3.2	0	0 <sup>8</sup>	0
Environmental protection orders (#)	0	0	0	0	0

1 Production is Syncrude crude oil shipped.

2 Operating costs are costs related to the mining of oil sands, the extraction and upgrading of bitumen into Syncrude Crude Oil (SCO), and maintenance of facilities; they also include administration costs, start-up costs, research, and purchased energy. There is no generally accepting accounting definition as to what constitutes "Operating Costs."

3 Capital expenditures includes development expense related to sustaining capital and growth capital projects. The accounting treatment of certain costs may vary significantly between different producers; some producers may elect to capitalize or defer and amortize certain expenditures that are recorded as an expense by other producers, and may segment "Corporate" costs.

4 Production of Syncrude Crude Oil (SCO) becomes the property of Syncrude's Joint Venture owners at point of departure from the Syncrude plant. As the operator, Syncrude does not collect revenue from the sale of crude oil or other products. Selling price and revenue reported here reflects only that of Canadian Oil Sands Limited, a 36.74 per cent owner, grossed up for 100 per cent Syncrude, and is solely meant to provide an indication of performance.

5 Syncrude's annual operating and capital expenditures are funded pro-rata by Syncrude's Joint Venture owners.

6 Includes spills of either hydrocarbons, chemicals or wastewater as reported to Alberta Environment and Resource Sustainable Development (ESRD) and/or Alberta Energy Regulator (AER). No spills occurred off-lease or into the surrounding environment.

7 An Environmental Compliance Incident is a failure, equipment bypass, or upset, that results in a numerical limit exceedence or operating without a control device (or a malfunctioning control device) as identified in Syncrude's Alberta Environmental Protection and Enhancement Act (EPEA) Operating Approval. Control devices not in service or malfunctioning were added to this metric in 2012. Data prior to 2012 includes only those incidents of limit exceedences.

8 In 2012, an administrative penalty of \$5,000 was paid to the Government of Alberta for failure to sufficiently report the release of emissions due to an isolated on-site sour water leak in July 2010.

Note: These figures may differ from those reported by any of the Joint Venture participants due to differences in reporting conventions and methodology.