Group Presentation Report:

Risk Management Practices of Canadian Oil and Gas Companies

BUS 419 Advanced Derivatives

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Simon Fraser University
Administration

OVERVIEW

Canada has a vast endowment of crude oil and natural gas resources. Developing these resources today provides hundreds of thousands of jobs for Canadians and contributes to our national wealth and trade balance. Canada has become a world leader in various fields such as high-tech exploration, enhanced recovery production methods, cold-climate and offshore operations, development of oil sands and sour gas resources and gas processing. Moreover, the oil and gas industry has three components: upstream operations, midstream operations, and downstream operations. Upstream operations locate and produce crude oil and natural gas. It is also known as the exploration and production (E&P) sector. Because Alberta accounts for more than 80 per cent of Canada's oil and gas production, many upstream businesses are based in Alberta and most have their head offices in Calgary. Midstream operations store, market and transport commodities such as crude oil, natural gas, natural gas liquids (NGLs, mainly ethane, propane and butane) and sulphur. It provides the vital link between the far-flung petroleum producing areas and the population centers where most consumers are located. In Canada, transmission pipeline companies are a major part of midstream operations. Most of these companies are also based in Calgary, although their activities extend across the country, into the United States and sometimes abroad. Downstream operations include oil refineries, petrochemical plants, petroleum products distributors, retail outlets and natural gas distribution companies. It touches extends to every province where consumers are located-and provides thousands of products such as gasoline, diesel, jet fuel, heating oil, asphalt, lubricants,

synthetic rubber, plastics, fertilizers, antifreeze, pesticides, pharmaceuticals, natural gas and propane.

MAJOR SUBSTITUTES

Even though the demand for crude oil and natural gas has grown significantly over the last decade, there has also been an increasing demand for other sources of energy. Major substitutes include coal, nuclear energy, biomass, biogas, solar power, wind power, geothermal energy, and tidal power. As global environmental conservatism increases, the demand for cleaner energy alternatives increases the competition for energy producing companies like oil and gas companies. However, even though the growth of these competing industries poses as a major threat to oil and gas companies, the demand for oil is still highly demanded for many industries globally.

THE STRUCTURE OF THE OIL INDUSTRY

In 2009, according to the US Energy Information Administration, Canada ranked as the sixth top world crude oil producer, producing 3,294 thousands of barrels per day, following leading gas producers Russia, Saudi Arabia, United States, Iran and China. It also ranked as the second largest natural gas producer in the world producing 5,634 thousands of barrels per day following Russia`s 20,610 thousands of barrels per day. The world`s largest consumer is the United States consuming 18,810 thousands of barrels per day. The United States is also Canada`s major importer of crude oil and natural gas. In 2009, they imported 70% of Canada's crude oil exports. This makes Canada the supplier to the United States of refined petroleum products, including gasoline and jet fuel.

MAIN CANADIAN PRODUCERS

The major oil and gas producers in Canada include EnCana Corporation, Canadian Natural Resources Limited, Husky Energy Inc., Talisman Energy Inc., Suncor Energy, Cenovus Energy, Penn West Energy Trust, and Nexen. A detailed analysis of the risk management procedures for Canadian Natural Resources Limited and Penn West Energy Trust are further developed in this report.

KEY ECONOMIC EVENTS

The introduction of the US-Canada Free Trade Agreement (FTA) in 1989 and the North American Free Trade Agreement (NAFTA) in 1994 has drastically increased trading between the US and Canada. These polices have created immense economic integration and thus the state of the Canadian economy has become highly correlated with the state of the US economy. Over the last decade, the Canadian economy has developed a trade-dependence as 70% of its exports are to the United States and thus Canada could not avoid the global financial crisis of 2008. Although Canada was not as severely impacted by the collapse as other economies, the oil and gas industry still experienced its adverse affects. Reduced access to credit limited highly leveraged operations such as exploration and development. Most oil and gas companies postponed these operations until market conditions improved. The financial crisis of 2008 also led to a decrease in demand, liquidity, and commodity price and led to increased regulations and supply. As the economic conditions improved, Canadian oil and gas industries regained stabilization.

REGULATION

Canadian oil and gas companies are regulated domestically as well as globally. They are globally regulated by the Organization of the Petroleum Exporting Countries (OPEC). Although Canada is not one of the OPEC member countries, OPEC tries to unify petroleum policies and attempts to secure prices for producers. The OPEC members include oil producing countries such as Iran, Iraq, Kuwait, Saudi Arabia, Venezuela, Qatar, Libya, Algeria, Nigeria, Ecuador, Angola, and United Arab Emirates. Canada is domestically regulated by the National Energy Board (NEB), the Office of Energy Efficiency (OEE), Environment Canada, and the Canadian Association of Petroleum Producers (CAPP). The Kyoto Protocol of 1997 was an international agreement linked to the United Nations Framework Convention on Climate Change. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing greenhouse gas (GHG) emissions.

PRICE VOLATILITY

The price of oil fluctuates continuously. This is a result of various factors such as the release of new OPEC and domestic regulations, geopolitical and financial events, the world supply and demand for oil and increase in demand for alternative energy sources. The seasonality of oil is another major factor that contributes to the volatility in oil prices.

RISK ANALYSIS

Firms in the Canadian Oil and Gas industry are exposure to many risks both globally and domestically. These risks include operational risk, economic and political risk, commodity risk, interest rate and exchange rate risk, and credit and liquidity risk. Canadian oil and gas companies are also exposed to the release of new regulatory limitations and the risks of new explorations and development.

RISK MEASUREMENT

Canadian oil and gas companies measure their exposure to these risks the application of sensitivity analysis on cash flows sensitive to oil and gas prices, interest rates, and foreign exchange changes.

RISK MANAGEMENT & HEDGING TECHNIQUES

They help manage these risks through constant diversification and insurance. They OTC forward contracts, combinations of options, and exchange traded futures such as foreign exchange futures and energy futures. They engage in derivative activities to hedge against the losses associated with the various forms of risk that they are exposed to. Canadian oil and gas companies focus on hedging techniques such as costless collar hedges, crack spread contracts and options, calendar spreads, interest rate swaps, and foreign exchange swaps.

The costless collar hedge helps mitigate losses due to fluctuations in the price of oil. This type of hedging activity involves purchasing the underlying asset and put option, while writing a call option. Although this is a common tool used in this industry to limit losses, it also limits the profits that can be made. The crack spread is created in commodity markets by purchasing oil futures and offsetting the position by selling gasoline and heating oil futures. This investment alignment allows Canadian oil and gas companies to hedge against risk due to the offsetting nature of the securities.

An interest rate swap is an agreement between two parties where one stream of future interest payments is exchanged for another based on a specified principal amount. These types of derivatives often exchange a fixed payment for a floating payment that is linked to an interest rate (LIBOR). Canadian oil and gas companies use interest rate swaps to manage their exposure to fluctuations in interest rate or obtain a marginally lower interest rate than it would have been able to get without the swap.

Foreign exchange swaps are also agreements made with counterparties but to consist of swapping principal and interest rate payments on a loan made in one currency for the principal and interest payments of a loan of equal value in another currency.

Canadian Natural Resources

CORPORATE OVERVIEW:

Canadian Natural Resources (CNR) is a Calgary, Alberta based company that focuses on the exploration, production, and development of oil and natural gas. It has grown to become the largest producer of heavy oil in Canada, as well as the second largest natural gas producer. The product range includes such various things as natural gas, heavy and light oil, in-situ oil sands production, and oil sands mining (with associated upgrading facilities).

The company details a number of key factors that they deem pivotal to their business strategy, some of which include (CNR, 2011):

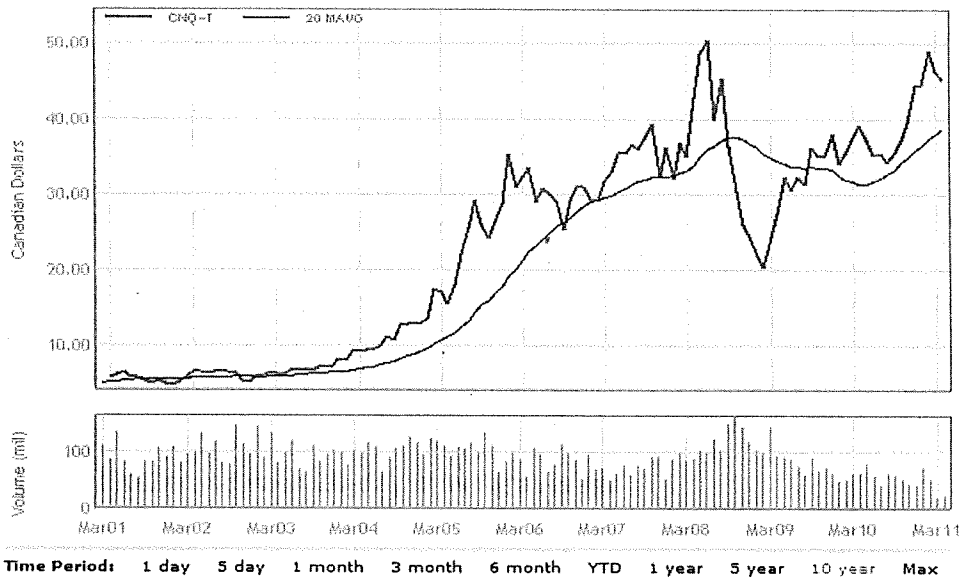
- A lowest cost producer strategy
- Exploitation focus (using existing discoveries, technology, etc.)
- Aversion to long-term contracts if possible, so as to increase flexibility
- Strive to own and operate all of their assets
- Balance between product offerings so as to at least partially avoid commodity risk
- Target strong debt ratings, manage liquidity as asset, & hedge for short-term cash flows

FINANCIAL PROFILE

CNR's stock (ticker symbol: CNQ) quote for March 9, 2011 was $45.11 CAD, down 2.65% from the previous day. Their high and low values for the 52-week range were $50.50 CAD and $31.97 CAD, respectively. With approximately 1.01 billion shares outstanding and a market cap of roughly $50.4 billion, CNR has a price-to-earnings ratio of 10.71 and an earnings-per-share of $4.20. Furthermore, they provide a dividend yield of 0.80%. As you can see in Figure 2a below

(Globe and Mail, 2011), which shows the 10 year historical stock price trend as compared to a 20-day moving average, CNR's stock has generally been increasing over this period of time. There was a period of some trouble around 2008-2009 however, likely due in large part to the global economic troubles.

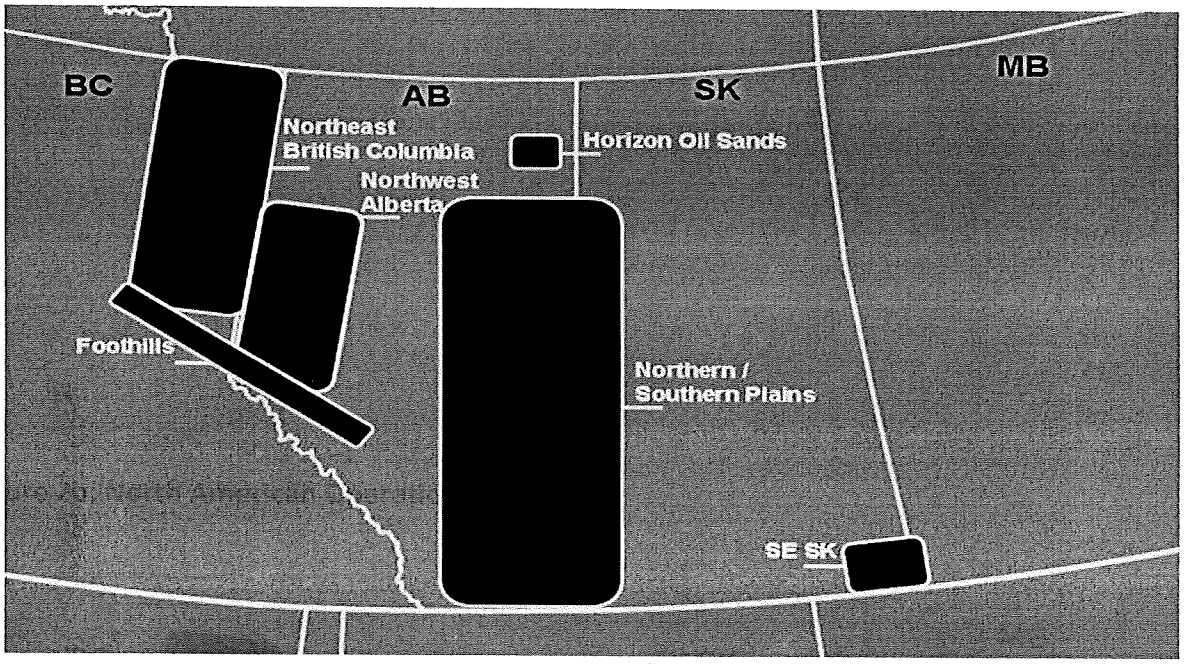
Figure 2a: 10 Year CNQ trend with 20-day moving average



OPERATIONAL PROFILE

With a primarily North American foundation, CNR holds the largest undeveloped land base in the Western Canadian Sedimentary Basin (see Figure 2b below). Crude Oil and NGL production in North America for the 3 months ended December 31, 2010, totaled 286,698 barrels per day, while natural gas production reached 1,223 million cubic feet per day. A key North American asset held by CNR is the Horizon Oil Sands, which is said to support 232,000 – 250,000 barrels per day of light, sweet, crude oil for a period of over 40 years (CNR, 2011).

Figure 2b: North American Operations



CNR also has international operations, specifically in the North Sea and off the coast of West Africa. These provide a strategic source of crude oil and natural gas, though quantities are significantly lower than North American operations (total proved plus probable reserves of light and medium oil, for instance, in North Sea and Offshore West Africa is about 525 million barrels).

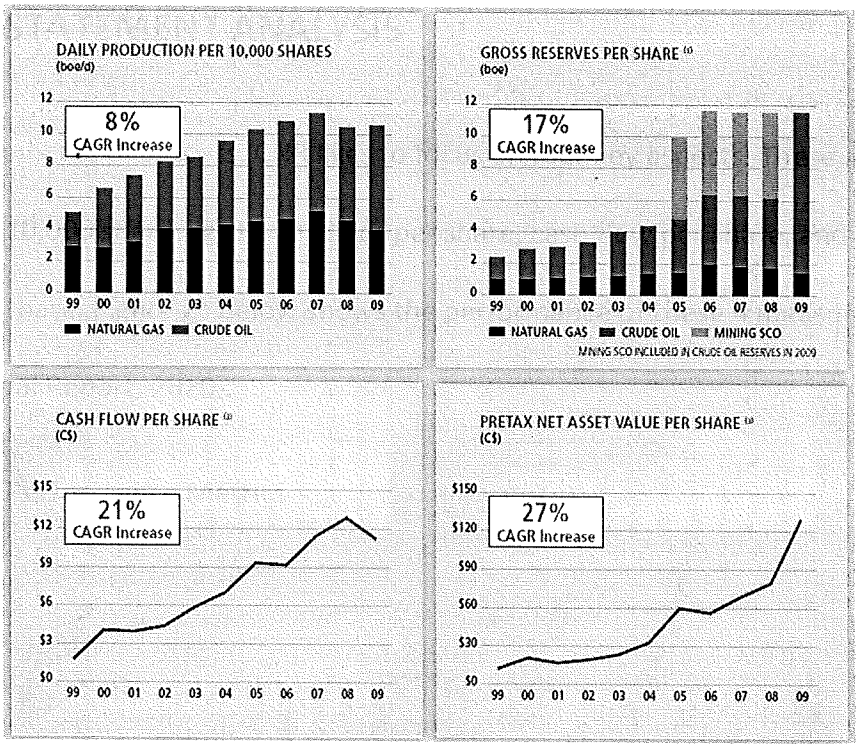
MANAGEMENT PROFILE

The main figures to be considered with regards to CNR's management are Allan P. Markin, Chairman of the Board, and Steve W. Laut, President. Markin, who obtained a BSc in Chemical Engineering, earned total compensation in 2009 of roughly $10,578,701 including option awards. Laut, who obtained a BSc in Mechanical Engineering, earned roughly $10,009,651 in total that same year.

FINANCIAL STATEMENT ANALYSIS

In their measurements of success, CNR likes to focus on four key aspects. These include daily production per 10,000 shares, gross reserves per share, cash flow per share, and pretax net asset value per share. Figure 2c below shows the performance of these 4 measurements since 1999 (CNR Annual Report, 2010):

Figure 2c: Four Performance Metrics



BALANCE SHEET

Figure 2d (CNR, 2011) on the following page displays CNR's balance sheet as at December 31, 2010. Of relevance to our analysis of risk management methods and related issues are such items as long-term debt and share capital. For instance, the notes pertaining to CNR's long-term

debt refer to the company's use of interest rate swaps, while the notes pertaining to share capital make note of stock options granted, surrendered, exercise, and forfeited.

Figure 2d: CNR Balance Sheet as at Dec. 31, 2010

(millions of Canadian dollars, unaudited)	Dec 31 2010	Dec 31 2009
ASSETS		
Current assets		
Cash and cash equivalents	$ 22	$ 13
Accounts receivable	1,481	1,148
Inventory, prepaids and other	610	584
Future income tax	59	146
	2,172	1,891
Property, plant and equipment (note 13)	40,472	39,115
Other long-term assets (note 3)	25	18
	$ 42,669	$ 41,024
LIABILITIES		
Current liabilities		
Accounts payable	$ 274	$ 240
Accrued liabilities	2,163	1,522
Current portion of other long-term liabilities (note 5)	719	643
	3,156	2,405
Long-term debt (note 4)	8,499	9,658
Other long-term liabilities (note 5)	2,130	1,848
Future income tax	7,899	7,687
	21,684	21,598
SHAREHOLDERS' EQUITY		
Share capital (note 7)	3,147	2,834
Retained earnings	18,005	16,696
Accumulated other comprehensive loss (note 8)	(167)	(104)
	20,985	19,426
	$ 42,669	$ 41,024

INCOME STATEMENT

CNR's statement of earnings also displays a number of items that can be partially attributed or related to the company's risk management tactics (ex. hedging activities). Some of these items, as can be seen in Figure 2e (CNR, 2011) on the following page, include stock-based compensation expenses, risk management activities, and foreign exchange gains/losses.

Figure 2e: Income Statement for the year ended Dec. 31, 2010

(millions of Canadian dollars, except per common share amounts, unaudited)	Three Months Ended Dec 31 2010	Three Months Ended Dec 31 2009	Year Ended Dec 31 2010	Year Ended Dec 31 2009
Revenue	$ 3,787	$ 3,319	$ 14,322	$ 11,078
Less: royalties	(431)	(285)	(1,421)	(936)
Revenue, net of royalties	3,356	3,034	12,901	10,142
Expenses				
Production	874	819	3,447	2,987
Transportation and blending	460	351	1,783	1,218
Depletion, depreciation and amortization (note 13)	1,578	836	4,036	2,819
Asset retirement obligation accretion (note 5)	27	23	107	90
Administration	53	49	210	181
Stock-based compensation expense (note 5)	336	87	294	355
Interest, net	120	111	449	410
Risk management activities (note 11)	199	186	(121)	738
Foreign exchange gain	(114)	(84)	(182)	(631)
	3,533	2,378	10,023	8,167
Earnings (loss) before taxes	(177)	656	2,878	1,975
Taxes other than income tax	25	32	119	106
Current income tax expense (note 6)	156	94	698	388
Future income tax expense (recovery) (note 6)	58	75	364	(99)
Net earnings (loss)	$ (416)	$ 455	$ 1,697	$ 1,580
Net earnings (loss) per common share (note 10)				
Basic and diluted	$ (0.38)	$ 0.42	$ 1.56	$ 1.46

Of interest to note is the foreign exchange gain in both 2009 and 2010 which result at least in part from the usage of cross currency swaps (more on this later). A more insightful look at risk-related activities can be had if one considers the statement of adjusted net earnings seen on the following page in Figure 2f (CNR, 2011). Of interest are the following:

- Changes in the intrinsic value of outstanding vested options are recognized in net earnings as stock-based compensation expense
- Changes in fair value of non-designated hedges are recognized in net earnings
- Unrealized foreign exchange gains and losses, offset by cross currency swaps, are recognized in net earnings

Figure 2f: Adjusted Net Earnings

($ millions)	Three Months Ended Dec 31 2010	Sep 30 2010	Dec 31 2009	Year Ended Dec 31 2010	Dec 31 2009
Net earnings (loss) as reported	$ (416)	$ 580	$ 455	$ 1,697	$ 1,580
Stock-based compensation expense, net of tax [a] [e]	336	18	65	294	261
Unrealized risk management loss (gain), net of tax [b]	131	71	224	(16)	1,437
Unrealized foreign exchange gain, net of tax [c]	(105)	(63)	(77)	(160)	(570)
Gabon, Offshore West Africa ceiling test impairment [d]	672	–	–	672	–
Effect of statutory tax rate and other legislative changes on future income tax liabilities [e]	–	–	–	83	(19)
Adjusted net earnings from operations	$ 618	$ 606	$ 667	$ 2,570	$ 2,689

CASH FLOW STATEMENT

The Cash Flow Statement for the year ended December 31, 2010, is shown in Figure 2g (CNR, 2011). It again shows the cash flows effects of risk-related activities, including risk management gains/losses and unrealized foreign exchange gains/losses.

Figure 2g: Cash Flow Statement for the year ended Dec. 31, 2010

(millions of Canadian dollars, unaudited)	Three Months Ended Dec 31 2010	Dec 31 2009	Year Ended Dec 31 2010	Dec 31 2009
Operating activities				
Net earnings (loss)	$ (416)	$ 455	$ 1,697	$ 1,580
Non-cash items				
Depletion, depreciation and amortization	1,578	836	4,036	2,819
Asset retirement obligation accretion	27	23	107	90
Stock-based compensation expense	336	87	294	355
Unrealized risk management loss (gain)	173	308	(25)	1,991
Unrealized foreign exchange gain	(120)	(88)	(180)	(661)
Deferred petroleum revenue tax expense	6	7	28	15
Future income tax expense (recovery)	58	75	364	(99)
Other	6	3	(7)	5
Abandonment expenditures	(80)	(17)	(179)	(48)
Net change in non-cash working capital	(63)	(180)	149	(235)
	1,503	1,509	6,284	5,812
Financing activities				
Issue (repayment) of bank credit facilities, net	622	(717)	(472)	(2,021)
Repayment of medium-term notes	(400)	–	(400)	–
Repayment of senior unsecured notes	–	–	–	(34)
Issue of common shares on exercise of stock options	87	3	170	24
Purchase of common shares under Normal Course Issuer Bid	–	–	(68)	–
Dividends on common shares	(82)	(57)	(302)	(225)
Net change in non-cash working capital	31	36	(5)	(12)
	258	(735)	(1,077)	(2,268)
Investing activities				
Expenditures on property, plant, and equipment	(1,872)	(680)	(6,336)	(2,985)
Proceeds on sale of property, plant and equipment	6	3	8	36
Net expenditures on property, plant and equipment	(1,867)	(677)	(6,327)	(2,949)
Net change in non-cash working capital	101	(98)	129	(609)
	(1,766)	(775)	(6,198)	(3,558)
(Decrease) increase in cash and cash equivalents	(5)	(1)	9	(14)
Cash and cash equivalents – beginning of period	27	14	13	27
Cash and cash equivalents – end of period	$ 22	$ 13	$ 22	$ 13
Interest paid	$ 89	$ 83	$ 471	$ 516
Taxes paid				
Taxes other than income tax	$ 33	$ 18	$ 102	$ 52
Current income tax	$ 66	$ 88	$ 111	$ 216

CORPORATE APPROACH TO RISK MANAGEMENT

CNR employs a carefully controlled hedge program with the aim of providing certainty with regard to the company's short-term cash flows. This, they say, is necessary in order to have access to adequate financing capabilities for capital plans. As such, CNR's usage of derivatives is solely aimed at managing their varying types of risk exposure, rather than for speculative purposes. CNR also tries to avoid risk in more fundamental manners. For instance, they tend to focus on large core areas, operate their key facilities themselves, and maintain product/operational diversity.

RISK FACTORS AND CNR MANAGEMENT THEREOF

MARKET RISK

CNR faces three main types of market risk in the course of doing business. These include commodity price risk, interest rate risk, and foreign currency exchange rate risk.

The company faces **commodity price risk** because fluctuation in the prices of commodities produced (or purchased) by CNR can affect their cash flows. On the sales side, CNR must hedge future crude oil and natural gas production. On the purchasing side, they must hedge the purchase of natural gas. To manage their commodity price risk, CNR uses such derivative financial instruments as crude oil price collars, crude oil puts, swap contracts, and more. Figure 2h (CNR, 2011) outlines their net derivatives outstanding at December 31, 2010:

Figure 2h: Commodity Price Risk Management Instruments (Dec. 31, 2010)

i) Sales Contracts

	Remaining term	Volume	Weighted average price	Index
Crude oil				
Crude oil price collars	Jan 2011 – Dec 2011	50,000 bbl/d	US$70.00 – US$102.23	WTI
Crude oil puts	Jan 2011 – Dec 2011	100,000 bbl/d	US$70.00	WTI

ii) Purchase Contracts

	Remaining term	Volume	Weighted average fixed rate	Floating index
Natural gas				
Swaps – floating to fixed	Jan 2011 – Dec 2011	125,000 GJ/d	C$4.87	AECO

These commodity derivatives are expected to be settled monthly by using the applicable index pricing for the respective contract months.

CNR also faces **interest rate risk** for two reasons: interest rate price risk on the company's fixed rate long-term debt and interest rate cash flow risk on their floating rate long-term debt. To manage this, CNR uses interest rate swap contracts. These require periodic exchange of payments without the actual exchange of the notional principle amounts on which the payments are based. CNR's interest rate swap contracts outstanding at December 31, 2010, are shown in Figure 2i (CNR, 2011):

Figure 2i: Outstanding Interest Rate Swaps (Dec. 31, 2010)

	Remaining term	Amount	Fixed rate	Floating rate
Interest rate [1] [2]				
Swaps – floating to fixed	Jan 2011 – Feb 2012	C$200	1.4475%	3 month CDOR [3]

(1) During the fourth quarter of 2010, the Company unwound US$350 million of 4.9% interest rate swaps for proceeds of US$54 million.

Finally, CNR faces **foreign currency exchange rate risk** due to a number of reasons. The primary reason for this is CNR's US-dollar denominated long-term debt and working capital. They are, however, also exposed because of transactions conducted in foreign currencies (in subsidiaries)

and because of the carrying values of self-sustaining foreign subsidiaries. To manage their foreign currency exchange rate risk, CNR uses cross currency swaps. Figure 2j (CNR, 2011) shows CNR's December 31, 2010, outstanding cross currency swaps:

Figure 2j: Outstanding Cross Currency Swaps (Dec.31, 2010)

	Remaining term	Amount	Exchange rate (US$/C$)	Interest rate (US$)	Interest rate (C$)
Cross currency Swaps [1]	Jan 2011 – Jul 2011	US$150	0.999	6.70%	7.70%
	Jan 2011 – Aug 2016	US$250	1.116	6.00%	5.40%
	Jan 2011 – May 2017	US$1,100	1.170	5.70%	5.10%
	Jan 2011 – Mar 2038	US$550	1.170	6.25%	5.76%

CNR also utilizes foreign currency forward contracts to manage currency exposure. At December 31, 2010, CNR had roughly $1.162 billion USD in foreign currency forwards outstanding (with terms of roughly 30 days or less).

CREDIT RISK

In order to manage the risk that CNR's counterparties will be unable to live up to contract obligations, the company regularly reviews risk exposure to individual companies. As well, CNR only enters into agreements with investment grade counterparties when getting involved with derivative instruments.

LIQUIDITY RISK

There is always the possibility that a company will face difficulties when trying to cover their financial liability obligations. CNR, thus, maintains adequate cash and cash equivalents.

Furthermore, they maintain other sources of capital. These include cash flow from operations, available credit facilities, and access to debt markets.

OTHER RISK FACTORS

Figure 2k (CNR, 2010) outlines a variety of other risk factors faced by CNR. Some noteworthy ones are indicated:

Figure 2k: Other Risk Factors

- Economic risk of finding, producing and replacing reserves at a reasonable cost, including the risk of reserve revisions due to economic and technical factors. Reserve revisions can have a positive or negative impact on asset valuations, ARO and depletion rates;
- Regulatory risk related to approval for exploration and development activities, which can add to costs or cause delays in projects;
- Labour risk associated with securing the manpower necessary to complete capital projects in a timely and cost effective manner;
- Operating hazards and other difficulties inherent in the exploration for and production and sale of crude oil and natural gas;
- Success of exploration and development activities;
- Timing and success of integrating the business and operations of acquired companies;
- Environmental impact risk associated with exploration and development activities, including GHG;
- Risk of catastrophic loss due to fire, explosion or acts of nature;
- Geopolitical risks associated with changing governmental policies, social instability and other political, economic or diplomatic developments in the Company's operations;
- Future legislative and regulatory developments related to environmental regulation;
- Reservoir quality;
- The ability to replace reserves of oil and gas, whether sourced from exploration, improved recovery or acquisition;
- Potential actions of governments, regulatory authorities and other stakeholders that may impose operating costs or restrictions in the jurisdations where the Company has operations;
- Changing royalty regimes;
- Business interruptions because of unexpected events such as fires, blowouts, freeze-ups, equipment failures and other similar events affecting the Company or other parties whose operations or assets directly or indirectly affect the Company and that may or may not be financially recoverable; and

One significant one (as indicated above) is changing royalty regimes. In 2010, royalties on crude oil and NGLs represented 19% of revenues, compared to 14% in 2009. With oil production being CNR's main activity, such changes in royalties can have significant impacts when calculations of

netback are considered. Netback calculates sales net of royalties (as well as production and transportation expenses). CNR's netback situation can be seen below, in Figure 2l (CNR, 2011):

Figure 2l: Netback

OPERATING HIGHLIGHTS – EXPLORATION AND PRODUCTION

	Three Months Ended			Year Ended	
	Dec 31 2010	Sep 30 2010	Dec 31 2009	**Dec 31 2010**	Dec 31 2009
Crude oil and NGLs ($/bbl) [1]					
Sales price [2]	**$ 67.74**	$ 63.21	$ 68.00	**$ 65.81**	$ 57.68
Royalties	**12.14**	9.05	7.96	**10.09**	6.73
Production expense	**13.59**	15.37	15.45	**14.16**	15.92
Netback	**$ 42.01**	$ 38.79	$ 44.59	**$ 41.56**	$ 35.03
Natural gas ($/Mcf) [1]					
Sales price [2]	**$ 3.56**	$ 3.75	$ 4.75	**$ 4.08**	$ 4.53
Royalties [3]	**0.07**	0.11	0.35	**0.20**	0.32
Production expense	**1.05**	1.05	1.03	**1.09**	1.08
Netback	**$ 2.44**	$ 2.59	$ 3.37	**$ 2.79**	$ 3.13
Barrels of oil equivalent ($/BOE) [1]					
Sales price [2]	**$ 50.41**	$ 47.44	$ 51.95	**$ 49.90**	$ 44.87
Royalties	**7.83**	5.83	5.60	**6.72**	4.72
Production expense	**10.91**	11.89	11.72	**11.25**	11.98
Netback	**$ 31.67**	$ 29.72	$ 34.63	**$ 31.93**	$ 28.17

SENSITIVITY ANALYSIS

Throughout CNR's financial reports, sensitivity analyses are included for various factors in order to provide investors or other outsiders information regarding the company's risk exposure to various factors. Figure 2m (CNR, 2011) on the following page displays a sensitivity analysis for some factors, such as commodity price changes, production volume changes, and interest rate changes (based on CNR's situation in the fourth quarter of 2010). This analysis provides a useful overview of the general impact that potential changes in various factors may have on CNR.

Figure 2m: Sensitivity Analysis

SENSITIVITY ANALYSIS

The following table is indicative of the annualized sensitivities of cash flow from operations and net earnings from changes in certain key variables. The analysis is based on business conditions and sales volumes during the fourth quarter of 2010, excluding mark-to-market gains (losses) on risk management activities, and is not necessarily indicative of future results. Each separate line item in the sensitivity analysis shows the effect of a change in that variable only with all other variables being held constant.

	Cash flow from operations ($ millions)	Cash flow from operations (per common share, basic)	Net earnings ($ millions)	Net earnings (per common share, basic)
Price changes				
Crude oil – WTI US$1.00/bbl [1]				
Excluding financial derivatives	$ 128	$ 0.12	$ 99	$ 0.09
Including financial derivatives	$ 128	$ 0.12	$ 99	$ 0.09
Natural gas – AECO C$0.10/Mcf [1]				
Excluding financial derivatives	$ 34	$ 0.03	$ 25	$ 0.02
Including financial derivatives	$ 38	$ 0.04	$ 29	$ 0.03
Volume changes				
Crude oil – 10,000 bbl/d	$ 175	$ 0.16	$ 104	$ 0.10
Natural gas – 10 MMcf/d	$ 9	$ 0.01	$ 1	$ –
Foreign currency rate change				
$0.01 change in US$ [1]				
Including financial derivatives	$ 101 – 103	$ 0.09	$ 40 – 41	$ 0.04
Interest rate change – 1%	$ 9	$ 0.01	$ 9	$ 0.01

(1) For details of outstanding financial instruments in place, refer to note 11 of the Company's unaudited interim consolidated financial statements.

STOCK-BASED COMPENSATION SCHEME

CNR employs a stock option plan that provides employees the choice between receiving common shares or direct cash payment in exchange for surrendered options. The options have terms of 5-6 years until they expire and intrinsic values of the options are recognized in each period for transparency purposes. The stock option plan liability is calculated using the popular Black-Scholes-Merton option pricing model. Figure 2n shows CNR's stock-based compensation expenses:

Figure 2n: Stock-based Compensation Expense

STOCK-BASED COMPENSATION EXPENSE

	Three Months Ended			Year Ended	
($ millions)	**Dec 31 2010**	Sep 30 2010	Dec 31 2009	**Dec 31 2010**	Dec 31 2009
Expense	**$ 336**	$ 18	$ 87	**$ 294**	$ 355

Penn West Exploration

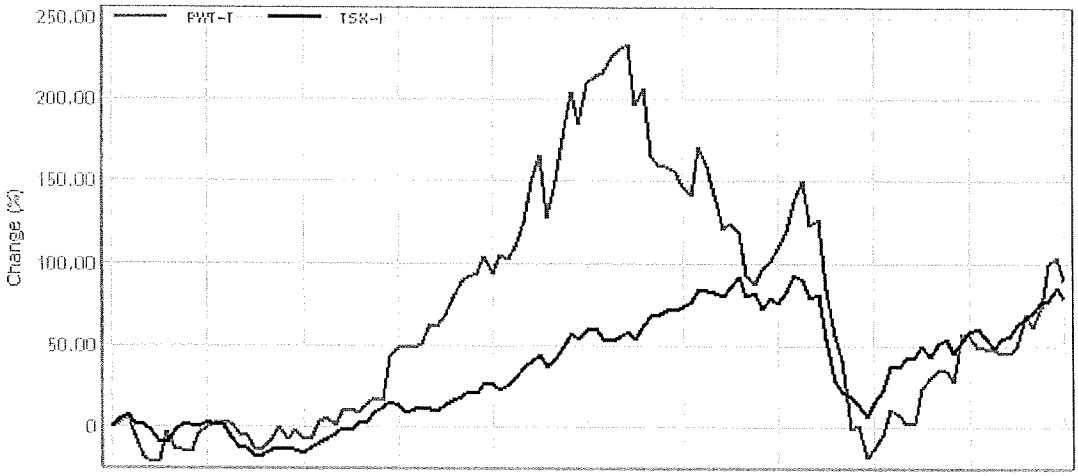
CORPORATE OVERVIEW:

Penn West Exploration (Penn West) is based in Calgary, Alberta and operates throughout the Western Canadian Sedimentary Basin. It is the largest producer of light and medium density oil in Western Canada by volume. Penn West has considerable interest in light/medium oil pools, an extensive in-situ oil sands project under early stages of development, and a large inventory of enhanced oil recovery opportunities. In January 2011 Penn West Petroleum Ltd. converted from an income trust into an exploration and production company with Penn West now operating under the trade name Penn West Exploration (Penn West About Us, 2011).

FINANCIAL PROFILE:

Penn West has a current market capitalization of $12.03 billion CAD with approximately 461 million shares outstanding as of December 31, 2010 (Penn West Investors, 2011). Its stock quote for March 10, 2011 was $26.10 CAD trading as stock symbol PWT on the Toronto Stock Exchange. The stock's 52-week range was $17.09 to $26.25. Penn West also trades on the New York Stock Exchange under symbol PWE (Investor Search: PWT, Globe and Mail, 2011). The stock currently has a Price-to-Earnings ratio of 50.41 and Earnings per Share of $0.52. Current dividend yield stands at 4.14%. The return-on-equity was +3% for 2010, -2% for 2009, and +19% for 2008. Figure 3a shows the historical stock price and volume for the previous 10 years from March, 2001 to March, 2011 against the S&P/TSX Composite. It can be seen that the stock had above average returns during the 2004-2008 period. After which time the stock has tracked the S&P/TSX Composite fairly closely.

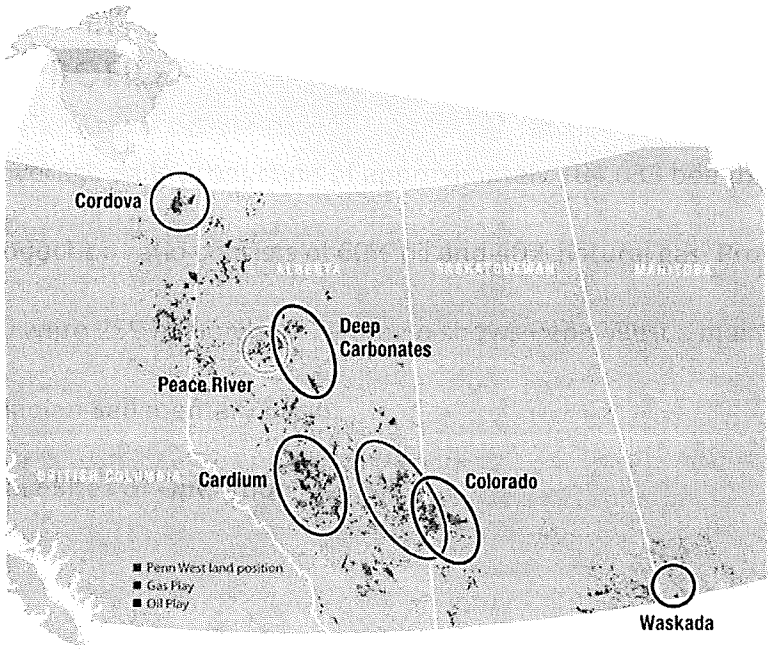
Figure 3a: 10 Year PWT.TSX versus S&P/TSX Composite



OPERATIONAL PROFILE

Penn West has an average daily production of approximately 164,633 boe (barrels of oil equivalents). Its production ratio consists of 60% oil and 40% natural gas. Proved reserves as at December 31, 2010 were 259 million boe. Figure 3b shows Penn West's main sites of operation in the Western Canadian Sedimentary Basin.

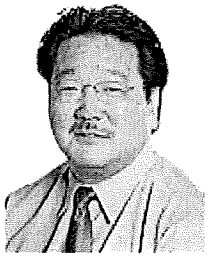
Figure 3b: Penn West Sites of Operation



MANAGEMENT PROFILE

The primary management personnel relevant to the study of risk management at Penn West include the Chief Executive Officer, the Chief Financial Officer, and the main executive responsible for risk management.

William E. Andrew is the current Chief Executive Officer. He is a professional engineer with over 35 years of oil and natural gas industry experience, including 18 years with Penn West. Andrew joined Penn West in 1992 as a founding member.



Todd Takeyasu is the Chief Financial Officer. He is a chartered accountant with more than 25 years of oil and natural gas industry and public accounting experience. Takeyasu joined Penn West in 1994, holding various positions including Financial Controller and Treasurer.

The last executive of primary importance is **Keith Luft**. He holds the position of **General Counsel and Senior Vice President**. He is a lawyer with more than 20 years of experience in private practice. Luft joined Penn West in 2006 as Vice President responsible for land and legal matters. In 2008 he was promoted to his current position, responsible for Legal, Regulatory, Corporate Resources, Insurance and Risk Management. So, it appears there is a risk management officer, who reports to the CEO and Board of Directors, but isn't a member of the Board, nor does there appear to be any subcommittees of the board dealing only with risk management issues. However, as expected, the Board does set risk management policies.

RISK MANAGEMENT STATEMENT

Penn West has in its financial reports a risk management statement which they use to inform investors on the general guidance of their risk management practices:

> "We are exposed to normal market risks inherent in the oil and natural gas business, including, but not limited to, commodity price risk, foreign currency risk, credit risk, interest rate risk, liquidity risk and environmental and climate change risk. We seek to mitigate these risks through various business processes and management controls and from time to time by using financial instruments." (Penn West: Financial Reports, Fourth Quarter, 2010)

RISK MANAGEMENT PHILOSOPHY

A synthesis of the information studied from the Penn West website and financial reports indicates a risk management philosophy that includes increasing the insurance of budgeted expected cash flows as well as managing downside risk, while preserving exposure to commodity price upside. Essential what this means is that Penn West uses risk management to protect planned future cash flows, while allowing the company to benefit from rising oil and natural gas prices.

STATEMENT ON HEDGING

Penn West has provided investors a statement on their hedging practices. This is not typical of companies in the oil and gas industry in Canada and Penn West was the only company to provide a statement on their hedging practices.

> "Penn West considers price hedging of oil and natural gas production to be a useful tool of risk management. Its uses include protecting planned capital budgets, safeguarding the economics of acquisitions and providing downside cash flow protection to support planned distributions.
>
> Penn West continues to employ derivative instruments on a portion of its production volumes spanning several quarters into the future. The company also secured hedges to fix the costs of electric power at its oilfield operations, improving its ability to project operating costs, netbacks and cash flows.
>
> Penn West is careful and judicious in its hedging activities in order to preserve exposure to commodity price upside and avoid unreasonable opportunity costs."
>
> (Penn West: Hedging, 2010)

What this indicates is that Penn West uses hedging to protect the integrity of capital budgets which include acquisitions and budgeted distributions in the form of dividends or stock buy-backs. They use the hedging only a few quarters into the future and do not go beyond this due to the difficulty in forecasting further into the future. The company also does not practice in speculative hedging practices and minimizes hedging that may reduce their upside exposure.

RISK FACTORS

Penn West faces the four primary risk factors in order of importance: commodity price risk, foreign currency exchange risk, interest rate risk, and credit risk.

Commodity Price Risk: Penn West most significant risk exposure is oil and natural gas price risk. As of the recent decade oil and gas prices have fluctuated significantly and have left the company open to risk exposures that could adversely affect their performance as well as their ability to stay operational. Penn West uses an active hedging program that uses swaps, collars and other financial instruments up to a maximum of 50% of forecasted short term sales volumes. They also secure hedges to fix the costs of electric power at its oilfield operations, improving its ability to project operating costs and cash flows. Average realized oil price before the impact of the realized portion of risk management for 2010 was $67.68 per barrel. As of Dec. 31, 2010, Penn West had risk management contracts of 35,000 barrels per day of their 2011 crude oil production at prices between US$80.06 per barrel and US$91.98 per barrel and 15,000 barrels per day of their forecasted 2012 crude oil production between US$83.67 per barrel and US$96.32 per barrel. Figure 3c shows the various derivatives utilized by the company to protect against fluctuation in oil prices as well as electrical power it needs to pump oil out of the ground.

Figure 3c: Penn West Commodity Price Hedging Instruments for Years 2011 and Beyond.

	Notional volume	Remaining term	Pricing
Crude oil			
WTI Collars	35,000 bbls/d	Jan/11 – Dec/11	US$80.06 to $91.98/bbl
WTI Collars	15,000 bbls/d	Jan/12 – Dec/12	US$83.67 to $96.32/bbl
Electricity swaps			
Alberta Power Pool	90 MW	Jan/11 – Dec/11	$63.16/MWh
Alberta Power Pool	45 MW	Jan/12 – Dec/12	$53.02/MWh
Alberta Power Pool	30 MW	Jan/12 – Dec/13	$54.60/MWh
Alberta Power Pool	20 MW	Jan/13 – Dec/13	$56.10/MWh
Alberta Power Pool	50 MW	Jan/14 – Dec/14	$58.50/MWh

Foreign Currency Exchange Risk: The second most significant risk exposure is foreign currency exchange risk. Penn West produces products, that being oil and natural gas, that are denominated on international commodities markets in US dollars. This leaves the company exposed to the CAD/USD exchange risk. In other words, since the commodity prices are referenced to US dollars, the realized prices are impacted by CAD/USD exchange rates received by the company operating in Canada. Penn West possess several debt capital contracts that are also denominated in USD, thus principal and interest payments in CAD are also impacted by exchange rates. The company uses forward contracts to fix or collar future exchange rates to fix the CAD equivalent of oil revenues or to fix USD denominated long-term debt principal repayments. Figure 3d show the various exchange rate forward contracts utilized by the company. This information includes both the terms of the contracts and the amounts hedged per year. It is important to note that the company appears to have created a synthetic collar by shorting $378 million and buying $90 million into future years.

Figure 3d: Foreign Currency Forward Contracts Outstanding as of December 31, 2010

Initial Term	Nominal Amount (millions)	Termination date	Exchange rate
19-month term	Sell US$378	December 2011	1.06085 CAD/USD
8-year term	Buy US$80	May 2015	1.01027 CAD/USD
10-year term	Buy US$80	May 2017	1.00016 CAD/USD
12-year term	Buy US$70	May 2019	0.99124 CAD/USD
15-year term	Buy US$20	May 2022	0.98740 CAD/USD

Interest Rate Risk: Penn West currently maintains a portion of debt capital in floating-rate bank facilities which results in exposure to fluctuations in short-term interest rates which remain at lower levels than longer-term rates. This may increase the certainty of future interest rates by

entering fixed interest rate debt instruments or by using financial instruments to swap floating interest rates for fixed rates or to collar interest rates. Figure 3e shows the various interest rate swaps being utilized by the company as of December 31, 2010. These swaps going only to the year 2014 and a large portion are denominated at a low 1.61%.

Figure 3e: Interest Rate Swaps

	Notional volume	Remaining term	Pricing
Interest rate swaps			
	$500	Jan/11 – Dec/11	1.61%
	$600	Jan/11 – Jan/14	2.71%
	$50	Jan/11 – Jan/14	1.94%

Credit Risk: Credit risk is the risk of loss if purchasers or counterparties do not fulfill their contractual obligations. In the oil and gas industry, oil and natural gas sales follow a counterparty risk procedure whereby each counterparty is reviewed on a regular basis for the purpose of assigning a credit limit and may be requested to provide security. Penn West also utilizes financial derivatives to transact with counterparties who are members of their banking syndicate or other counterparties that have investment grade bond ratings. By remaining close to their own banking syndicate, the company is able to reduce credit risk from counterparties.

FINANCIAL STATEMENT ANALYSIS

BALANCE SHEET

The fair value of all outstanding derivative contracts (commodity, interest rate, foreign exchange) is reflected on the balance sheet, with changes during the period recorded in income as unrealized gains or losses. The key items to notice on the balance sheet is that short term risk management liabilities are nearly half the amount of the previous year. And long term risk management liabilities are nearly triple the amount of the previous year. This may indicate the company is perhaps moving into longer-term derivatives contracts.

Figure 3f: December 31, 2010 Penn West Balance Sheet

(CAD millions, unaudited)	December 31, 2010	December 31, 2009
Assets		
Current		
Accounts receivable	$ 386	$ 371
Future income taxes	17	37
Other	87	101
	490	509
Deferred funding obligation	678	-
Property, plant and equipment	10,180	11,347
Goodwill	2,020	2,020
	12,878	13,367
	$ 13,368	$ 13,876
Liabilities and unitholders' equity		
Current		
Accounts payable and accrued liabilities	$ 743	$ 515
Distributions payable	41	63
Risk management	62	130
	846	708
Long-term debt	2,496	3,219
Convertible debentures	255	273
Asset retirement obligations	653	568
Risk management	64	21
Future income taxes	855	1,169
	5,169	5,958
Unitholders' equity		
Unitholders' capital	9,177	8,451
Contributed surplus	138	123
Deficit	(1,116)	(656)
	8,199	7,918
	$ 13,368	$ 13,876

INCOME STATEMENT

The income statement for the year 2010 for Penn West shows that there were realized gains and losses on commodity contracts. There was a loss of $20 million realized and a gain of $23 million unrealized under risk management gain. Under expenses there was an unrealized risk management gain of $2 million, an unrealized foreign exchange gain of $82 million, and a gain on currency contracts of nil. The $82 million gain during 2010 was primarily due to the strengthening CAD relative to the USD. Also important to notice is that net income was $226 million compared to a net loss of $144 million for 2009. The increase was primarily due to higher oil and natural gas revenues and lower unrealized risk management losses.

	Three months ended December 31		Year ended December 31	
(CAD millions, except per unit amounts, unaudited)	**2010**	2009	**2010**	2009
Revenues				
Oil and natural gas	**$ 805**	$ 801	**$ 3,054**	$ 2,859
Royalties	**(139)**	(146)	**(545)**	(495)
	666	655	**2,509**	2,364
Risk management gain (loss)				
Realized	**(23)**	30	**(20)**	344
Unrealized	**(87)**	(107)	**23**	(554)
	556	578	**2,512**	2,154
Expenses				
Operating	**246**	240	**959**	979
Transportation	**8**	8	**33**	34
General and administrative	**48**	43	**181**	168
Financing	**43**	41	**174**	161
Depletion, depreciation and accretion	**345**	367	**1,338**	1,556
Unrealized risk management (gain) loss	**(12)**	(2)	**(2)**	39
Unrealized foreign exchange gain	**(55)**	(25)	**(82)**	(186)
Transaction costs	**4**	-	**4**	-
Gain on currency contracts	**-**	-	**-**	(75)
	627	672	**2,605**	2,676
Loss before taxes	**(71)**	(94)	**(93)**	(522)
Taxes				
Future income tax recovery	**(50)**	(82)	**(319)**	(378)
Net and comprehensive income (loss)	**$ (21)**	$ (12)	**$ 226**	$ (144)

Figure 3g: December 31, 2010 Penn West Income Statement

CASH FLOW STATEMENT

The cash flow statement for December 31, 2010 shows an unrealized risk management gain of $25 million and an unrealized foreign exchange gain of $82 million. These are likely to be the result of the strengthening Canadian dollar.

Figure 3h: December 31, 2010 Penn West Cash Flow Statement

	Three months ended December 31		Year ended December 31	
(CAD millions, unaudited)	**2010**	2009	**2010**	2009
Operating activities				
Net income (loss)	**$ (21)**	$ (12)	**$ 226**	$ (144)
Depletion, depreciation and accretion	**345**	367	**1,338**	1,556
Future income tax recovery	**(50)**	(82)	**(319)**	(378)
Unit-based compensation	**11**	13	**47**	52
Unrealized risk management loss (gain)	**75**	105	**(25)**	593
Unrealized foreign exchange gain	**(55)**	(25)	**(82)**	(186)
Asset retirement expenditures	**(15)**	(16)	**(53)**	(65)
Change in non-cash working capital	**13**	88	**85**	(27)
	303	438	**1,217**	1,401
Investing activities				
Additions to property, plant and equipment	**(400)**	(196)	**(1,187)**	(688)
Acquisition of property, plant and equipment	**(158)**	(1)	**(637)**	(32)
Disposition of property, plant and equipment	**4**	197	**1,148**	401
Change in non-cash working capital	**9**	30	**155**	(79)
	(545)	30	**(521)**	(398)
Financing activities				
Increase (decrease) in bank loan	**134**	(315)	**(1,101)**	(687)
Proceeds from issuance of notes	**156**	-	**460**	238
Issue of equity	**73**	10	**557**	280
Distributions paid	**(100)**	(163)	**(591)**	(799)
Redemption of convertible debentures	**-**	-	**-**	(4)
Repayment of acquired credit facilities	**(21)**	-	**(21)**	(31)
	242	(468)	**(696)**	(1,003)
Change in cash	**-**	-	**-**	-
Cash, beginning of period	**-**	-	**-**	-
Cash, end of period	**$ -**	$ -	**$ -**	$ -
Interest paid	**$ 56**	$ 56	**$ 147**	$ 147
Income taxes recovered	**$ -**	$ -	**$ (1)**	$ (3)

SENSITIVITY ANALYSIS

Unlike a majority of the other oil and gas companies in Canada, Penn West did not provide a sensitivity analysis based on the various derivatives used. Instead, the company provided a general sensitivity analysis based on the key drivers of change, those being: price per barrel of liquids, interest rates, exchange rates, etc.. While this information is useful, it does not provide the important key points needed to analyze the company's exposure due to its hedging practices.

Figure 3i: December 31, 2010 General Sensitivity Analysis

		Impact on funds flow	
Change of:	Change	$ millions	$/unit
Price per barrel of liquids	$1.00	19	0.04
Liquids production	1,000 bbls/day	17	0.04
Price per mcf of natural gas	$0.10	12	0.03
Natural gas production	10 mmcf/day	7	0.01
Effective interest rate	1%	4	0.01
Exchange rate ($US per $CAD)	$0.01	21	0.05

COMPENSATION FINANCIAL DERVIATIVES

Before Penn West reverted back to an independent corporation, it was operating as a Trust until the end of December 2010. The company utilized a trust unit rights incentive plan, similar to an employee stock options incentive plan used in corporation. In 2011 and beyond the company will be using the more familiar method. The trust unit compensation expense for the plan is based on the fair value of the rights granted, amortized over the vesting periods. A binomial option pricing model was used to determine the fair value of the rights when granted.

Encana Natural Gas

Hedging Philosophy

Encana partially manages its financial risks exposure through the use of various financial instruments and physical contracts. The use of derivative financial instruments is governed by limits established by the board of directors. Encana's policy is not to use derivatives for speculative purposes (Encana, 2010).

Risk Factors

Natural gas price risk: fluctuations in commodity prices may have an effect on the fair value of future cash flows. Encanad estimated the changes in pre-tax net earnings due to price changes as follows (Encana, 2010):

	10% Price Increase	10% Price Decrease
Natural gas price	$ (447)	$ 447
Power price	10	(10)

Enacana partially manages the natural gas price risk by entering into swaps to fix the New York Mercantile Exchange (NYMEX) prices. Swaps are also used to manage price differential between production areas and sales points: The following table provides fair values of commodity price positions (Encana, 2010):

	Notional Volumes	Term	Average Price	Fair Value
Natural Gas Contracts				
Fixed Price Contracts				
NYMEX Fixed Price	1,438 MMcf/d	2011	5.98 US$/Mcf	$ 745
NYMEX Fixed Price	1,125 MMcf/d	2012	6.36 US$/Mcf	522
Basis Contracts *				
Canada		2011		(15)
United States		2011		(51)
Canada and United States		2012-2013		(21)
				1,180
Other Financial Positions **				(9)
Natural Gas Fair Value Position				1,171
Power Purchase Contracts				
Power Fair Value Position				(10)
Total Fair Value				$ 1,161

Foreign Exchange Risk: Fluctuations in the USD/CAD rates can affect the fair values of Encana's positions. Although the functional currency is CAD, Encana's reports are prepared in USD. The FX risk is managed by a natural hedge through holdings in both CAD and USD. Encana may enter into cross currency swaps on portions of its debt in order to manage the FX risk (Encana, 2010).

Interest Rate Risk: Changes in interest rates affect the value of Encana's debt. This risk is managed by holding of both fixed and floating rate debt. Encana may enter into interest rate swaps agreements to manage the fixed/floating debt (Encana, 2010).

The following is the "operating activities" section of the cash flow statements. Losses on risk management activities can be seen under the results for 2010:

For the years ended December 31 (US$ millions)		2010	2009	2008
Operating Activities				
Net earnings from continuing operations		$ 1,499	$ 1,830	$ 6,499
Depreciation, depletion and amortization		3,242	3,704	4,035
Future income taxes	*(Note 9)*	774	(1,799)	1,723
Cash tax on sale of assets	*(Note 9)*	–	–	25
Unrealized (gain) loss on risk management	*(Note 17)*	(945)	2,680	(2,729)
Unrealized foreign exchange (gain) loss		(278)	(231)	417
Accretion of asset retirement obligation	*(Note 13)*	46	71	77
(Gain) loss on divestitures	*(Note 6)*	2	2	(141)
Other		99	373	(79)
Cash flow from discontinued operations		–	149	(441)
Net change in other assets and liabilities		(84)	23	(257)
Net change in non-cash working capital from continuing operations	*(Note 18)*	(1,990)	(29)	(1,353)
Net change in non-cash working capital from discontinued operations		–	1,100	1,210
Cash From Operating Activities		2,365	7,873	8,986

Nexen Inc.

Hedging Philosophy

Nexen philosophy is to recognize market risks and manage them to the extent that it's practical using derivatives for trading and non-trading purposes as part of an overall risk management policy.

Risk Factors

Commodity Price Risk: Nexen recognizes that "extended periods of lower commodity prices affects spending on exploration, estimates of reserves, and carrying value of oil and gas properties" (p.41). Most of Nexen's production is sold under short-term contracts which exposes them to short-term price fluctuations. Nexen management of price risk could include futures, swaps and options. Currently, Nexen uses WTI put options which help establishing a floor price. The following table shows Nexen's positions in the WTI puts (Nexen, 2010):

	December 31, 2010				
	Notional Volumes *(bbls/d)*	Term	Average Floor Price *(US$/bbl)*	Fair Value *(Cdn$ millions)*	Change in Fair Value *(Cdn$ millions)*
WTI Crude Oil Put Options (monthly)	100,000	2011	56	9	(24)
	December 31, 2009				
	Notional Volumes *(bbls/d)*	Term	Average Floor Price *(US$/bbl)*	Fair Value *(Cdn$ millions)*	Change in Fair Value *(Cdn$ millions)*
WTI Crude Oil Put Options (monthly)	60,000	2010	50	13	(12)
WTI Crude Oil Put Options (annual)	30,000	2010	50	4	(10)
				17	(22)

Foreign Exchange Risk: A significant portion of Nexen's activities are carried in US dollar, which exposes it to USD/CAD exchange rate risk. The following table provides a measure of the sensitivity to changes in USD/CAD rates (Nexen, 2010):

(Cdn$ millions)	Cash Flow	Net Income	Capital Expenditures	Long-Term Debt
$0.01 Change in US to Cdn	26	15	16	53

This risk is managed by establishing a natural hedge. Nexen matches expected future cash flows with borrowing in the same currency. "Net revenue from foreign operations and USD borrowings are used to fund USD capital expenditure and debt repayments" (p.112). The following table shows the matching to create a natural hedge (Nexen, 2010):

(US$ millions)	December 31, 2010	December 31, 2009
Net Investment in Self-Sustaining Foreign Operations	4,443	4,492
Designated US-Dollar Debt	4,393	4,492

Interest Rate Risk: Nexen believes that its exposure to interest rate risk is only through their term credit facilities which are to be used minimally. This exposure is believed to be immaterial and is not managed by Nexen (Nexen, 2010).

Credit Risk: Nexen's exposure to credit risk is with counterparties in the energy industry. Most of this exposure is with large energy companies. Some of the measures Nexen takes to control credit risks are: assessing financila strength of counterparties, limiting exposure to individuals, and review counterparties credit limits regularly (Nexen, 2010).

Talisman Energy Inc.

Hedging Philosophy

Talisman tracks its exposure to volatilities in commodity prices, interest rates and foreign exchange rates. Talisman enters into physical delivery contracts for fixed and collared prices and derivative positions to manage its exposure to commodity, interest rates and foreign exchange rates risks (Talisman, 2010).

Risk Factors:

Commodity Price Risk: To manage its exposure to commodity price risk, Talisman had the following positions as of December 31, 2010 (Talisman, 2010):

Fixed price swaps	Term	mcf/d	C$/mcf	Fair value
ICE index	Jan-Mar 2011	17,824	6.45	(6)
ICE index	Apr-Jun 2011	16,886	5.89	(5)
				(11)

Fixed price swaps	Term	mcf/d	US$/mcf	Fair value
NYMEX index	Jan-Dec 2011	23,734	6.12	11

Two-way collars	Term	bbls/d	Floor/ceiling US$/bbl	Fair value
Dated Brent oil index	Jan-Jun 2011	20,000	80.00/92.41	(18)
Dated Brent oil index	Jan-Dec 2011	21,000	80.00/91.27	(49)
Dated Brent oil index	Jan-Dec 2011	20,000	84.00/97.57	(20)
WTI	Jan-Dec 2011	9,000	80.00/92.00	(18)
				(105)

Two-way collars	Term	mcf/d	Floor/ceiling US$/mcf	Fair value
NYMEX index	Jan-Jun 2011	95,000	5.27/6.66	12
NYMEX index	Jan-Dec 2011	71,200	6.14/6.59	36
				48

It also had the following physical delivery contracts (Talisman, 2010):

Contract	Term	mcf/d	C$/mcf
AECO natural gas swaps	Jan-Dec 2011	3,671	2.98

Interest Rate and Foreign Exchange Risks: Talisman denominates most borrowings in USD to reduce exposure to FX risk. It also manages currency translation with subsidiaries by matching

internal borrowings with the functional currency of the subsidiaries. As for the interest rate risk, Talisman uses cross currency interest rates swaps to manage fixed/float rates debt. The following table shows Talisman's positions in the swaps (Talisman, 2010):

Derivative Instrument	Balance Sheet Caption	2010	2009
Assets			
Interest rate swaps	Accounts receivable	**13**	13
Interest rate swaps	Other assets	**24**	14
Cross currency swaps	Accounts receivable	**46**	–
Cross currency swaps	Other assets	–	28
Commodity contracts	Accounts receivable	**59**	17
Risk management assets		**142**	72
Liabilities			
Cross currency swaps	Accounts payable and accrued liabilities	–	1
Commodity contracts	Accounts payable and accrued liabilities	**116**	275
Commodity contracts	Other long-term obligations	–	7
Risk management liabilities		**116**	283

REFERENCES

CNR Annual Report 2009. (2010). Retrieved March 5, 2011, from

http://www.cnrl.com/upload/media_element/307/01/cnq_2009ar.pdf

CNR: Financial Information. (2011). Retrieved March 2, 2011, from

http://www.cnrl.com/investor-information/financial-information/financial-reports/annual-report.html

Encana. Annual Report. (2010). Retrieved on March 1, 2011 from

http://www.encana.com/investors/financial/annualreports/

Investor Search: CNQ, *Globe and Mail*, Retrieved March 9, from

http://www.theglobeandmail.com/globe-investor/markets/stocks/summary/?q=CNQ-T

Investor Search: PWT, *Globe and Mail*, Retrieved March 10, from

http://www.theglobeandmail.com/globe-investor/markets/stocks/summary/?q=PWT-T

Nexen. Annual Report (2010). Retrieved on March 4, 2010 from

http://www.nexeninc.com/en/Investors/ReportsandFilings/AnnualReports.aspx

Penn West: About Us. Retrieved March 10, 2011, from

http://www.pennwest.com/about/at-a-glance.asp

Penn West: Financial Reports, Fourth Quarter 2010. Retrieved March 10, from

http://www.pennwest.com/investors/documents/20104thQuarter-FullReleaseFeb16FINAL.pdf

Penn West: Hedging. Retrieved March 10, 2011 from

http://www.pennwest.com/investors/hedging.asp

Penn West: Investors. Retrieved March 10, 2011, from

http://www.pennwest.com/investors/investor-faq.asp

Talisman. Annual Report. (2010). Retrieved on March 5, 2010 from http://www.talisman-energy.com/investors/financial_information/annual_reports.html