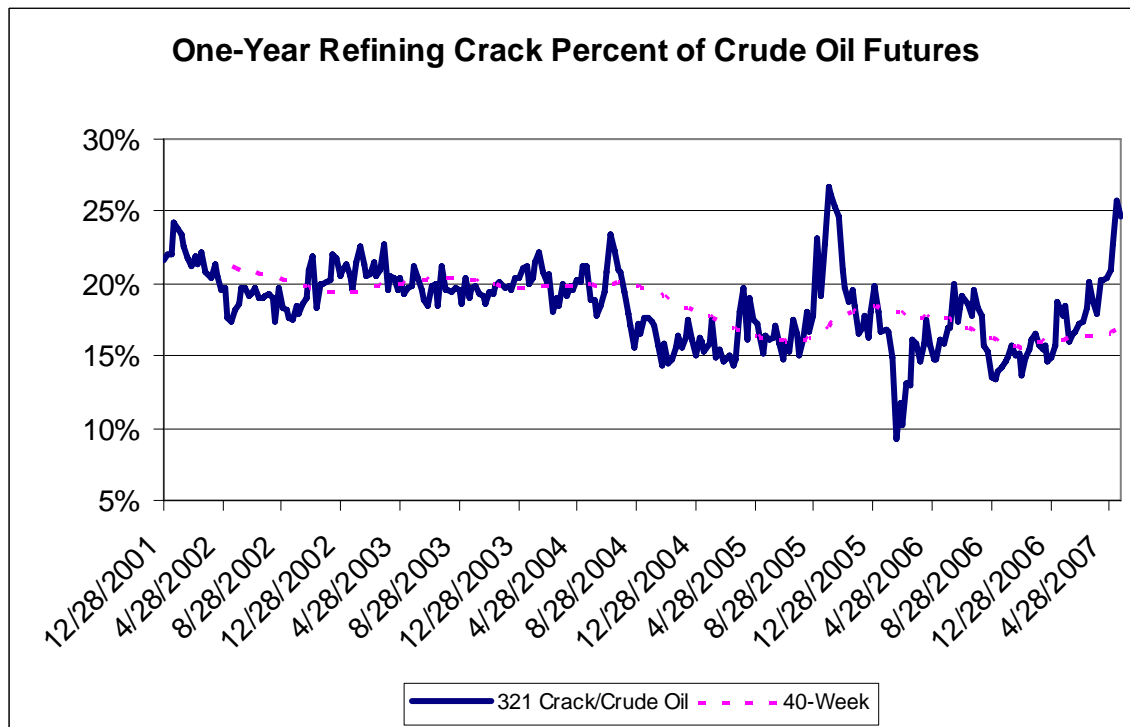


## Refining Rewards and Risks

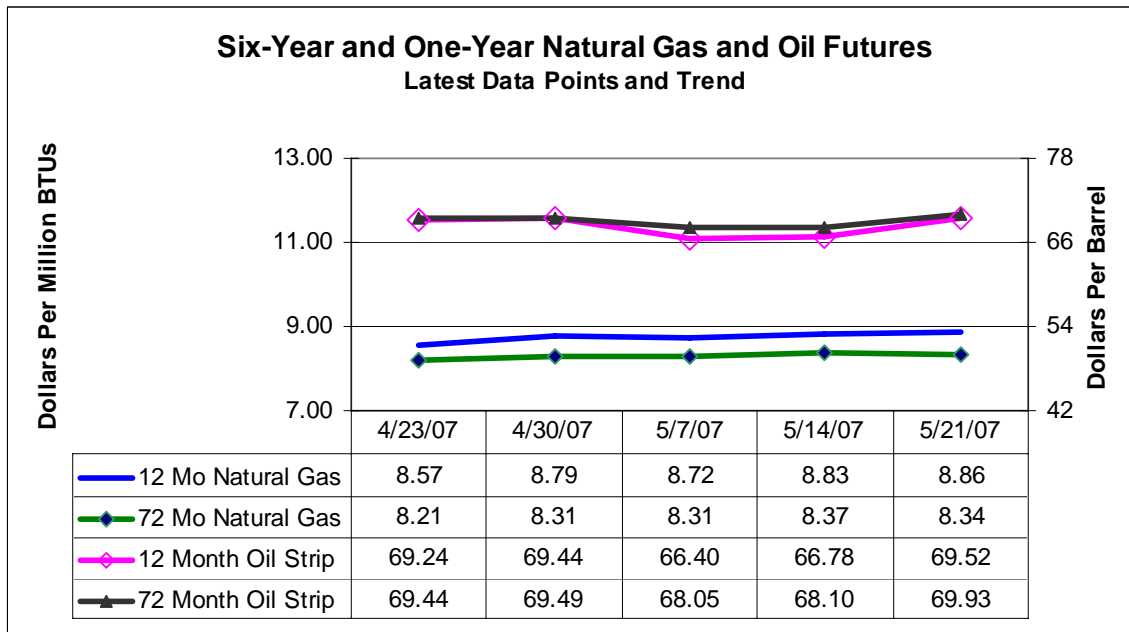
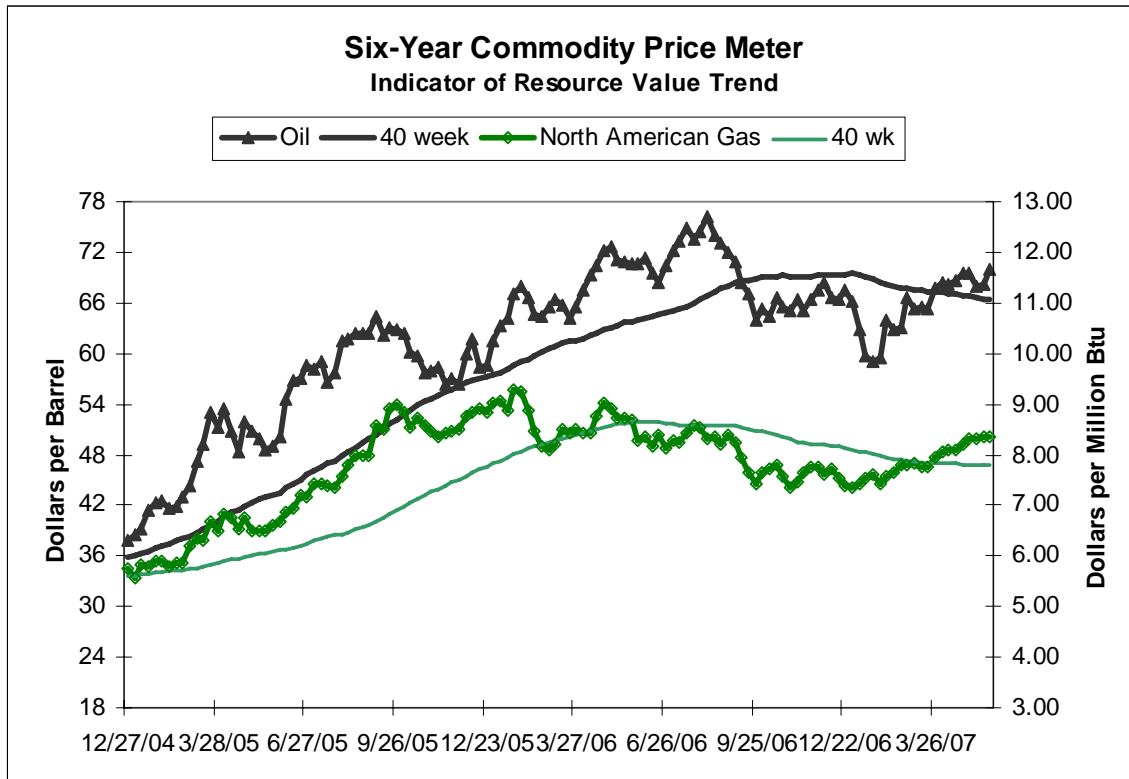
### Summary and Recommendation

On the basis of the long-term expected rewards, we like double-weighted buy recommendations with downstream exposure, **ConocoPhillips (COP)**, **Chevron (CVX)** and **Lukoil (LUKOY)**. To hedge the short-term risks we changed our rating to hold for downstream concentrated **Marathon Oil (MRO)**, from a half-weighted buy recommendation. The long-term crack spread, or margin between the price of refined products and crude oil, is probably higher than the \$10 a barrel (17% of crude oil price) we have in present value estimates, but the recent sharp runup to the current quote of \$17 a barrel (25% of crude oil price) for the next twelve months may not be sustainable yet. Taking perspective from a new graph, it looks like the 40-week average of crack to crude may be headed up toward 20% where it traded in 2003 (see chart One-Year Refining Crack Percent of Crude Oil Futures). Similarly, deviations as far from the 40-week average as we have now did not last in the past. Meanwhile an uptrend for refining margin is matched by uptrends in crude oil and natural gas futures prices (see chart Six-Year Commodity Price Meter and table Six-Year and One-Year Natural Gas and Oil Futures).

Kurt H. Wulff, CFA



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**Oil and Gas Producers - Rank by McDep Ratio**

	Symbol/ Rating		Price (US\$/sh) 21-May 2007	Shares (mm)	Market Cap (US\$m)	Net Present Value (US\$/sh)	Debt/ Present Value	McDep Ratio
<b>Mega Cap</b>								
Exxon Mobil Corporation	XOM	B	83.59	5,714	478,000	82.40	0.05	1.01
Total S.A.	TOT	B	76.26	2,281	174,000	80.00	0.14	0.96
Chevron Corporation	CVX	B	82.83	2,206	183,000	92.00	0.10	0.91
Royal Dutch Shell plc	RDS-A	B	74.84	3,153	236,000	84.00	0.15	0.91
BP plc	BP	B	69.44	3,231	224,000	80.00	0.17	0.89
ConocoPhillips	COP	B	75.86	1,669	127,000	100.00	0.19	0.81
Gazprom (50%)	OGZPY	B	38.25	2,849	109,000	56.00	0.07	0.70
<i>Total or Median</i>					<i>1,531,000</i>		<i>0.14</i>	<i>0.91</i>
<b>Producer/Refiners - Large Cap</b>								
Kinder Morgan, Inc.	KMI	S	106.94	133	14,260	33.00	0.76	1.54
Imperial Oil Limited (30%)	IMO	B	46.52	287	13,370	37.00	0.08	1.24
Marathon Oil Corporation	MRO	H	116.07	347	40,280	110.00	0.14	1.05
Petro-Canada	PCZ	B	50.70	502	25,450	49.00	0.19	1.03
Norsk Hydro (pro forma)	NHY	B	35.54	1,229	43,680	38.00	0.20	0.95
Suncor Energy	SU	B	87.56	461	40,370	95.00	0.08	0.93
PetroChina Company Ltd (10%)	PTR	B	131.20	181	23,750	150.00	0.06	0.88
Lukoil Oil Company	LUKOY	B	76.80	830	64,000	110.00	0.02	0.70
<i>Total or Median</i>					<i>265,000</i>		<i>0.11</i>	<i>0.99</i>
<b>Independent Natural Gas and Oil - Large Cap</b>								
XTO Energy Inc.	XTO	B	58.70	372	21,840	60.00	0.15	0.98
Encana Corporation	ECA	B	62.71	780	48,900	65.00	0.15	0.97
CNOOC Limited (34%)	CEO	B	94.13	140	13,160	98.00	-	0.96
EOG Resources	EOG	B	78.53	247	19,400	92.00	0.05	0.86
Anadarko Petroleum Corp.	APC	B	49.41	465	23,000	70.00	0.40	0.82
Occidental Petroleum Corp.	OXY	B	54.79	847	46,400	69.00	0.08	0.81
Devon Energy Corporation	DVN	B	79.04	450	35,600	115.00	0.16	0.74
<i>Total or Median</i>					<i>208,000</i>		<i>0.15</i>	<i>0.86</i>
<b>Independent Natural Gas and Oil - Small Cap</b>								
Berry Petroleum Company	BRY	B	36.16	45	1,610	44.00	0.24	0.86
Encore Acquisition Company	EAC	B	28.04	53	1,490	48.00	0.41	0.76
Energy Partners Ltd.	EPL	B	16.09	31	500	33.00	0.39	0.68
Cimarex Energy Company	XEC	B	40.85	84	3,450	68.00	0.10	0.64
<i>Total or Median</i>					<i>7,100</i>		<i>0.31</i>	<i>0.72</i>
<b>Income</b>								
Kinder Morgan Energy Partners, L.P.	KMP	S	55.33	172	9,500	15.00	0.54	2.23
Kinder Morgan Management, LLC	KMR	S	52.82	62	3,260	15.00	0.54	2.16
Pengrowth Energy Trust	PGH		18.91	244	4,610	17.00	0.29	1.08
Enerplus Resources Fund	ERF		47.94	123	5,920	47.00	0.14	1.02
Penn West Energy Trust	PWE	B	35.45	240	8,500	36.00	0.16	0.99
Canadian Oil Sands Trust	COSWF	B	30.15	479	14,440	35.00	0.08	0.87
San Juan Basin Royalty Trust	SJT	B	32.22	47	1,500	40.00	-	0.80
Hugoton Royalty Trust	HGT	B	27.30	40	1,090	34.00	-	0.80
<i>Total or Median</i>					<i>48,800</i>		<i>0.15</i>	<i>1.00</i>

B = Buy, S = Sell, H = Hold

Present Value = Shares times Net Present Value divided by (1-Debt/Present Value).

Debt = Present Value times Debt/Present Value

McDep Ratio = Market cap and Debt to present value of oil and gas and other businesses

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**Oil and Gas Producers - Rank by EV/Ebitda**

	Symbol/ Rating		Price (US\$/sh) 21-May 2007	Adjustd Resrvs/ Prod NTM	PV/ Ebitda NTM	EV/ Ebitda NTM	P/E NTM	Divd or Distrib NTM (%)
<b>Mega Cap</b>								
Exxon Mobil Corporation	XOM	B	83.59	11.5	6.4	6.5	12	1.7
Gazprom (50%)	OGZPY	B	38.25	24.0	8.5	6.0	9	0.2
Total S.A.	TOT	B	76.26	9.4	6.2	5.9	11	3.3
BP plc	BP	B	69.44	9.6	6.6	5.9	10	3.6
Chevron Corporation	CVX	B	82.83	10.0	5.9	5.4	10	2.8
Royal Dutch Shell plc	RDS-A	B	74.84	7.9	5.6	5.1	9	3.8
ConocoPhillips	COP	B	75.86	11.0	6.0	4.9	8	2.2
		<i>Median</i>		<i>10.0</i>	<i>6.2</i>	<i>5.9</i>	<i>10</i>	<i>2.8</i>
<b>Producer/Refiners - Large Cap</b>								
Kinder Morgan, Inc.	KMI	S	106.94		8.9	13.6	21	3.3
Imperial Oil Limited (30%)	IMO	B	46.52	13.6	7.8	9.6	16	0.6
Suncor Energy	SU	B	87.56	23.6	9.5	8.8	15	0.3
PetroChina Company Ltd (10%)	PTR	B	131.20	15.1	7.5	6.6	13	3.6
Marathon Oil Corporation	MRO	H	116.07	8.1	5.6	5.9	10	1.7
Petro-Canada	PCZ	B	50.70	6.9	5.1	5.3	11	0.9
Norsk Hydro (pro forma)	NHY	B	35.54	8.6	5.4	5.1	10	2.3
Lukoil Oil Company	LUKOY	B	76.80	18.3	7.2	5.0	9	1.7
		<i>Median</i>		<i>13.6</i>	<i>7.3</i>	<i>6.2</i>	<i>12</i>	<i>1.7</i>
<b>Independent Natural Gas and Oil - Large Cap</b>								
XTO Energy Inc.	XTO	B	58.70	12.2	7.5	7.4	13	0.8
Anadarko Petroleum Corp.	APC	B	49.41	11.2	8.2	6.7	12	1.5
Encana Corporation	ECA	B	62.71	9.5	6.7	6.5	13	1.3
EOG Resources	EOG	B	78.53	9.6	6.7	5.8	13	0.5
CNOOC Limited (34%)	CEO	B	94.13	10.6	5.6	5.4	10	3.5
Occidental Petroleum Corp.	OXY	B	54.79	11.9	6.7	5.4	11	1.6
Devon Energy Corporation	DVN	B	79.04	9.4	7.2	5.3	10	0.7
		<i>Median</i>		<i>10.6</i>	<i>6.7</i>	<i>5.8</i>	<i>12</i>	<i>1.3</i>
<b>Independent Natural Gas and Oil - Small Cap</b>								
Berry Petroleum Company	BRY	B	36.16	10.3	9.0	7.8	13	0.8
Encore Acquisition Company	EAC	B	28.04	14.5	8.6	6.5	15	-
Cimarex Energy Company	XEC	B	40.85	8.1	6.1	3.9	9	0.4
Energy Partners Ltd.	EPL	B	16.09	5.4	4.8	3.3	-	-
		<i>Median</i>		<i>9.2</i>	<i>7.3</i>	<i>5.2</i>	<i>13</i>	<i>0.2</i>
<b>Income</b>								
Kinder Morgan Energy Partners, L.P.	KMP	S	55.33		7.9	17.6	54	6.0
Kinder Morgan Management, LLC	KMR	S	52.82		7.9	17.0	51	6.3
Canadian Oil Sands Trust	COSWF	B	30.15	22.7	11.7	10.2	14	5.8
San Juan Basin Royalty Trust	SJT	B	32.22	10.4	11.6	9.3	11	8.7
Pengrowth Energy Trust	PGH		18.91	7.5	7.3	7.9	25	14.6
Hugoton Royalty Trust	HGT	B	27.30	14.0	9.8	7.9	10	9.6
Penn West Energy Trust	PWE	B	35.45	7.6	7.4	7.3	15	10.6
Enerplus Resources Fund	ERF		47.94	9.0	7.0	7.1	13	9.7
		<i>Median</i>		<i>9.7</i>	<i>7.9</i>	<i>8.6</i>	<i>15</i>	<i>9.1</i>

EV = Enterprise Value = Market Cap and Debt; Ebitda = Earnings before interest, tax, depreciation and amortization; NTM = Next Twelve Months Ended March 31, 2008; P/E = Stock Price to Earnings; PV = Present Value of oil and gas and other businesses

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**McDep Energy Portfolio**  
**Composite of Buy Recommendations**

Symbol	Price (US\$/sh)	Portfolio Weight		Non- U.S. HQ	North Amer. Natural Gas (%)	Rest of World Natural Gas (%)	Oil Prod'n (%)	Down- stream (%)	McDep Ratio	
		21-May 2007	Equity (%)							EV (%)
<b>Mega Cap</b>										
Exxon Mobil Corporation	XOM	83.59	3.2	2.9		0.2	0.4	1.5	0.7	1.01
Total S.A.	TOT	76.26	2.9	2.9	2.9		0.8	1.4	0.6	0.96
Chevron Corporation	CVX	82.83	6.0	5.7		0.3	0.4	3.5	1.5	0.91
Royal Dutch Shell plc	RDS-A	74.84	2.8	2.9	2.9	0.1	0.4	1.4	1.0	0.91
BP plc	BP	69.44	1.4	1.4	1.4	0.1	0.1	0.8	0.3	0.89
ConocoPhillips	COP	75.86	5.1	5.7		1.0	0.4	3.0	1.3	0.81
Gazprom	OGZPY	38.25	9.1	8.6	8.6		6.8	1.8		0.70
<b>Producer/Refiners - Large Cap</b>										
Imperial Oil Limited	IMO	46.52	1.6	1.4	1.4	0.1		1.1	0.2	1.24
Petro-Canada	PCZ	50.70	1.4	1.4	1.4	0.2	0.0	1.0	0.2	1.03
Norsk Hydro (pro forma)	NHY	35.54	2.6	2.9	2.9		0.7	1.1	1.1	0.95
Suncor Energy	SU	87.56	1.5	1.4	1.4	0.1		1.3	0.1	0.93
PetroChina Company Ltd.	PTR	131.20	3.1	2.9	2.9		0.2	2.4	0.2	0.88
Lukoil Oil Company	LUKOY	76.80	6.5	5.7	5.7			4.3	1.4	0.70
<b>Independent Natural Gas and Oil - Large Cap</b>										
XTO Energy Inc.	XTO	58.70	2.8	2.9		2.1		0.8		0.98
Encana Corporation	ECA	62.71	5.6	5.7	5.7	4.2		1.3	0.2	0.97
CNOOC Limited	CEO	94.13	3.3	2.9	2.9		0.3	2.6		0.96
EOG Resources	EOG	78.53	6.3	5.7		4.3	0.4	1.0		0.86
Anadarko Petroleum Corp.	APC	49.41	1.7	2.9		1.5		1.3	0.1	0.82
Occidental Petroleum Corp	OXY	54.79	3.0	2.9		0.4	0.0	2.2	0.3	0.81
Devon Energy Corporation	DVN	79.04	5.2	5.7		3.1		2.7		0.74
<b>Independent Natural Gas and Oil - Small Cap</b>										
Berry Petroleum Company	BRY	36.16	1.2	1.4		0.3		1.1		0.86
Encore Acquisition Comp	EAC	28.04	1.5	2.9		0.7		2.2		0.76
Energy Partners Ltd.	EPL	16.09	0.7	1.4		0.8		0.7		0.68
Cimarex Energy Company	XEC	40.85	2.8	2.9		1.9		0.9		0.64
<b>Income</b>										
Penn West Energy Trust	PWE	35.45	4.2	4.3	4.3	1.4		2.9		0.99
Canadian Oil Sands Trust	COSWF	30.15	6.0	5.7	5.7			5.7		0.87
San Juan Basin Royalty Tr	SJT	32.22	6.7	5.7		5.7				0.80
Hugoton Royalty Trust	HGT	27.30	1.7	1.4		1.4				0.80
<b>Portfolio Composite</b>			<b>100</b>	<b>100</b>	<b>50</b>	<b>30</b>	<b>11</b>	<b>50</b>	<b>9</b>	<b>0.84</b>
Canada					20					
Russia					14					
Europe					10					
China					6					

Note: Percentages in the Portfolio Weight - EV column correspond to unlevered positions ranging from triple at 8.6% to half at 1.4%.

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**Index of Recent Research****Stock Ideas**

<u>Date</u>	<u>Symbol</u>	<u>Stock</u>	<u>Theme</u>
18-May	MRO	Marathon Oil Corporation	Downgrade to Hold from Buy on Price
9-May	XEC	Cimarex Energy Company	Lowest McDep Ratio
8-May	OGZPY	Gazprom	Russian Value
8-May	PWE	Penn West Energy Trust	Committed to Income Distributions
7-May	EAC	Encore Acquisition	Encore for Bell Creek
7-May	PTR	PetroChina Company Limited	Raise NPV on Discovery
4-May	TOT	Total S.A.	Integrated Model
4-May	EPL	Energy Partners, Ltd.	Strategic Alternatives Disappointment
3-May	RDSA	Royal Dutch Shell plc	Record Results
2-May	BRY	Berry Petroleum	Piceance and Diatomite
2-May	DVN	Devon Energy Corporation	Low McDep Ratio Natural Gas
2-May	IMO	Imperial Oil Limited	Oil Sands Deal Unmasks Value
1-May	EOG	EOG Resources Inc.	Productive Drilling Boosts Cash Flow
1-May	MRO	Marathon Oil Corporation	Stock Split Declared
1-May	APC	Anadarko Petroleum Corporation	Adjust NPV to \$70 a Share on Lower Debt
27-Apr	CVX	Chevron Corporation	Solid Results
26-Apr	CEO	CNOOC Ltd	Volume up 5%
26-Apr	XOM	Exxon Mobil Corporation	Another Record Quarter
26-Apr	* COSWF	Canadian Oil Sands Trust	Distribution Raised 33%
25-Apr	* XTO	XTO Energy Inc.	Buy for Natural Gas
25-Apr	* ECA	EnCana Corporation	Buy for Natural Gas
25-Apr	* COP	ConocoPhillips	Strong Demand, Constrained Supply
25-Apr	* BP	BP p.l.c.	CEO Cycle
25-Apr	* LUKOY	Lukoil Oil Company	Tax Timing
24-Apr	* OXY	Occidental Petroleum Corporation	Well-Positioned in Oil
24-Apr	* PCZ	Petro-Canada	Volume Up 15%
18-Apr	* KMX	Kinder Morgan	Deal Delayed
23-Mar	* SJT	San Juan Basin Royalty Trust	Planetary Emergency
23-Mar	* HGT	Hugoton Royalty Trust	Planetary Emergency
20-Feb	* NHY	Norsk Hydro ASA	Raise NPV to \$36 a Share

**Meter Reader - A Weekly Analysis**

22-May		
15-May		Peak Oil Test Looming
8-May	*	Russian Value
1-May	*	Deals and Debacles

**Natural Gas and Oil Royalty Trusts - A Weekly Analysis**

18-May		Encore's MLP Filed
11-May		Income from Clean Fuel for Global Growth
4-May	*	Out of Favor
27-Apr	*	Distribution Decisions

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