Corporate Credit Spread Chartbook
Energy Sector

Morningstar Credit Ratings, LLC
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Contents

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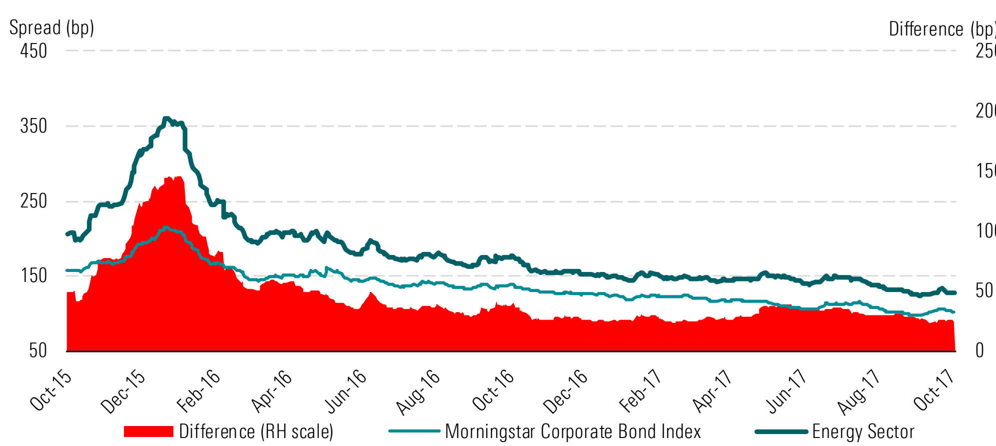
Executive Summary

Since we published our last Energy Chartbook in August, the West Texas Intermediate oil price has rallied from $50 per barrel to its current level around $57 on evidence that OPEC-Russia cuts are helping to tighten global supply and demand fundamentals, resulting in overall declining inventories. Since April, positive fundamental trends have supported a gradual tightening of energy sector bond spreads. With support from especially sharp cuts to global exploration and production expenditures since 2014 and the likelihood of only a modest rebound in upstream spending in 2018, we look for oil pricing over the next 12-18 months to seesaw higher—with bouts of volatility—in anticipation of a gradually improving global supply and demand balance in 2018. We forecast a 2018 oil price range of $55-$60 per barrel, unchanged from our prior outlook. Commensurate with this, we think the overall credit quality of companies in the energy sector will continue to gradually improve.

Historical Sector Spreads: Energy

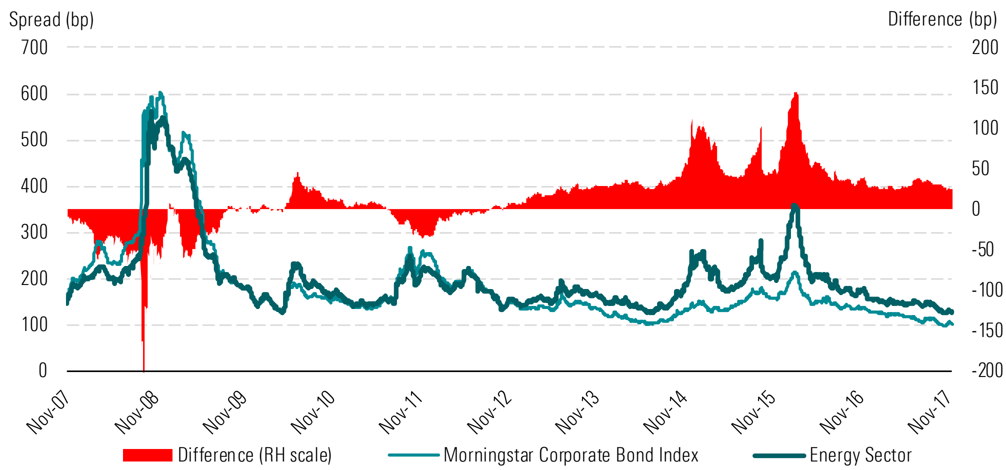
Since the oil price hit a multiyear bottom in February 2016, the energy sector has tightened 232 basis points to +127 bps while the Morningstar Corporate Bond Index has tightened 114 bps to +102 bps. Because the energy sector accounts for about 10% of the CBI, we estimate that 12% of the CBI tightening was energy-related. Within energy, the midstream subsector tightened 302 bps, partly mitigated by the integrated subsector, which tightened 147 bps, with the other subsectors in between.

Exhibit 1 Morningstar Corporate Bond Index vs. Energy Sector (Trailing 24 Months)



Source: Morningstar, Inc. data as of Dec. 4, 2017

Exhibit 2 Morningstar Corporate Bond Index vs. Energy Sector (Trailing 10 Years)



Source: Morningstar, Inc. data as of Dec. 4, 2017

Extension of OPEC-Russia Production Cuts Supports Our Constructive Long-Term View on Oil Market; Possibility of Oil Shale Surge Acts as Near-Term Price Regulator

Looking through early 2018, we believe oil supply and demand fundamentals will continue to gradually improve, providing support to pricing. Oil production cuts were originally implemented Jan. 1 by OPEC and several large non-OPEC producing countries, including Russia, Mexico, Oman, and Kazakhstan. At their Nov. 30 regular meeting, OPEC and the non-OPEC participants voted to extend the production cut agreement by nine months, from the end of March to year-end 2018, a move widely anticipated by the market. The cuts were recently reviewed for compliance by participants. Of the planned collective cut of 1.8 million barrels per day (about 2% of global supply), market reports indicate more than 85% overall cut compliance has been achieved year to date.

The cut extension agreement contains some important changes from the prior accord. First, the participants agreed to review crude-oil market conditions in June 2018 and end the cuts early if the supply and demand balance and pricing are improving too quickly. This would allow participants to take advantage of rising prices. Second, Libya and Nigeria, both OPEC members but exempt from the original production cut agreement because of civil conflict, have now agreed to cap production slightly above the current output level. Both countries ramped up oil production in 2017, offsetting nearly half of the cuts realized by OPEC's other members. However, the constant threat of disruption from sectarian violence makes production from Libya and Nigeria uncertain.

In the past few months, as the impact of the cuts on global oversupply became more evident, pricing has rallied. OECD crude-oil stocks have decreased to 1,166 million barrels (through September) from 1,210 million at the beginning of the year. Within this, crude-oil inventory for the Americas has declined about 7% to 621 million barrels currently from 670 million.

Market fears largely centering on rapid reacceleration of U.S. shale oil production, rising U.S. inventory, and rebounding Libyan and Nigerian production pressured the oil price back to the low $40s per barrel (WTI basis) in June, following a surge to $54 earlier in 2017 on positive sentiment following the OPEC-Russia cut agreement signed late last year. Despite that, since bottoming in June, the oil price has rallied to about $57 currently on indications of a tighter balance between global supply and demand and overall declining global inventories.

We expect global oil demand growth of 1.6% in 2017 and forecast 1.3% growth in 2018, slightly above the 10-year compound annual growth rate of 1.2%. Integrating all these points, we are maintaining our full-year 2018 price projection range of $55-$60 per barrel.

Longer term, we maintain our view that oil prices will gradually increase, subject to bouts of volatility. With support from especially sharp cuts to global exploration and production expenditures during the prior three years and the likelihood of only a modest rebound in upstream spending in 2018 (see Exhibit 3), we look for oil pricing over the next 12-18 months to seesaw higher—two steps ahead, one step back—in anticipation of a gradually improving global supply and demand balance.

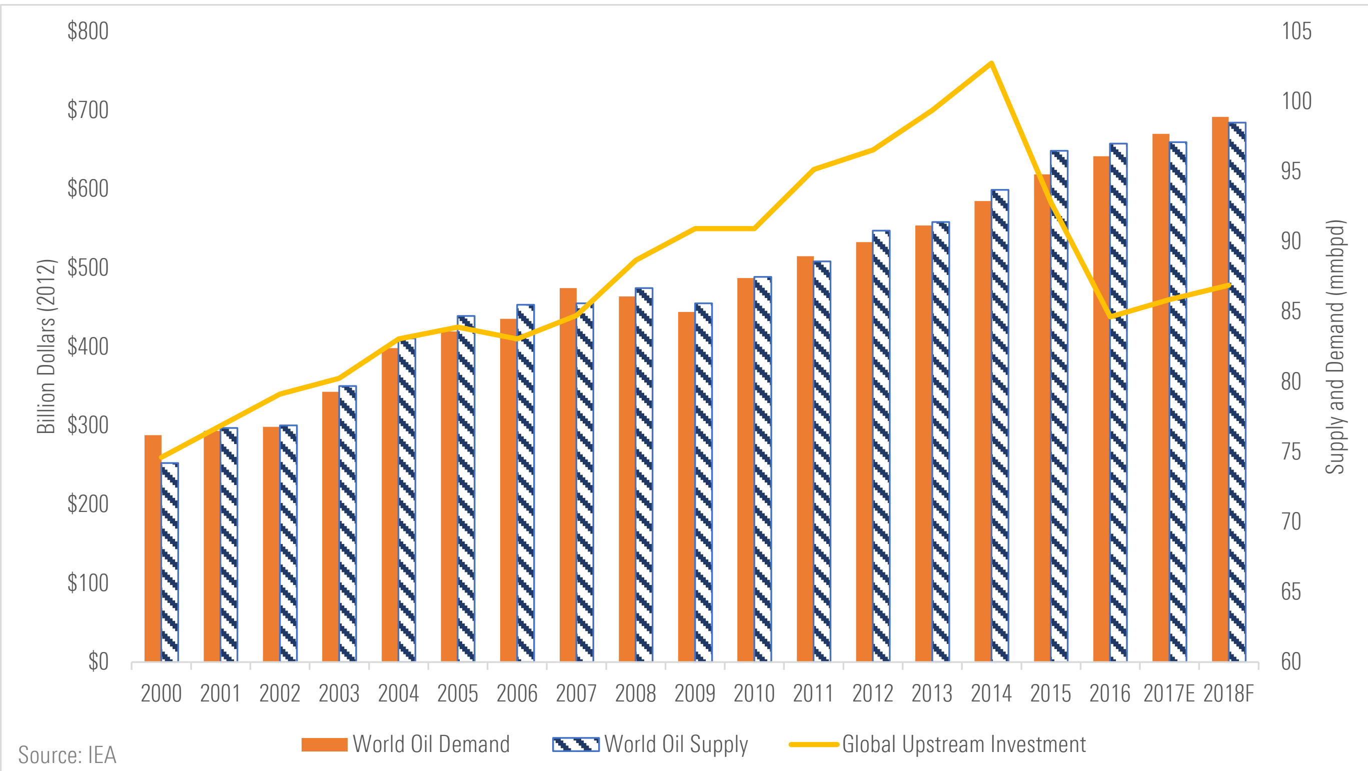
Despite the recent positive trends, we continue to have near-term crude-oil concerns, which include the following.

- Despite a modest decline since the beginning of 2017, global inventories of crude oil remain high relative to history. U.S. commercial crude inventories remain in the upper half of the average range for this time of year.
- U.S. oil production has rebounded significantly in 2017, increasing 8% cumulative year to date. We expect the recent price increase to accelerate well completions and encourage new drilling, so U.S. oil production is likely to continue to surge in 2018. The threat of an overly aggressive response by shale oil speculators could sabotage pricing gains and remains a major worry in the market.
- Despite "very good" overall cooperation on the production cut agreement to this point, there is a history of cheating by OPEC members and other participants on previous agreements to cut production. Given Saudi Arabia's desire to eventually bring state-owned Saudi Arabian Oil Co. public, the kingdom is highly motivated to encourage compliance by all production cut participants to help support a higher oil price. Not surprisingly, the Saudi Arabian energy minister heads OPEC's compliance monitoring committee to ride herd on the other 23 participating countries to honor their pledges to reduce output.

We believe these concerns are mitigated by fears of a more significant Venezuelan and northern Iraqi oil production outage caused by the worsening economic and political crises there. Year to date, Venezuelan crude production has declined more than 10%. With the Venezuelan government teetering on default, output there could plunge in 2018.

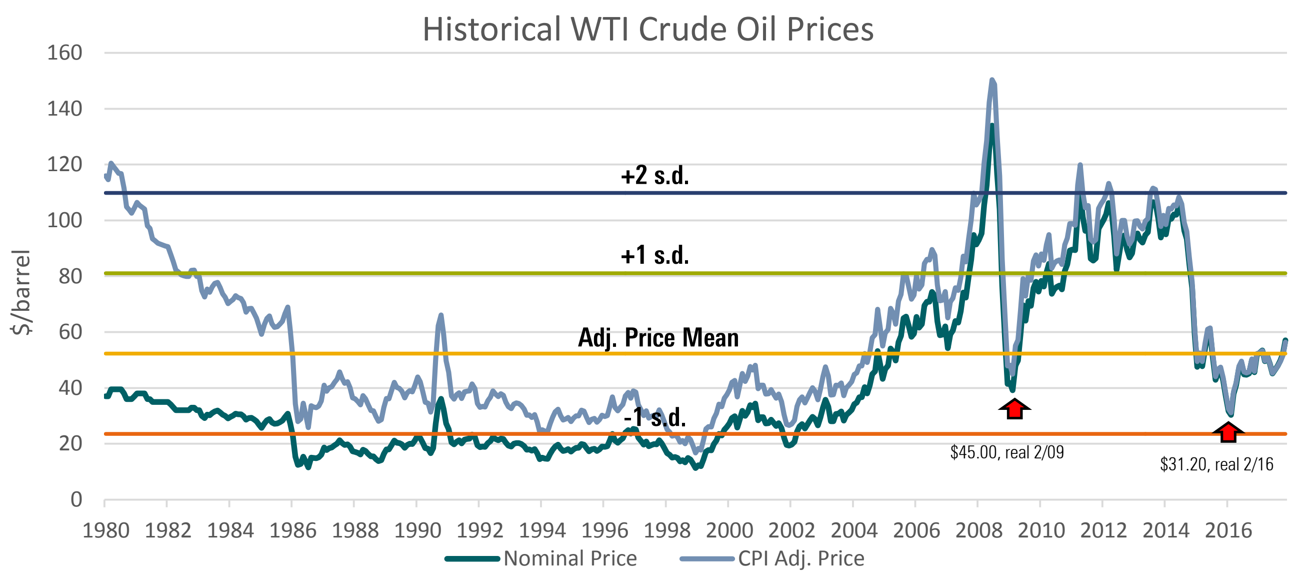
As we begin the winter heating season, the U.S. underground natural gas storage inventory is 3.7 trillion cubic feet, 3% below the five-year average, and the spot gas price is $2.83 per million Btu. After having been above the five-year average for nearly all of 2017, gas storage has trended slightly below average since mid-September. Domestic gas demand typically peaks during winter, with the gas injection season running from early April through late October. With U.S. gas storage currently near normal, for spot pricing to have a good chance of catching a sustained bid above $3.00 through winter will require near-term temperatures that are colder than average, in our view, sufficient to drive an acceleration of draws and push inventory well below normal for the remainder of the heating season. However, as of this writing, the near-term outlook for temperatures in the key Midwest and Mid-Atlantic heating areas is at or above historical norms.

Exhibit 3 In Wake of Oil Price Bust, Much Lower Upstream Investment Could Create a Supply Shortfall Within a Few Years



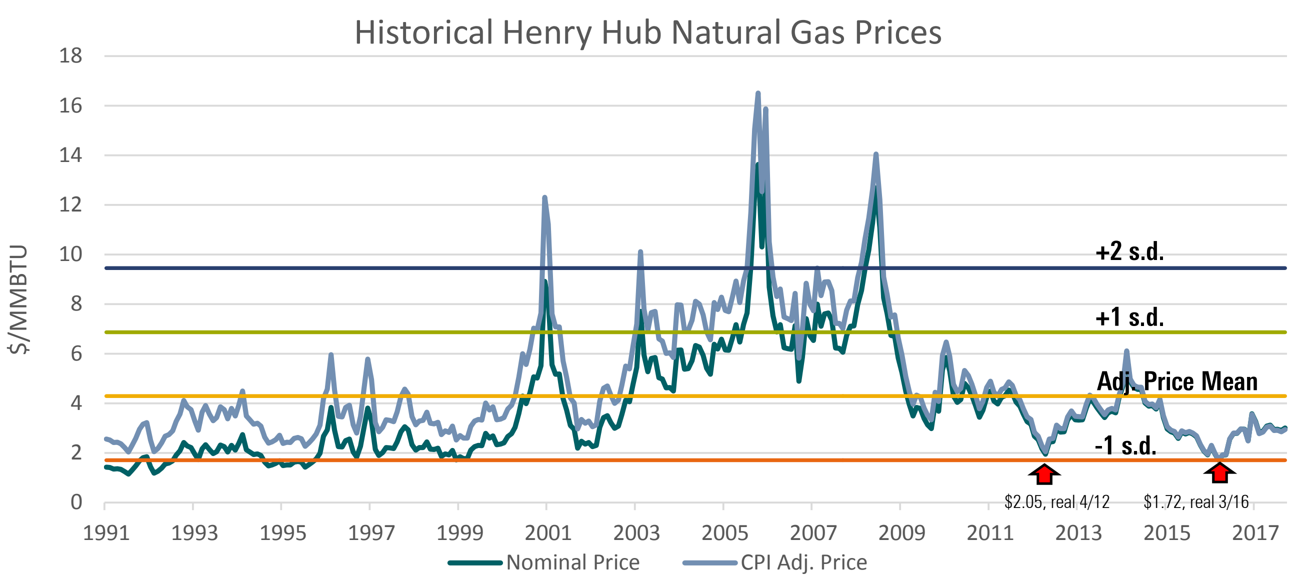
Sources: International Energy Agency as of November 2017 and Morningstar Credit Ratings, LLC estimates

Exhibit 4 Current WTI Oil Price of $57 per Barrel is 9% Above Historical Mean of $52.26 (Real Basis)



Source: Federal Reserve Bank of St. Louis as of Dec. 11, 2017

Exhibit 5 Current Natural Gas Price of $2.82 per mmBtu Is Well Below Historical Mean of $4.29 (Real Basis)

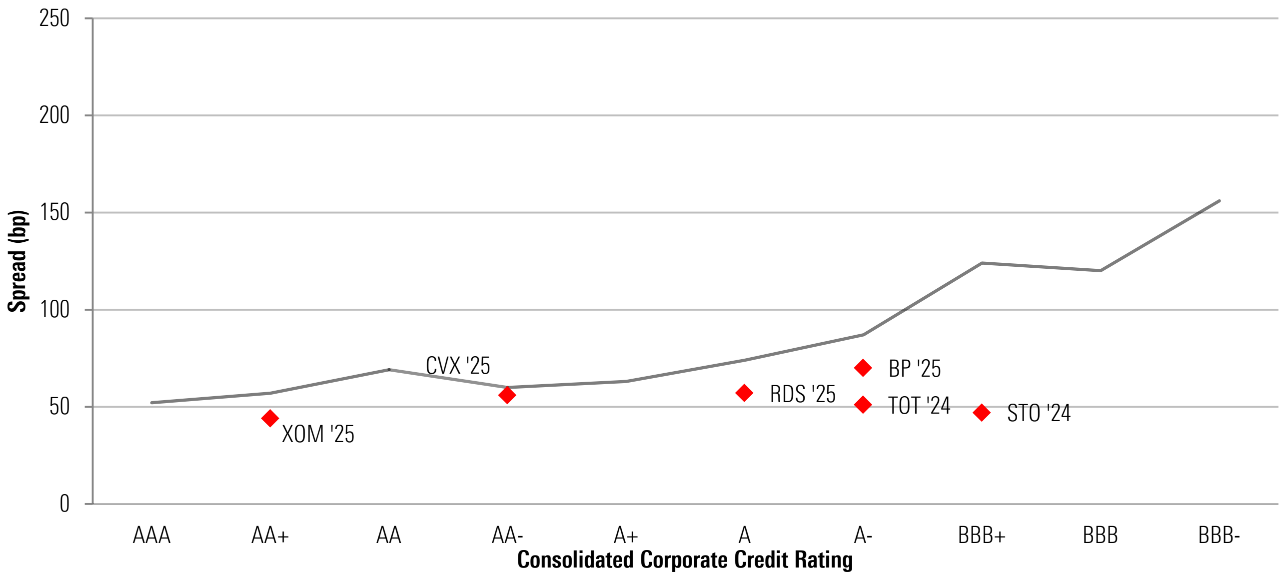


Source: Federal Reserve Bank of St. Louis as of Dec. 11, 2017

Spread Charts by Energy Sector

Integrated

Exhibit 6 Integrated Sector vs. Morningstar Corporate Bond Index



Source: Morningstar Credit Ratings, LLC , Morningstar, Inc., and Bloomberg as of Dec. 11, 2017
(UR) = rating under review / (p) = positive outlook / (n) = negative outlook

Integrated Sector Trends

Vertically integrated oil and gas companies, or the majors, have total or near-total ownership and operation of the entire energy supply chain, from exploration to refining and retail. Historically, the majority of earnings has been derived from the upstream (exploration and production) segment and the remainder from downstream (refining, marketing, and transportation). However, this relationship reversed for some majors in 2015 and 2016 following the sharp downturn in oil and gas prices. Downstream operations often achieve higher margins during times of low pricing, partially offsetting the decline of oil and gas production income. Looking ahead, we expect integrated fundamentals to improve, benefiting from a cyclically rebounding oil price and refined product pricing over the next several quarters, supporting credit ratings in the subsector. Financial discipline remains a priority as capital budgets for the integrated oil and gas companies are overall little changed from original 2017 guidance. Since energy prices hit a multiyear bottom in February 2016, integrated bond spreads sharply tightened through April 2017. Since April, spreads have tightened further, but at a more gradual pace.

Issuer Highlights

- In an energy price environment that remains unsure, ExxonMobil (AA+, stable) is maintaining investment discipline, advancing only the best developments from its portfolio of projects, including the decision in June to proceed with the first phase of development for the Liza field, one of the largest oil discoveries of the past decade, located offshore Guyana; steady development of and strategic additions to its highly contiguous acreage position in the Permian Basin; completion of the purchase of Jurong Aromatics in August, which should yield good synergies, given close proximity to the company's large refining and petrochemical complex in Singapore; and the opening of the company's first Mobil service stations in central Mexico in December, with additional stations opening in early 2018.

- The focus at Chevron (AA-, stable) remains on expanding free cash flow generation via ongoing operating cost reductions, capital efficiency gains, and monetization of noncore assets, while still delivering significant increases in production. The company's Gorgon LNG project in Australia closed the third quarter running well above nameplate capacity, first production from the Wheatstone LNG project was achieved in October, and production from the Permian Basin is exceeding design expectations. In December, Chevron announced a 2018 capital budget of $18.3 billion (which includes affiliated companies), down for the fourth consecutive year. Approximately three fourths of the 2018 budget will be for projects that the company expects will realize cash flow within two years.
- Signaling confidence about the sustainability of recent oil price gains and future cash flow generation, both Royal Dutch Shell (A, stable) and Statoil (BBB+, stable) announced in the third quarter that they are ending programs that gave shareholders the option of receiving dividends in the form of discounted stock, called scrip. Beginning in the fourth quarter, both companies will return to a full cash dividend with no scrip option. Shell and Statoil had implemented scrip dividend programs in 2015 to contend with exceptionally low energy prices. Further, although Total (A-, stable) continues to offer shareholders the option of a cash or scrip dividend, the company recently removed the discount on the scrip dividend.

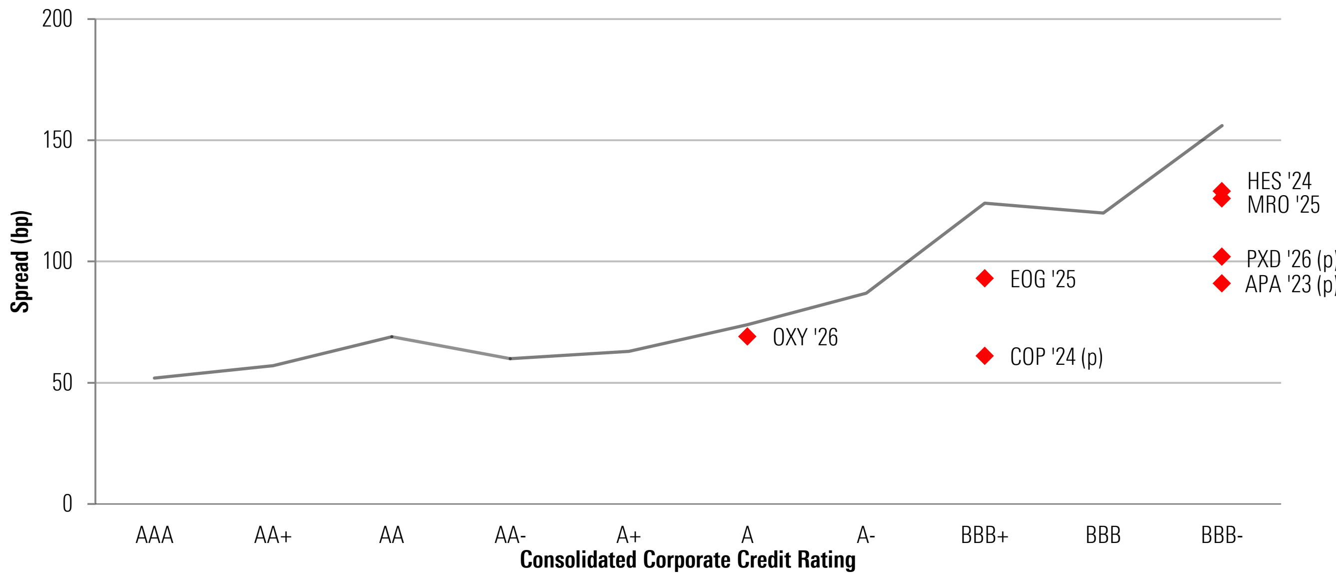
Exhibit 7 Investment-Grade Integrated Spreads

Integrated	Rating	Rating Outlook/ Review Status	Coupon	Maturity	Yield	Spread	Difference From Index	Average Difference
Chevron	AA-	Stable	3.33%	11/17/2025	2.87%	+56	-4	
ExxonMobil	AA+	Stable	2.71%	3/6/2025	2.74%	+44	-13	
Royal Dutch Shell	A	Stable	3.25%	5/11/2025	2.88%	+57	-17	
BP	A-	Stable	3.51%	3/17/2025	3.00%	+70	-17	-27
Total	A-	Stable	3.75%	4/10/2024	2.76%	+51	-36	
Statoil	BBB+	Stable	3.25%	11/10/2024	2.76%	+47	-77	

Source: Morningstar Credit Ratings, LLC, Morningstar, Inc., and Bloomberg as of Dec. 11, 2017

Exploration and Production

Exhibit 8 E&P Sector vs. Morningstar Corporate Bond Index



Source: Morningstar Credit Ratings, LLC, Morningstar, Inc., and Bloomberg as of Dec. 11, 2017
(UR) = rating under review / (p) = positive outlook / (n) = negative outlook

E&P Sector Trends

The exploration and production subsector consists of companies that focus on the high-risk, high-reward area of finding, augmenting, producing, and merchandising different types of oil and gas. The largest, North America-based E&Ps include Occidental Petroleum (A, stable) and ConocoPhillips (BBB+, positive), both U.S.-centric with foreign operating interests, onshore and offshore. More-regional E&Ps with competitive, niche positions in the United States include EOG Resources (BBB+, stable) with low-cost shale oil and gas holdings in the Eagle Ford Shale (Texas), Permian Basin (Texas), and Bakken Formation (North Dakota), and Pioneer Natural Resources (BBB-, positive), also with low-cost shale holdings in the Permian, Eagle Ford Shale, and Raton Basin (Colorado).

The continuation of a rebound in the price of oil and a higher, somewhat steadier U.S. natural gas price in 2017 has provided some relief for all E&Ps. Since hitting a multiyear low of $26 per barrel in February 2016, the price of oil (WTI basis) has cycled higher to about $57 per barrel currently, buffeted by bouts of volatility. Over the same time, the spot domestic natural gas price has rebounded from $1.75 per million British thermal units to about $2.80 currently. Better pricing, aggressive cuts to capital and operating costs, the reduction or elimination of dividends, and the sale of noncore assets have reinvigorated free cash flow generation for some producers, while for others cash flow remains constrained. E&P bond spreads have significantly tightened since energy prices bottomed in February 2016, more so than for the energy sector index. Assuming pricing gradually cycles higher, credit trends should continue to improve for issuers in the E&P sector, but perhaps not as rapidly as they have over the past year.

Issuer Highlights

- In September 2017, we affirmed Hess' BBB- credit rating and maintained a stable outlook. The affirmation incorporates our renewed oil and gas price forecasts and our estimate for gradually improving company performance over the next several quarters. The stable outlook reflects Hess' excellent progress in lowering its overall cost structure and its growth strategy, with lower-risk U.S. onshore production providing balance to the company's global offshore E&P activities.
    - After the end of the third quarter, Hess announced the sale of its Equatorial Guinea and Norway assets, with $2.65 billion total proceeds expected before year end. Hess also commenced a process to sell its interests in Denmark (North Sea). Proceeds from these asset sales plus the prior sale of Permian Basin assets are planned to be used to pay down $500 million of debt in 2018 and to prefund development of the prolific Stabroek Block offshore Guyana, in which Hess is a 30% partner.
    - First oil from Guyana is still expected by 2020. Although we view the asset sales as a modest credit positive for Hess, it is not enough to change our credit rating. The company will benefit from a modest reduction in leverage and a reduction in the companywide unit cost of oil equivalent production. However, Hess plans to redeploy asset sale proceeds to the development of offshore Guyana, the success of which will depend on future pricing and operating assumptions. We recognize the immense potential for Guyana, but development is at an early stage, and up-front capital outlays will be significant.
- In September, we affirmed Murphy Oil's BB+ credit rating and maintained a stable outlook. The stable outlook reflects Murphy's excellent progress in lowering its overall cost structure and its growth strategy, which focuses on low-risk, North American onshore, oil-weighted production. Following last year's adjustments to its portfolio of oil and gas holdings, we now view Murphy's Western Canadian operations as better aligned with its unconventional business in the Eagle Ford Shale (Texas).
- In a strategic shift to focus on its Permian assets (Texas and New Mexico), Apache (BBB-, positive) finalized the sale of its remaining Canadian oil and gas assets during the third quarter with proceeds to be used to fund 2017-18 capital expenditures or to reduce debt, improving overall liquidity. In the Permian, a main focus is on the development program at Alpine High, a new resource play, bringing new wells on line, ramping up production, and building out infrastructure there.
- ConocoPhillips (BBB+, positive) is on track to make good on its pledge to reduce total debt to less than $20 billion by year-end 2017 with cash proceeds from the sale of San Juan Basin, Barnett Shale, and Texas Panhandle assets (all closed in the third quarter), the sale of certain Canadian oil and gas assets earlier this year, and significant, ongoing overall cost-reduction progress. The company expects to realize over $16 billion of dispositions in 2017. In addition to strengthening the balance sheet, the sale of lower-margin assets has refocused ConocoPhillips' resources on its best prospects—including oil-weighted, unconventional assets in the Lower 48 and British Columbia, and Asian conventional resources—supporting future free cash flow generation.
- Concho Resources (BB+, positive) continues to fine-tune its Permian Basin (Texas and New Mexico) portfolio by completing purchase and sale transactions there earlier this year, which collectively are

helping the company to accelerate cash flow and enhance future returns. In the third quarter, the company redeemed existing long-term borrowings by issuing new senior notes, reinforcing its strong financial position by lowering its interest expense and extending debt maturity.

Recent Headlines

- Low oil prices and the possibility of increased regulation to reduce carbon emissions to comply with global climate agreements have caused many foreign firms to sell Canadian oil sands interests during the past year. Most of these sales have been to Canadian companies. With the oil price remaining low relative to pre-2015 levels, producers have generally been redeploying oil sands sale proceeds to higher-return projects, including shale oil in the U.S.
- As of Oct. 31, 134 North American oil and gas producers have filed for bankruptcy—including chapters 7, 11, and 15 and Canadian cases—since the beginning of 2015. Filings reached a crescendo (16) in the month of May 2016, sharply tailing off since then. Only 20 energy producers have filed for bankruptcy year to date. (Source: Oil Patch Bankruptcy Monitor, Haynes and Boone, Oct. 31.)

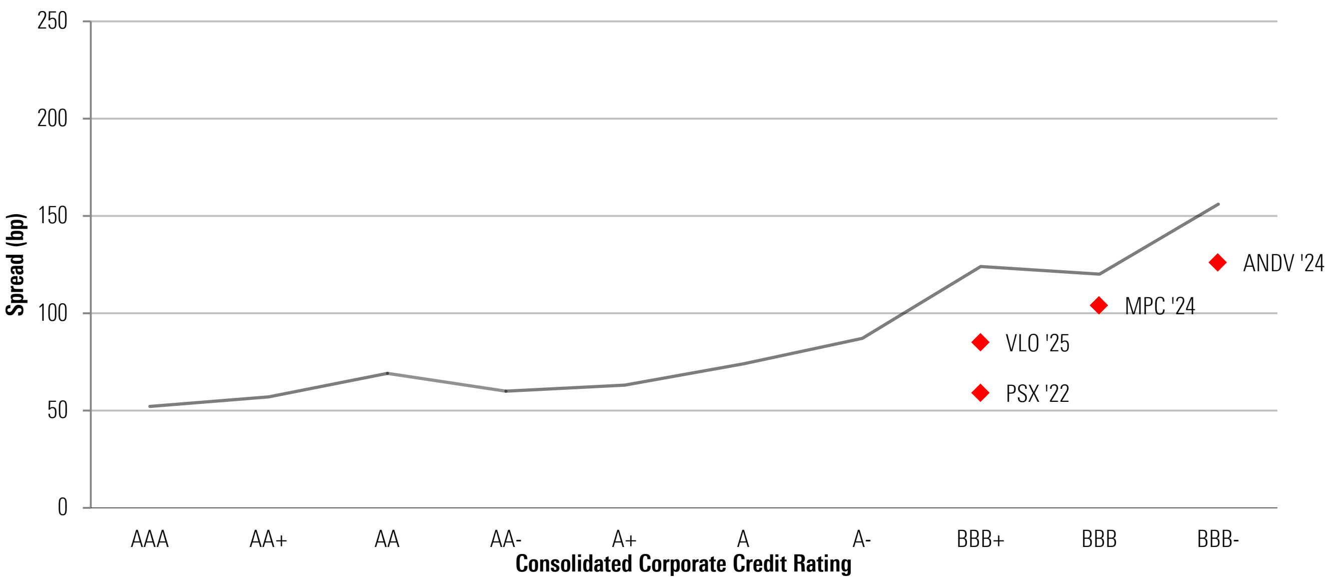
Exhibit 9 Investment-Grade Exploration and Production Spreads

E&P	Rating	Rating Outlook/ Review Status	Coupon	Maturity	Yield	Spread	Difference From Index	Average Difference
Occidental Petroleum Corp.	A	Stable	3.40%	4/15/2026	3.02%	+69	-5	
Hess Corp.	BBB-	Stable	3.50%	7/15/2024	3.56%	+129	-27	
Marathon Oil Corporation	BBB-	Stable	3.85%	6/1/2025	3.57%	+126	-30	
Enron Oil & Gas	BBB+	Stable	3.15%	4/1/2025	3.23%	+93	-31	-45
Pioneer Natural Resources	BBB-	Positive	4.45%	1/15/2026	3.35%	+102	-54	
ConocoPhillips	BBB+	Positive	3.35%	11/15/2024	2.89%	+61	-63	
Apache Corp.	BBB-	Positive	2.63%	1/15/2023	3.08%	+91	-65	

Source: Morningstar Credit Ratings, LLC, Morningstar, Inc., and Bloomberg as of Dec. 11, 2017

Refining, Marketing, and Transportation

Exhibit 10 Refining, Marketing, and Transportation vs. Morningstar Corporate Bond Index



Source: Morningstar Credit Ratings, LLC, Morningstar, Inc., and Bloomberg as of Dec. 11, 2017
(UR) = rating under review / (p) = positive outlook / (n) = negative outlook

Refining, Marketing, and Transportation Sector Trends

The downstream sector refers to the refining of petroleum crude oil and the processing and purifying of raw natural gas, as well as the marketing and distribution of products derived from crude oil and natural gas. The downstream sector reaches consumers through products such as gasoline or petrol, kerosene, diesel oil, heating oil, fuel oils, lubricants, and natural gas as well as hundreds of petrochemicals.

Despite strong fall consumer demand continuing into November, domestic gasoline inventories have rebounded after hitting an interim low shortly after Hurricane Harvey hit the Gulf Coast in late August, disrupting refinery production there. Currently, U.S. gasoline stocks are within the five-year range for this time of year. Now heading into the winter season, when driving declines, we expect North American gasoline demand and prices to seasonally decline. However, low U.S. distillate inventories, currently in the bottom half of the five-year range for December, and the approaching winter surge in distillate (heating oil) demand bode well for all domestic petroleum refiners. Assuming U.S. refineries maximize distillate production for the next month or two, this should help to prevent a large buildup in gasoline inventories before the 2018 driving season. Further, seasonal refinery maintenance in the first quarter should help to keep product inventories in check. Led by Mexico, export demand for U.S. gasoline and distillate in Latin America continues to grow, accounting for an increasing percentage of offtake from U.S. refiners. These factors should help to support refining crack spreads. We see few issues that could unduly pressure credits in the refining subsector in the near future. After peaking in February 2016, bond spreads for the refiners tightened sharply through November 2017.

Issuer Highlights

- In November, we affirmed the BBB- corporate credit rating of Andeavor with a stable outlook, resolving our review of the rating established Nov. 22, 2016, related to Tesoro's purchase of Western Refining in a stock transaction. Tesoro completed its acquisition of Western Refining on June 1, 2017, and the new organization changed its name to Andeavor on Aug. 1. Subsequently, Andeavor Logistics (not rated) acquired Western Refining Logistics on Oct. 30. Andeavor has a 59% equity interest in Andeavor Logistics, a midstream master limited partnership. The stable rating outlook incorporates potential merger synergies and our renewed supply and demand and price forecast for refined products.
- We affirmed Marathon Petroleum's BBB credit rating with a stable outlook in November. Our rating reflects Marathon's large scale and cost-advantaged refining position on the U.S. Gulf Coast, the inherent cyclicality of the petroleum refining industry, integrated interests in midstream assets that generate higher returns and add earnings stability to petroleum refining operations, extensive retail network of Marathon outlets and Speedway convenience stores, and the company's debt leverage.
    - On Nov. 13, Marathon announced an agreement to drop down refining logistics assets and fuels distribution services to MPLX, paid in cash by MPLX via a debt raise and MPLX equity. Marathon is general partner of MPLX (not rated), a midstream master limited partnership. The transaction is expected to close Feb. 1, 2018. On a pro forma basis, we estimate the drop-down will increase gross leverage to 1.8 times by fiscal 2019, little changed from our current leverage estimate of 1.6 times at that time.
- In November, we affirmed the BBB+ corporate credit rating of Phillips 66 with a stable outlook. Our rating reflects Phillips 66's large scale and cost-advantaged refining position on the U.S. Gulf Coast, integrated interests in chemical and midstream assets that generate higher returns and add earnings stability to petroleum refining operations, premium-branded wholesale outlets, and low debt leverage.
- We affirmed Valero Energy's BBB+ credit rating in November, maintaining a stable outlook. Our rating reflects Valero's large scale and cost-advantaged position on the U.S. Gulf Coast, premium-branded wholesale outlets, the integration of midstream assets of majority-owned Valero Energy Partners (not rated) with Valero refineries, and the company's low debt leverage.

Recent Headlines

- Since the OPEC and non-OPEC cut agreement took effect Jan. 1 (and was recently extended to year-end 2018), the global availability of medium and heavy sour crude has been reduced, as Saudi Aramco emphasizes production of pricier sweet light crude. As the discount for medium and heavy sour crude has narrowed, the economics now favor U.S. Gulf Coast refiners to run domestic light sweet crude. This situation will probably prevail until OPEC production comes back. The tightening of U.S. economic sanctions on Venezuela in August has further hindered the availability of heavy sour crude, driving the price higher and increasing use of domestic sweet light by Gulf Coast refiners.
- Since the end of the ban on U.S. crude-oil exports in late 2015, the wide spread between U.S. crude prices and Brent (as well as other international benchmarks) had narrowed to $1-$2 per barrel for 2016 and for most of 2017 relative to about $5 per barrel before late 2015. The export ban, originally enacted

in 1975, had helped to pad U.S. refiners' margins by bottling up surging domestic output of shale oil-derived light crude. However, temporary slack demand for U.S. crude caused by hurricane-induced refinery outages, combined with increased demand for North Sea crude to replace OPEC cuts, has resulted in the U.S. discount to Brent widening out again, to about $6 per barrel. The crude price discount provides U.S. refiners with a competitive advantage, positioning them lower on the global cost curve and enhancing refined product exports. Furthermore, access to low-priced natural gas should help to support U.S. refiners' cost advantage relative to global peers.

- The International Maritime Organization has set a global limit for sulfur in fuel oil used on board ships of 0.50% m/m (mass by mass) beginning Jan. 1, 2020. This will significantly reduce the amount of sulfur oxide emanating from ships. Currently, the global sulfur cap is 3.5%, while the average sulfur content of today's heavy fuel oil bunkers—the most common type of marine fuel burned—is around 2.7%. The replacement fuel is likely to be marine gasoil (distillate), which should benefit U.S. refiners. We expect more detailed plans by individual refiners to address IMO 2020 next year.

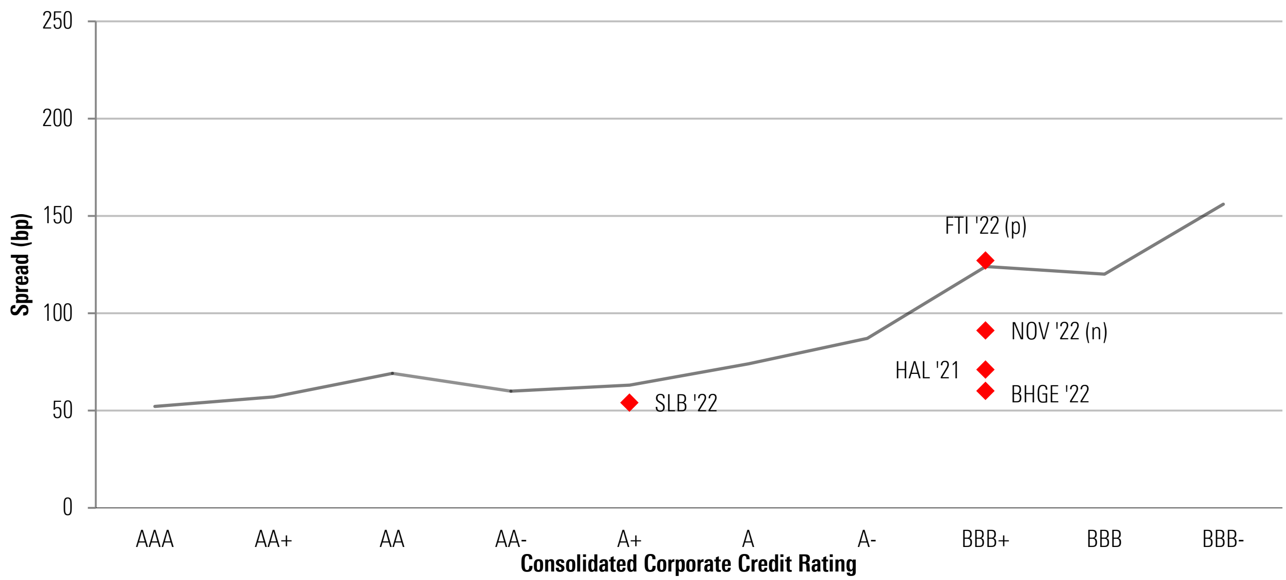
Exhibit 11 Investment-Grade Refining, Marketing and Transportation Spreads

Refiner	Rating	Rating Outlook/ Review Status	Coupon	Maturity	Yield	Spread	Difference From Index	Average Difference
Marathon Petroleum Corp.	BBB	Stable	3.63%	9/15/2024	3.33%	+104	-16	
Andeavor	BBB-	Stable	5.13%	4/1/2024	2.97%	+126	-30	-38
Valero Energy Corp.	BBB+	Stable	3.65%	3/15/2025	3.15%	+85	-39	
Phillips 66	BBB+	Stable	4.30%	4/1/2022	2.68%	+59	-65	

Source: Morningstar Credit Ratings, LLC, Morningstar, Inc., and Bloomberg as of Dec. 11, 2017

Oilfield Services

Exhibit 12 Oilfield Services vs. Morningstar Corporate Bond Index



Source: Morningstar Credit Ratings, LLC, Morningstar, Inc., and Bloomberg as of Dec. 11, 2017
(UR) = rating under review / (p) = positive outlook / (n) = negative outlook

Oilfield Services Sector Trends

Globally, E&P investment cuts totaled more than 40% in 2015 and 2016, collectively, relative to 2014 (see Exhibit 3). However, a moderate rebound in upstream spending in 2017, expected to continue next year, is helping to resuscitate demand for oilfield services and equipment. After continuously declining for more than two years, the total world rig count bottomed at 1,405 in May 2016. Since then, the worldwide rig count has steadily increased to about 2,080, nearly 50% below the interim peak of 3,736 in February 2014. The rebound in drilling activity is reviving demand for rig maintenance and well-completion services. Although oilfield services activity has sharply rebounded in North America land, activity is still very weak offshore globally and inconsistent elsewhere (Far East and Latin America). Overall, a gradually growing number of pockets where demand is reviving makes for a more constructive market tone than in early 2017.

Oilfield service bond spreads have significantly tightened since energy prices bottomed in February 2016, more so than for the energy sector index. Assuming oil and gas pricing gradually cycles higher, credit trends should continue to improve for issuers in the oilfield services sector, but perhaps not as rapidly as experienced in the past year.

Issuer Highlights

- We affirmed Baker Hughes, a GE Co.'s BBB+ rating in November and assigned a stable outlook, resolving our review of the rating from Nov. 2, 2016, related to the announced merger between Baker Hughes and General Electric's oil and gas segment. The merger closed July 3, 2017. The stable rating outlook incorporates our renewed demand forecast for oilfield products and services and potential merger synergies.
    - Subsequently, Baker Hughes issued new long-term debt to fund a tender offer for existing 2018, 2024, and 2029 notes and a share buyback. The tender offer for the 2018 notes expired Dec. 8 and the company intends to redeem any remaining notes not purchased in the tender. The tender offer for the 2024 and 2029 notes expires Jan. 2, 2018. After an analysis of the tender, we do not currently envision a scenario where we would downgrade our rating in the near term. However, we are monitoring merger-related profitability improvements and the impact of a debt-funded share repurchase program as the situation evolves.
- Since inaugurating the initiative in 2015, and despite a subsea market that remains challenged, TechnipFMC's (BBB+, positive) integrated approach to subsea development has resulted in dozens of engineering studies, an increasing portion of which are converting to engineering, procurement, construction, and installation project orders. Technip's merger with FMC Technologies was finalized in January. Since then, TechnipFMC has realized cost synergies of $200 million on a run-rate basis, slightly ahead of schedule, and recently increased the cost synergy target to a $450 million exit rate by year-end 2019 from $400 million by year-end 2018 previously, supporting cash flow generation.
- Schlumberger (A+, stable) continues to be a consolidator in the global oilfield services sector. The company remains on track to close the OneStim joint venture with Weatherford International (B+, negative) to consolidate North American land completion products and services by year-end 2017. On July 20, Schlumberger announced an agreement to purchase a 51% equity interest in Eurasia Drilling Co. (not rated), subject to approval by Russian regulators. Schlumberger and EDC are well known to each other, having originally formed a strategic alliance in 2011. On Oct. 6, Schlumberger and Borr Drilling (not rated) signed an agreement to offer integrated, performance-based drilling contracts in the offshore jackup market. Lastly, Schlumberger Production Management and its joint venture partner, privately held Torxen Energy, announced the purchase of the producing Palliser Block in Alberta for approximately $1 billion total on Oct. 19. Schlumberger will be the majority nonoperating owner of Palliser.

Exhibit 13 Investment-Grade Oilfield Services Spreads

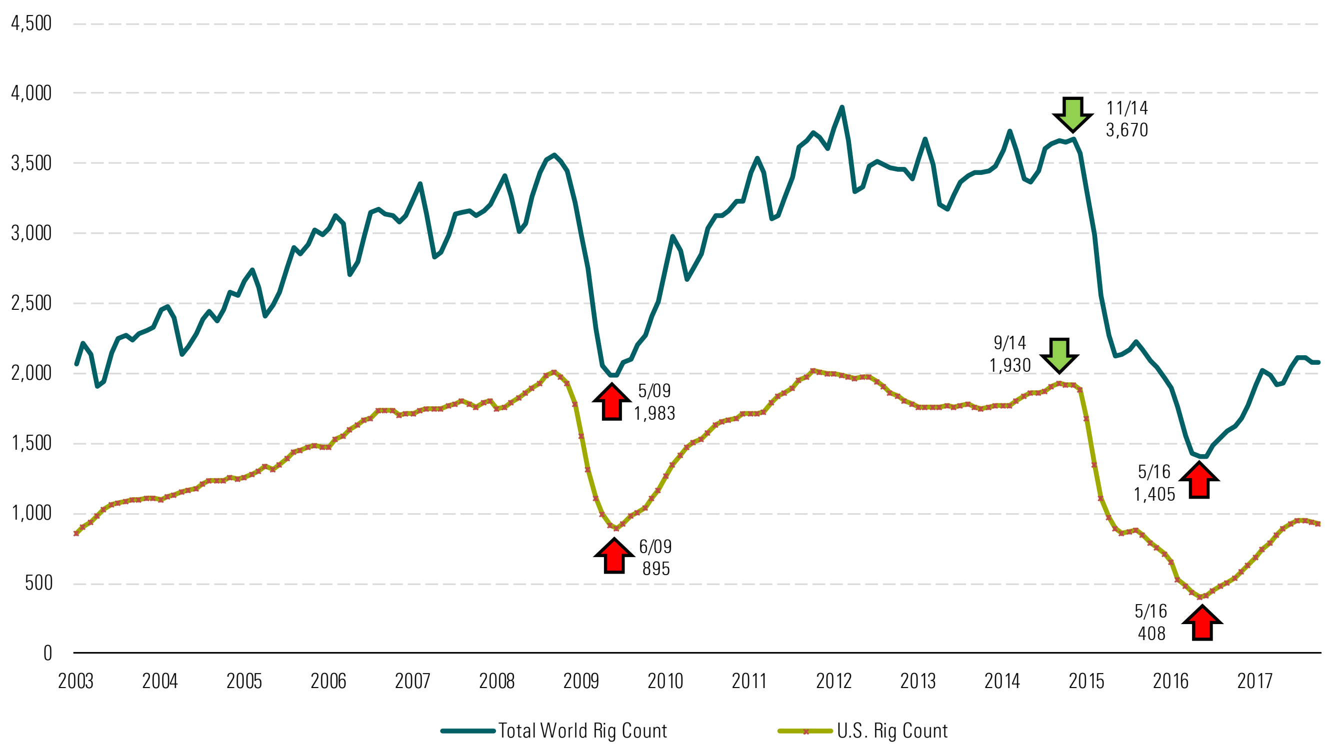
Oilfield Services	Rating	Rating Outlook/ Review Status	Coupon	Maturity	Yield	Spread	Difference From Index	Average Difference
TechnipFMC	BBB+	Positive	3.45%	10/1/22022	3.38%	+127	3	
Schlumberger	A+	Stable	3.63%	11/20/2022	2.69%	+54	-9	-31.2
National Oilwell Varco	BBB+	Negative	2.60%	12/1/2022	3.08%	+91	-33	
Halliburton	BBB+	Stable	3.50%	8/1/2023	2.88%	+71	-53	
Baker Hughes, a GE Co.	BBB+	Stable	2.77%	12/15/2022	2.74%	+60	-64	

Source: Morningstar Credit Ratings, LLC, Morningstar, Inc., and Bloomberg as of Dec. 11, 2017

Recent Headlines

- Related to fracking, rationalization of pressure pumping capacity combined with the resurgence of North American land-based E&P activity during the past few quarters is resulting in much-improved fleet utilization and pressure pumping pricing. A heightened demand for fracking in North America looks to continue through early 2018.
- According to data provided by Baker Hughes, the total world rig count hit an interim peak in February 2014 at 3,736, then began a long slide, bottoming at 1,405 in May 2016 (see Exhibit 14). Since then, about 675 rigs have been added to the worldwide rig count, as North American land-based E&P activity has surged. Within the total, the rig count for the U.S. has rebounded by 510 and for Canada by about 160 (seasonally, the Canadian rig count typically peaks in the December-February time frame), more than offsetting a small decline in Africa and Europe. In the U.S., the rebound in E&P activity since May 2016 has been largely centered in the prolific Permian Basin (Texas and New Mexico), Eagle Ford Shale (Texas), and Woodford Shale (Oklahoma).
- As of Oct. 31, 155 North American oilfield service companies have filed for bankruptcy, including 79 in Texas, 17 in Louisiana, and 7 in Canada, since the beginning of 2015. Filings reached a crescendo in the months of May and June 2016 (9 each), tailing off since then. So far, 44 oilfield service companies have filed for bankruptcy in 2017. (Source: Oilfield Services Bankruptcy Tracker, Haynes and Boone, Oct. 31.)

Exhibit 14 Since May 2016 Bottom, Total World Rig Count Rebound Led by Resuscitation of North American Land-Based Activity



Source: Baker Hughes, a GE Co. as of Dec. 4, 2017

About Morningstar® Credit Research

Morningstar Credit Research provides independent, fundamental equity research differentiated by a consistent focus on sustainable competitive advantages.

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