

## INDUSTRY OVERVIEW

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### GLOBAL OIL AND GAS MARKET

The global economic recession that began in 2008 and continued into 2009 had a profound impact on world energy demand, as global marketed energy consumption decreased in 2009 for the first time since 1982. However, in the longer term, energy demand growth is expected to recover as the global economy resumes its growth.

Oil, among all types of fuels, has been the most important source for energy in recent decades, followed by coal, natural gas, nuclear and renewable energies. According to EIA, oil is expected to remain the largest source for energy accounting for about 30.3% of global primary energy consumption in 2035. Total global oil consumption is expected to grow by 28.5% from 2007 to 2035. In the same period, China, driven by its strong economic growth, is expected to have the highest oil consumption growth, at a 2.9% CAGR. In addition, oil consumption growth is higher in non-OECD region, at a 1.8% CAGR compared with OECD region at 0.1% CAGR.

#### World Oil Consumption by Region

	2005	2006	2007	2015E	2020E	2025E	2030E	2035E	2007 as % of total	2035E as % of total	2007- 2035E CAGR
<b>OECD</b>											
<b>OECD North America</b> .....	<b>25.2</b>	<b>25.0</b>	<b>25.1</b>	<b>24.6</b>	<b>25.0</b>	<b>25.7</b>	<b>26.4</b>	<b>27.4</b>	<b>29.2%</b>	<b>24.8%</b>	<b>0.3%</b>
—United States .....	20.8	20.7	20.6	20.2	20.6	21.0	21.5	22.1	23.9%	20.0%	0.3%
—Canada .....	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.4	2.7%	2.2%	0.2%
—Mexico .....	2.1	2.1	2.1	2.2	2.3	2.4	2.7	2.9	2.4%	2.6%	1.2%
<b>OECD Europe</b> .....	<b>15.7</b>	<b>15.7</b>	<b>15.3</b>	<b>14.0</b>	<b>13.4</b>	<b>13.4</b>	<b>13.6</b>	<b>13.7</b>	<b>17.8%</b>	<b>12.4%</b>	<b>-0.4%</b>
<b>OECD Asia</b> .....	<b>8.6</b>	<b>8.5</b>	<b>8.4</b>	<b>7.7</b>	<b>8.0</b>	<b>8.1</b>	<b>8.3</b>	<b>8.4</b>	<b>9.8%</b>	<b>7.6%</b>	<b>0.0%</b>
—Japan .....	5.3	5.2	5.0	4.2	4.3	4.3	4.2	4.1	5.8%	3.7%	-0.7%
—South Korea .....	2.2	2.2	2.2	2.4	2.5	2.7	2.9	3.1	2.6%	2.8%	1.2%
—Australia/New Zealand .....	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.3%	1.1%	0.3%
<b>Total OECD</b> .....	<b>49.5</b>	<b>49.1</b>	<b>48.8</b>	<b>46.3</b>	<b>46.4</b>	<b>47.2</b>	<b>48.3</b>	<b>49.5</b>	<b>56.7%</b>	<b>44.8%</b>	<b>0.1%</b>
<b>Non-OECD</b>											
<b>Non-OECD Europe and</b>											
<b>Eurasia</b> .....	<b>4.9</b>	<b>5.0</b>	<b>5.1</b>	<b>4.9</b>	<b>4.9</b>	<b>5.0</b>	<b>5.1</b>	<b>5.4</b>	<b>5.9%</b>	<b>4.9%</b>	<b>0.2%</b>
—Russia .....	2.8	2.9	2.9	2.8	2.7	2.7	2.7	2.8	3.4%	2.5%	-0.1%
—Other .....	2.1	2.2	2.2	2.1	2.2	2.3	2.4	2.5	2.6%	2.3%	0.5%
<b>Non-OECD Asia</b> .....	<b>15.4</b>	<b>16.2</b>	<b>16.8</b>	<b>20.1</b>	<b>22.7</b>	<b>25.9</b>	<b>29.1</b>	<b>32.3</b>	<b>19.5%</b>	<b>29.2%</b>	<b>2.4%</b>
—China .....	6.7	7.3	7.6	10.0	11.6	13.5	15.3	16.9	8.8%	15.3%	2.9%
—India .....	2.5	2.7	2.8	3.2	3.6	3.9	4.3	4.7	3.3%	4.2%	1.9%
—Other Non-OECD Asia .....	6.2	6.2	6.3	6.9	7.6	8.5	9.5	10.7	7.3%	9.7%	1.9%
Middle East .....	5.8	6.0	6.4	7.2	7.8	8.5	9.5	11.0	7.4%	9.9%	2.0%
Africa .....	3.0	3.0	3.1	3.5	3.6	3.9	4.2	4.6	3.6%	4.2%	1.4%
Central and South America .....	5.5	5.8	6.0	6.6	6.7	7.0	7.5	8.0	7.0%	7.2%	1.0%
Brazil .....	2.2	2.3	2.4	2.8	3.0	3.3	3.6	4.0	2.8%	3.6%	1.8%
Other Central and South America ..	3.3	3.5	3.6	3.7	3.7	3.8	3.9	4.0	4.2%	3.6%	0.4%
<b>Total Non-OECD</b> .....	<b>34.6</b>	<b>36.1</b>	<b>37.3</b>	<b>42.4</b>	<b>45.7</b>	<b>50.4</b>	<b>55.6</b>	<b>61.1</b>	<b>43.3%</b>	<b>55.2%</b>	<b>1.8%</b>
<b>Total World</b> .....	<b>84.0</b>	<b>85.2</b>	<b>86.1</b>	<b>88.7</b>	<b>92.1</b>	<b>97.6</b>	<b>103.9</b>	<b>110.6</b>	<b>100%</b>	<b>100%</b>	<b>0.9%</b>

Source: EIA

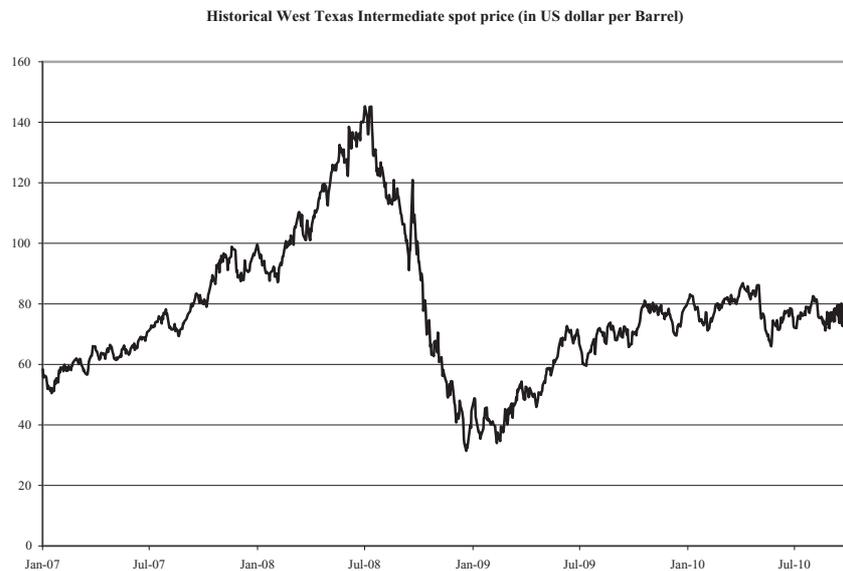
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Oil and gas demand has steered and will continue to steer increasing investment across the global oil and gas industry infrastructure, both upstream and downstream. According to BP Statistics Review 2010, in 2009, as a result of the financial crisis, global oil production dropped 2.5% from 2008, to 80 million barrels per day, while oil consumption dropped 1.4% in the same period to 84 million barrels per day, the largest annual drop since 1982. OECD consumption fell by 4.3%, the fourth consecutive annual decline, while outside the OECD, consumption growth slowed to 2.3%, the weakest annual percentage growth since 2001. China, India and Middle Eastern countries accounted for almost all of the non-OECD growth. The global economic crisis as well as general negative sentiment regarding the economy resulted in a steep fall in the oil price, the West Texas Intermediate spot price falling from a high of over \$145 per barrel in July 2008 to a five-year low of \$31 per barrel by December 2008. In 2009, oil prices began below \$40 per barrel, but increased slowly throughout the year as investors became increasingly optimistic that the global economy would recover faster than expected. Despite the recent fluctuations in the oil price, official sources, including EIA, forecast that global oil demand will continue to grow.

The dramatic fall and slow recovery of the oil price, as well as field operators' expectations regarding future growth in oil consumption, had a significant negative impact on global upstream oil and gas sector activity, which in turn negatively impacted the activity and performance of oilfield equipment manufacturers for the 2009.

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The following two charts set forth historical West Texas Intermediate spot prices and U.S. Henry Hub Gas prices during the Track Record Period.



Source: Bloomberg

## GLOBAL OILFIELD DRILLING SERVICES MARKET

### Overview

The oilfield drilling services market addressed in this section includes the following services:

- Onshore contract drilling: performed by the drilling contractor that owns and operates a drilling rig. The drilling contractor usually charges a fixed daily rate for the use of its rig and crew, plus certain operating expenses such as mobilizing/demobilizing the rig, fuel, etc. Land contract drilling is typically a highly fragmented, localized, cyclical business. When demand drops, rig rates fall quickly toward cash costs as contractors take steps to keep their rig utilization high. As utilization exceeds 90%, day rates begin rising quickly since supply is inelastic. In North America most rigs are hired only on a per-well or short-term basis and serve the market within a 50 mile radius from its yard. Internationally,

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most rigs work under long-term (up to three year) day rate contracts, but rigs rarely cross national borders in order to secure contracts.

- Mud engineering consists of testing the drilling fluids or mud, at a rig and prescribing mud treatments to maintain mud weight, properties and chemistry to optimize mud performance. Mud companies almost always have a mud engineer on duty at the rig, either on a full-time or part-time basis. The mud engineer may be provided by the mud company providing the product to the customer (typical in North America) or hired separately by the operator from a third party not associated with the products used (typical outside North America).
- Cementing: takes place when cement is prepared and pumped into place in a wellbore. Cementing operations may be performed in order to seal the annulus after a casing string has been run, to seal a lost circulation zone, to set a plug in a well in order to assist in further drilling, or to plug a well so that it may be abandoned. A cementing crew uses special mixers and pumps to displace drilling fluids and place cement in the wellbore. For a new well, cementing typically takes place three or four times during the drilling process: to set conductor pipe, to set surface casing, to set intermediate casing, and to set production casing.

Spears and Associates estimate that the onshore contract drilling, mud engineering and cementing services markets totaled US\$25.3 billion, US\$1.3 billion and US\$7.7 billion respectively in 2009. For all three services, North America is the largest regional market, followed by South America, China and Russia.

The future growth of the oilfield service market is closely linked to the upstream capital expenditure made by oil companies, which is driven by the oil price. Based on Spears and Associates' current oil price forecast from 2009 to 2015, in North America, the largest market by number of land rigs, the total land rig count is expected to grow at a CAGR of 10.7% to 2,322 in 2015 while total onshore drilling and well completion services spending, which totaled at US\$79.3 billion in 2009, is expected to grow at 13.7% CAGR to reach US\$171.2 billion by the end of 2015. In another major market, Russia, the total land rig count is 758 in 2009, and is expected to grow at 3.0% CAGR through year 2015 to 904, while total spending in onshore drilling is forecasted to grow at 5.4% CAGR to reach US\$12.4 billion by 2015.

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### Global Oilfield Drilling Service Market<sup>(1)</sup>

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2009 as % of total	2009- 2015E CAGR
<b>Onshore Contract Drilling Market (US\$ Billion)</b>													
China	2.8	3.1	3.2	3.2	3.0	3.0	3.1	3.2	3.4	3.5	3.7	11.9%	3.6%
North America	10.3	15.4	15.6	16.8	9.5	13.2	15.4	16.3	17.2	18.2	19.2	37.5%	12.4%
South America	1.7	2.1	2.9	3.7	3.6	3.5	3.8	4.0	4.2	4.4	4.7	14.2%	4.5%
Europe	0.1	0.2	0.2	0.5	0.4	0.4	0.4	0.5	0.5	0.5	0.5	1.6%	3.8%
Africa	0.5	0.6	0.9	1.2	1.1	1.1	1.2	1.3	1.4	1.6	1.7	4.3%	7.5%
Mid East	1.1	1.3	1.9	2.2	2.2	2.0	2.1	2.2	2.3	2.4	2.5	8.7%	2.2%
Far East	0.9	1.1	1.5	1.9	2.0	1.9	2.0	2.1	2.3	2.4	2.6	7.9%	4.5%
Russia	1.6	2.0	2.4	2.7	2.8	2.9	3.1	3.3	3.5	3.6	3.8	11.1%	5.2%
Central Asia	0.6	0.7	0.8	0.9	0.8	0.9	0.9	1.0	1.0	1.1	1.1	3.2%	5.5%
<b>Total</b>	<b>19.8</b>	<b>26.5</b>	<b>29.3</b>	<b>33.1</b>	<b>25.3</b>	<b>28.9</b>	<b>32.2</b>	<b>33.9</b>	<b>35.8</b>	<b>37.8</b>	<b>39.8</b>	<b>100.0%</b>	<b>7.8%</b>
<b>Mud Engineering Services Market (US\$ Billion)</b>													
China	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	17.7%	3.9%
North America	0.5	0.6	0.6	0.7	0.4	0.6	0.7	0.7	0.7	0.8	0.8	30.0%	12.7%
South America	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	10.8%	7.8%
Europe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	3.1%	3.8%
Africa	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	3.1%	12.2%
Mid East	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	5.4%	6.1%
Far East	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	7.7%	7.0%
Russia	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	16.2%	5.5%
Central Asia	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	5.4%	6.1%
<b>Total</b>	<b>1.3</b>	<b>1.5</b>	<b>1.5</b>	<b>1.6</b>	<b>1.3</b>	<b>1.5</b>	<b>1.7</b>	<b>1.8</b>	<b>1.9</b>	<b>2.0</b>	<b>2.1</b>	<b>100.0%</b>	<b>8.2%</b>
<b>Cementing Services Market (US\$ Billion)</b>													
China	1.3	1.3	1.3	1.5	1.3	1.3	1.3	1.4	1.5	1.5	1.6	16.9%	3.5%
North America	5.4	5.9	5.8	6.3	4.0	5.7	6.7	7.1	7.5	7.9	8.3	51.9%	12.9%
South America	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.9	7.8%	7.0%
Europe	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	2.6%	7.0%
Africa	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	3.9%	4.9%
Mid East	0.2	0.2	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	2.6%	7.0%
Far East	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.7	6.5%	5.8%
Russia	0.3	0.4	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.7	0.8	7.8%	4.9%
Central Asia	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.3%	0.0%
<b>Total</b>	<b>8.6</b>	<b>9.4</b>	<b>9.5</b>	<b>10.3</b>	<b>7.7</b>	<b>9.6</b>	<b>10.8</b>	<b>11.4</b>	<b>12.0</b>	<b>12.7</b>	<b>13.4</b>	<b>100.0%</b>	<b>9.7%</b>
<b>Total Onshore Rig Count</b>													
North America	1,741	2,026	2,035	2,194	1,265	1,858	2,107	2,153	2,213	2,272	2,322	N/A	10.7%
Russia	439	539	648	734	758	790	835	852	869	886	904	N/A	3.0%
<b>Total Drilling and Well Completion Services Spending (Onshore, US\$ Billion)</b>													
North America	76.4	110.6	121.7	148.3	79.3	120.2	142.7	148.9	156.3	164.0	171.2	N/A	13.7%
Russia	4.8	6.0	7.8	9.7	9.0	8.5	9.4	10.1	10.8	11.5	12.4	N/A	5.4%

Source: the Spears' Report

(1) Throughout this section, the following regions have been defined as follows: "Central Asia" consists of Azerbaijan, Kazakhstan, Turkmenistan, Uzbekistan, and Ukraine; "Mid East" consists of Iran, Iraq, Israel, Kuwait, Oman, Qatar, Saudi Arabia, Syria, Turkey, UAE, and Yemen; "Far East" consists of Australia, India, Indonesia, Japan, Malaysia, Myanmar, New Zealand, Pakistan, Papua New Guinea, Thailand, and Vietnam; and "China", for purposes of this section only, includes Hong Kong.

### Major Service Providers

All the three service segments are dominated by North America based multinational firms. In the onshore contract drilling market, there are an estimated 500 drilling contractors, of which 70% are in North America. Leading service providers include Nabors Industries, Helmerich & Payne, and Weatherford. M-I Swaco (a division of Schlumberger), Baroid (a division of Halliburton), and Inteq (a division of Baker Hughes International) are the major services providers in the mud engineering market. Halliburton, Schlumberger, and BJ Services (a division of Baker Hughes International) have the biggest share of the cementing services market.

A number of the major services providers have integrated along the value chain to save costs and achieve superior performance. For instance, a contract drilling firm which also makes drill pipe potentially has a cost

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advantage over other contract drilling firms which must source their drilling equipment from third parties at market prices. For most contract drilling firms, approximately 25-30% of its capital outlays will be spent on purchasing drill pipes, hence savings of the cost of procuring drill pipe by procuring it in-house would allow an onshore drilling contractor to charge lower rig rates, providing an advantage when competing for work for price-conscious oil and gas companies. Another potential advantage of a contract drilling firm that makes drill pipe is that it may be able to leverage proprietary information (acquired through drill pipe research and development) in such as way as to achieve superior drilling performance.

For example, Nabors Industries, the largest onshore contract drilling company, also owns rig data acquisition and information management products and services. Halliburton, the largest pressure pumping services company, manufactures its own cementing and stimulation equipment, while Schlumberger, Halliburton, and Baker Hughes, the leading directional drilling service companies, manufacture their own directional drilling tools.

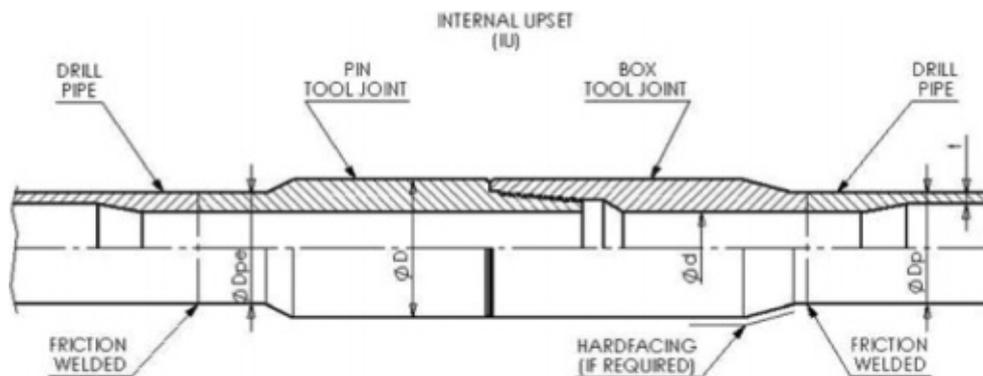
### GLOBAL DRILL PIPE MARKET

#### Overview

The drill pipe market as addressed here includes the sale of drill pipe, drill collar, and heavy weight drill pipe. It excludes the sale of non-magnetic drill collar:

- Drill pipe is used during drilling operations to connect the surface drilling equipment to the bottom hole assembly and the drill bit. A drill pipe transmits power from the drilling motor above ground to the drill bit and conducts drilling fluid (mud) down to the drill bit to flush drill cuttings to the surface for removal. A section of drill pipe is called a “joint”; each joint is normally about thirty feet long with an outer diameter (OD) ranging from 2.375 to 6.625 inches, is joined to one another by tool joints to form the drill string
- A drill string is composed of drill collar at the bottom, which are connected to heavy weight drill pipe, which are then connected to standard weight drill pipe, which normally accounts for the vast majority of the drill string.
- Drill collars are a part of the drill string that provides weight on bit for drilling
- Heavy weight drill pipe (HWDP) is a type of drill pipe whose walls are thicker and collars are longer than conventional drill pipe. HWDP tends to be stronger and has higher tensile strength than conventional drill pipe, so it is placed near the bottom of a long drill string for additional support

#### Drill Pipe with Weld-On Tool Joint Assembly



Spears and Associates estimate that the global drill pipe market totaled 17.2 million feet, or US\$647 million in 2009. The market is forecast to increase, in dollar terms, at a 13.3% CAGR from 2009 to 2015, reaching

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US\$1,368 million, driven by both increasing demand for drill pipe due to increasing drilling activities and a higher average selling price.

The demand for drill pipe is largely driven by the replacement of existing drill pipes, which accounts for approximately 80% of total demand. The remaining 20% of drill pipes are for the construction of new rigs. Routine maintenance accounts for only about half of total drill pipe replacement demand. On average, about 20%-30% of a drill string is replaced each year due to normal wear and tear; the rest of drill pipe replacement demand is associated with drill pipe that is lost downhole.

Depending on the grade, drill pipe is currently selling for \$3,000 to \$6,000 a short ton. Over the past year drill pipe prices have rebounded from their 2009 lows and are currently selling near 2006-2008 price levels. Drill pipe prices are expected to rise about 5% per year.

Historically, North America has been the largest regional market, followed by China, Russia, and South America. Outside of Russia, drilling contractors almost exclusively use drill pipe that meets or exceeds API (American Petroleum Institute) specifications. Most drill pipe in Russia is manufactured to GOST standards; as a result, very little Russian made drill pipe is exported. Russia, Central Asia and North America are expected to be the fastest growing regions globally.

### Global Drill Pipe Market

	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010E</u>	<u>2011E</u>	<u>2012E</u>	<u>2013E</u>	<u>2014E</u>	<u>2015E</u>	<u>2009 as % of total</u>	<u>2009- 2015E CAGR</u>
<b>US\$ Million</b>													
China . . . . .	153	161	164	209	154	157	167	177	188	199	211	23.8%	5.4%
North America . . .	396	439	432	563	295	425	507	544	587	633	679	45.6%	14.9%
South America . . .	45	48	52	66	55	58	64	69	75	81	88	8.5%	8.1%
Europe . . . . .	12	12	13	15	12	13	14	15	16	17	18	1.9%	7.0%
Africa . . . . .	14	18	20	25	20	24	26	28	31	34	37	3.1%	10.8%
Mid East . . . . .	22	23	26	31	24	25	27	29	31	33	35	3.7%	6.5%
Far East . . . . .	30	31	31	37	32	34	37	40	44	47	51	4.9%	8.1%
Russia . . . . .	82	102	121	165	45	69	112	176	189	202	216	7.0%	29.9%
Central Asia . . . . .	15	20	21	27	10	13	18	26	28	30	32	1.5%	21.4%
<b>Total . . . . .</b>	<b>769</b>	<b>855</b>	<b>881</b>	<b>1,138</b>	<b>647</b>	<b>818</b>	<b>973</b>	<b>1,105</b>	<b>1,188</b>	<b>1,276</b>	<b>1,368</b>	<b>100.0%</b>	<b>13.3%</b>
<b>Million FT</b>													
China . . . . .	5.1	5.4	5.5	5.8	5.1	5.2	5.3	5.4	5.4	5.5	5.5	29.7%	1.3%
North America . . .	9.9	11	10.8	11.8	7.4	10.6	12.1	12.3	12.7	13	13.3	43.0%	10.3%
South America . . .	0.9	1	1	1.1	1.1	1.2	1.2	1.3	1.3	1.3	1.4	6.4%	4.1%
Europe . . . . .	0.2	0.2	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	1.2%	7.0%
Africa . . . . .	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.6	2.3%	7.0%
Mid East . . . . .	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	2.9%	3.1%
Far East . . . . .	0.6	0.6	0.6	0.7	0.6	0.7	0.7	0.7	0.8	0.8	0.8	3.5%	4.9%
Russia . . . . .	2.7	3.4	4	4.6	1.5	2.3	3.6	5.3	5.4	5.5	5.7	8.7%	24.9%
Central Asia . . . . .	0.5	0.7	0.7	0.8	0.3	0.4	0.6	0.8	0.8	0.8	0.8	1.7%	17.8%
<b>Total . . . . .</b>	<b>20.7</b>	<b>23.1</b>	<b>23.9</b>	<b>26</b>	<b>17.2</b>	<b>21.7</b>	<b>24.7</b>	<b>27.1</b>	<b>27.7</b>	<b>28.3</b>	<b>28.9</b>	<b>100.0%</b>	<b>9.0%</b>

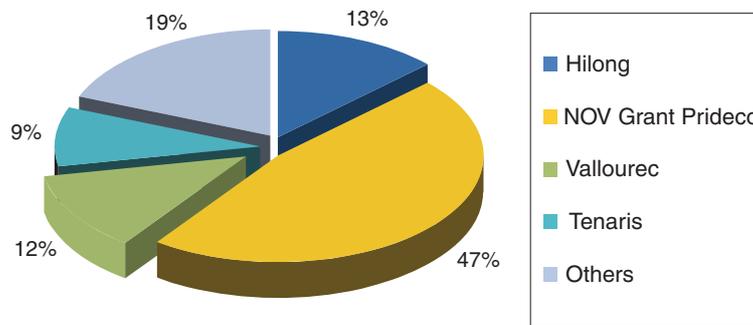
Source: the Spears' Report

## INDUSTRY OVERVIEW

### Leading Manufacturers

Globally, the drill pipe market is dominated by NOV Grant Prideco, Hilong, Vallourec, and Tenaris, who have 47%, 13%, 12% and 9% of the global market share respectively, based on 2009 sales. Hilong held 10% and 16% of the global drill pipe market in terms of sales in 2007 and 2008, respectively.

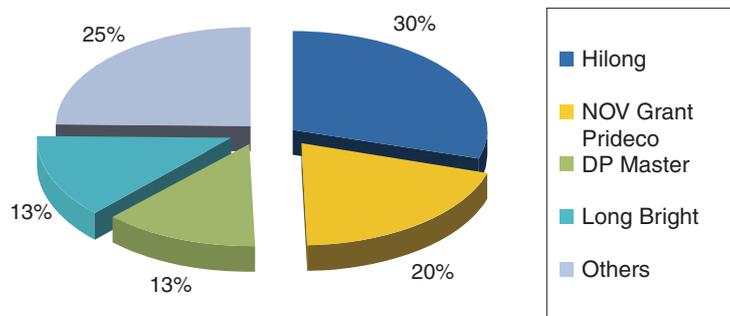
**Global Drill Pipe Market - 2009 Sales**



Source: the Spears' Report

The Chinese drill pipe market is led by Hilong; in terms of sales it is estimated to have held about 30% of this market over the 2007 to 2009 timeframe on the strength of its position as the leading drill pipe supplier to both CNPC and Sinopec, the two largest operators in China which are estimated to combine to account for over 90% of the Chinese drill pipe market. Other significant suppliers to the Chinese drill pipe market include Grant Prideco (with approximately 20% of the market), and DP Master and Long Bright (each with an estimated 10%-15% of the market). The balance of the Chinese drill pipe market is believed to be divided among 15-20 other firms.

**Chinese Drill Pipe Market - 2009 Sales**



Source: the Spears' Report

Russia is expected to be the fastest growing market with a 2009-2015 CAGR of 29.9% according to Spears and Associates. Russian pipe manufacturers are estimated to capture about 30% of the Russian drill pipe market, while importers (primarily Chinese) hold an estimated 70% of the Russian market. According to the same source, Hilong is estimated to be the leading foreign supplier to the Russian market, with an estimate 20% share of the market. In Russia, unlike other markets, aluminum drill pipe is often used to drill deviated wells in part because of its superior fatigue resistance but also due the benefit of its lower weight than conventional steel pipe, which is an important factor due to limitations on the hoisting capacity of drilling rigs built during the Soviet era.

The North American market is dominated by Grant Prideco, which is estimated to capture 70%-75% of this market, Vallourec (10%-15%), and Tenaris (10%). At present, access to the North American and European markets by Chinese drill pipe suppliers is restricted because of high tariffs.

## INDUSTRY OVERVIEW

### R&D and Innovation Trends

New oil and gas reservoirs are increasingly found at greater depths, or in extreme or low temperature or highly corrosive environments. These situations push the design capabilities of products across the entire oilfield supply chain, including drill pipe. In recent years drill pipe R&D has focused on materials research to develop:

- lighter weight pipe for use in drilling ultra-deep (over 5,000 meter) wells;
- fatigue-resistant pipe for use in drilling horizontal wells; and
- corrosion-resistant alloys, extreme temperature, and sour service steels for use in “critical service” applications

### Hardbanding Market

Hardbanding is a key component in drill pipe manufacturing. A hard-metal facing (i.e., hardband) is often applied in a band around the outside of the tool joint and on the center wear pad to enable the drill pipe to resist abrasion from the walls of the borehole and extended service life. Hardbanding increases tool joint life and reduces casing wear and is applied to the tool joint prior to the joint being welded to the pipe body. It is applied under very closely controlled conditions resulting in a uniform, wear-resistant surface. It can be flushed, raised, and machined finished. The application of the heavy-duty hardmetal facing is a closely controlled welding process applied with an automatic hardbanding machine.

According to Spears and Associates, the global hardbanding market is estimated to have totaled almost US\$32 million in 2009. The primary independent suppliers of hardbanding materials are Arnco Technology Trust, Postle Hardbanding Solutions, and Liquidmetal Technologies. In addition, drill pipe manufacturers that also supply hardbanding products include Hilong, NOV Grant Prideco (through its Tuboscope division), and VAM Drilling. The major participants in the Chinese hardbanding market include Hilong and Arnco.

#### Global Hardbanding Market

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2009 as % of total	2009- 2015E CAGR
<b>US\$ Million</b>													
China .....	8	8	8	9	8	8	8	9	9	10	11	25.0%	5.5%
North America .....	20	22	22	24	15	21	25	27	29	32	34	46.9%	14.6%
South America .....	2	2	3	3	3	3	3	3	4	4	4	9.4%	4.9%
Europe .....	1	1	1	1	1	1	1	1	1	1	1	3.1%	0.0%
Africa .....	1	1	1	1	1	1	1	1	2	2	2	3.1%	12.2%
Mid East .....	1	1	1	1	1	1	1	1	2	2	2	3.1%	12.2%
Far East .....	1	2	2	2	2	2	2	2	2	2	3	6.3%	7.0%
Russia .....	4	5	6	7	2	3	6	9	9	10	11	6.3%	32.9%
Central Asia .....	1	1	1	1	1	1	1	1	1	1	2	3.1%	12.2%
<b>Total .....</b>	<b>38</b>	<b>43</b>	<b>44</b>	<b>48</b>	<b>32</b>	<b>41</b>	<b>49</b>	<b>55</b>	<b>59</b>	<b>64</b>	<b>68</b>	<b>100.0%</b>	<b>13.4%</b>

Source: the Spears Report

### GLOBAL LINE PIPE COATING MATERIALS MARKET

#### Overview

Steel pipelines are used to transport natural gas, crude oil, water, petrochemical and petroleum products at high pressures over long distances. Line pipe coating involves the coating of onshore and offshore steel pipes with protective layers both externally and internally to prevent corrosion from the surrounding substrate. External pipe coating also provides mechanical protection for the underlying steel pipe. Given that the pipes are generally

## INDUSTRY OVERVIEW

bare steel, coating it with different layers of plastic and concrete prevents seawater or groundwater from attacking the steel pipe, prolonging its life. Coating of pipes represents 5-6% of the total pipeline cost in the overall scheme of design, manufacturing and installation of a pipeline project, but plays a very critical role. Aside from providing corrosion and mechanical protection, the pipe coating must be flexible enough to bend with the pipe and applied evenly to prevent any pockets where corrosion may accelerate.

Five main coating systems are used for onshore pipelines, three layer polyethylene (3LPE), three layer polypropylene (3LPP), fusion bonded epoxy (FBE or Dual FBE), coal tar enamel (CTE), asphalt enamel and polyurethane (PUR). The different systems are specified by pipeline owners and engineering firms depending on short term and long term cost, captive usage, regional availability of the coating material, control on handling, transportation and installation of pipelines, and technical reasons. Spears and Associates estimate the market size of the line pipe coating services to be 1,977 million square feet in 2009.

### Global Line Pipe Coating Demand

	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2009 as % of total</u>	<u>2009- 2015E CAGR</u>
<b>Million Square Feet</b>													
China .....	141	246	312	408	412	325	334	344	355	365	376	20.8%	-1.5%
North America .....	184	171	184	220	234	259	266	274	283	291	300	11.8%	4.2%
South America .....	72	36	32	79	130	66	68	70	72	74	76	6.6%	-8.6%
Europe .....	24	13	49	30	12	30	31	32	33	34	35	0.6%	19.5%
Africa .....	5	60	35	107	172	234	241	248	256	264	271	8.7%	7.9%
Mid East .....	54	132	213	366	482	729	751	773	797	820	845	24.4%	9.8%
Asia Pacific .....	330	574	728	613	412	325	334	344	355	365	376	20.8%	-1.5%
Russia .....	163	91	339	209	81	206	212	218	225	231	238	4.1%	19.7%
Central Asia .....	82	46	170	105	41	103	106	109	112	116	119	2.1%	19.4%
<b>Total .....</b>	<b><u>1,055</u></b>	<b><u>1,370</u></b>	<b><u>2,063</u></b>	<b><u>2,137</u></b>	<b><u>1,977</u></b>	<b><u>2,275</u></b>	<b><u>2,343</u></b>	<b><u>2,414</u></b>	<b><u>2,486</u></b>	<b><u>2,561</u></b>	<b><u>2,637</u></b>	<b><u>100.0%</u></b>	<b><u>4.9%</u></b>

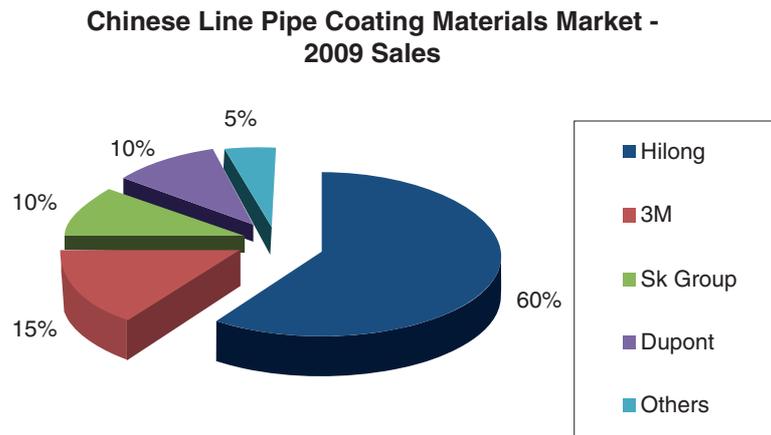
Source: the Spears' Report

In the five-year period from 2005 through 2009, measured by total area, global line pipe coating demand grew at a CAGR of 17.0%, and is forecast to grow at a CAGR of 4.9% till 2015. The growth of this market is closely linked to pipeline construction activity, which is expected to grow rapidly, driven by the increasing demand for energy worldwide and a global remapping of energy demand and supply dynamics.

## INDUSTRY OVERVIEW

### Major Line Pipe Coating Materials Suppliers

The global line pipe coating materials market is estimated to be US\$625 million in 2010, according to Spears. The leading suppliers in the market include 3M, DuPont, Akzo Nobel, Socotherm, Borealis/Borouge, and LyondellBasell. The global market is dominated by 3M. The Company is estimated to do over US\$800 million per year in pipe coatings across all industries, including steel line pipe, as well as refining/petrochemical and water pipes. Based on 2009 sales, Hilong is the leading supplier to the \$82 million Chinese steel line pipe coating materials market, with approximately 60% of the market. Other significant players in the Chinese line pipe coating materials market include 3M (with an estimated 15% of the 2009 market), SK Group (10%), and Dupont (10%). Hilong held approximately 30%-40% and 50% of the line pipe coating materials market in China in terms of sales in 2007 and 2008, respectively.



Source: the Spears' Report

### R&D and Innovation Trends

The key objectives of pipe coating innovations have been:

- to improve the toughness of the coating (impact, abrasion etc);
- to increase the operating temperature range (both on lower and higher side); and
- to secure better long term properties of the coating (Cathodic disbondment, Peel strength, weathering, UV and heat resistance, environmental stress crack resistance).

Pipeline engineers will continue to be challenged by the increasingly corrosive content and harsher operating conditions for oil and gas projects. In particular, unique applications for line pipe coating are likely to be required as new reserves are developed in cold climate and deep water environments.

## GLOBAL OCTG COATING MATERIALS AND SERVICES MARKET

### Overview

OCTG coating involves the coating of casing, tubing, and drill pipe in order to prevent corrosion and wear and to enhance equipment performance. Specialized coating service firms are used to perform OCTG pipe coating operations; in addition, the larger OCTG coating service firms also provide pipe inspection services. The OCTG coating services market is driven by overall drilling activity, a shift towards deeper drilling, replacement of aging tubulars, demand for higher end tubulars and a growing focus on safety.

North America is the most important market for OCTG coating services, accounting for 56% of the global market, followed by Russia and then China. In all, Spears estimates that the global market for OCTG coating

## INDUSTRY OVERVIEW

services totaled US\$188 million in 2009. Based on the outlook for future drilling activity, and assuming OCTG coating prices rise 4%-6% per year, the worldwide OCTG coating market is projected to reach US\$387 million in 2015, representing a CAGR of 12.8%. North America, China, and Africa are expected to be the fastest growing regions.

### Global OCTG Coating Materials and Services Market

US\$ million	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2009 as % of total	2009-2015E CAGR
China	31	32	35	40	22	22	38	41	43	46	48	12%	13.9%
North America	123	142	147	169	105	152	181	194	210	226	243	56%	15.0%
South America	10	11	13	15	14	15	17	18	19	21	22	7%	7.8%
Europe	3	3	3	4	3	3	4	4	4	4	5	2%	8.9%
Africa	3	5	5	6	5	6	7	7	8	9	10	3%	12.2%
Mid East	5	5	6	7	6	6	7	7	8	8	9	3%	7.0%
Far East	6	7	7	9	8	8	9	10	11	12	13	4%	8.4%
Russia	11	15	18	22	22	23	26	28	29	32	34	12%	7.5%
Central Asia	2	3	3	3	3	3	3	4	4	4	4	2%	4.9%
<b>Total</b>	<b>194</b>	<b>223</b>	<b>238</b>	<b>273</b>	<b>188</b>	<b>239</b>	<b>291</b>	<b>312</b>	<b>336</b>	<b>361</b>	<b>387</b>	<b>100.0%</b>	<b>12.8%</b>

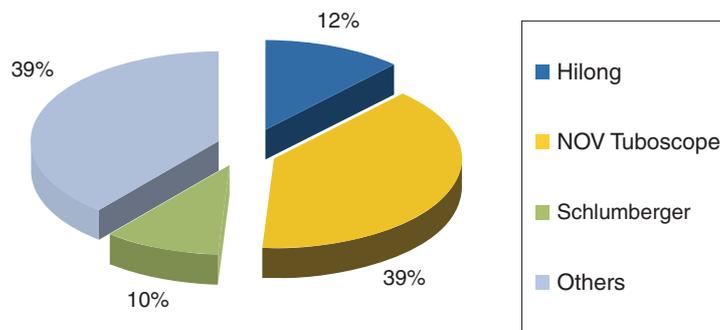
Source: the Spears' Report

### Major OCTG Coating Materials and Services Providers

According to the Spears Report, the leading OCTG materials and coating service companies are Hilong, NOV Tuboscope, and Schlumberger. Shawcor and RPC are among the other companies that also participate in the OCTG materials and coating services market.

- Based on 2009 sales, Hilong is the leading Chinese OCTG materials and coating service firm, capturing approximately two-thirds of the Chinese market and 12% of the global market, making it the second largest player globally. Hilong held 8% and 13% of the global OCTG coating materials and services market in terms of sales in 2007 and 2008, respectively, and held 60% and 67% of the OCTG coating materials and services market in China during the same period.
- The Tuboscope division of National Oilwell Varco (NOV) is the largest OCTG coating service firm outside China with a 39% of global market share.
- Schlumberger is a diversified oilfield service firm with operations around the world. Its Smith Services division is primarily involved in the inspection and coating of drill pipe.

**Global OCTG Coating Materials and Services Market - 2009 Sales**

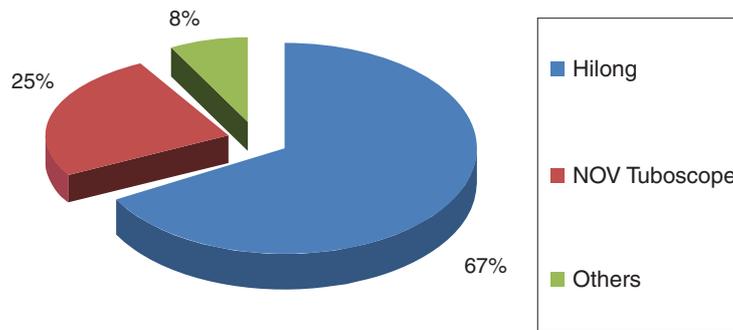


Source: the Spears' Report

## INDUSTRY OVERVIEW

NOV Tuboscope, Hilong and Schlumberger are also the leading coating material suppliers. Hilong produces the TC series of coating and anti-corrosion materials for use on drill pipe, tubing, casing, and line pipe. NOV Tuboscope has approximately 40 internal plastic coatings to protect drill pipe and line pipe specifically. Schlumberger (Smith International) commercializes Sub-One Technology's advanced InnerArmor coating technology for OCTG applications.

**Chinese OCTG Coating Materials and Services  
Market - 2009 Sales**



Source: the Spears' Report

### R&D and Innovation Trends

The challenges for drill pipe coating engineers include higher downhole temperatures, increasingly acidic drilling fluids, and improved friction loss properties. Newer drill pipe powder coating materials have the ability to withstand formation temperatures of about 400 F, allowing circulation to be reduced without sacrificing performance. Powder coating also performs well with drilling fluids such as zinc bromides and the acids used to drill some wells. Powder coatings have a lower coefficient of friction, allowing higher mud flow rates, allowing drilling contractors to reduce the size of the mud pumps and rig weight at significant savings in total well costs.

### ABOUT THIS SECTION

#### General

This "Industry Overview" section contains information extracted from a commissioned report prepared by Spears and Associates, or the Spears' Report, for purposes of this prospectus. For the full report, see "Industry Consultant Report" in Appendix V to this prospectus. Other key sources used to prepare this section include BP Statistical Review of World Energy and EIA.

#### About Spears and Associates

Spears and Associates has provided market research-based consulting services to the worldwide petroleum industry since 1965, specializing in equipment and services used in exploration, drilling and completion, production, transportation and refining. Current and former clients of Spears and Associates include petroleum equipment manufacturers, oilfield service firms, oil and gas producers, financial institutions, trade associations, and the U.S. government. Within this market Spears and Associates provides a wide scope of research and consulting services grouped in the following areas:

- marketing and sales—evaluation of market size and growth, market share, customer satisfaction, technology trends, selection criteria, purchasing process, and benchmarking;
- business development—strategic analysis for mergers and acquisitions, partnering, new technology development and introduction, and competitive analysis;

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- finance and planning—outlook for industry activity and price sensitivity analysis; and
- corporate—strategic review, due diligence and litigation support.

In addition to its market research and consulting assignments, Spears and Associates produces three publications covering the upstream petroleum industry: “Drilling and Production Outlook”, “Oilfield Market Report” and “Pipe Logix”.

### **Research Background on the Spears’ Report**

Over the course of its research, Spears and Associates interviewed approximately 50 people to determine the size of the market, how it is structured, and how it is expected to develop in the future. These interviews were conducted with key industry participants, knowledgeable industry figures such as marketing managers, product managers, and other company executives. Spears and Associates research also relied on its proprietary database of oilfield market segment sales and its internal knowledge of oilfield equipment and service markets developed through working with many of the world’s leading oilfield equipment and service companies. The research team also drew on publicly-available information on energy markets and measures of industry activity. The focus of Spears and Associates research and interviews was on the oilfield drilling services market, the drill pipe market, and the line pipe and OCTG coating materials and services market.

### **Other Key Sources**

The following sets forth our other key sources used to prepare this “Industry Overview” section.

- *BP Statistical Review of World Energy*. BP Statistical Review of World Energy is an annual industry report that provides objective quantitative data on world energy markets. The report has been published for over 50 years and is based on statistics taken from the government, primary sources as well as published data. BP plc, one of the world’s largest oil and gas companies, issues the report annually. The source data is based on contributions from a number of independent organizations including OECD, Platts, World Energy Council, EIA and the Oil and Gas journal.
- *EIA*. The Energy Information Administration, or EIA, is an independent statistical agency within the United States Department of Energy.