



Excavator Based Pipelayers
Introduced by Volvo Construction Equipment

Volvo Construction Equipment respectfully requests IPLOCA consideration for the prestigious British Petroleum Award based on its introduction of a full range of pipelayers stemming from patented adaptation of excavator base machines combined with state-of-the-art lifting technologies. A five model line up, ranging from 20 to 150 metric ton max lift capacity, is being offered.

This submission clearly meets the BP Award criteria of an engineering / technology breakthrough that can substantially improve construction practices.

Recognizing Volvo's extensive product lines, the pipeline industry will benefit both from the new pipelayer technology and the added competitiveness of an additional full line equipment and services provider.

To the specific Award Committee criteria:

Does it provide the onshore pipeline construction industry with something it did not have before?

Clearly yes. Traditional track-type tractor side booms have been limited to fixed position lifting off one side of the tractor. They are restricted in stability by their relatively narrow gauge and often need to maneuver in reverse because of site layout requirements. Volvo's exclusive excavator based solution provides 360 degree swing with full lifting performance and functionality at all radius positions. While excavators and rough terrain cranes are routinely used for specialized lifting on pipeline projects they have been limited in maneuverability such that they could not be more broadly applied. Volvo Pipelayers address those shortcomings while going far beyond in improving lifting performance, operator environment, safety, and many design areas specific to pipelayer application requirements.

Does it constitute an identifiable step forward in technology / construction process?

Clearly yes. These designs have received numerous patents in multiple countries with others pending.

Wide undercarriage gauge and low center of gravity provide previously unachievable stability allowing lift capacities substantially higher than track-type tractor based side booms. The largest, 150 metric ton model, is 40% greater max lift than the largest track-type tractor side boom ever produced allowing more effective handling of large diameter and potentially even larger pipe. Coupled with longer booms this allows higher hook height for better work positioning or in working further away from the trench. Wide gauge allows straddling the trench if advantageous for project layout.

A handwritten signature in black ink, consisting of a stylized, cursive name.

**Does it improve safety and / or environmental protection?**

Clearly yes. Volvo state-of-the-art lifting technologies include an on-board Load Management System that computes load charts for 360 degree rotation and infinite machine geometries up to 35 degree grade slope. It compares these to current operating conditions and displays them on a monitor in the cab along with a wide variety of warnings and operational aids. Load indicating light bars, located on the boom tips, provide visible warning to the operator and to adjacent operators and ground personnel allowing quantum improvements in safety and site management. The LMS is a huge improvement over traditional side booms that have only been rated on flat level ground and have not typically had on-board monitoring. Volvo Pipelayers are equipped with anti-two block device. They have substantially improved visibility resulting from the elevated cab and asymmetric boom design providing greater safety when working with personnel on the ground and in the trench. Ability to swing allows always operating in forward position with operator always facing the load. A mechanical swing lock is provided for added safety on severe side slopes.

Volvo Pipelayers exceed global design and safety requirements for pipelayers as well as cranes; most significant are OSHA regulations, ASME B30.14, ASME B30.5, ISO8813, and DIN 15018 and 15019. These standards regulate rated load methodology and issues such as wire rope strength safety factor and minimum sheave diameter and hoist drum diameter to wire rope diameter sizing. Traditional side booms have not been fully regulated against this full spectrum, particularly OSHA and crane standards. Yet, Volvo is pioneering this level of safety consistent with Volvo core values.

Relative to the environment, wide gauge and track shoe widths reduce ground pressure and soil disturbance while providing greater ability to work in softer underfoot conditions. Ability to lay pipe off both sides of the machines can allow narrowing of right-of-way saving precious time, material, and landscape. Volvo Pipelayers have capability to operate with bio-degradable oils.

Does it overcome a current problem area in pipeline construction?

Clearly yes. The cyclical nature of pipeline projects coupled with the specialty purpose of track type tractor side booms often results in low fleet utilization. Reluctance to further aggravate under utilized field populations and stinging experiences of high factory and user machine inventories in down cycles has driven long manufacturing lead times. These inefficiencies manifest themselves in excessive industry cost structure and antiquated machine fleets. Volvo pipelayers will moderate these impacts by having flexibility to be easily converted to an excavator boom and stick digging configuration. This allows dual use for project work balance, use between projects in non-pipelayer application, and / or potential for second life or to improve resale value. High production excavator manufacturing will shorten factory lead time and improve pipeline user efficiencies.

Transportability is typically a limit to optimum machine sizing for a project or in anticipation of future projects. Larger models of Volvo Pipelayers, where transport is an issue, are designed with variable gauge or easily removable track side frames, counterweights, and booms. This allows disassembly to roadable weight modules in a matter of minutes. Volvo Pipelayers can self disassemble and reassemble totally independently with no requirement for other lifting machine assistance.

A handwritten signature in black ink, consisting of a large, stylized 'V' shape with a horizontal line extending to the right.



Does it provide a reason for the industry to change the manner in which onshore cross-country pipelines are laid?

Clearly yes. Volvo Pipelayers will improve productivity, lower operating cost, and increase site layout flexibility while improving safety and environmental impact; all important areas for improvement in pipelining unachievable with any other solution.

Following are brief specs for the full model range. Page 3 illustrates the design features of the PL4611.

Signature:  _____

Signed on behalf of Volvo Group Korea Co. Ltd., Volvo Construction Equipment,
Volvo Bldg. 7th Fl., 726-173 Hannam-dong, Yongsan-Ku,
Seoul Korea (140-210)

Name and position in the company: Bart Decroos, Vice President Global Marketing - Volvo Excavators

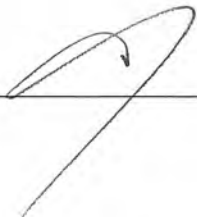
Date: 28th June, 2007

e-mail address: bart.decroos@volvo.com

Telephone no.: (Korea) +82 2 3780 9055, (Europe) +49 6501 84596

Fax no.: +82 2 3780 9263

Website: www.volvo.com

_____  Page 3/3

VOLVO



OIL & GAS PIPELINE SOLUTIONS

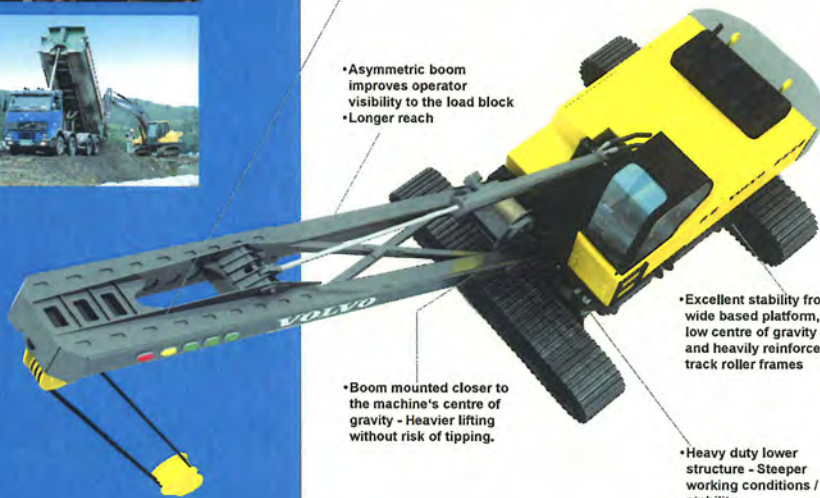
Innovative, cost-saving, patented design



• Load Management System boom-mounted light bar and in-cab monitor



• Volvo „Care Cab“ - Safety, Comfort, Visibility
• Cab riser



• Asymmetric boom improves operator visibility to the load block
• Longer reach

• Boom mounted closer to the machine's centre of gravity - Heavier lifting without risk of tipping.

• Excellent stability from wide based platform, low centre of gravity and heavily reinforced track roller frames

• Heavy duty lower structure - Steeper working conditions / stability



• Planetary, high line pull winch - Higher working loads

• Upper structure swing - Accurate pipe positioning

• Upper structure swing lock - Safety on severe side slopes

• Standard counterweight heavily reinforced boom - Excellent weight distribution and stability on steep slopes

• Retractable outriggers - Machine preparation for transport

• Track frames engage / disengage hydraulically - Easy transportation

• Increased ground clearance

• Wide track shoes



MORE CARE. BUILT IN.

