

## Well Site Pre-Completions Prep

With the need to streamline cost in today's completions, Boreal Pumping has been offering its Complete and extremely versatile Horse power Spreads to help reduce the cost of the rig in/setup of pre-frac operations on single and many multi-pad locations in WCSB.



### What can Boreal do for you?

- Pressure testing
  - Wellheads and Buffalo Heads
  - Casing against toe ports for DIR-83 Requirements
  - Wireline Lubricators & BOP's
  - Stump testing
- Single and multi-well annulus support utilizing our Mongoose hose and manifold
- Injectivity and step rate testing
- DFIT with live REAL TIME streaming
- Pumpdown support of guns if a Wireline Plug & Perf completion is used
- Acid Spearhead, Bullhead & Wash
- Complete Frac Support
- Full 2" and 3" 1502 15k iron packages that includes our own safety restraint system

### Horsepower Spread Capabilities

Pressure		Pumpdown Spread (2500HHP)		Twin Spread (1700HPP)		Body Job (600 BHP)	
		Max Rate m3/min		Max Rate m3/min		Max Rate m3/min	
MPa	psi	One Unit	Two Units	One Unit	Two Units	10K Unit	15K Unit
25	3500	3.20	6.40	2.10	4.20	1.00	.750
34.5	5000	2.50	5.00	1.16	2.32	.550	.650
45	6400	2.15	4.30	.850	1.70	.450	.450
69	10000	1.25	2.50	.750	1.50	.300	.250
103	15000	.750	1.50	.550	1.10	N/A	.150

<b>SERVICE COMPARISON TABLE FOR PUMP-DOWN OPERATIONS ON MULTI WELL PADS</b>				
<b>SERVICE PROVIDER</b>	<b>BOREAL PUMP-DOWN SPREAD</b>	<b>BOREAL TWIN SPREAD</b>	<b>COMPETITORS TWIN SPREAD</b>	<b>TRADITIONAL FRAC SPREAD</b>
<b>SERVICE</b>				
103 mPa PRESSURE RATING	YES	YES	YES	YES
MAX FLOW RATES OVER 2.5 m3 / min	YES	YES	YES	YES
TRACEABLE CHEM ADD SYSTEM	YES	YES	YES	YES
COMPACT FOOTPRINT	YES	YES	YES	NO
ONBOARD TANKS FOR MIXING / BLENDING	YES	YES	YES	NO
FLOW RATES FROM 1 TO 2500 lpm	YES	YES	NO	NO
ON BOARD LOW RATE PTESTING	YES	YES	NO	NO
ON BOARD LOW RATE ANNULAR	YES	YES	NO	NO
ON BOARD VACCUM ASSIST	YES	YES	NO	NO
REMOTE PANEL FOR WIRELINE COM	YES	YES	NO	NO
PURPOSE BUILT EQUIPMENT	YES	YES	NO	NO
100% REDUNDANCY ON LOW RATE PUMPS	YES	YES	NO	NO
100% REDUNDANT FLOW 1.5 m3 @ 65mPa	YES	NO	NO	NO
100% REDUNDANT HYDRAULIC SYSTEMS	YES	NO	NO	NO
SHIFT CREW LOAD OF LESS THAN 4	YES	NO	NO	NO
<b>COST ADDED SERVICES</b>				
VACCUM TRUCK	Not Required	Not Required	Additional fee \$\$	Additional fee \$\$
BACK PRESSURE TRUCK	Not Required	Not Required	Additional fee \$\$	Additional fee \$\$
<b>WHITE = STANDARD</b>				
<b>GOLD = VALUE ADDED SERVICE</b>				
<b>BLUE = PERFORMANCE / SAFETY ADDED SERVICE</b>				

## **Boreal Pumping Contacts**

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