



HydroPull™ Extended Reach

Motor Gas Separator (MGS™)

HydroPull™ SC Tool (Stimulation and Cleanout)

Water Bypass AV Sub (WBS)

High Pressure Rotary Jet (JetRotor™)

Job Planning Software

Engineering Services

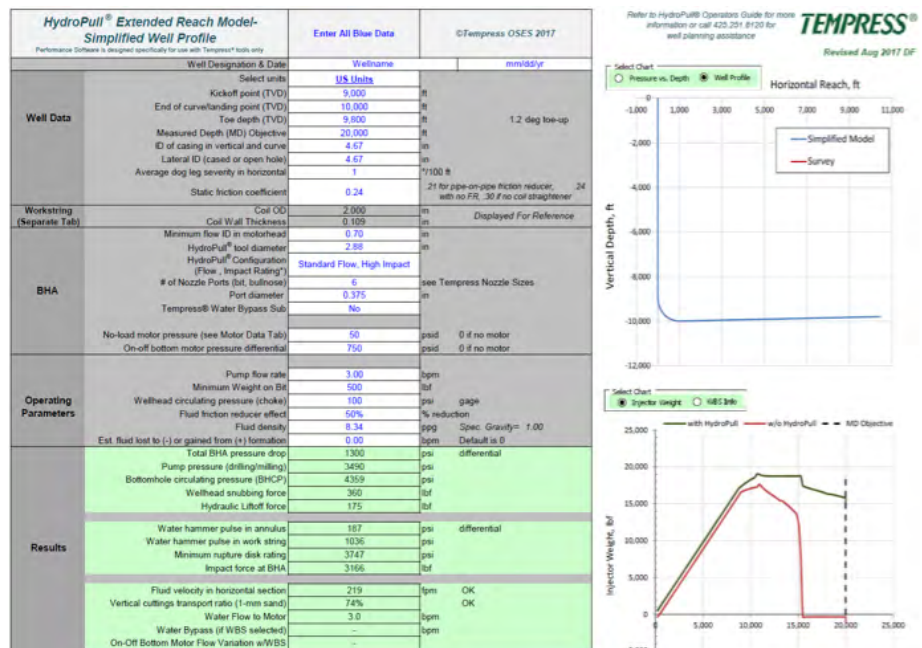
Custom Tool Development

## Tempress Job Planning Performance Software Suite

The performance of Tempress Well Intervention tools are enhanced through the use of our proprietary Job Planning Performance Software Suite. The Software is available to predict the performance and configuration of the HydroPull™ tool, the Motor Gas Separator (MGS™) tool and the Water Bypass AV Sub (WBS).

The Tempress Job Planning Performance Software is a critical component in the Front-End Engineering and Design (FEED) required of extended reach and depleted well operations. The Software plays a vital role in Tempress equipment consistently setting or breaking industry records. The Software is located within our Client Login site on our website and training is available at no cost to our clients.

### HydroPull™ Performance Software



A proprietary software program is available for HydroPull tool job planning. The software evaluates circulating pressures in the well and horizontal reach capabilities based on a set of input parameters. The program also calculates pump pressure requirements, the transport of sand and cuttings in the horizontal and vertical sections of the well, predicted lockup, and the rate at which the tool will pull tubing into the well.



## Motor Gas Separator (MGS™) and Water Bypass Sub (WBS) Performance Software

HydroPull™ Extended Reach

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Motor Gas Separator (MGS™)

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HydroPull™ SC Tool (Stimulation and Cleanout)

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Water Bypass AV Sub (WBS)

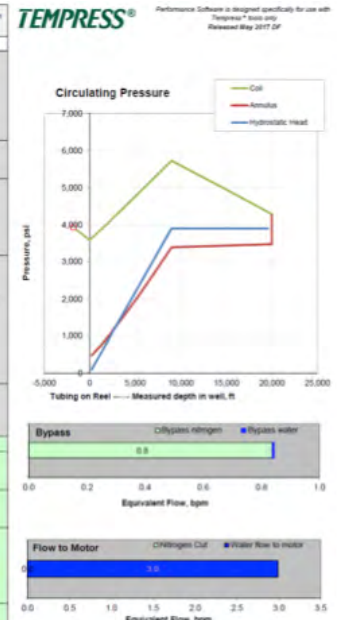
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High Pressure Rotary Jet (JetRotor™)

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Job Planning Software

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Engineering Services

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Custom Tool Development

Two Phase Circulation Model with MGS™ & WBS Port Sizing		Enter All Blue Data		Refer to MGS™ and WBS Operator's Guides for more information or call 425.251.8120 for well planning assistance.	
Well Designation & date		XXXX		mm-00-yy	
Well Data	Select Units	US Units			
	Total Vertical Depth (TVD)	5,000	ft		
	Measured Depth (MD)	20,000	ft		
	Vertical casing ID	4.67	in		
	Horizontal casing or openhole ID	4.67	in		
Work-string	Temperature gradient, deg F/1000 ft	20.0	F/1000 ft	Bottomhole Temperature: 440 °F	
	Length of tubing (coil or jointed)	22,000	ft		
	Tubing O.D.	2.86	in		
Fluid/Gas	Tubing wall thickness	0.156	in		
	Nitrogen flow rate	800	scfm		
	Fluid pump flow rate	3.00	gpm		
	Wellhead choke pressure (psig)	400	psig		
	Friction reducer effect (% reduction)	50%	% reduction		
BHA	Brine concentration (ppg)	5.34	ppg	Specific Gravity = 1.00	
	Est. fluid lost to ( ) or gained from ( + ) formation	0.00	gpm		
	Minimum ID in motorhead	0.950	in	upstream of gas separator	
	BHA tool diameter	2.86	in		
	Select bypass tool: MGS™ or WBS	MGS™		For lower flow, default is 0, factory installed. See HydroPull® Performance Program.	
Bypass Ports	# of pressure balancing restrictors (MGS)	0			
	Select HydroPull® tool	HydroPull®			
	HydroPull® Flow Configuration	Standard Flow			
	No load motor pressure (see Motor Data Tab)	50	psid	At fluid rate, inch D if no motor.	
	On-off bottom motor pressure differential	750	psid	See Motor Data Sheet. Use 1 for equivalent diameter values. See Nozzle Sizes sheet.	
RESULTS	Number of nozzles (at valve)	6			
	BI nozzle diameter	0.375	in	See Nozzle Sizes sheet.	
Pressures	On-Bottom (Milling) or Off-Bottom	OFF BOTTOM		Balanced	
	MGS™ bypass port size	0.250	inch	5.00 mm	1/4" (5.00 mm)
	Press # to recalculate until solution stabilizes			Max Port Size = 0.275	
Transport	Total BHA pressure drop	800	psi		
	Pump pressure	4000	psi		
	Bottomhole circulating pressure (BHCIP)	3470	psi		
Fluid Flow Rates	Vertical cuttings transport ratio (1 min sand)	77%		Should be >50%	
	Fluid velocity in horizontal section	223	ft/min	OK	
	Horizontal flow stabilization check	Mixed - OK			
Gas Separation	Motor equivalent flow	3.0	gpm		
	Bypass equivalent flow	0.8	gpm		
	Bypass water	0.8	gpm		
Gas Separation	On-off bottom motor flow variation	0%		Displays when WBS selected.	
	Ratio of water bypassed	0%			
	Water flow to motor	3.0	gpm		
Gas Separation	Bypass nitrogen	0.8	gpm		
	Nitrogen cut in motor	0.8	gpm		
Gas Separation	Nitrogen ratio in motor	0%			
				© Tempres 2017	



A proprietary software program is available for MGS and WBS tool job planning. The software evaluates the best separator and fluid bypass performance range for the job. The software outputs circulating pressures in the well, the transport of sand and cuttings in the horizontal and vertical sections of the well, equivalent fluid flow rates, amount of water flow to the motor, and the amount of gas separation based on a set of input parameters.

### Case Histories

Please contact us or visit our website for the most recent Case Histories.

#### CONTACT INFORMATION:

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