

B2.3 Pump or Well "Wire to Water" Efficiency Tests

[Return to MAIN Menu](#)

Service Description: **Well 15b**

Date: **12/27/2002**

Power Meter #: **3555-67**

COMMON Plant and Pumping DATA:

Power Utility Rate #: 6		Pumping Head (H) Units: Feet	
Power Demand Rate: 8.44	per peak KW	Pumping Head During Test (H): 720.72	Feet
Energy Rate: 0.0344	per KW-hour	Pumping Flow (Q) Units: GPM	
Motor Rated Horsepower: 250	HP	Pump Test Flow Rate (Q): 800	GPM
		Pump Efficiency from Curve (if known): 80.00%	(leave blank if unknown)
Number of Gallons Pumped per Year (x1,000): 340000		Est. Annual Pumping Duty: 80.86%	

POWER METERS with a DIAL SCALE:

Disk Constant: 67	(Enter one (1) if none is specified on meter)
Each Disk Revolution Represents: Watt Hours	
# of Complete Disk Revs. during Measured Time: 1	With all plant systems, heaters, pumps, and lights turned OFF (enter 0 if there is no disk movement). This is mainly transformer magnetizing power.
Seconds Timed for the 1 Revs. Above: 178.50	
# of Complete Disk Revs. during Measured Time: 2	With all non-pumping loads ON, such as lights, heating (if applicable), and other equipment normally in operation.
Seconds Timed for the 2 Revs. Above: 63.00	
# of Complete Disk Revs. during Measured Time: 24	With only measured pumping motors or equipment operating. Shut off all other unnecessary electrical loads, such as light, heating, etc.
Seconds Timed for the 24 Revs. Above: 34.00	
WATER Kilowatts (KW): 108.62	This represents the REQUIRED Theoretical Power to pump the given flow at the given head - assuming the system is 100% efficient.
WATER Horsepower (HP): 145.60	
WIRE Kilowatts (KW): 170.26	This represents the ACTUAL Electrical Power utilized to pump the given flow at the given head - factoring in the loss of efficiency to the pump and the motor.
WIRE Horsepower (HP): 228.23	
TOTAL Pumping WIRE to WATER Efficiency (Eff): 63.80%	This represents the losses in efficiency attributed to the electrical system, motor, and pump design. If the total efficiency is less than 60%, the pumping system may not be operating in the correct portion of the pump curve, or the pump and/or motor may be worn, need servicing or miss-sized. Consult a professional for questions or service.
Less Rated Pumping Efficiency: 80.00%	
Estimated Motor or System Efficiency: 79.74%	
Estimated Non-Pumping Kilowatts (KW): 7.66	
Non-Pumping Annual POWER (KW) Demand Cost: 776	This is based on a monthly peak - and is charged on power demand, not on time used.
Non-Pumping Annual ENERGY (KW-hr) Cost: 1,154	This is based on a 50% annual utilization factor of power - this is charged on hours used.
TOTAL Annual Non-Pumping Cost: 1,929	
Estimated Pumping Kilowatts (KW): 170.26	
Pumping Annual POWER (KW) Demand Cost: 17,244	This is based on a monthly peak - and is charged on power demand, not on time used.
Pumping Annual ENERGY (KW-hr) Cost: 41,486	This is based on the annual est. pumping duty above - this is charged on hours used.
TOTAL Annual Pumping Cost: 58,730	
TOTAL ANNUAL ESTIMATED ELECTRICAL COST: 60,659	

POWER METERS with DIGITAL SCALE:

Meter Multiplier: 40	(Enter one (1) if none is specified on meter)
This Meter Calculates Readings in: Watt Hours	
# of Complete Disk Revs. during Measured Time: 1	With all plant systems, heaters, pumps, and lights turned OFF (enter 0 if there is no disk movement). This is mainly transformer magnetizing power.
Seconds Timed for the 1 Revs. Above: 178.50	
# of Complete Disk Revs. during Measured Time: 2	With all non-pumping loads ON, such as lights, heating (if applicable), and other equipment normally in operation.
Seconds Timed for the 2 Revs. Above: 63.00	
# of Complete Disk Revs. during Measured Time: 24	With only measured pumping motors or equipment operating. Shut off all other unnecessary electrical loads, such as light, heating, etc.
Seconds Timed for the 24 Revs. Above: 34.00	
WATER Kilowatts (KW): 108.62	This represents the REQUIRED Theoretical Power to pump the given flow at the given head - assuming the system is 100% efficient.
WATER Horsepower (HP): 145.60	
WIRE Kilowatts (KW): 101.65	This represents the ACTUAL Electrical Power utilized to pump the given flow at the given head - factoring in the loss of efficiency to the pump and the motor.
WIRE Horsepower (HP): 136.26	
TOTAL Pumping WIRE to WATER Efficiency (Eff): 106.86%	This represents the losses in efficiency attributed to the electrical system, motor, and pump design. If the total efficiency is less than 60%, the pumping system may not be operating in the correct portion of the pump curve, or the pump and/or motor may be worn, need servicing or mis-sized. Consult a professional for questions or service.
Less Rated Pumping Efficiency: 80.00%	
Estimated Motor or System Efficiency: 133.57%	
Estimated Non-Pumping Kilowatts (KW): 4.57	
Non-Pumping Annual POWER (KW) Demand Cost: 463	This is based on a monthly peak - and is charged on power demand, not on time used.
Non-Pumping Annual ENERGY (KW-hr) Cost: 689	This is based on a 50% annual utilization factor of power - this is charged on hours used.
TOTAL Annual Non-Pumping Cost: 1,152	
Estimated Pumping Kilowatts (KW): 101.65	
Pumping Annual POWER (KW) Demand Cost: 10,295	This is based on a monthly peak - and is charged on power demand, not on time used.
Pumping Annual ENERGY (KW-hr) Cost: 24,768	This is based on the annual est. pumping duty above - this is charged on hours used.
TOTAL Annual Pumping Cost: 35,063	
TOTAL ANNUAL ESTIMATED ELECTRICAL COST: 36,215	