

Company: Bonneville Power Administration

Name:

Date: 11/29/2006

Selection: Missing Fairbanks Vertical Turbines



Pump:

Size: 19B.1 (1 stage)
 Type: VERT.TURBINE
 Synch speed: 1800 rpm
 Curve: 18-196
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 1770 rpm
 Dia: 14.36 in
 Impeller:
 Ns: ---
 Nss: ---
 Suction: 17.25 in
 Discharge: 14 in
 Bowl size: 18.5 in
 Max lateral: 0.62 in
 Thrust K factor: 31 lb/ft

Search Criteria:

Flow: --- US gpm Head: --- ft

Fluid:

Water
 Density: 62.25 lb/ft³
 Viscosity: 1.105 cP
 NPSHa: --- ft
 Temperature: 60 °F
 Vapor pressure: 0.2563 psi a
 Atm pressure: 14.7 psi a

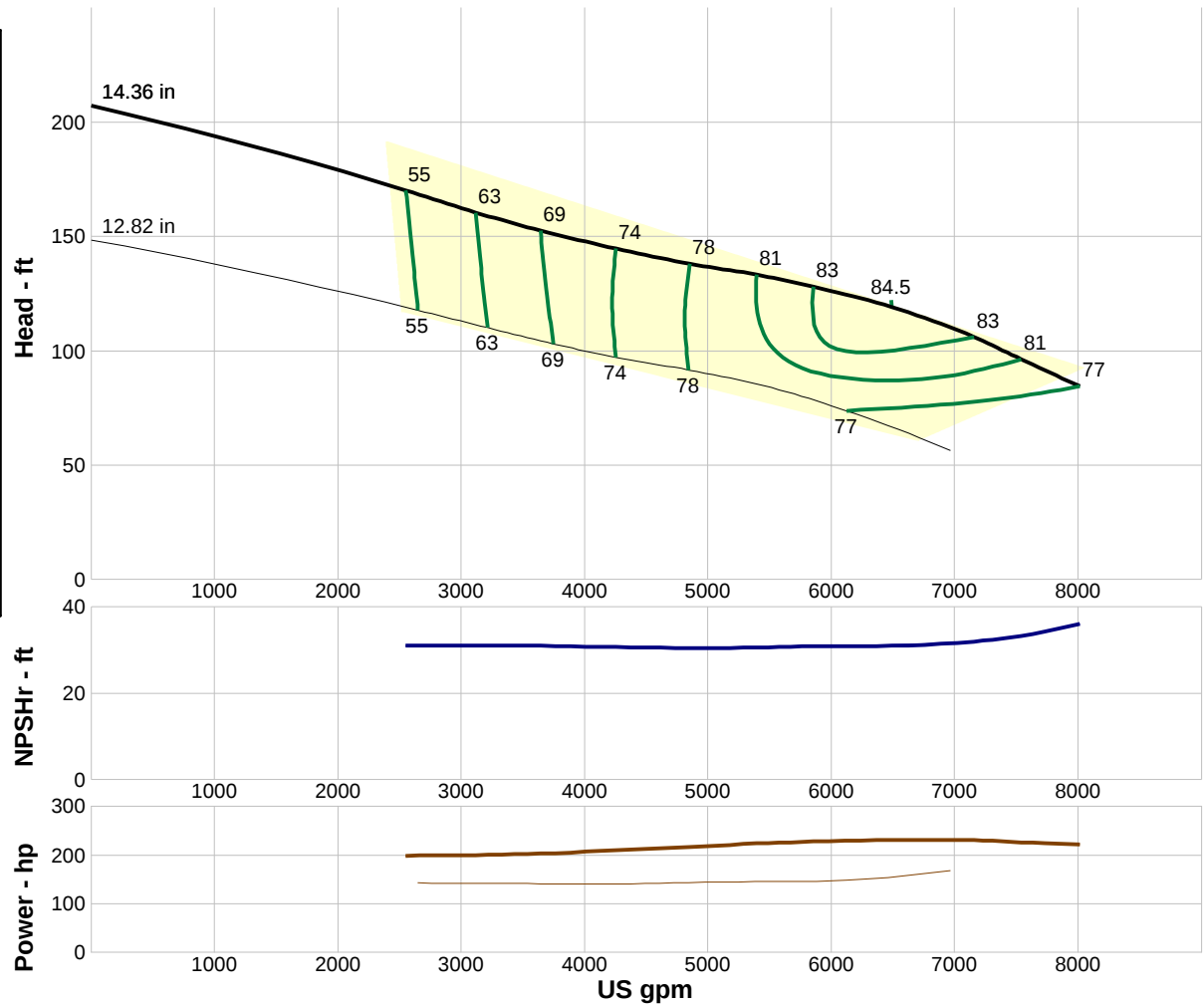
Motor:

Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve
 Size: 250 hp
 Speed: 1800
 Frame: 447T

Pump Limits:

Temperature: 150 °F
 Pressure: 300 psi g
 Sphere size: 1.25 in
 Power: 651 hp
 Eye area: --- in²

---- Data Point ----	
Flow:	6489 US gpm
Head:	119 ft
Eff:	84.5%
Power:	231 hp
NPSHr:	31 ft
---- Design Curve ----	
Shutoff head:	207 ft
Shutoff dP:	89.5 psi
Min flow:	--- US gpm
BEP:	84.5% @ 6489 US gpm
NOL power:	231 hp @ 6489 US gpm
-- Max Curve --	
Max power:	231 hp @ 6489 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
7690	1770	92.5	79.7	225	34.2
6408	1770	120	84.3	231	31
5126	1770	136	79.5	220	30.6
3845	1770	150	70.7	205	30.9
2563	1770	170	55.2	199	31

Company: Bonneville Power Administration

Name:

Date: 11/29/2006

Selection: Missing Fairbanks Vertical Turbines



Pump:

Size: 19B.2+ (2 stage)
 Type: VERT.TURBINE
 Synch speed: 1800 rpm
 Curve: 18-196A
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 1770 rpm
 Dia: 14.36 in
 Impeller:
 Ns: ---
 Nss: ---
 Suction: 17.25 in
 Discharge: 14 in
 Bowl size: 18.5 in
 Max lateral: 0.62 in
 Thrust K factor: 31 lb/ft

Search Criteria:

Flow: --- US gpm Head: --- ft

Fluid:

Water
 Density: 62.25 lb/ft³
 Viscosity: 1.105 cP
 NPSHa: --- ft
 Temperature: 60 °F
 Vapor pressure: 0.2563 psi a
 Atm pressure: 14.7 psi a

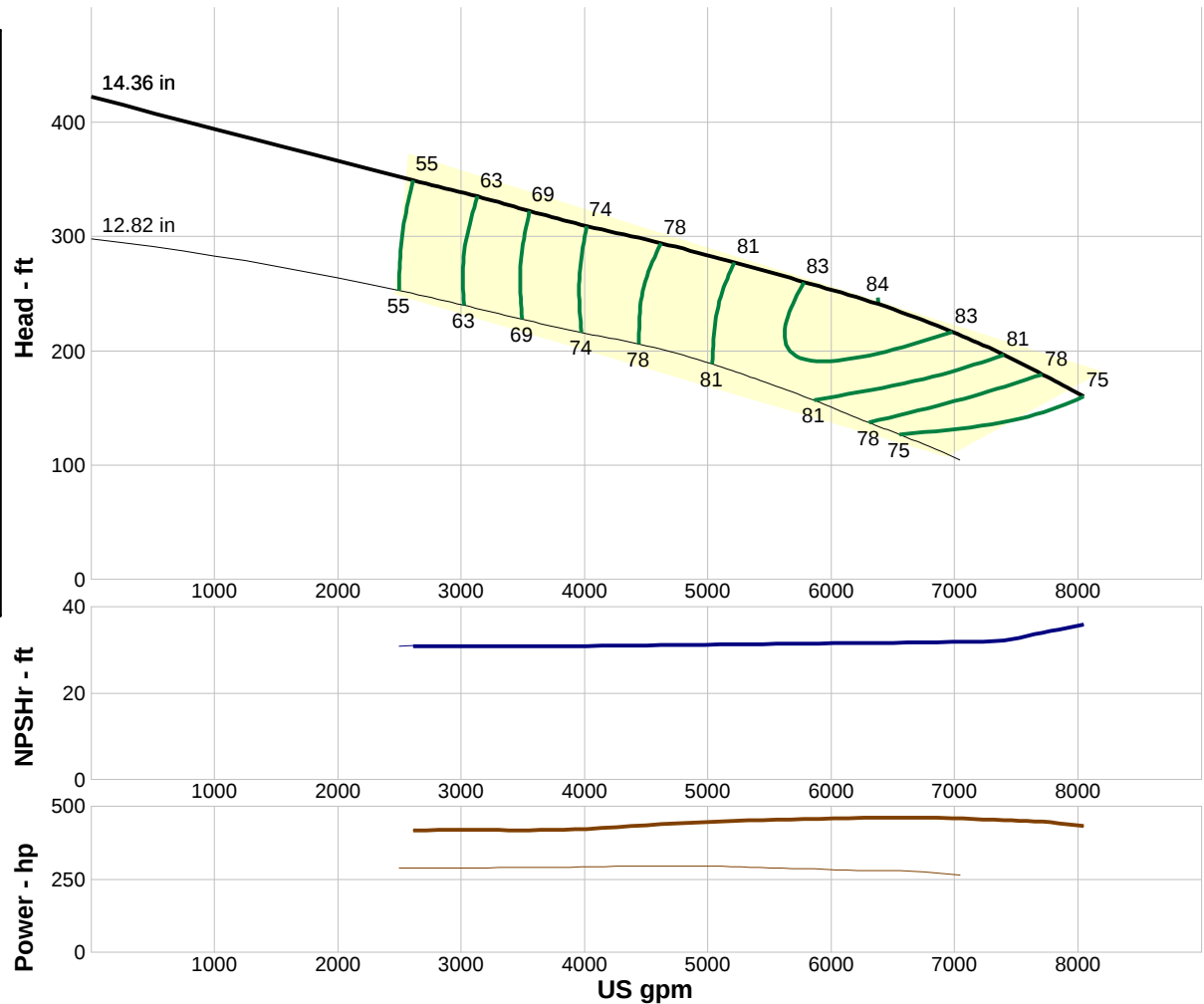
Motor:

Standard: NEMA --- hp
 Enclosure: TEFC Speed: ---
 Frame: ---
 Sizing criteria: Max Power on Design Curve

Pump Limits:

Temperature: 150 °F
 Pressure: 300 psi g
 Sphere size: 1.25 in
 Power: 651 hp
 Eye area: --- in²

---- Data Point ----	
Flow:	6378 US gpm
Head:	241 ft
Eff:	84%
Power:	462 hp
NPSHr:	31.7 ft
---- Design Curve ----	
Shutoff head:	422 ft
Shutoff dP:	183 psi
Min flow:	--- US gpm
BEP:	84% @ 6378 US gpm
NOL power:	462 hp @ 6378 US gpm
-- Max Curve --	
Max power:	462 hp @ 6378 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
7721	1770	179	77.9	447	34.1
6434	1770	239	83.9	462	31.7
5147	1770	279	80.7	449	31.3
3860	1770	314	72.4	422	31
2574	1770	350	54.5	418	31