

Company: Bonneville Power Administration
 Name:
 Date: 11/29/2006
 Selection: Missing Fairbanks Vertical Turbines



Pump:

Size: 31M.1 (1 stage)
 Type: VERT.TURBINE
 Synch speed: 1200 rpm
 Curve:
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 1170 rpm
 Dia: 19.38 in
 Impeller:
 Ns: ---
 Nss: ---
 Suction: 31.3 in
 Discharge: 24 in
 Bowl size: 29.56 in
 Max lateral: 1 in
 Thrust K factor: 62.04 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

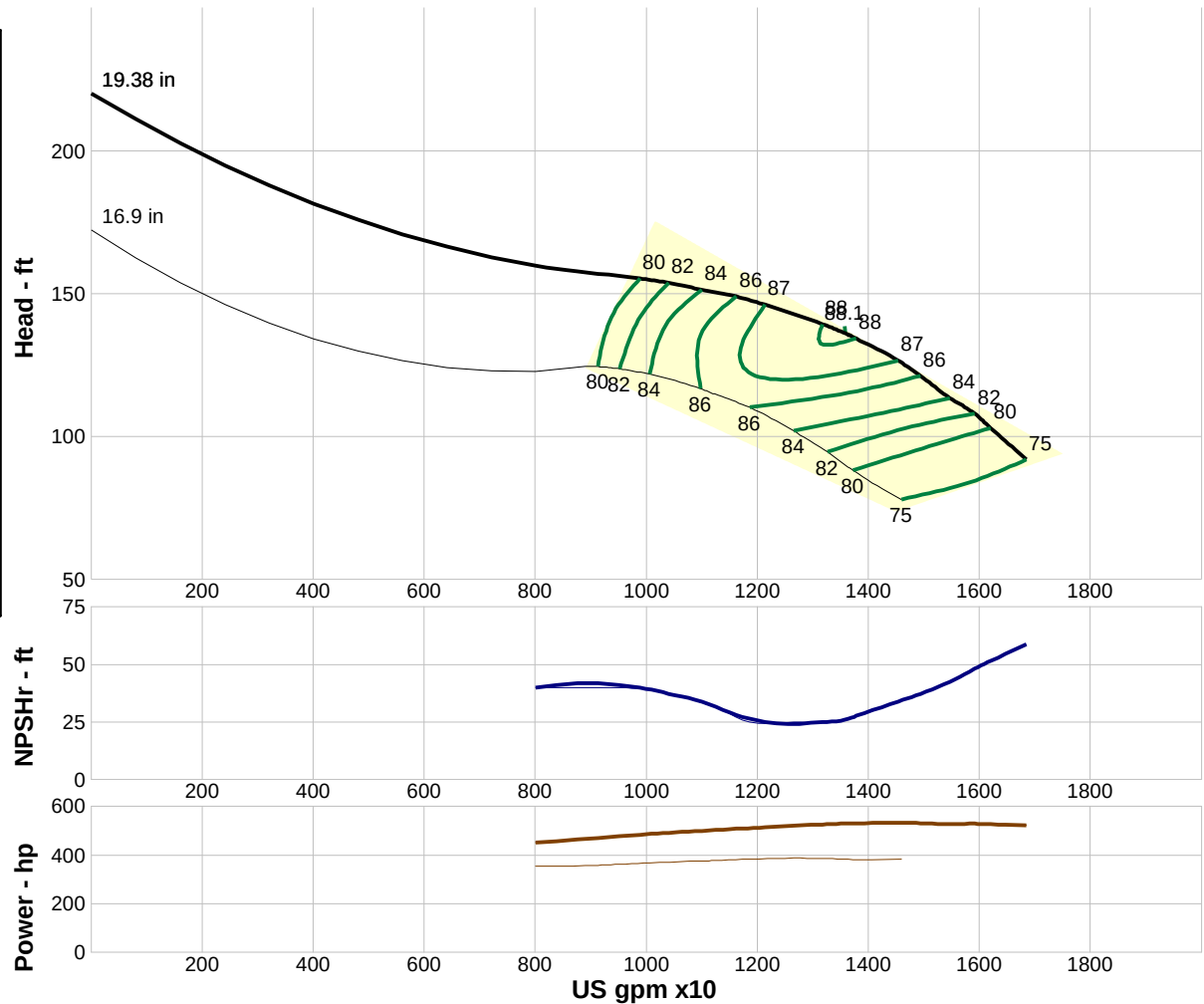
Motor:

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

Pump Limits:

Temperature: 150 °F
 Pressure: 485 psi g
 Sphere size: 3.25 in
 Power: 2448 hp
 Eye area: --- in²

---- Data Point ----	
Flow:	13581 US gpm
Head:	136 ft
Eff:	88.1%
Power:	530 hp
NPSHr:	26.1 ft
---- Design Curve ----	
Shutoff head:	220 ft
Shutoff dP:	95.1 psi
Min flow:	--- US gpm
BEP:	88.1% @ 13581 US gpm
NOL power:	534 hp @ 14530 US gpm
-- Max Curve --	
Max power:	534 hp @ 14530 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
16164	1170	104	80.3	527	51.2
13470	1170	137	88.1	529	25.8
10776	1170	152	83.3	497	35.2
8082	1170	160	72	452	40
5388	1170	---	---	---	---

Company: Bonneville Power Administration

Name:

Date: 11/29/2006

Selection: Missing Fairbanks Vertical Turbines



Pump:

Size: 31M.2+ (2 stage)
 Type: VERT.TURBINE
 Synch speed: 1200 rpm
 Curve:
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 1170 rpm
 Dia: 19.38 in
 Impeller:
 Ns: ---
 Nss: ---
 Suction: 31.3 in
 Discharge: 24 in
 Bowl size: 29.56 in
 Max lateral: 1 in
 Thrust K factor: 62.04 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

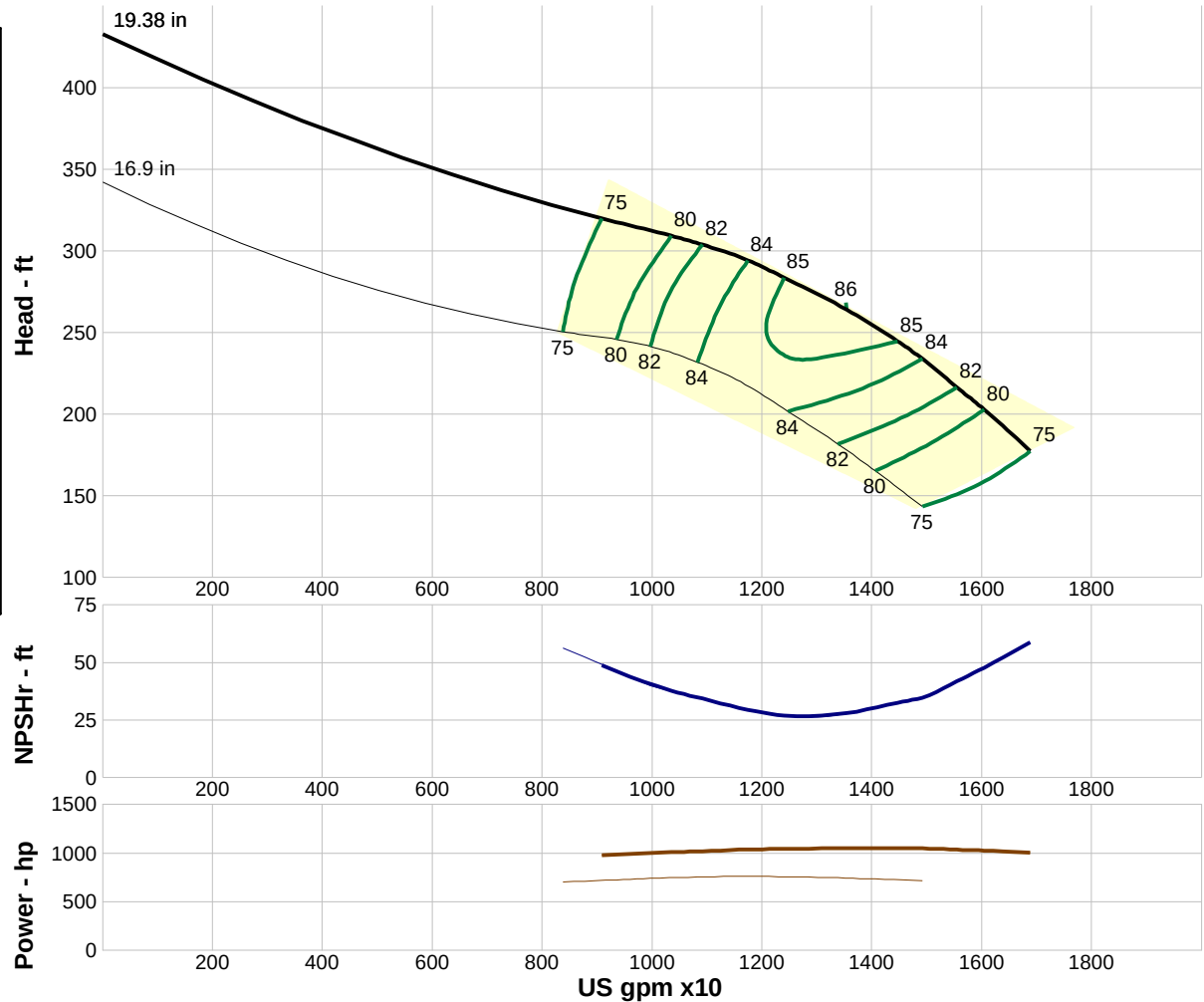
Motor:

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

Pump Limits:

Temperature: 150 °F
 Pressure: 485 psi g
 Sphere size: 3.25 in
 Power: 2448 hp
 Eye area: --- in²

---- Data Point ----	
Flow:	13536 US gpm
Head:	264 ft
Eff:	86%
Power:	1049 hp
NPSHr:	28 ft
---- Design Curve ----	
Shutoff head:	433 ft
Shutoff dP:	187 psi
Min flow:	--- US gpm
BEP:	86% @ 13536 US gpm
NOL power:	1051 hp @ 14466 US gpm
-- Max Curve --	
Max power:	1051 hp @ 14466 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
16202	1170	198	79	1023	50
13502	1170	265	86	1049	28
10802	1170	305	81.6	1018	35
8101	1170	---	---	---	---
5401	1170	---	---	---	---