

Pump:

Size: 12HXH-1C (1 stage)
 Type: LINE W_60 Hz
 Synch speed: 1200 rpm
 Curve: ETXBAEH-12
 Specific Speeds:
 Dimensions:
 Vertical Turbine:

Speed: 1160 rpm
 Dia: 9.47 in
 Impeller: 12HXH-1C
 Ns: 4469
 Nss: 7693
 Suction: 10"
 Discharge: RE 10" RI 12"
 Bowl size: 11.5 in
 Max lateral: ---
 Thrust K factor: 11 lb/ft

Search Criteria:

Flow: --- Head: ---

Fluid:

Water
 SG: 1
 Viscosity: 0.9946 cP
 NPSHa: ---

Temperature: 68 °F
 Vapor pressure: 0.3391 psi a
 Atm pressure: 14.7 psi a

Motor:

Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve

Size: 7.5 hp
 Speed: 1200
 Frame: 254T

Pump Limits:

Temperature: 167 °F
 Pressure: 430 psi g
 Sphere size: 1.5 in

Power: 429 hp
 Eye area: 32.8 in²

---- Data Point ----

Flow: 1374 US gpm
 Head: 16.5 ft
 Eff: 82.5%
 Power: 6.96 hp
 NPSHr: ---

---- Design Curve ----

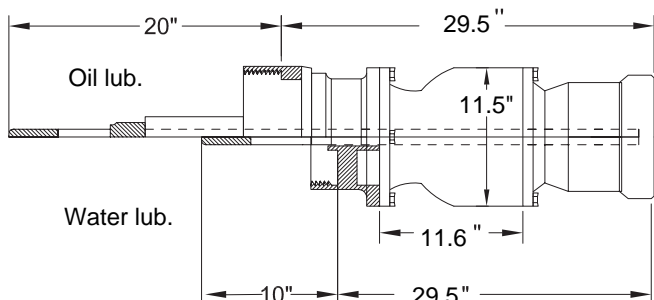
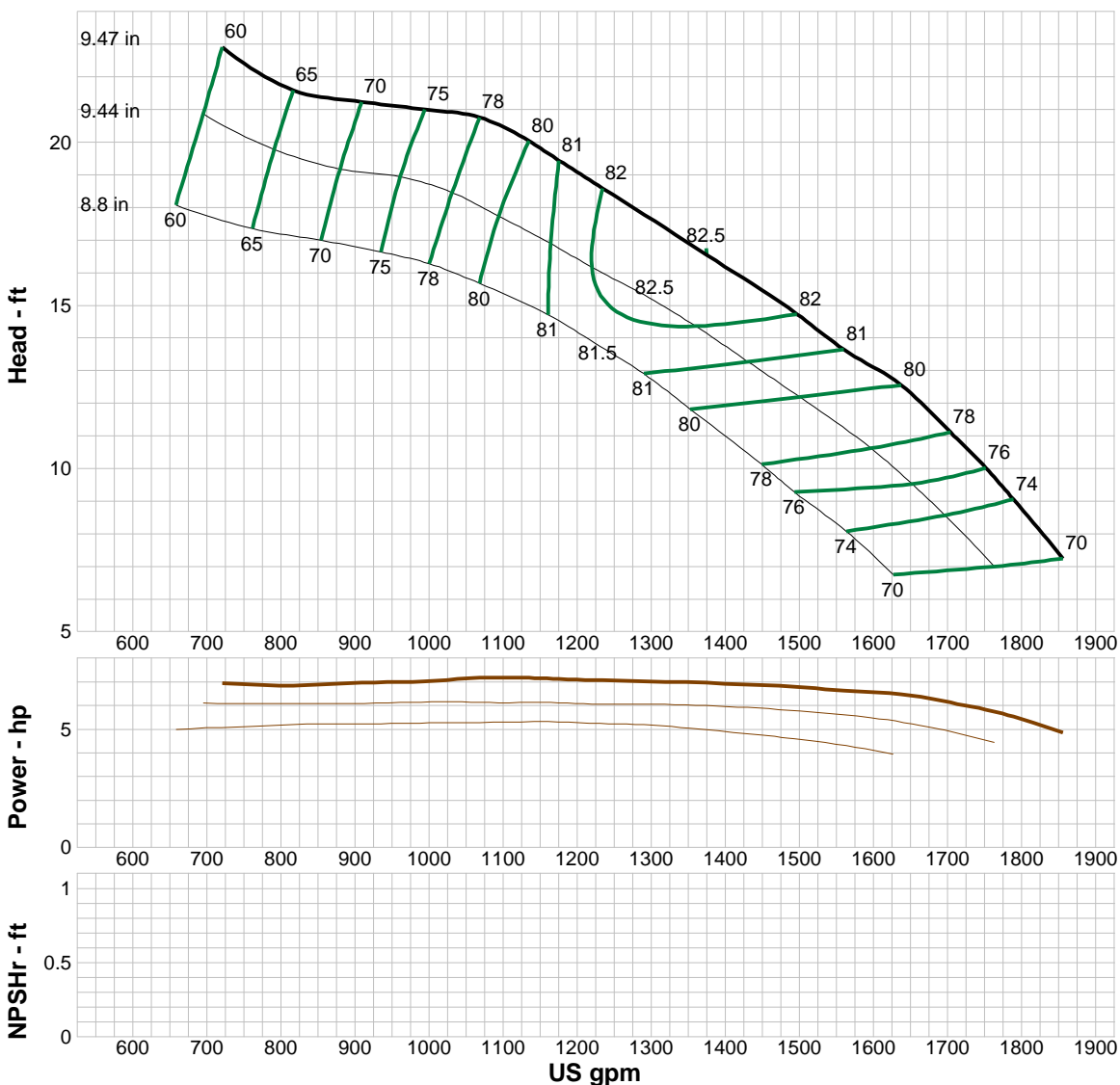
Shutoff head: 31.4 ft
 Shutoff dP: 13.6 psi
 Min flow: 430 US gpm
 BEP: 82.5% @ 1374 US gpm
 NOL power:
 7.25 hp @ 430 US gpm

-- Max Curve --

Max power:
 7.25 hp @ 430 US gpm

--Additional Data--

Std. Shaft Diameter :1 15/16
 Max. Shaft Diameter: C.F.
 Opt. Lateral Setting:0.13
 Std. Lateral:0.68
 One Stage Subm. WT-LB:N/A
 One Stage Water Lub. WT-LB: 255.5
 One Stage Oil Lub. WT-LB:292.5
 Add Stage WT-LB:123.1
 Impeller Weight:28.4 lb
 Min. Submergence:7



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
1780	1160	9.26	74.4	5.59	---
1483	1160	14.9	82.1	6.81	---
1186	1160	19.3	81.2	7.11	---
890	1160	21.3	69	6.94	---
593	1160	24.7	53.4	7.08	---

Pump:

Size: 12MS-3C (1 stage)
 Type: LINE W_60 Hz
 Synch speed: 1200 rpm
 Curve: ETMBCEH-12
 Specific Speeds:
 Dimensions:
 Vertical Turbine:

Speed: 1160 rpm
 Dia: 8.88 in
 Impeller: 12MS-3C
 Ns: 2935
 Nss: 5485
 Suction: CB- 8"
 Discharge: RI8" RE 10"
 Bowl size: 11.4 in
 Max lateral: ---
 Thrust K factor: 7.5 lb/ft

Search Criteria:

Flow: --- Head: ---

Fluid:

Water
 SG: 1
 Viscosity: 0.9946 cP
 NPSHa: ---

Temperature: 68 °F
 Vapor pressure: 0.3391 psi a
 Atm pressure: 14.7 psi a

Motor:

Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve

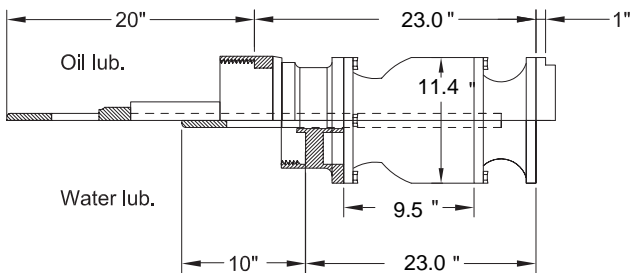
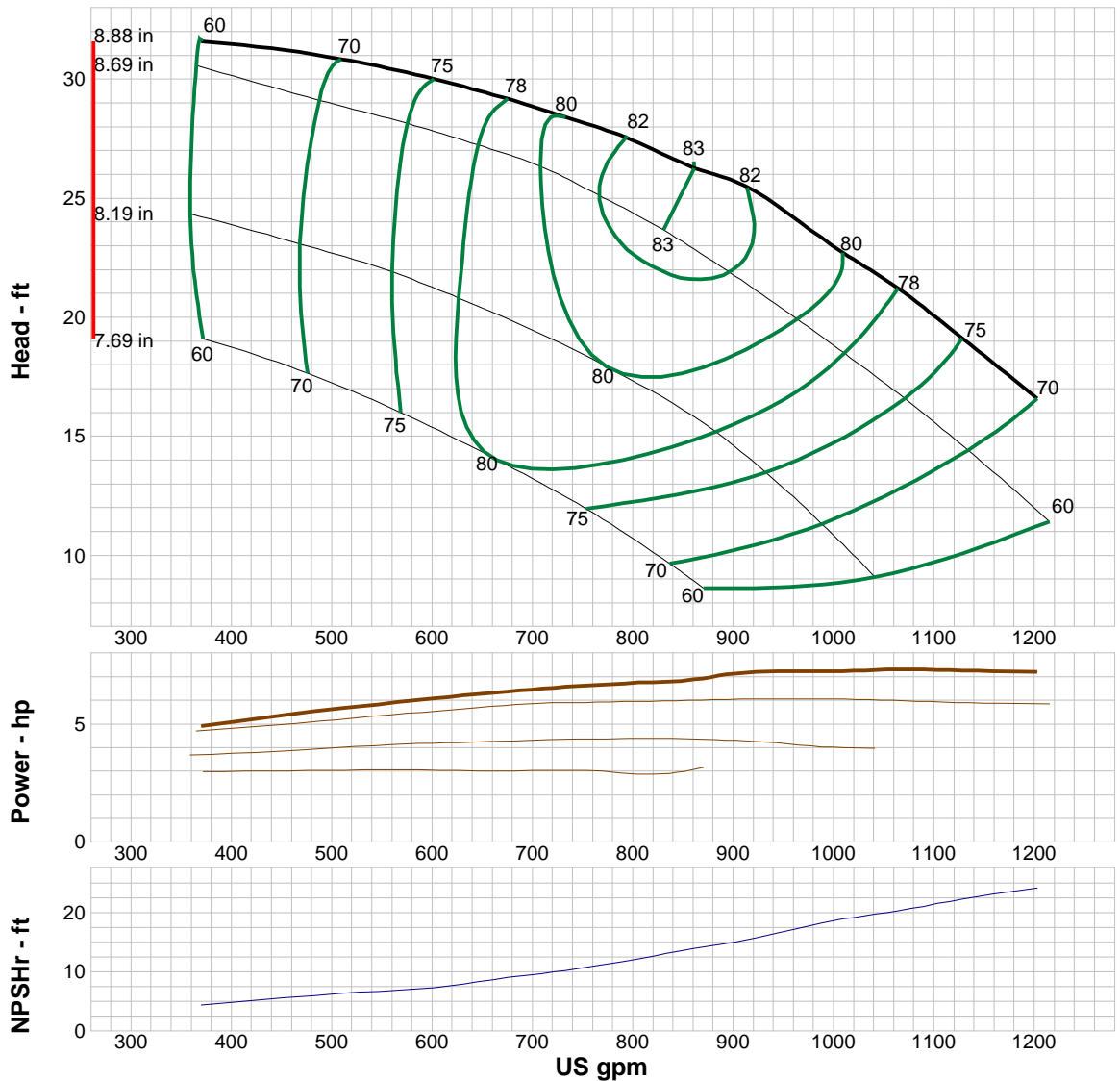
Size: 7.5 hp
 Speed: 1200
 Frame: 254T

Pump Limits:

Temperature: 167 °F
 Pressure: 350 psi g
 Sphere size: 0.813 in

Power: 159 hp
 Eye area: 17.9 in²

---- Data Point ----	
Flow:	861 US gpm
Head:	26.3 ft
Eff:	83%
Power:	6.88 hp
NPSHr:	13.9 ft
---- Design Curve ----	
Shutoff head:	34 ft
Shutoff dP:	14.7 psi
Min flow:	262 US gpm
BEP:	83% @ 861 US gpm
NOL power:	7.31 hp @ 1064 US gpm
-- Max Curve --	
Max power:	7.31 hp @ 1064 US gpm
--Additional Data--	
Std. Shaft Diameter:	1 1/2
Max. Shaft Diameter:	C.F.
Opt. Lateral Setting:	0.13
Std. Lateral:	0.50
One Stage Subm. WT-LB:	N/A
One Stage Water Lub. WT-LB:	212.1
One Stage Oil Lub. WT-LB:	233.5
Add Stage WT-LB:	96.4
Impeller Weight:	19.3 lb
Min. Submergence:	7



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
1154	1160	18.2	73.2	7.24	22.9
962	1160	24	80.9	7.19	17.2
770	1160	27.9	81.3	6.67	11.2
577	1160	30.2	73.7	5.97	7.09
385	1160	31.5	61.1	5	4.62

Pump:

Size: 12WH-1C (1 stage)
 Type: LINE W_60 Hz
 Synch speed: 1200 rpm
 Curve: ETWBBEH-12
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 1180 rpm
 Dia: 8.69 in
 Impeller: 12WH-1C
 Ns: 2130
 Nss: 7803
 Suction: CB-8
 Discharge: RI 8" RI10"
 Bowl size: 11.8 in
 Max lateral: ---
 Thrust K factor: 7.5 lb/ft

Search Criteria:

Flow: --- Head: ---

Fluid:

Water
 SG: 1
 Viscosity: 0.9946 cP
 NPSHa: ---
 Temperature: 68 °F
 Vapor pressure: 0.3391 psi a
 Atm pressure: 14.7 psi a

Motor:

Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve
 Size: 10 hp
 Speed: 1200
 Frame: 256T

Pump Limits:

Temperature: 167 °F
 Pressure: 340 psi g
 Sphere size: 0.875 in
 Power: 138 hp
 Eye area: 20.5 in²

---- Data Point ----

Flow: 749 US gpm
 Head: 31.8 ft
 Eff: 87%
 Power: 6.91 hp
 NPSHr: 8.07 ft

---- Design Curve ----

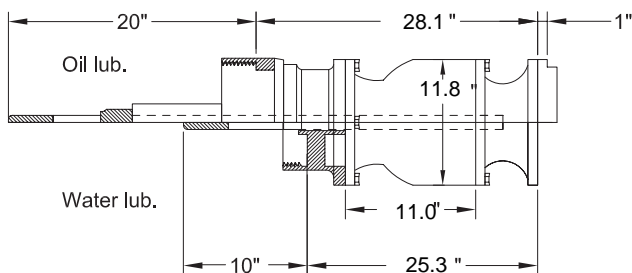
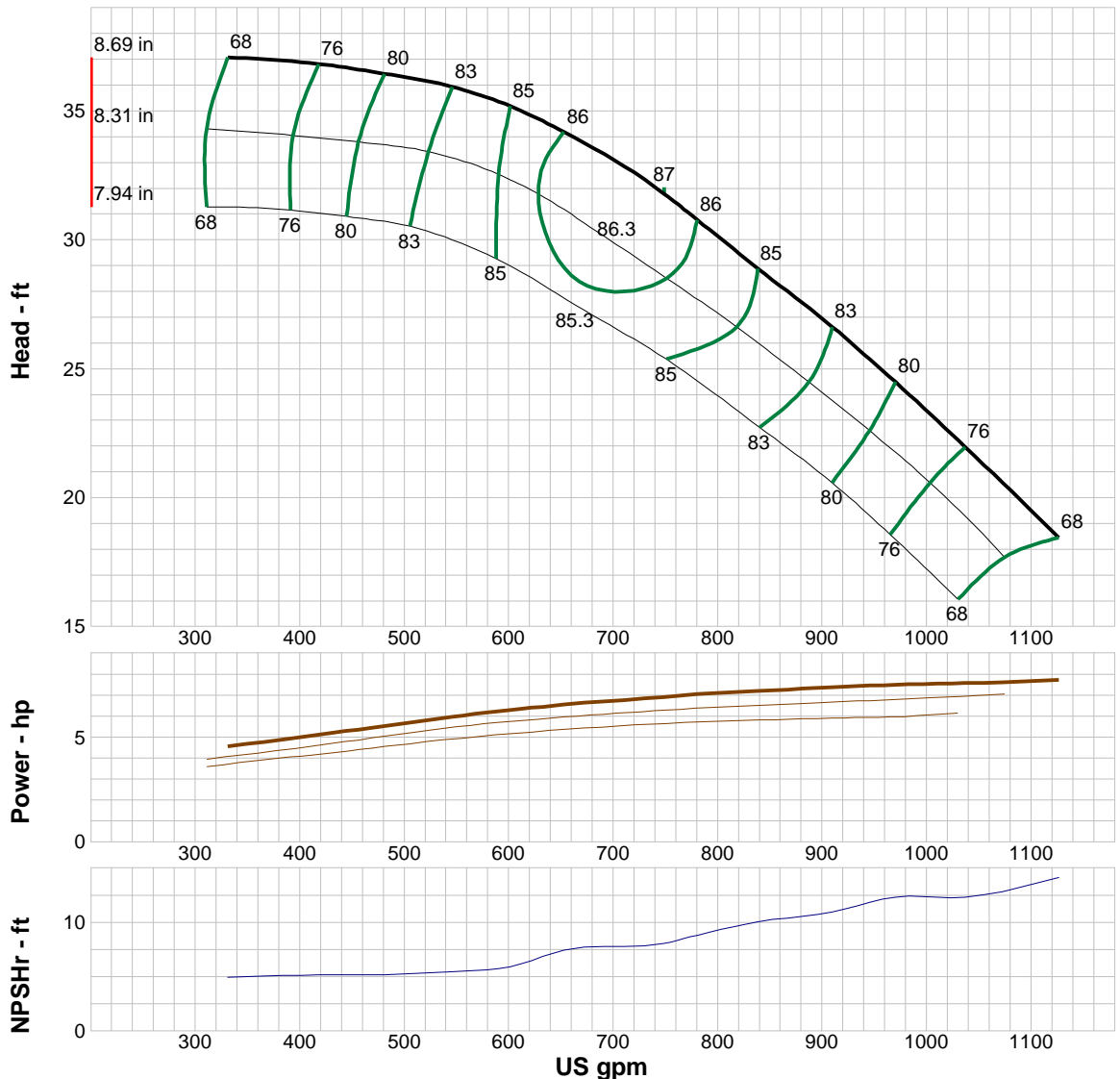
Shutoff head: 38 ft
 Shutoff dP: 16.4 psi
 Min flow: 200 US gpm
 BEP: 87% @ 749 US gpm
 NOL power:
 7.71 hp @ 1126 US gpm

-- Max Curve --

Max power:
 7.71 hp @ 1126 US gpm

--Additional Data--

Std. Shaft Diameter: 1 11/16
 Max. Shaft Diameter: C.F.
 Opt. Lateral Setting: 0.25
 Std. Lateral: 0.53
 One Stage Subm. WT-LB: N/A
 One Stage Water Lub. WT-LB: 307.3
 One Stage Oil Lub. WT-LB: 309.4
 Add Stage WT-LB: 135.7
 Impeller Weight: 25.5 lb
 Min. Submergence: 10



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
1081	1180	20.2	72	7.64	13.2
901	1180	26.9	83.2	7.35	10.8
721	1180	32.5	86.7	6.8	7.88
541	1180	36	82.8	5.93	5.45
360	1180	37	70.7	4.74	5.04

Pump:

Size: 12Z-1C (1 stage)
 Type: LINE W_60 Hz
 Synch speed: 1200 rpm
 Curve: ETZBAEH-12
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 1160 rpm
 Dia: 9.38 in
 Impeller: 12Z-1C
 Ns: 2349
 Nss: 8030
 Suction: CB- 8"
 Discharge: RI 8" RE10"
 Bowl size: 11.3 in
 Max lateral: ---
 Thrust K factor: 10.6 lb/ft

Search Criteria:

Flow: --- Head: ---

Fluid:

Water
 SG: 1
 Viscosity: 0.9946 cP
 NPSHa: ---
 Temperature: 68 °F
 Vapor pressure: 0.3391 psi a
 Atm pressure: 14.7 psi a

Motor:

Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve
 Size: 7.5 hp
 Speed: 1200
 Frame: 254T

Pump Limits:

Temperature: 167 °F
 Pressure: 584 psi g
 Sphere size: 0.625 in
 Power: 127 hp
 Eye area: 20.1 in²

---- Data Point ----

Flow: 752 US gpm
 Head: 29 ft
 Eff: 82.3%
 Power: 6.69 hp
 NPSHr: 11.3 ft

---- Design Curve ----

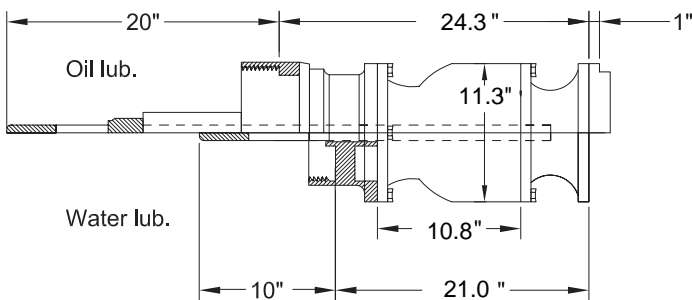
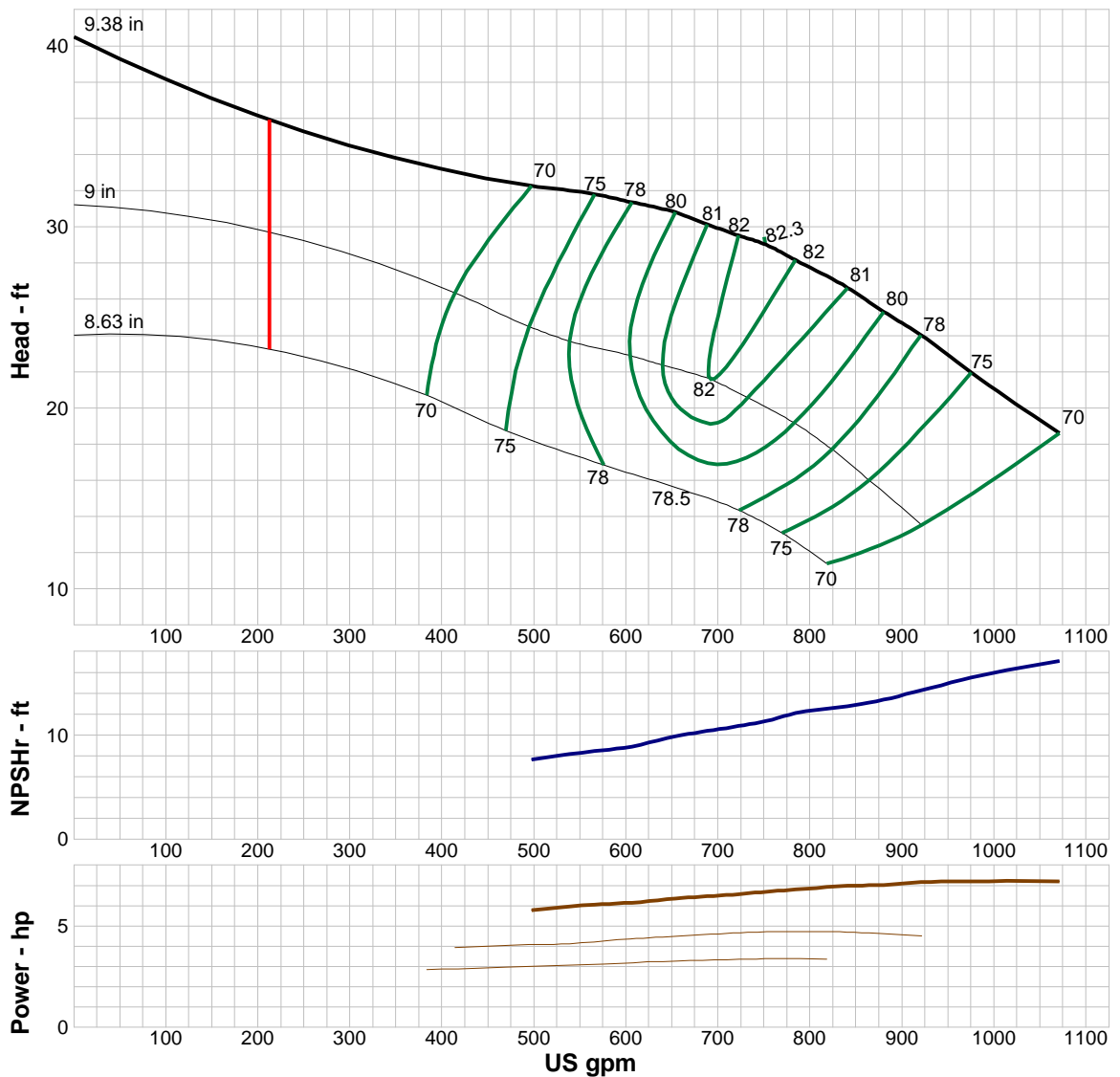
Shutoff head: 40.5 ft
 Shutoff dP: 17.5 psi
 Min flow: 212 US gpm
 BEP: 82.3% @ 752 US gpm
 NOL power:
 7.21 hp @ 975 US gpm

-- Max Curve --

Max power:
 7.21 hp @ 975 US gpm

--Additional Data--

Std. Shaft Diameter: 1 1/2
 Max. Shaft Diameter: C.F.
 Opt. Lateral Setting: 0.13
 Std. Lateral: 0.30
 One Stage Subm. WT-LB: N/A
 One Stage Water Lub. WT-LB: 241.9
 One Stage Oil Lub. WT-LB: 263.1
 Add Stage WT-LB: 120.6
 Impeller Weight: 23.7lb
 Min. Submergence: 7



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
1028	1160	20.1	72.2	7.2	16.4
857	1160	26.1	80.6	7	13
686	1160	30.2	80.9	6.46	10.4
514	1160	32.2	71.2	5.85	7.85
343	1160	34.8	58.8	5.17	5.8

Pump:

Size: 14HXH-1C (1 stage)
 Type: LINE W_60 Hz
 Synch speed: 1200 rpm
 Curve: ETXB AEJ-12
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 1160 rpm
 Dia: 11.81 in
 Impeller: 14HXH-1C
 Ns: 4096
 Nss: 9442
 Suction: CB-12"
 Discharge: RI 10 RI12"
 Bowl size: 14.1 in
 Max lateral: ---
 Thrust K factor: 24.8 lb/ft

Search Criteria:

Flow: --- Head: ---

Fluid:

Water
 SG: 1
 Viscosity: 0.9946 cP
 NPSHa: ---
 Temperature: 68 °F
 Vapor pressure: 0.3391 psi a
 Atm pressure: 14.7 psi a

Motor:

Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve
 Size: 20 hp
 Speed: 1200
 Frame: 286T

Pump Limits:

Temperature: 167 °F
 Pressure: 420 psi g
 Sphere size: 1.5 in
 Power: 288 hp
 Eye area: 47.4 in²

---- Data Point ----

Flow: 1884 US gpm
 Head: 30.7 ft
 Eff: 85.3%
 Power: 17.1 hp
 NPSHr: 12.9 ft

---- Design Curve ----

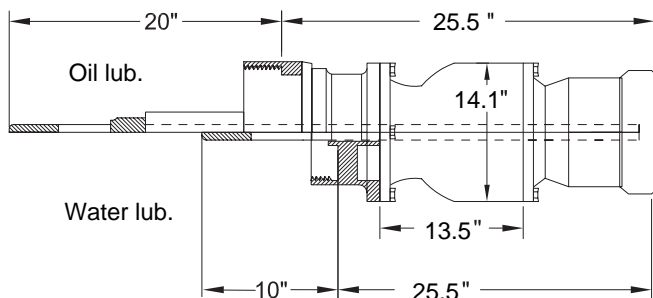
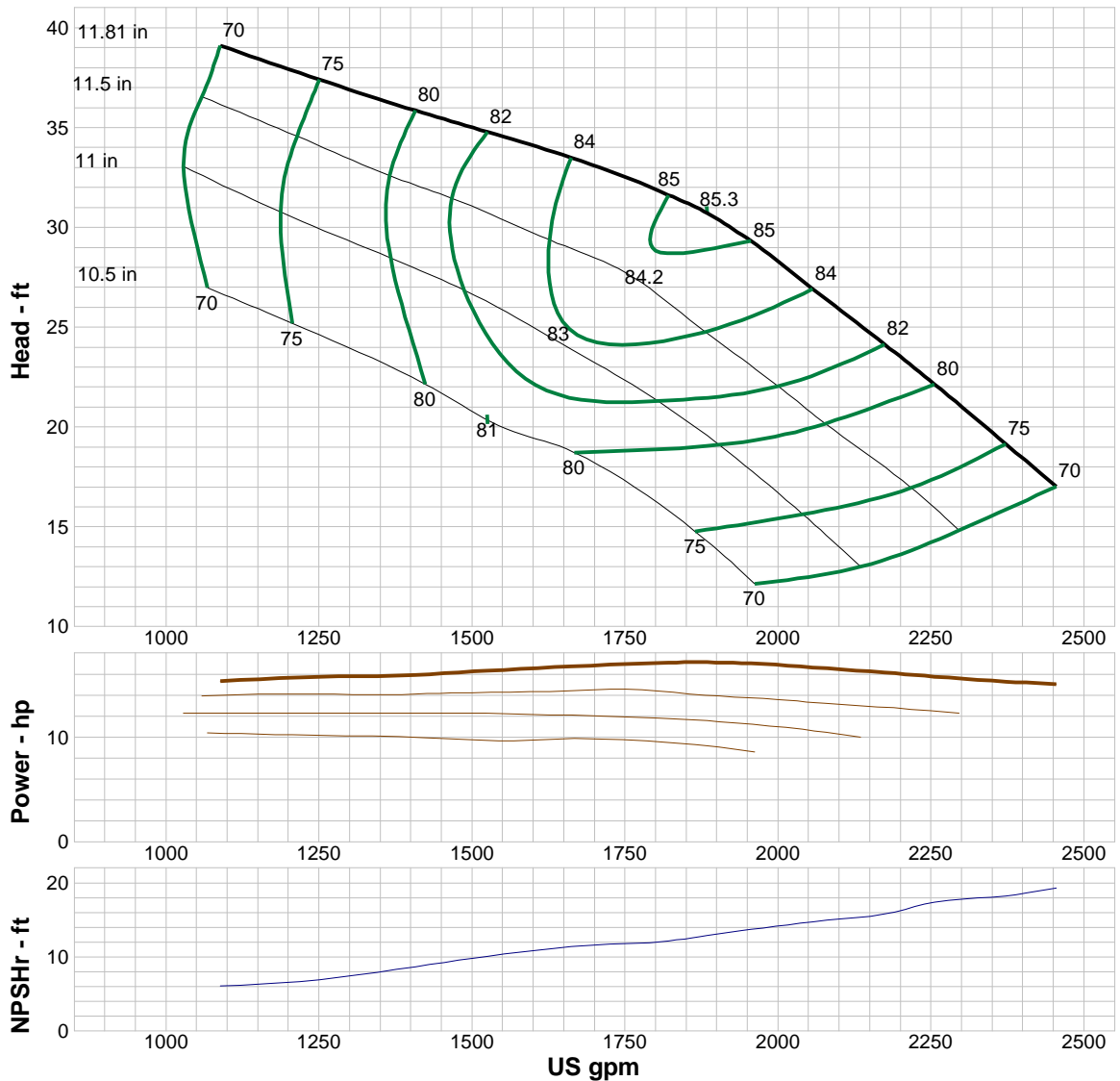
Shutoff head: 57.3 ft
 Shutoff dP: 24.8 psi
 Min flow: 594 US gpm
 BEP: 85.3% @ 1884 US gpm
 NOL power:
 17.1 hp @ 1884 US gpm

-- Max Curve --

Max power:
 17.1 hp @ 1884 US gpm

--Additional Data--

Std. Shaft Diameter :1 15/16
 Max. Shaft Diameter: C.F.
 Opt. Lateral Setting:0.25
 Std. Lateral:0.69
 One Stage Subm. WT-LB:N/A
 One Stage Water Lub. WT-LB:368.4
 One Stage Oil Lub. WT-LB: 357.5
 Add Stage WT-LB:174.5
 Impeller Weight:43.4lb
 Min. Submergence:15



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
2356	1185	19.5	75.7	15.4	18.1
1963	1185	29.1	84.9	17	13.8
1570	1185	34.4	82.7	16.5	10.5
1178	1185	38.2	72.8	15.6	6.59
785	1185	42.3	60.7	14.6	4.56

Pump:

Size: 14HH-1C (1 stage)
 Type: LINE W_60 Hz
 Synch speed: 1200 rpm
 Curve: ETHBAEJ-12
 Specific Speeds:
 Dimensions:
 Vertical Turbine:

Speed: 1160 rpm
 Dia: 9.81 in
 Impeller: 14HH-1C
 Ns: 4974
 Nss: 10670
 Suction: CB-12"
 Discharge: RI10" RI12"
 Bowl size: 13.3 in
 Max lateral: ---
 Thrust K factor: 20 lb/ft

Search Criteria:

Flow: --- Head: ---

Fluid:

Water
 SG: 1
 Viscosity: 0.9946 cP
 NPSHa: ---

Temperature: 68 °F
 Vapor pressure: 0.3391 psi a
 Atm pressure: 14.7 psi a

Motor:

Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve

Size: 15 hp
 Speed: 1200
 Frame: 284T

Pump Limits:

Temperature: 167 °F
 Pressure: 400 psi g
 Sphere size: 0.688 in

Power: 170 hp
 Eye area: 48 in²

---- Data Point ----

Flow: 1804 US gpm
 Head: 21.2 ft
 Eff: 85.7%
 Power: 11.3 hp
 NPSHr: 8.69 ft

---- Design Curve ----

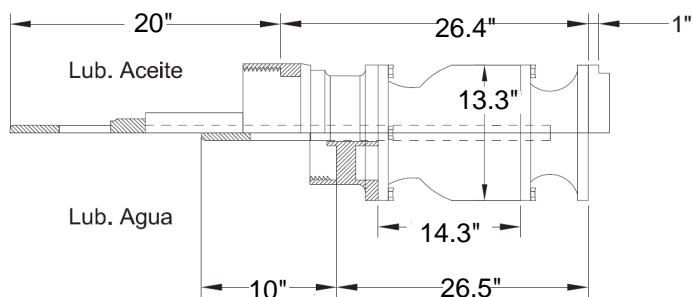
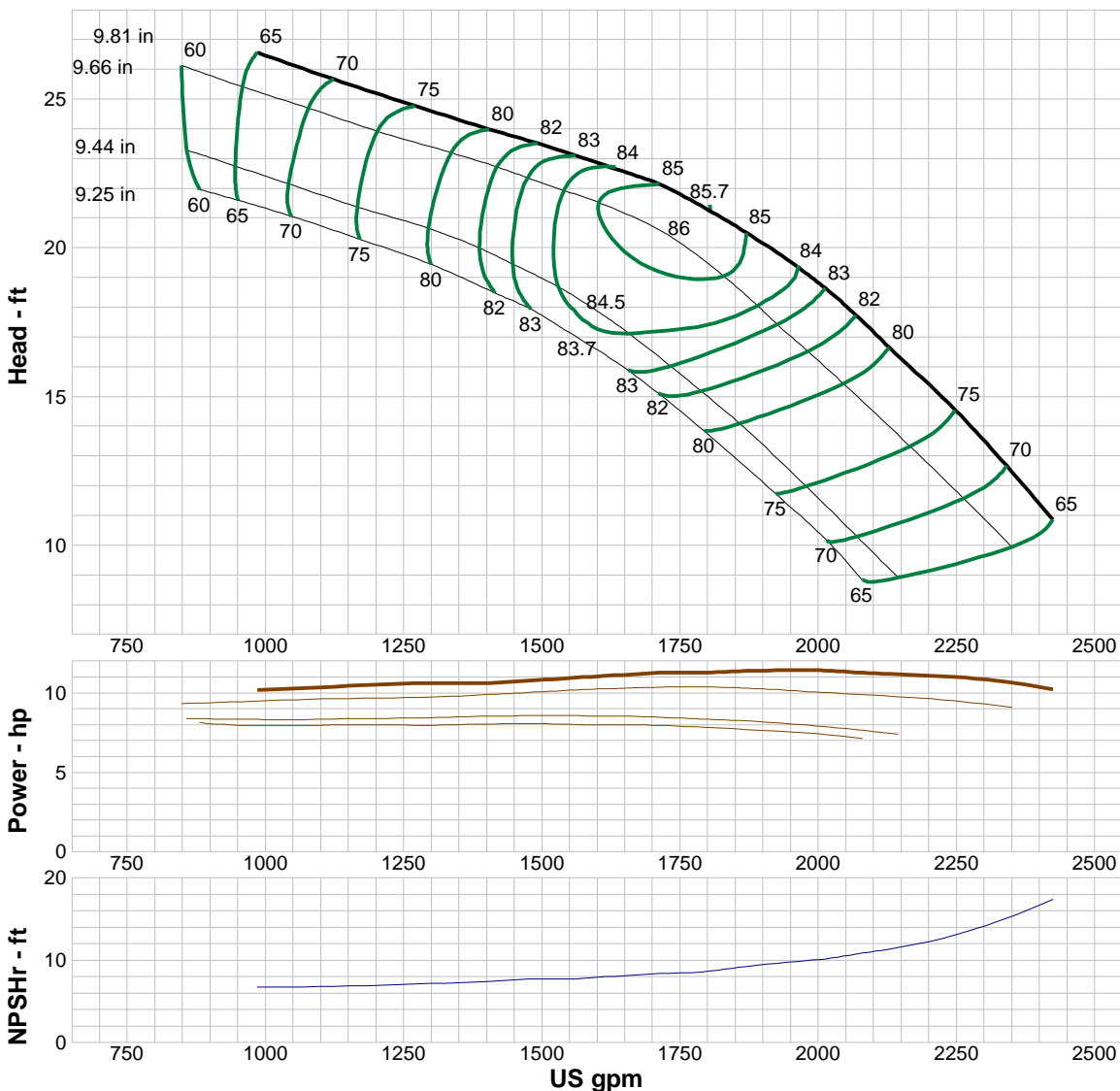
Shutoff head: 27.3 ft
 Shutoff dP: 11.8 psi
 Min flow: 555 US gpm
 BEP: 85.7% @ 1804 US gpm
 NOL power:
 11.4 hp @ 1961 US gpm

-- Max Curve --

Max power:
 11.4 hp @ 1961 US gpm

--Additional Data--

Std. Shaft Diameter :1 15/16
 Max. Shaft Diameter: C.F.
 Opt. Lateral Setting:0.13
 Std. Lateral:0.71
 One Stage Subm. WT-LB:N/A
 One Stage Water Lub. WT-LB:368.9
 One Stage Oil Lub. WT-LB:358.3
 Add Stage WT-LB:178.7
 Impeller Weight: 42.1lb
 Min. Submergence:13



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
2326	1160	12.9	70.8	10.7	14.8
1938	1160	19.6	84.3	11.4	9.72
1550	1160	23.2	82.9	10.9	7.76
1163	1160	25.4	71.4	10.4	6.91
775	1160	27.9	57.4	9.81	6.73

Pump:

Size: 14HH-2C (1 stage)
 Type: LINE W_60 Hz
 Synch speed: 1200 rpm
 Curve: ETHBBEJ-12
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 1185 rpm
 Dia: 10.56 in
 Impeller: 14HH-2C
 Ns: 5491
 Nss: 13878
 Suction: CB-12"
 Discharge: RI10" RI12"
 Bowl size: 13.3 in
 Max lateral: ---
 Thrust K factor: 20 lb/ft

Search Criteria:

Flow: --- Head: ---

Fluid:

Water
 SG: 1
 Viscosity: 0.9946 cP
 NPSHa: ---
 Temperature: 68 °F
 Vapor pressure: 0.3391 psi a
 Atm pressure: 14.7 psi a

Motor:

Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve
 Size: 20 hp
 Speed: 1200
 Frame: 286T

Pump Limits:

Temperature: 167 °F
 Pressure: 400 psi g
 Sphere size: 0.688 in
 Power: 249 hp
 Eye area: 56.2 in²

---- Data Point ----

Flow: 2345 US gpm
 Head: 22.4 ft
 Eff: 86.3%
 Power: 15.4 hp
 NPSHr: 7.66 ft

---- Design Curve ----

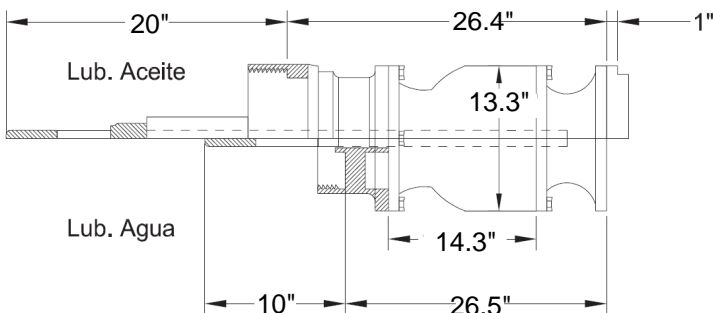
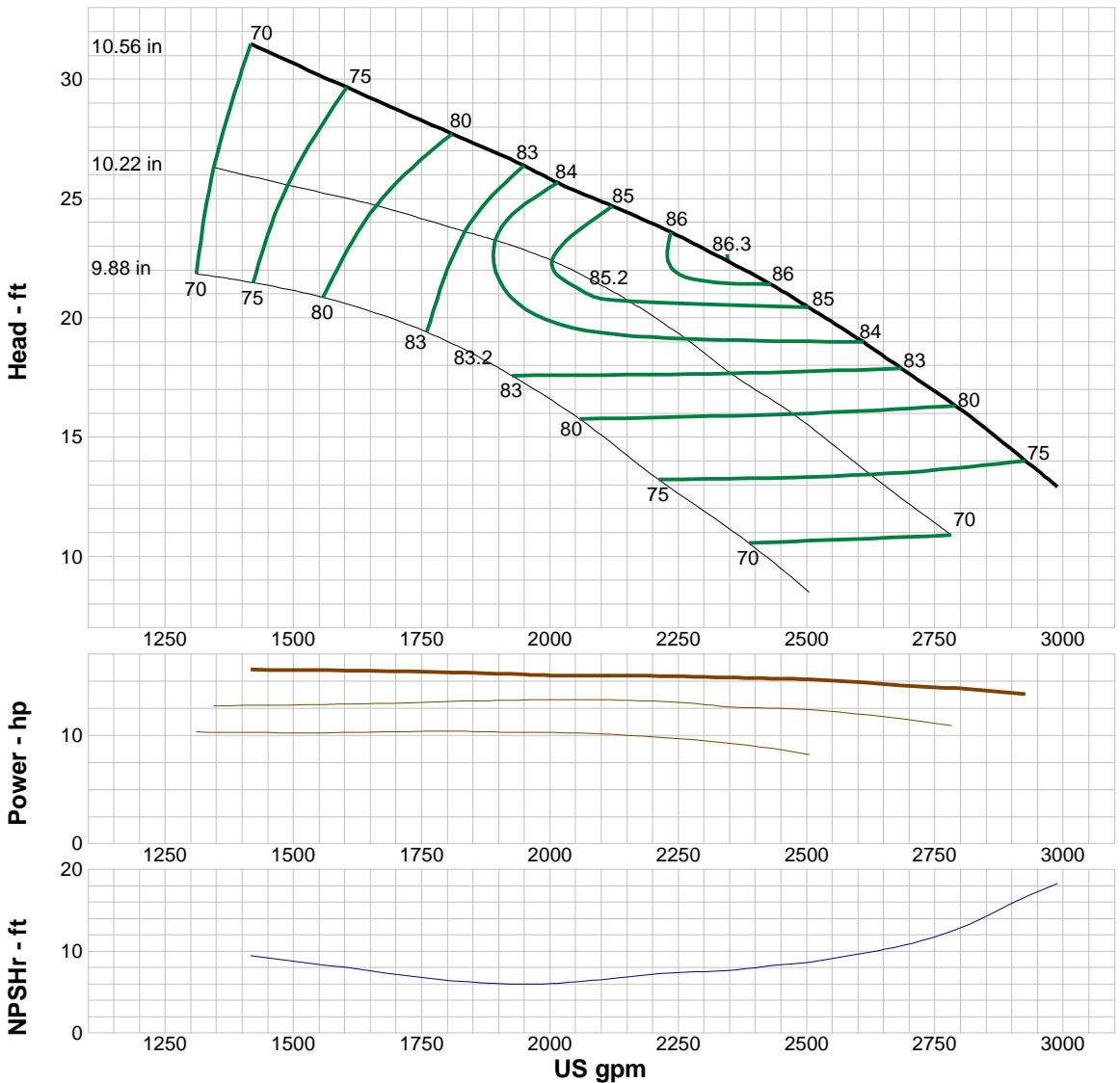
Shutoff head: 32.7 ft
 Shutoff dP: 14.2 psi
 Min flow: 1080 US gpm
 BEP: 86.3% @ 2345 US gpm
 NOL power:
 16.2 hp @ 1080 US gpm

-- Max Curve --

Max power:
 16.2 hp @ 1080 US gpm

--Additional Data--

Std. Shaft Diameter: 1 15/16
 Max. Shaft Diameter: C.F.
 Opt. Lateral Setting: 0.13
 Std. Lateral: 0.71
 One Stage Subm. WT-LB: N/A
 One Stage Water Lub. WT-LB: 368.9
 One Stage Oil Lub. WT-LB: 358.3
 Add Stage WT-LB: 178.7
 Impeller Weight: 42.1 lb
 Min. Submergence: 13



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
2868	1185	15	77.1	14	15
2390	1185	21.9	86.1	15.3	7.96
1912	1185	26.7	82.2	15.7	6.09
1434	1185	31.3	70.5	16.1	9.31
956	1185	---	---	---	---

Pump:

Size: 14LS-1C (1 stage)
 Type: LINE W_60 Hz
 Synch speed: 1200 rpm
 Curve: ETLBAEJ-12
 Specific Speeds:
 Dimensions:
 Vertical Turbine:

Speed: 1160 rpm
 Dia: 11.313 in
 Impeller: 14LS-1C
 Ns: 2621
 Nss: 8032
 Suction: CB-10"
 Discharge: RI10" RI 12"
 Bowl size: 13.7 in
 Max lateral: ---
 Thrust K factor: 19.7 lb/ft

Search Criteria:

Flow: --- Head: ---

Fluid:

Water
 SG: 1
 Viscosity: 0.9946 cP
 NPSHa: ---

Temperature: 68 °F
 Vapor pressure: 0.3391 psi a
 Atm pressure: 14.7 psi a

Motor:

Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve

Size: 15 hp
 Speed: 1200
 Frame: 284T

Pump Limits:

Temperature: 167 °F
 Pressure: 540 psi g
 Sphere size: 0.75 in

Power: 215 hp
 Eye area: 31.5 in²

---- Data Point ----

Flow: 1138 US gpm
 Head: 36.9 ft
 Eff: 84.3%
 Power: 12.6 hp
 NPSHr: 10.3 ft

---- Design Curve ----

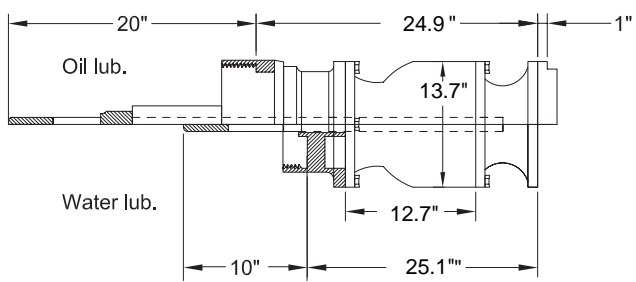
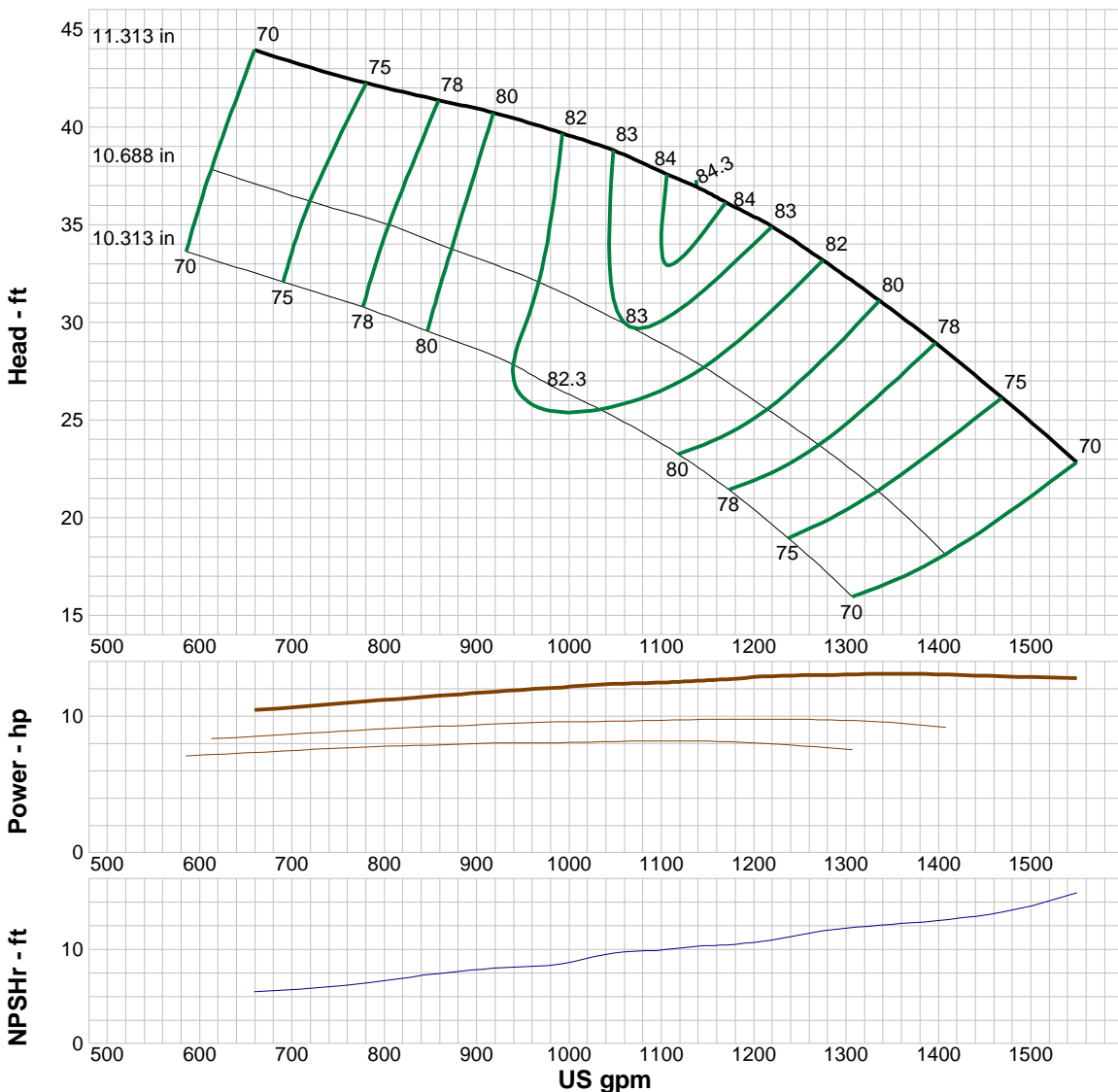
Shutoff head: 54.5 ft
 Shutoff dP: 23.6 psi
 Min flow: 350 US gpm
 BEP: 84.3% @ 1138 US gpm
 NOL power:
 13.1 hp @ 1336 US gpm

-- Max Curve --

Max power:
 13.1 hp @ 1336 US gpm

--Additional Data--

Std. Shaft Diameter: 1 15/16
 Max. Shaft Diameter: C.F.
 Opt. Lateral Setting: 0.25
 Std. Lateral: 0.88
 One Stage Subm. WT-LB: N/A
 One Stage Water Lub. WT-LB: 354.6
 One Stage Oil Lub. WT-LB: 372.2
 Add Stage WT-LB: 177.8
 Impeller Weight: 42.3 lb
 Min. Submergence: 13



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
1487	1160	25.4	73.8	12.9	14.4
1239	1160	34.3	82.6	13	11.4
991	1160	39.7	82	12.1	8.47
743	1160	42.8	73.5	10.9	6.16
496	1160	46.2	63.3	9.57	4.32

Pump:

Size: 14MS-1C (1 stage)
 Type: LINE W_60 Hz
 Synch speed: 1200 rpm
 Curve: ETMBAEJ-12
 Specific Speeds:
 Dimensions:
 Vertical Turbine:

Speed: 1160 rpm
 Dia: 10.88 in
 Impeller: 14MS-1C
 Ns: 2727
 Nss: 6868
 Suction: CB-10"
 Discharge: RI 10" RI 12"
 Bowl size: 13.5 in
 Max lateral: ---
 Thrust K factor: 10 lb/ft

Search Criteria:

Flow: --- Head: ---

Fluid:

Water
 SG: 1
 Viscosity: 0.9946 cP
 NPSHa: ---

Temperature: 68 °F
 Vapor pressure: 0.3391 psi a
 Atm pressure: 14.7 psi a

Motor:

Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve

Size: 15 hp
 Speed: 1200
 Frame: 284T

Pump Limits:

Temperature: 167 °F
 Pressure: 303 psi g
 Sphere size: 1 in

Power: 209 hp
 Eye area: 25.3 in²

---- Data Point ----

Flow: 1164 US gpm
 Head: 35.2 ft
 Eff: 83.2%
 Power: 12.4 hp
 NPSHr: 14.2 ft

---- Design Curve ----

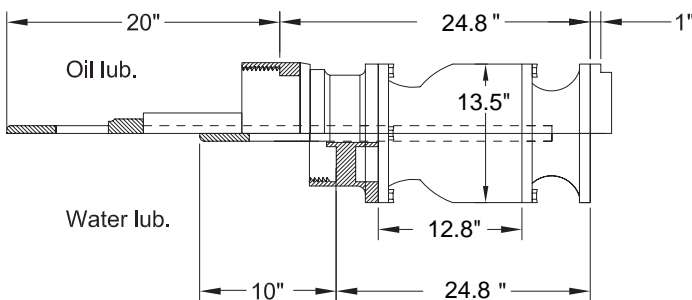
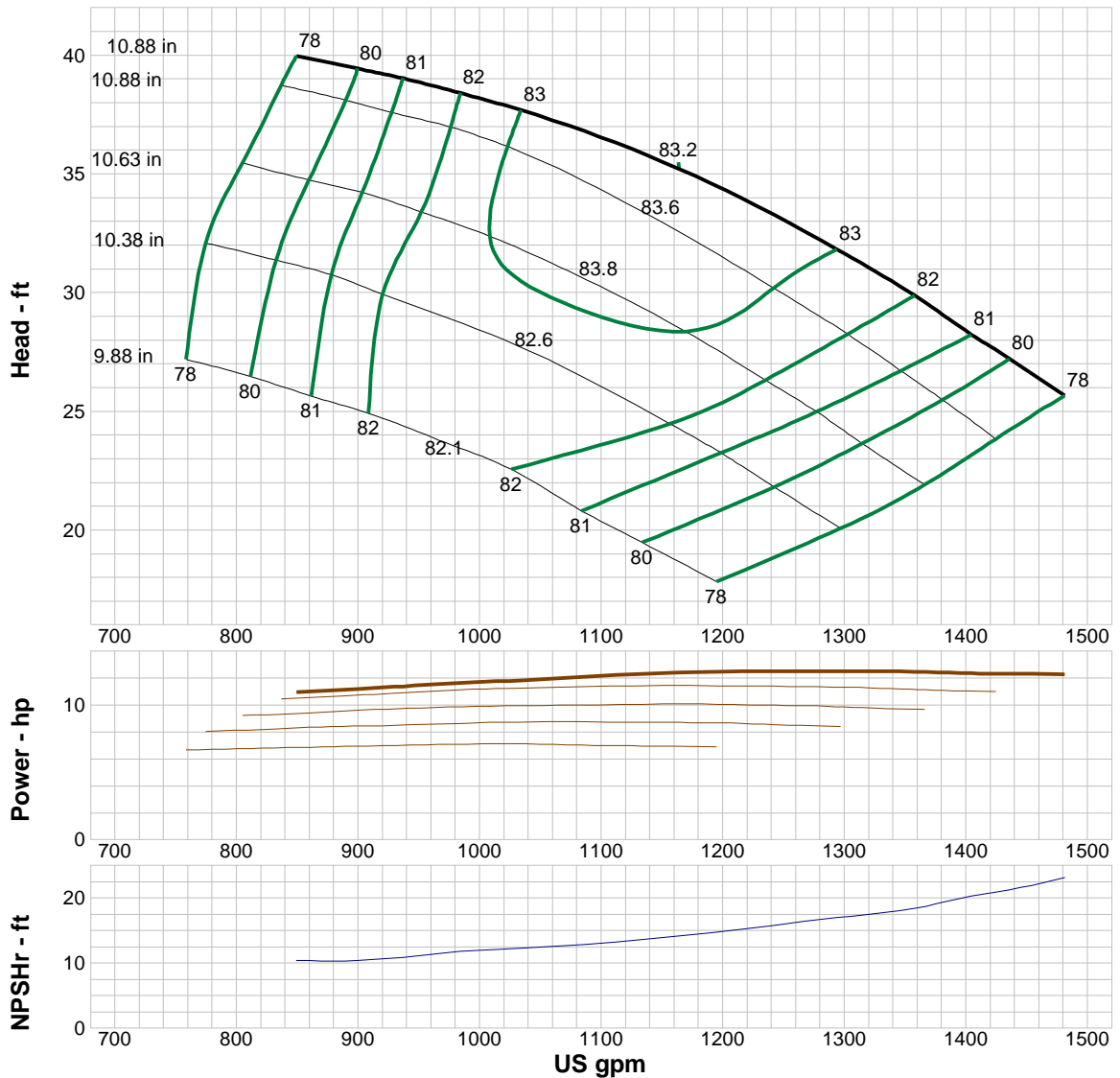
Shutoff head: 41.1 ft
 Shutoff dP: 17.8 psi
 Min flow: 354 US gpm
 BEP: 83.2% @ 1164 US gpm
 NOL power: 12.5 hp @ 1293 US gpm

-- Max Curve --

Max power: 12.5 hp @ 1293 US gpm

--Additional Data--

Std. Shaft Diameter: 1 15/16
 Max. Shaft Diameter: C.F.
 Opt. Lateral Setting: 0.06
 Std. Lateral: 0.58
 One Stage Subm. WT-LB: N/A
 One Stage Water Lub. WT-LB: 394.4
 One Stage Oil Lub. WT-LB: 383.5
 Add Stage WT-LB: 185.1
 Impeller Weight: 42.6lb
 Min. Submergence: 13



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
1422	1160	27.7	80.4	12.3	20.9
1185	1160	34.7	83.2	12.5	14.6
948	1160	38.9	81.2	11.5	11.1
711	1160	41.4	72.5	10.4	10.5
474	1160	43.8	63	9.4	10.6

Pump:

Size: 14MS-2C (1 stage)
 Type: LINE W_60 Hz
 Synch speed: 1200 rpm
 Curve: ETMBBEJ-12
 Specific Speeds:
 Dimensions:
 Vertical Turbine:

Speed: 1160 rpm
 Dia: 10.88 in
 Impeller: 14MS-2C
 Ns: 2766
 Nss: 6252
 Suction: CB-10"
 Discharge: RI 10" RI 12"
 Bowl size: 13.5 in
 Max lateral: ---
 Thrust K factor: 10 lb/ft

Search Criteria:

Flow: --- Head: ---

Fluid:

Water
 SG: 1
 Viscosity: 0.9946 cP
 NPSHa: ---

Temperature: 68 °F
 Vapor pressure: 0.3391 psi a
 Atm pressure: 14.7 psi a

Motor:

Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve

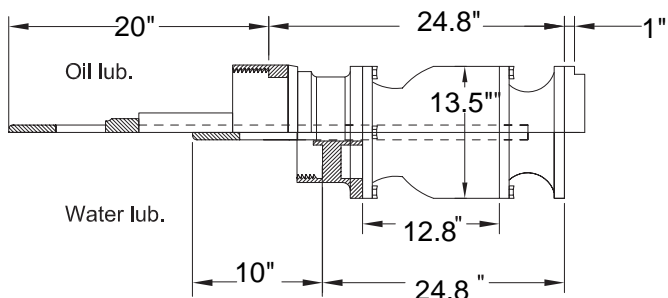
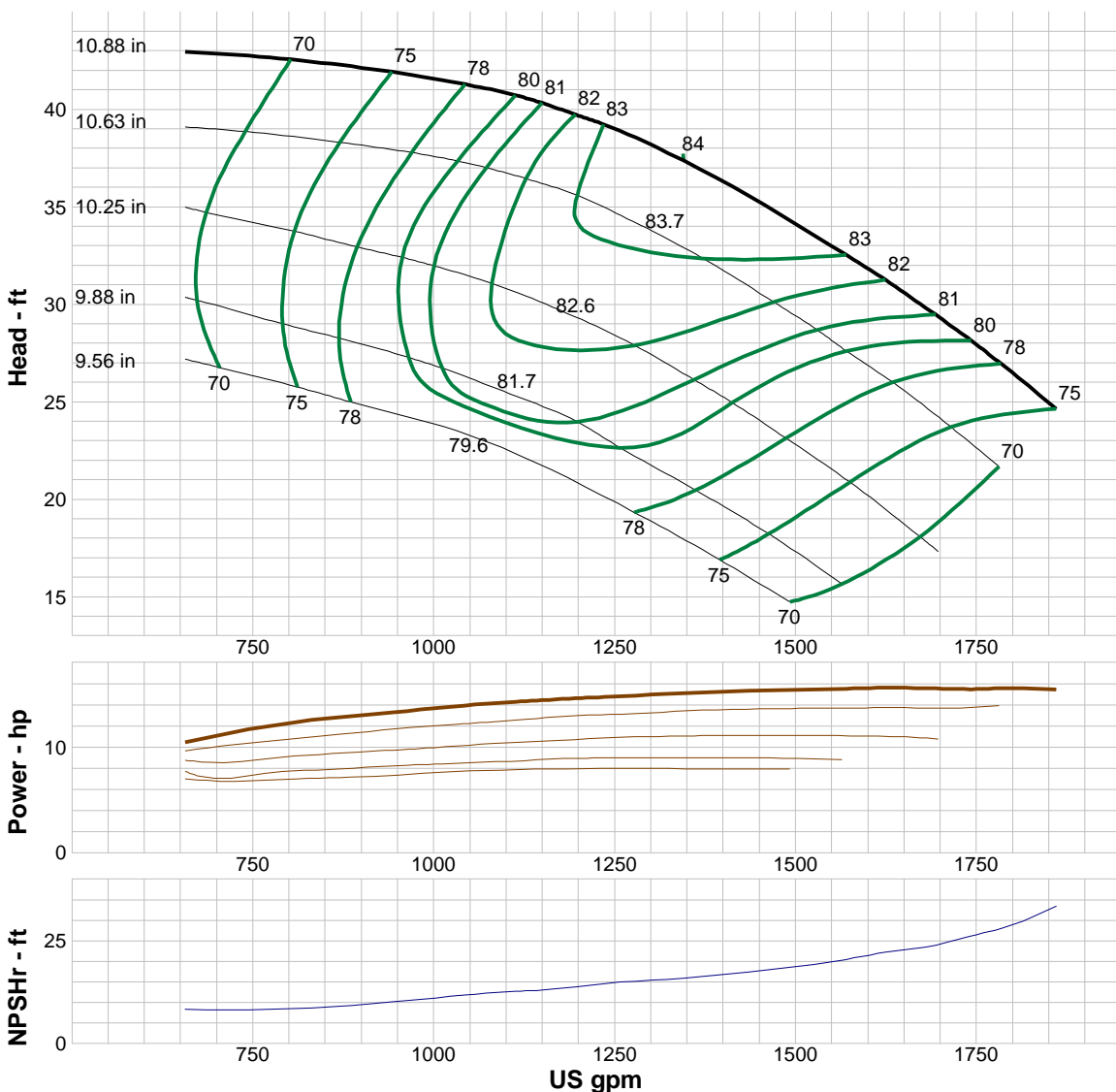
Size: 20 hp
 Speed: 1200
 Frame: 286T

Pump Limits:

Temperature: 167 °F
 Pressure: 303 psi g
 Sphere size: 1 in

Power: 258 hp
 Eye area: 26.1 in²

---- Data Point ----	
Flow:	1345 US gpm
Head:	37.4 ft
Eff:	84%
Power:	15.1 hp
NPSHr:	15.9 ft
---- Design Curve ----	
Shutoff head:	48.1 ft
Shutoff dP:	20.8 psi
Min flow:	410 US gpm
BEP:	84% @ 1345 US gpm
NOL power:	15.6 hp @ 1624 US gpm
-- Max Curve --	
Max power:	15.6 hp @ 1624 US gpm
--Additional Data--	
Std. Shaft Diameter:	1 15/16
Max. Shaft Diameter:	C.F.
Opt. Lateral Setting:	0.06
Std. Lateral:	0.58
One Stage Subm. WT-LB:	N/A
One Stage Water Lub. WT-LB:	394.4
One Stage Oil Lub. WT-LB:	383.5
Add Stage WT-LB:	185.1
Impeller Weight:	42.6 lb
Min. Submergence:	13



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
1786	1160	26.9	77.9	15.6	28.2
1488	1160	34.3	83.4	15.4	18.8
1190	1160	39.8	81.9	14.6	13.7
893	1160	42.1	73.3	12.9	9.57
595	1160	43.1	67.2	9.69	8.35

Pump:

Size: 16MS-1C (1 stage)
 Type: LINE W_60 Hz
 Synch speed: 1200 rpm
 Curve: ETMBAEL-12
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 1160 rpm
 Dia: 13.19 in
 Impeller: 16MS-1C
 Ns: 2445
 Nss: 9843
 Suction: CB-12"
 Discharge: RI 12"
 Bowl size: 15.2 in
 Max lateral: ---
 Thrust K factor: 36 lb/ft

Search Criteria:

Flow: --- Head: ---

Fluid:

Water
 SG: 1
 Viscosity: 0.9946 cP
 NPSHa: ---
 Temperature: 68 °F
 Vapor pressure: 0.3391 psi a
 Atm pressure: 14.7 psi a

Motor:

Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve
 Size: 40 hp
 Speed: 1200
 Frame: 364T

Pump Limits:

Temperature: 167 °F
 Pressure: 430 psi g
 Sphere size: 1 in
 Power: 543 hp
 Eye area: 78.5 in²

---- Data Point ----

Flow: 2619 US gpm
 Head: 40.7 ft
 Eff: 85%
 Power: 31.6 hp
 NPSHr: 15.2 ft

---- Design Curve ----

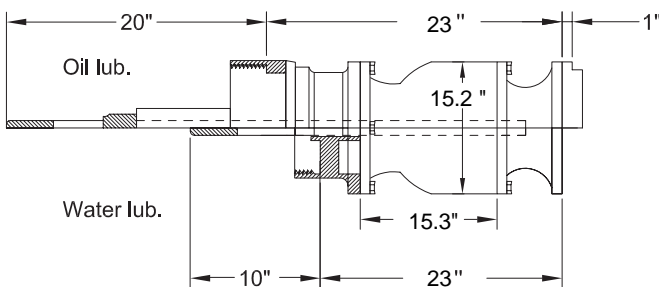
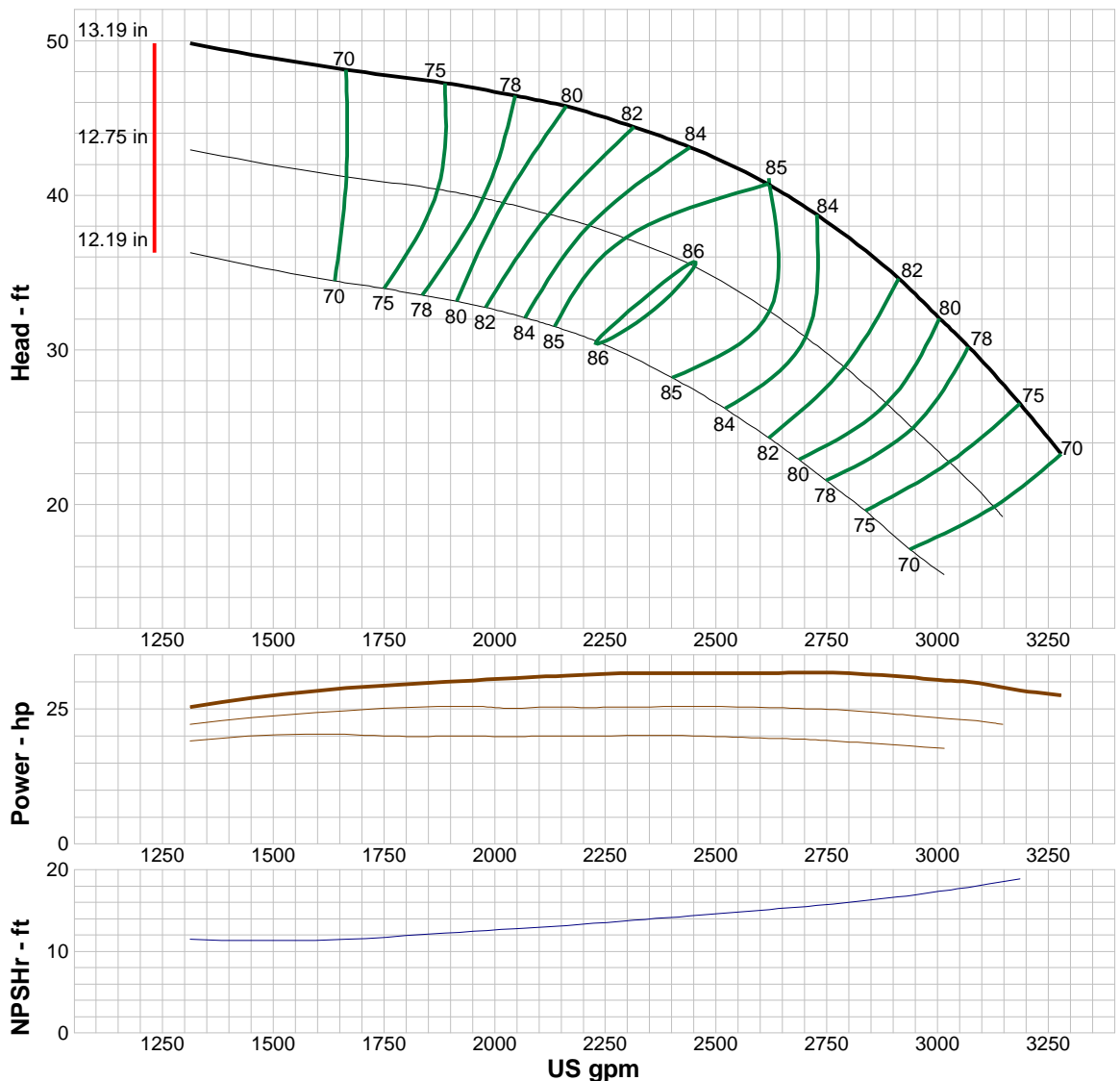
Shutoff head: 71.3 ft
 Shutoff dP: 30.9 psi
 Min flow: 1230 US gpm
 BEP: 85% @ 2619 US gpm
 NOL power:
 31.7 hp @ 2726 US gpm

-- Max Curve --

Max power:
 31.7 hp @ 2726 US gpm

--Additional Data--

Std. Shaft Diameter: 1 15/16
 Max. Shaft Diameter: C.F.
 Opt. Lateral Setting: 0.25
 Std. Lateral: 0.60
 One Stage Subm. WT-LB: N/A
 One Stage Water Lub. WT-LB: 442.5
 One Stage Oil Lub. WT-LB: 450.9
 Add Stage WT-LB: 225.7
 Impeller Weight: 46.9 lb
 Min. Submergence: 17



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
3148	1160	27.7	75.9	29	18.6
2623	1160	40.6	85	31.6	15.2
2098	1160	46.1	78.9	31	13
1574	1160	48.5	68.7	28	11.5
1049	1160	---	---	---	---

Pump:

Size: 18HH-1C (1 stage)
 Type: LINE W_60 Hz
 Synch speed: 1200 rpm
 Curve: ETHBAEN-12
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 1185 rpm
 Dia: 13 in
 Impeller: 18HH-1C
 Ns: 5212
 Nss: 10015
 Suction: C
 Discharge: N/A
 Bowl size: 18.2 in
 Max lateral: ---
 Thrust K factor: 35 lb/ft

Search Criteria:

Flow: --- Head: ---

Fluid:

Water
 SG: 1
 Viscosity: 0.9946 cP
 NPSHa: ---
 Temperature: 68 °F
 Vapor pressure: 0.3391 psi a
 Atm pressure: 14.7 psi a

Motor:

Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve
 Size: 50 hp
 Speed: 1200
 Frame: 365T

Pump Limits:

Temperature: 167 °F
 Pressure: 314 psi g
 Sphere size: 0.875 in
 Power: 597 hp
 Eye area: 84.9 in²

---- Data Point ----

Flow: 4414 US gpm
 Head: 36.3 ft
 Eff: 87.3%
 Power: 46.3 hp
 NPSHr: 16.7 ft

---- Design Curve ----

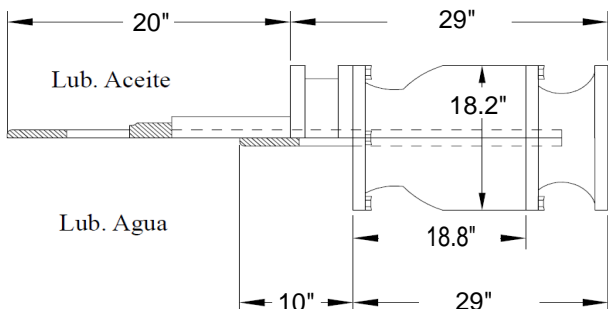
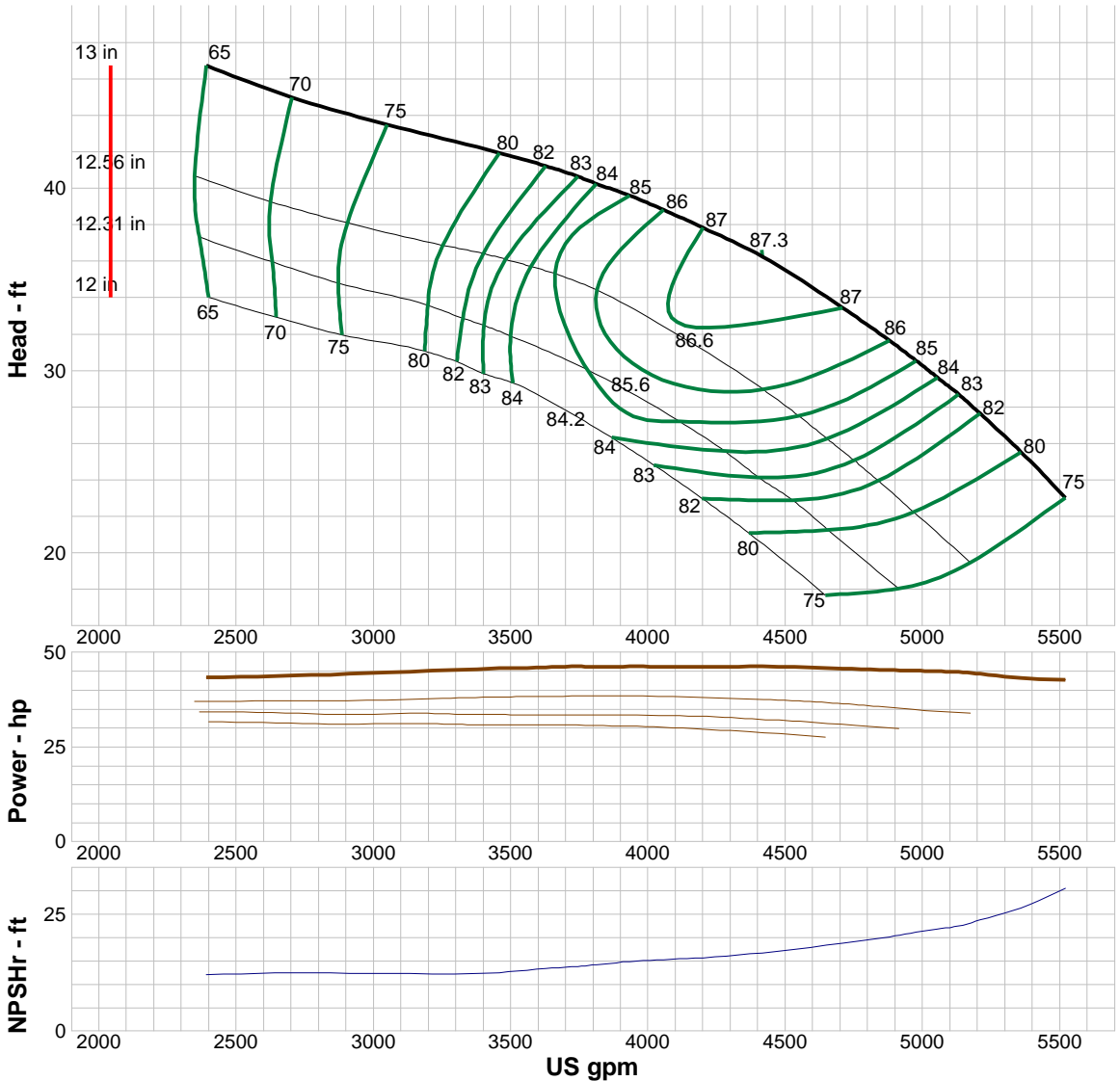
Shutoff head: 51 ft
 Shutoff dP: 22.1 psi
 Min flow: 2040 US gpm
 BEP: 87.3% @ 4414 US gpm
 NOL power:
 46.3 hp @ 4414 US gpm

-- Max Curve --

Max power:
 46.3 hp @ 4414 US gpm

--Additional Data--

Std. Shaft Diameter: 1 15/16
 Max. Shaft Diameter: C.F.
 Opt. Lateral Setting: 0.25
 Std. Lateral: 0.95
 One Stage Subm. WT-LB: N/A
 One Stage Water Lub. WT-LB: 590.0
 One Stage Oil Lub. WT-LB: 598.4
 Add Stage WT-LB: 388.4
 Impeller Weight: 81.4 lb
 Min. Submergence: 20



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
5298	1185	26.4	80.8	43.6	25.3
4415	1185	36.3	87.3	46.3	16.8
3532	1185	41.6	80.9	45.9	12.9
2649	1185	45.3	69.2	43.8	12.4
1766	1185	---	---	---	---

Pump:

Size: 18HH-2C (1 stage)
 Type: LINE W_60 Hz
 Synch speed: 1200 rpm
 Curve: ETHBBEN-12
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 1185 rpm
 Dia: 14 in
 Impeller: 18HH-2C
 Ns: 4997
 Nss: 14080
 Suction: C
 Discharge: N/A
 Bowl size: 18.2 in
 Max lateral: ---
 Thrust K factor: 35 lb/ft

Search Criteria:

Flow: --- Head: ---

Fluid:

Water
 SG: 1
 Viscosity: 0.9946 cP
 NPSHa: ---
 Temperature: 68 °F
 Vapor pressure: 0.3391 psi a
 Atm pressure: 14.7 psi a

Motor:

Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve
 Size: 75 hp
 Speed: 1200
 Frame: 405T

Pump Limits:

Temperature: 167 °F
 Pressure: 314 psi g
 Sphere size: 0.875 in
 Power: 842 hp
 Eye area: 97.9 in²

---- Data Point ----

Flow: 5277 US gpm
 Head: 43.2 ft
 Eff: 88.5%
 Power: 65.1 hp
 NPSHr: 16.6 ft

---- Design Curve ----

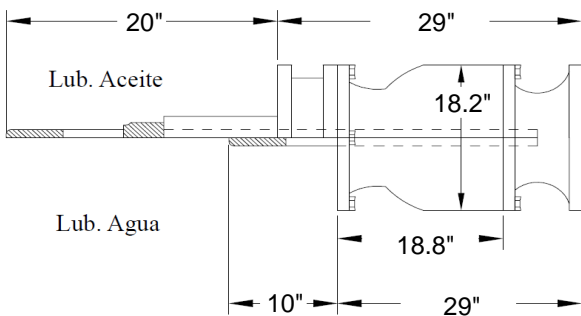
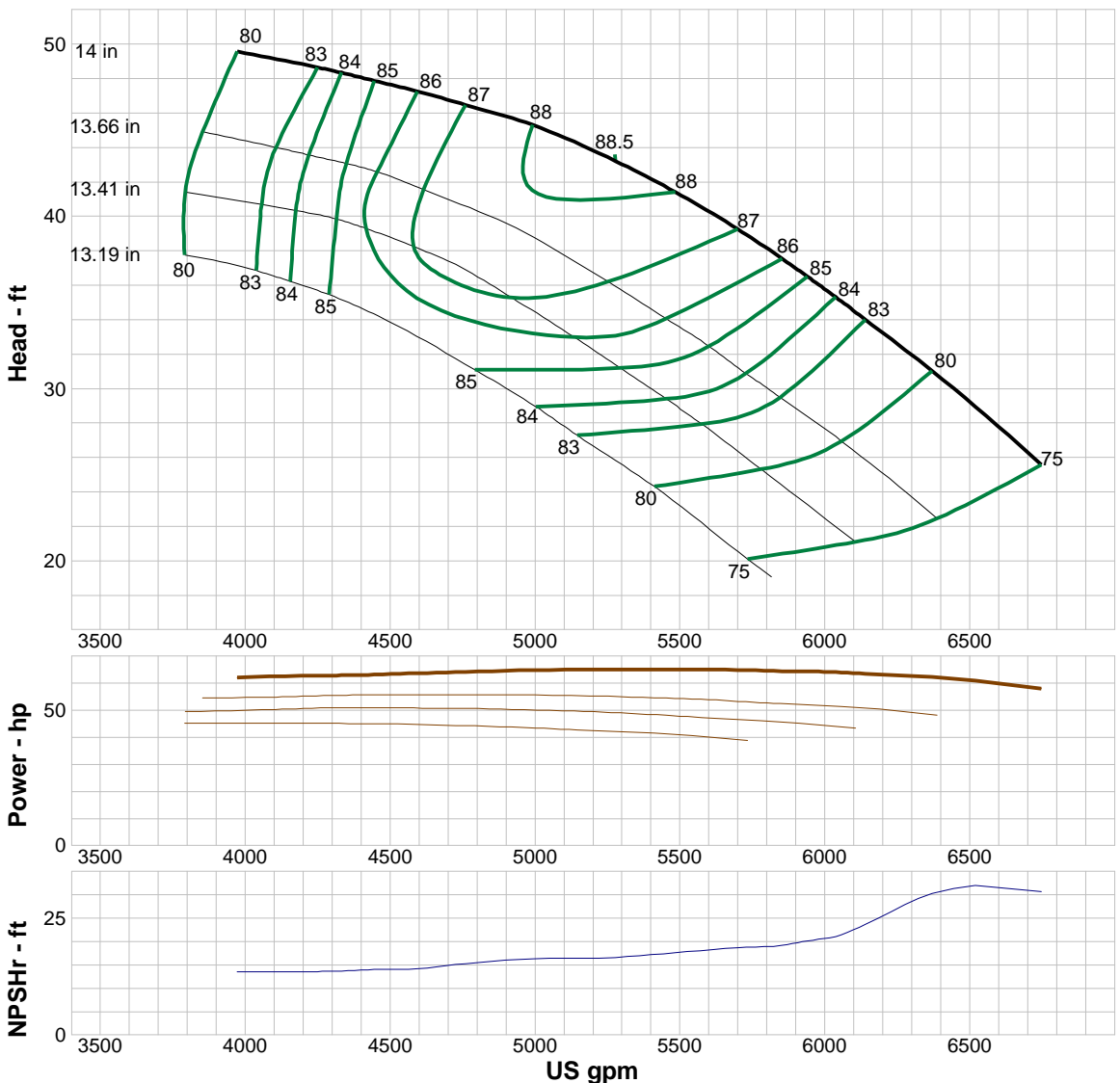
Shutoff head: 50.6 ft
 Shutoff dP: 21.9 psi
 Min flow: 2400 US gpm
 BEP: 88.5% @ 5277 US gpm
 NOL power:
 65.1 hp @ 5482 US gpm

-- Max Curve --

Max power:
 65.1 hp @ 5482 US gpm

--Additional Data--

Std. Shaft Diameter: 1 15/16
 Max. Shaft Diameter: C.F.
 Opt. Lateral Setting: 0.25
 Std. Lateral: 0.95
 One Stage Subm. WT-LB: N/A
 One Stage Water Lub. WT-LB: 590.0
 One Stage Oil Lub. WT-LB: 598.4
 Add Stage WT-LB: 388.4
 Impeller Weight: 81.4 lb
 Min. Submergence: 21



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
6475	1185	29.5	78.6	61.2	30.4
5396	1185	42.2	88.2	65.1	17.2
4317	1185	48.4	83.8	62.9	13.7
3238	1185	52	72.1	60.1	13.3
2158	1185	---	---	---	---

Pump:

Size: 19WM-1C (1 stage)
 Type: LINE W_60 Hz
 Synch speed: 1200 rpm
 Curve: ETWBAEM-12
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 1170 rpm
 Dia: 12.6 in
 Impeller: 19WM-1C
 Ns: 3781
 Nss: 11264
 Suction: C
 Discharge: N/A
 Bowl size: 18 in
 Max lateral: ---
 Thrust K factor: 32 lb/ft

Search Criteria:

Flow: --- Head: ---

Fluid:

Water
 SG: 1
 Viscosity: 0.9946 cP
 NPSHa: ---
 Temperature: 68 °F
 Vapor pressure: 0.3391 psi a
 Atm pressure: 14.7 psi a

Motor:

Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve
 Size: 75 hp
 Speed: 1200
 Frame: 405T

Pump Limits:

Temperature: 167 °F
 Pressure: 400 psi g
 Sphere size: 1 in
 Power: 857hp
 Eye area: 74.5 in²

---- Data Point ----

Flow: 3966 US gpm
 Head: 52.1 ft
 Eff: 86.5%
 Power: 60.3 hp
 NPSHr: 14.7 ft

---- Design Curve ----

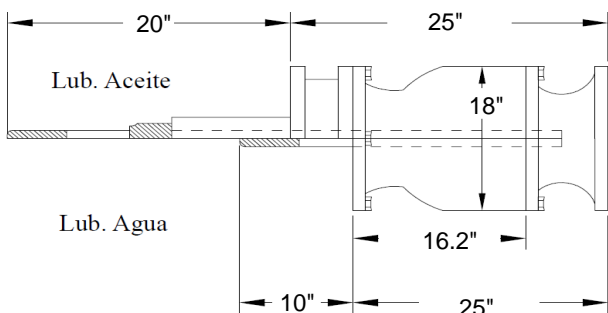
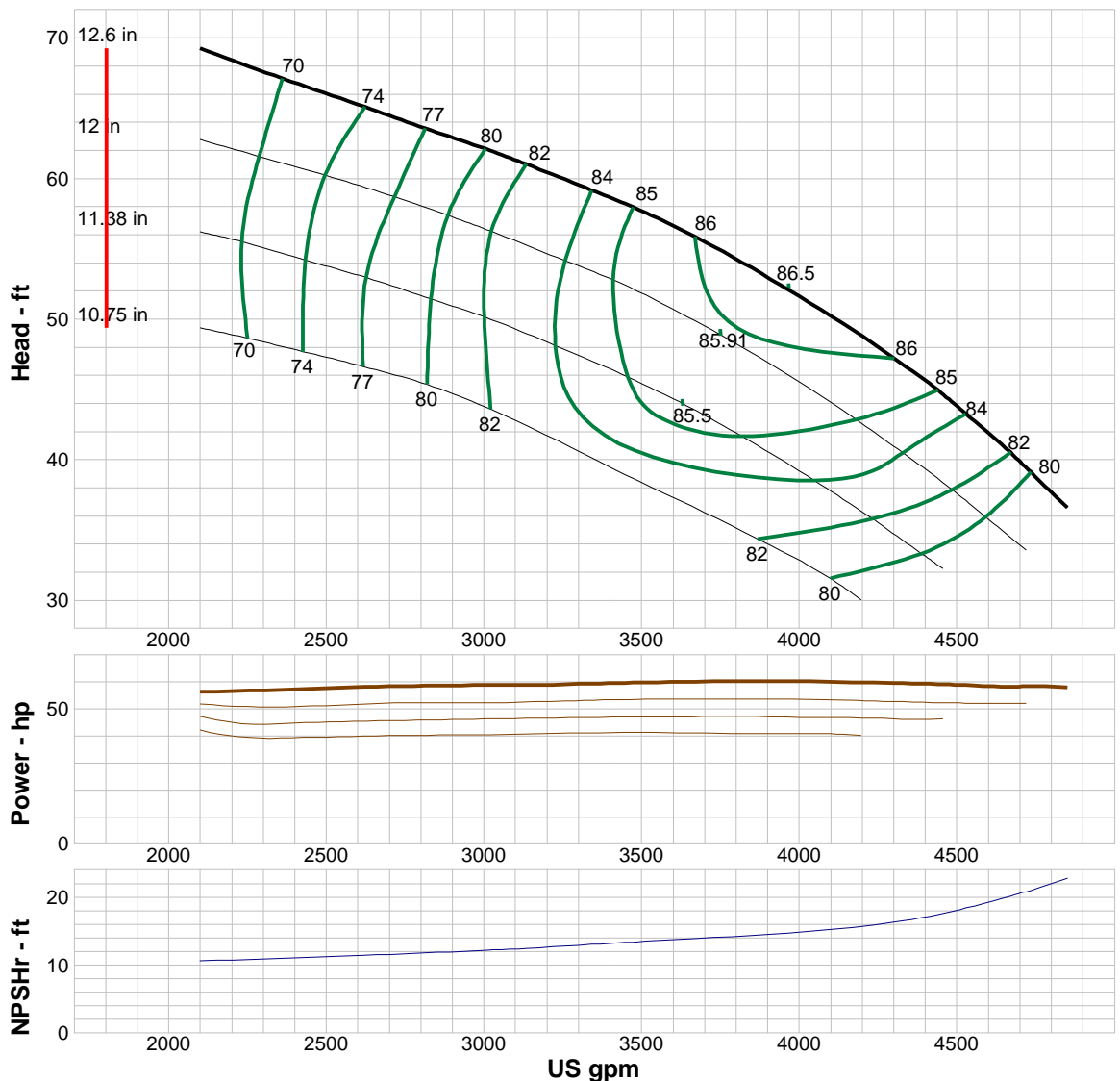
Shutoff head: 86.8 ft
 Shutoff dP: 37.6 psi
 Min flow: 1800 US gpm
 BEP: 86.5% @ 3966 US gpm
 NOL power:
 60.3 hp @ 3966 US gpm

-- Max Curve --

Max power:
 60.3 hp @ 3966 US gpm

--Additional Data--

Std. Shaft Diameter: 2 1/4
 Max. Shaft Diameter: C.F.
 Opt. Lateral Setting: 0.13
 Std. Lateral: 0.68
 One Stage Subm. WT-LB: N/A
 One Stage Water Lub. WT-LB: 570.5
 One Stage Oil Lub. WT-LB: 581.8
 Add Stage WT-LB: 348.7
 Impeller Weight: 84.4lb
 Min. Submergence: 18



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
4656	1170	40.8	82.2	58.3	20
3880	1170	53.2	86.4	60.2	14.5
3104	1170	61.3	81.6	58.9	12.4
2328	1170	67.4	69.4	57	11
1552	1170	---	---	---	---

Pump:

Size: 20WH-1C ADD (1 stage)
 Type: LINE W_60 Hz
 Synch speed: 1200 rpm
 Curve: ETWBAEO-12
 Specific Speeds:
 Dimensions:
 Vertical Turbine:

Speed: 1180 rpm
 Dia: 13.31 in
 Impeller: 20WH-1C AD
 Ns:3273
 Nss: 9993
 Suction: C
 Discharge: N/A
 Bowl size: 18 in
 Max lateral: ---
 Thrust K factor: 31 lb/ft

Search Criteria:

Flow: --- Head: ---

Fluid:

Water
 SG: 1
 Viscosity: 0.9946 cP
 NPSHa: ---

Temperature: 68 °F
 Vapor pressure: 0.3391 psi a
 Atm pressure: 14.7 psi a

Motor:

Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve

Size: 100 hp
 Speed: 1200
 Frame: 444T

Pump Limits:

Temperature: 167 °F
 Pressure: 380 psi g
 Sphere size: 1 in

Power: 1,067hp
 Eye area: 97.86 in²

---- Data Point ----

Flow: 4568 US gpm
 Head: 62.3 ft
 Eff: 86%
 Power: 83.5 hp
 NPSHr: 14.3 ft

---- Design Curve ----

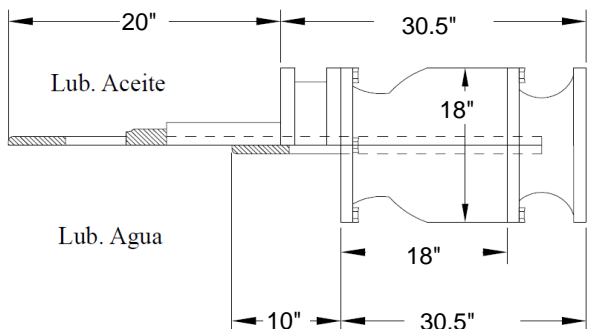
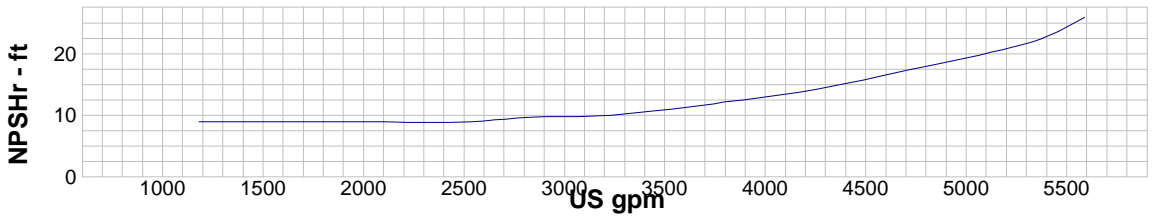
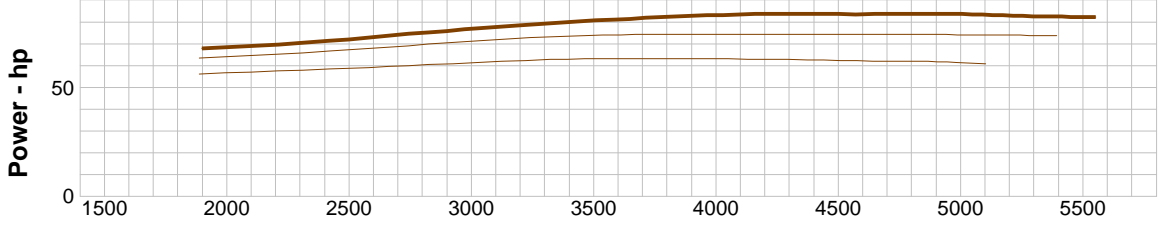
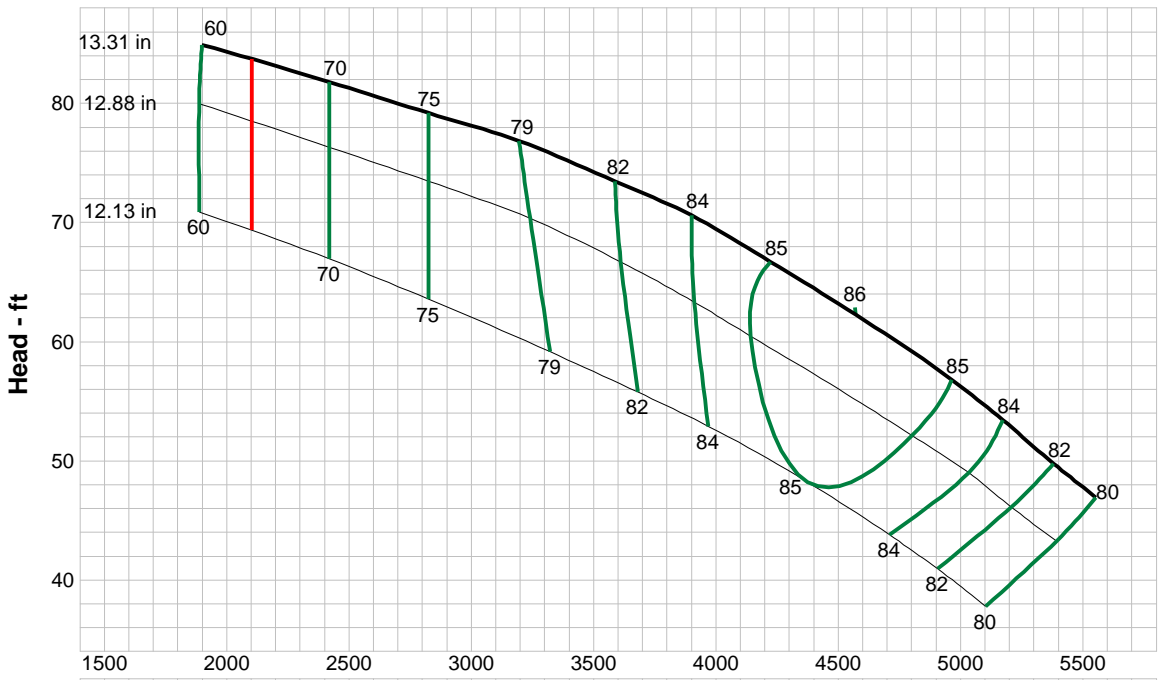
Shutoff head: 95.3 ft
 Shutoff dP: 41.3 psi
 Min flow: 2100 US gpm
 BEP: 86% @ 4568 US gpm
 NOL power:
 83.7 hp @ 4962 US gpm

-- Max Curve --

Max power:
 83.7 hp @ 4962 US gpm

--Additional Data--

Std. Shaft Diameter: 2 1/4
 Max. Shaft Diameter: C.F.
 Opt. Lateral Setting:0.25
 Std. Lateral:0.39
 One Stage Subm. WT-LB:N/A
 One Stage Water Lub. WT-LB:571.5
 One Stage Oil Lub. WT-LB:582.8
 Add Stage WT-LB:350.7
 Impeller Weight: 86.4lb
 Min. Submergence:20"



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
5329	1180	50.6	82.5	82.6	---
4441	1180	63.9	85.6	83.6	---
3553	1180	73.7	81.8	80.9	---
2665	1180	80.2	73.1	73.7	---
1776	1180	---	---	---	---

Pump:

Size: 20WH-1C FIRST (1 stage)
 Type: LINE W_60 Hz
 Synch speed: 1200 rpm
 Curve: ETWBEO-12
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 1180 rpm
 Dia: 13.18 in
 Impeller: 20WH-1C FIRST
 Ns: 3698
 Nss: 9311
 Suction: C
 Discharge: N/A
 Bowl size: 18 in
 Max lateral: ---
 Thrust K factor: 31 lb/ft

Search Criteria:

Flow: --- Head: ---

Fluid:

Water
 SG: 1
 Viscosity: 0.9946 cP
 NPSHa: ---
 Temperature: 68 °F
 Vapor pressure: 0.3391 psi a
 Atm pressure: 14.7 psi a

Motor:

Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve
 Size: 100 hp
 Speed: 1200
 Frame: 444T

Pump Limits:

Temperature: 167 °F
 Pressure: 380 psi g
 Sphere size: 1 in
 Power: 999 hp
 Eye area: 80.70 in²

---- Data Point ----

Flow: 4256 US gpm
 Head: 64.9 ft
 Eff: 87%
 Power: 80.1 hp
 NPSHr: 14.3 ft

---- Design Curve ----

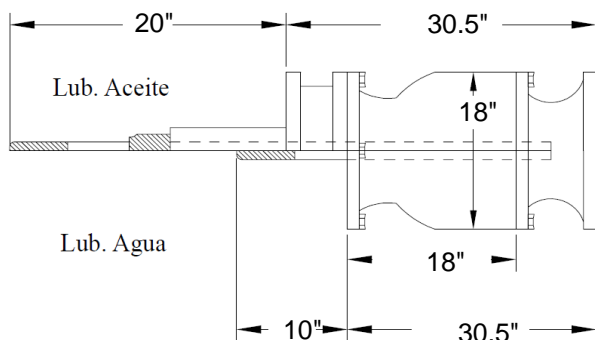
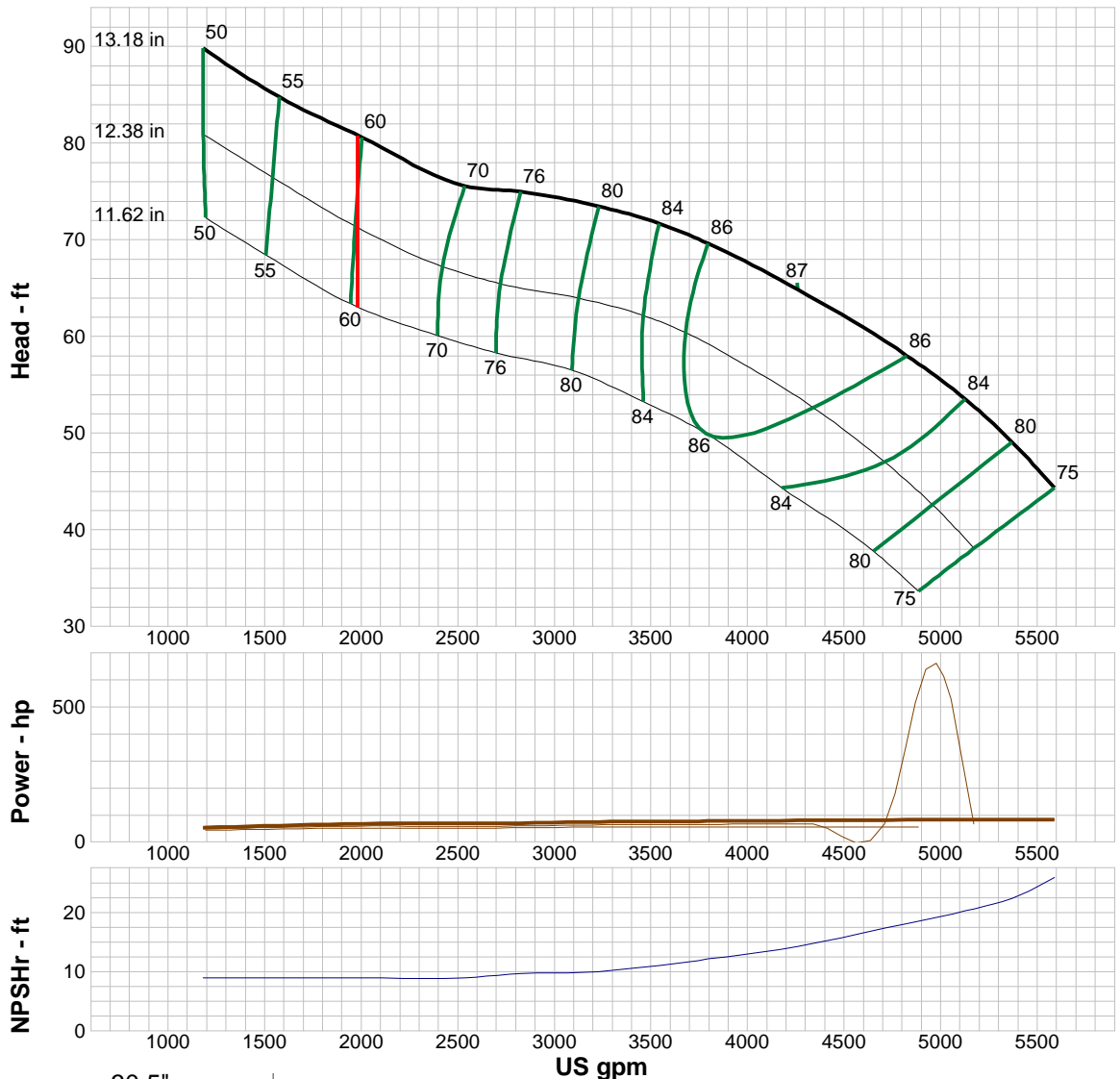
Shutoff head: 101 ft
 Shutoff dP: 43.5 psi
 Min flow: 1980 US gpm
 BEP: 87% @ 4256 US gpm
 NOL power:
 83.4 hp @ 5586 US gpm

-- Max Curve --

Max power:
 83.4 hp @ 5586 US gpm

--Additional Data--

Std. Shaft Diameter: 2 1/4
 Max. Shaft Diameter: C.F.
 Opt. Lateral Setting: 0.25
 Std. Lateral: 0.39
 One Stage Subm. WT-LB: N/A
 One Stage Water Lub. WT-LB: 571.5
 One Stage Oil Lub. WT-LB: 582.8
 Add Stage WT-LB: 350.7
 Impeller Weight: 86.4lb
 Min. Submergence: 20



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
5363	1180	49.2	80.1	83.2	22.4
4469	1180	62.3	86.6	80.9	15.7
3575	1180	71.4	84.3	76.5	11.2
2681	1180	75.3	73.1	69.7	9.33
1788	1180	---	---	---	---

Pump:

Size: 24HH 1C (1 stage)
 Type: LINE W_60 Hz
 Synch speed: 1200 rpm
 Curve: ETHBAES-12
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 1185 rpm
 Dia: 12.9 in
 Impeller: 24HH-1C
 Ns: 4785
 Nss: 10248
 Suction: C
 Discharge: N/A
 Bowl size: 21.7 in
 Max lateral: ---
 Thrust K factor: 57 lb/ft

Search Criteria:

Flow: --- Head: ---

Fluid:

Water
 SG: 1
 Viscosity: 0.9946 cP
 NPSHa: ---
 Temperature: 68 °F
 Vapor pressure: 0.3391 psi a
 Atm pressure: 14.7 psi a

Motor:

Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve
 Size: 150 hp
 Speed: 1200
 Frame: 447T

Pump Limits:

Temperature: 167 °F
 Pressure: 195 psi g
 Sphere size: 1.125 in
 Power: 150 hp
 Eye area: 152 in²

---- Data Point ----

Flow: 7998 US gpm
 Head: 55.7 ft
 Eff: 88.3%
 Power: 127 hp
 NPSHr: 21.8 ft

---- Design Curve ----

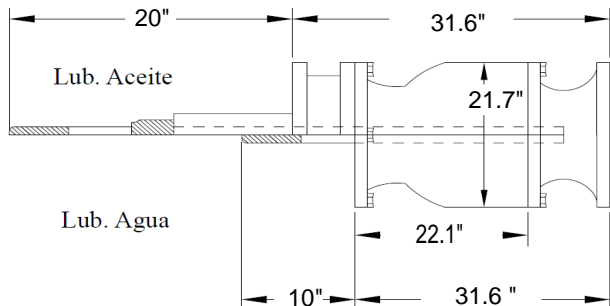
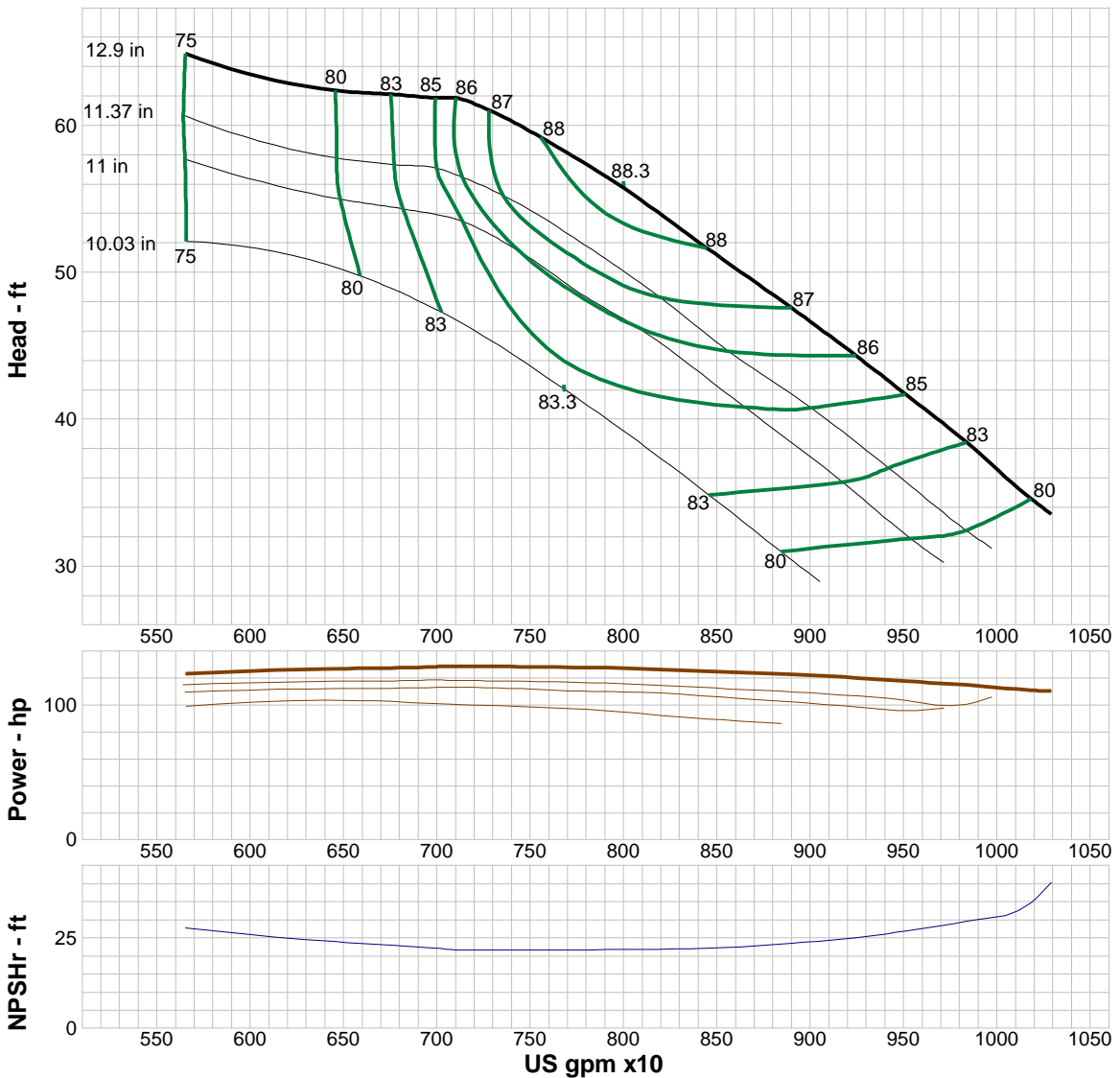
Shutoff head: 65 ft
 Shutoff dP: 28.1 psi
 Min flow: 2475 US gpm
 BEP: 88.3% @ 7998 US gpm
 NOL power:
 129 hp @ 7098 US gpm

-- Max Curve --

Max power:
 129 hp @ 7098 US gpm

--Additional Data--

Std. Shaft Diameter: 2 1/4
 Max. Shaft Diameter: C.F.
 Opt. Lateral Setting: 0.13
 Std. Lateral: 0.96
 One Stage Subm. WT-LB: N/A
 One Stage Water Lub. WT-LB: 1100.8
 One Stage Oil Lub. WT-LB: 1137.1
 Add Stage WT-LB: 656.4
 Impeller Weight: 155.3
 Min. Submergence: 50



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
9878	1185	38	82.6	115	30.3
8232	1185	53.6	88.1	126	22
6586	1185	62.3	81.3	127	23.5
4939	1185	67.1	70.6	120	31.2
3293	1185	72.3	60.3	113	39.1

Pump:

Size: 24HH 2C (1 stage)
 Type: LINE W_60 Hz
 Synch speed: 1200 rpm
 Curve: ETHBBES-12
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 1185 rpm
 Dia: 17.25 in
 Impeller: 24HH-2C
 Ns: 5018
 Nss: 12839
 Suction: C
 Discharge: N/A
 Bowl size: 21.7 in
 Max lateral: ---
 Thrust K factor: 57 lb/ft

Search Criteria:

Flow: --- Head: ---

Fluid:

Water
 SG: 1
 Viscosity: 0.9946 cP
 NPSHa: ---
 Temperature: 68 °F
 Vapor pressure: 0.3391 psi a
 Atm pressure: 14.7 psi a

Motor:

Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve
 Size: 250 hp
 Speed: 1200
 Frame: 449T

Pump Limits:

Temperature: 167 °F
 Pressure: 195 psi g
 Sphere size: 1.125 in
 Power: 200 hp
 Eye area: 152 in²

Pump Selection Warnings:

Design curve maximum power exceeds limit for the pump.

---- Data Point ----

Flow: 10156 US gpm
 Head: 74.5 ft
 Eff: 88.7%
 Power: 215 hp
 NPSHr: 22.9 ft

---- Design Curve ----

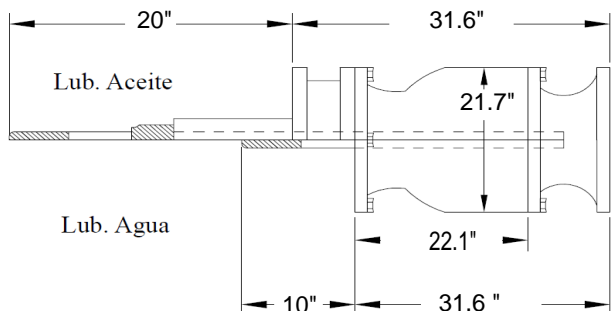
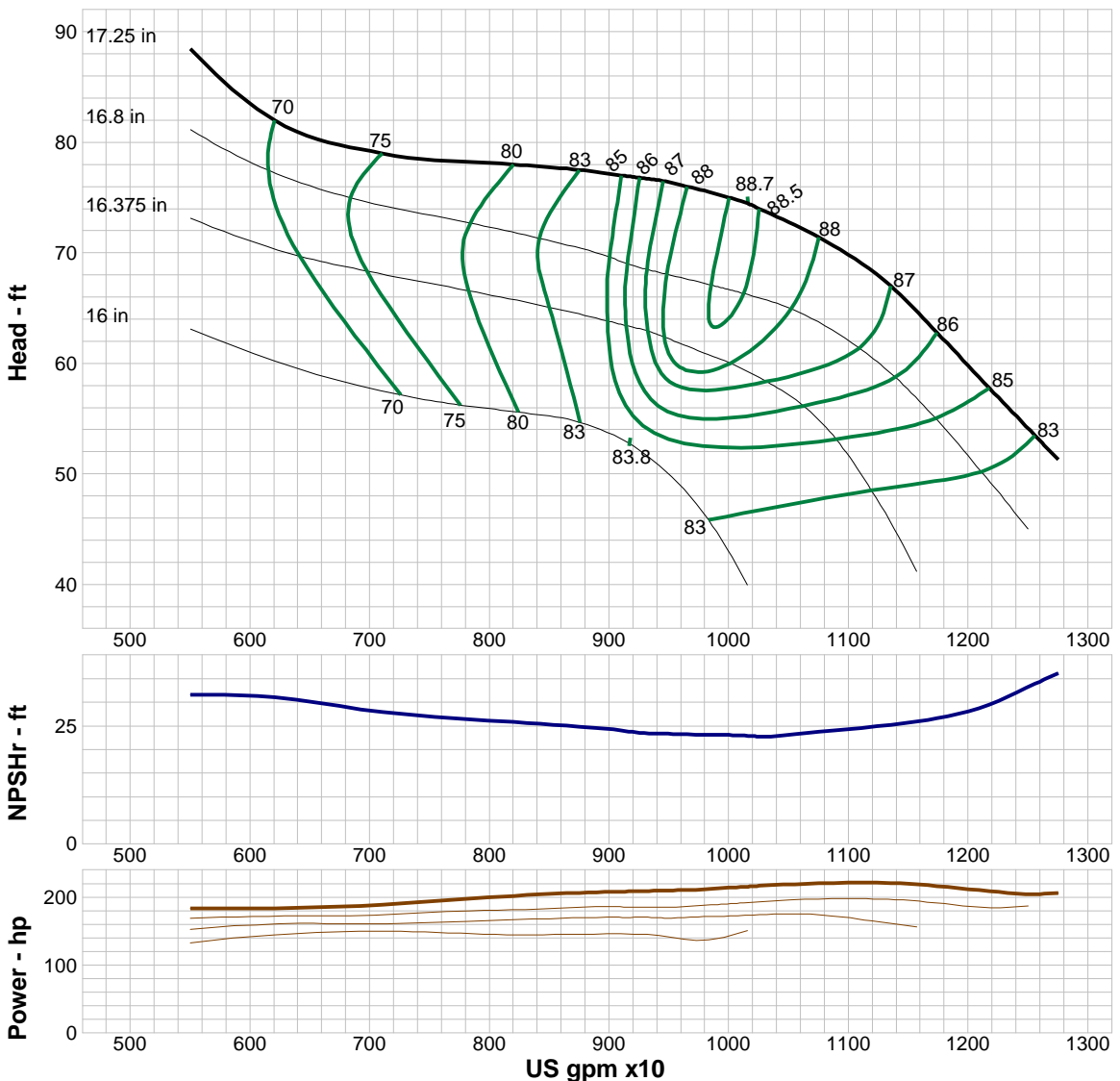
Shutoff head: 124 ft
 Shutoff dP: 53.5 psi
 Min flow: 3150 US gpm
 BEP: 88.7% @ 10156 US gpm
 NOL power:
 221 hp @ 11350 US gpm

-- Max Curve --

Max power:
 221 hp @ 11350 US gpm

--Additional Data--

Std. Shaft Diameter: 2 1/4
 Max. Shaft Diameter: C.F.
 Opt. Lateral Setting: 0.13
 Std. Lateral: 0.96
 One Stage Subm. WT-LB: N/A
 One Stage Water Lub. WT-LB: 1100.8
 One Stage Oil Lub. WT-LB: 1137.1
 Add Stage WT-LB: 656.4
 Impeller Weight: 155.3
 Min. Submergence: 50



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
12240	1185	57	84.7	208	30.3
10200	1185	74.3	88.6	216	22.8
8160	1185	78	79.8	201	25.9
6120	1185	82.7	69.7	183	31.1
4080	1185	102	60.9	183	32.7

Pump:

Size: 28HXH-1C (1 stage)
 Type: LINE W_60 Hz
 Synch speed: 1200 rpm
 Curve: ETXBAEW-12
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 1180 rpm
 Dia: 21.69 in
 Impeller: 28HXH-1C
 Ns: 3430
 Nss: 9500
 Suction: C
 Discharge: N/A
 Bowl size: 27.6 in
 Max lateral: ---
 Thrust K factor: 64.2 lb/ft

Search Criteria:

Flow: --- Head: ---

Fluid:

Water
 SG: 1
 Viscosity: 0.9946 cP
 NPSHa: ---
 Temperature: 68 °F
 Vapor pressure: 0.3391 psi a
 Atm pressure: 14.7 psi a

Motor:

Standard: ---
 Enclosure: ---
 Sizing criteria: Max Power on Design Curve

 Speed: ---
 Frame: ---

Pump Limits:

Temperature: 167 °F
 Pressure: 130 psi g
 Sphere size: 1.5 in
 Power: 560 hp
 Eye area: 168 in²

Pump Selection Warnings:

Design curve maximum power exceeds limit for the pump.

---- Data Point ----

Flow: 13832 US gpm
 Head: 143 ft
 Eff: 82.3%
 Power: 609 hp
 NPSHr: 34.3 ft

---- Design Curve ----

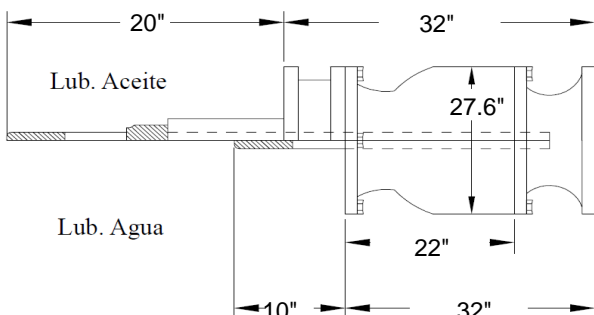
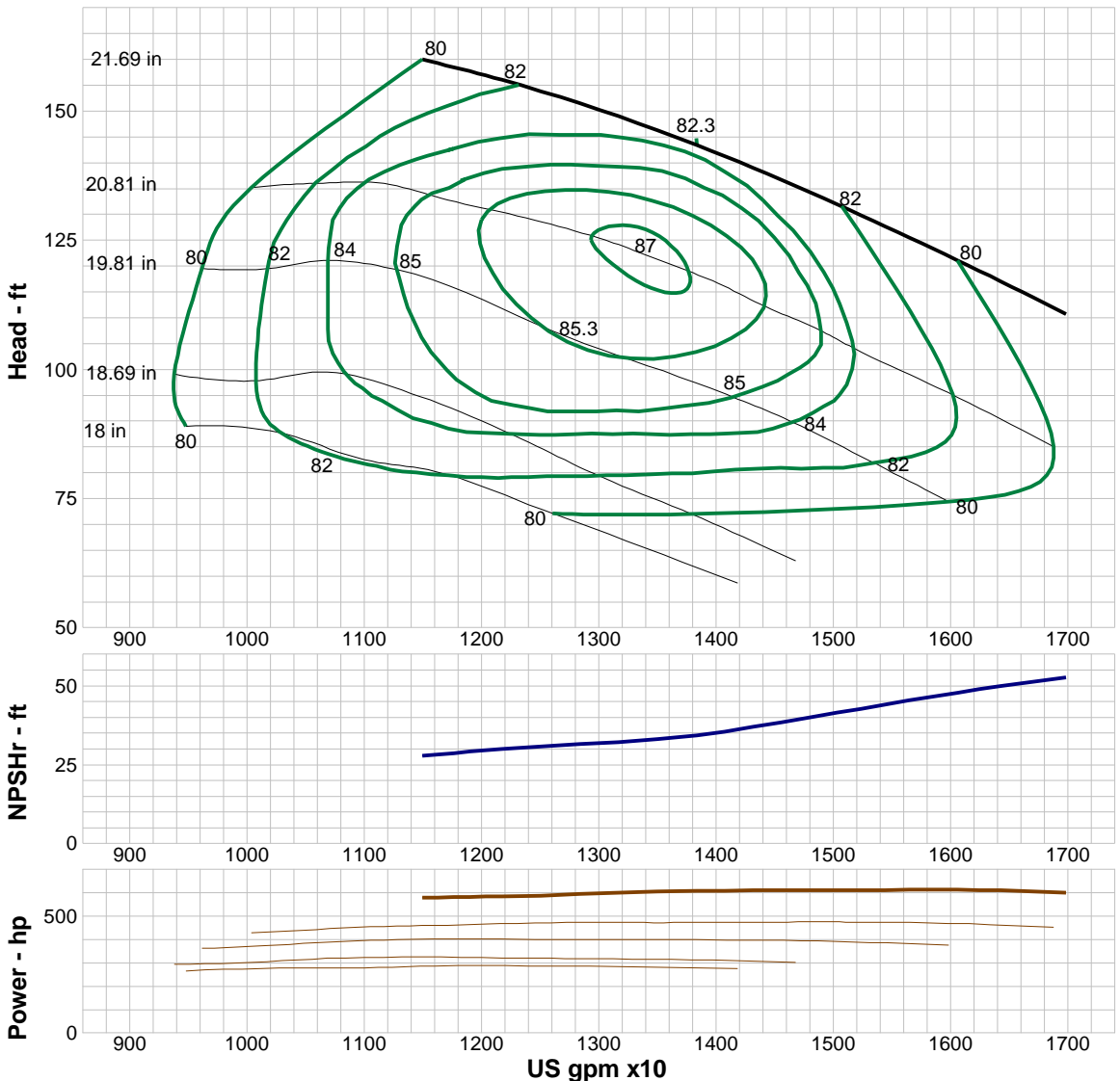
Shutoff head: 174 ft
 Shutoff dP: 75.3 psi
 Min flow: 4200 US gpm
 BEP: 82.3% @ 13832 US gpm
 NOL power:
 614 hp @ 16055 US gpm

-- Max Curve --

Max power:
 614 hp @ 16055 US gpm

--Additional Data--

Std. Shaft Diameter: 2 15/16
 Max. Shaft Diameter: C.F.
 Opt. Lateral Setting: 0.19
 Std. Lateral: 1.88
 One Stage Subm. WT-LB: N/A
 One Stage Water Lub. WT-LB: 1483.8
 One Stage Oil Lub. WT-LB: 1545.6
 Add Stage WT-LB: 843.8
 Impeller Weight: 200.8 lb
 Min. Submergence: 60



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
16300	1180	118	79.7	610	49.1
13583	1180	145	82.3	605	33.7
10866	1180	164	78.2	576	25.8
8150	1180	179	70.2	558	17.1
5433	1180	195	62.2	539	8.35