Upstream Pressure	1400	psia
Downstream Pressure	25	psia
Vapor Pressure	4	psia
Pipe ID	1.9	inches
Required Flow	75	gpm
Minimum orifice size	0.25	inches

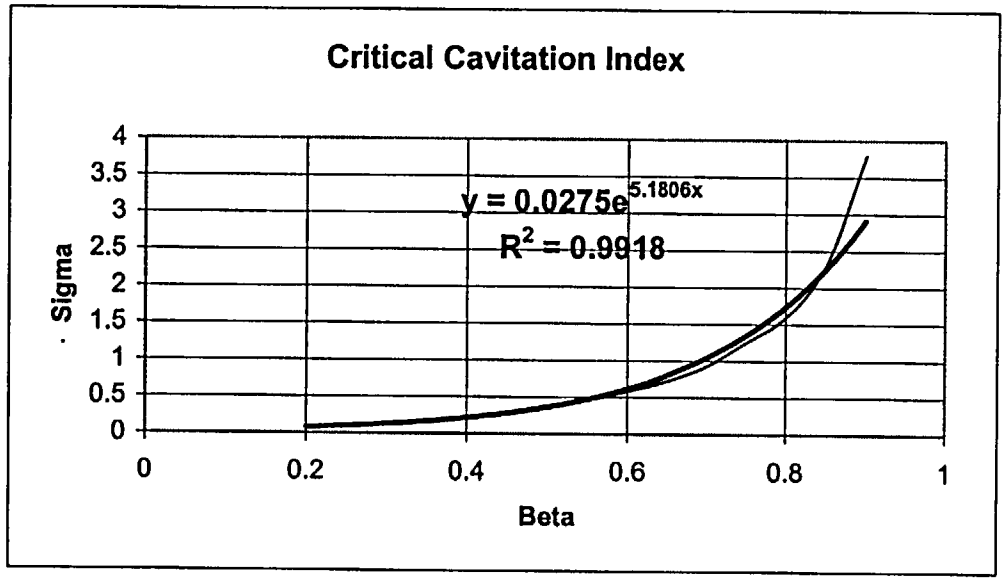
Stage #	Pu	d (in)	n	β	C	dh (ft)	dP (psid)	Pd	σ	$\sigma_{critical}$	Ratio
1	=B2	=7/16	1	=D12/$B$5	0.6	=(($B$6/E12)/(19.65*G12*D12^2))^2	=H12/2.31	=C12-I12	=(J12-$B$4)/(C12-J12)	=0.275*EXP(5.1806*F12)	=K12/L12
2	=J12	=5/16	2	=D13/$B$5	0.6	=(($B$6/E13)/(19.65*G13*D13^2))^2	=H13/2.31	=C13-I13	=(J13-$B$4)/(C13-J13)	=0.275*EXP(5.1806*F13)	=K13/L13
3	=J13	0.375	2	=D14/$B$5	0.6	=(($B$6/E14)/(19.65*G14*D14^2))^2	=H14/2.31	=C14-I14	=(J14-$B$4)/(C14-J14)	=0.275*EXP(5.1806*F14)	=K14/L14
4	=J14	0.375	3	=D15/$B$5	0.6	=(($B$6/E15)/(19.65*G15*D15^2))^2	=H15/2.31	=C15-I15	=(J15-$B$4)/(C15-J15)	=0.275*EXP(5.1806*F15)	=K15/L15
5	=J15	0.4375	3	=D16/$B$5	0.6	=(($B$6/E16)/(19.65*G16*D16^2))^2	=H16/2.31	=C16-I16	=(J16-$B$4)/(C16-J16)	=0.275*EXP(5.1806*F16)	=K16/L16
6	=J16	0.4375	4	=D17/$B$5	0.6	=(($B$6/E17)/(19.65*G17*D17^2))^2	=H17/2.31	=C17-I17	=(J17-$B$4)/(C17-J17)	=0.275*EXP(5.1806*F17)	=K17/L17
7	=J17	0.5	4	=D18/$B$5	0.6	=(($B$6/E18)/(19.65*G18*D18^2))^2	=H18/2.31	=C18-I18	=(J18-$B$4)/(C18-J18)	=0.275*EXP(5.1806*F18)	=K18/L18
8	=J18	0.5625	4	=D19/$B$5	0.6	=(($B$6/E19)/(19.65*G19*D19^2))^2	=H19/2.31	=C19-I19	=(J19-$B$4)/(C19-J19)	=0.275*EXP(5.1806*F19)	=K19/L19
9	=J19	0.5	5	=D20/$B$5	0.6	=(($B$6/E20)/(19.65*G20*D20^2))^2	=H20/2.31	=C20-I20	=(J20-$B$4)/(C20-J20)	=0.275*EXP(5.1806*F20)	=K20/L20

Computer printout
of email received from
Tom Kendall date 11/[illegible]

Critical Cavitation Index

β	σ
0.2	0.08
0.3	0.14
0.4	0.225
0.5	0.375
0.55	0.47
0.6	0.58
0.65	0.72
0.7	0.92
0.75	1.25
0.8	1.6
0.85	2.3
0.9	3.8

$\sigma_{critical}$



Upstream Pressure	1400	psia
Downstream Pressure	25	psia
Vapor Pressure	4	psia
Pipe ID	1.9	inches
Required Flow	75	gpm
Minimum orifice size	0.25	inches

Stage #	Pu	d (in)	n	β	C	dh (ft)	dP (psid)	Pd	σ	$\sigma_{critical}$
1	1400	0.4375	1	0.230	0.6	1105	478	922	1.92	0.91
2	922	0.3125	2	0.164	0.6	1061	459	463	1.00	0.64
3	463	0.375	2	0.197	0.6	512	221	241	1.07	0.76
4	241	0.375	3	0.197	0.6	227	98	143	1.41	0.76
5	143	0.4375	3	0.230	0.6	123	53	90	1.61	0.91
6	90	0.4375	4	0.230	0.6	69	30	60	1.86	0.91
7	60	0.5	4	0.263	0.6	40	18	42	2.18	1.08
8	42	0.5625	4	0.296	0.6	25	11	31	2.49	1.27
9	31	0.5	5	0.263	0.6	26	11	20	1.43	1.08

Ratio
2.12
1.55
1.40
1.84
1.78
2.06
2.03
1.96
1.33