

(1)



Calc. For		Water Hammer Analysis: LPSI "B"	
X	Safety-Related		Non-Safety-Related

Calc. No. EC-M97-002	
Rev. 0	Date 1/29/97
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Client Estergy Operations, Inc.	
Project Waterford Three	
Proj. No. 9225-410	Equip. No.
System Code	Subsystem

Prepared by M. A. Salmon	Date
Reviewed by	Date
Approved by	Date
Division	File No.

ATTACHMENT 5

(Parametric Study of the Effects of Variations in Bubble Size)

- Summary of Parametric Study Results
- Plots of Peak Pressures vs. Bubble Size
- Plots of Peak Force vs. Bubble Size

(K)

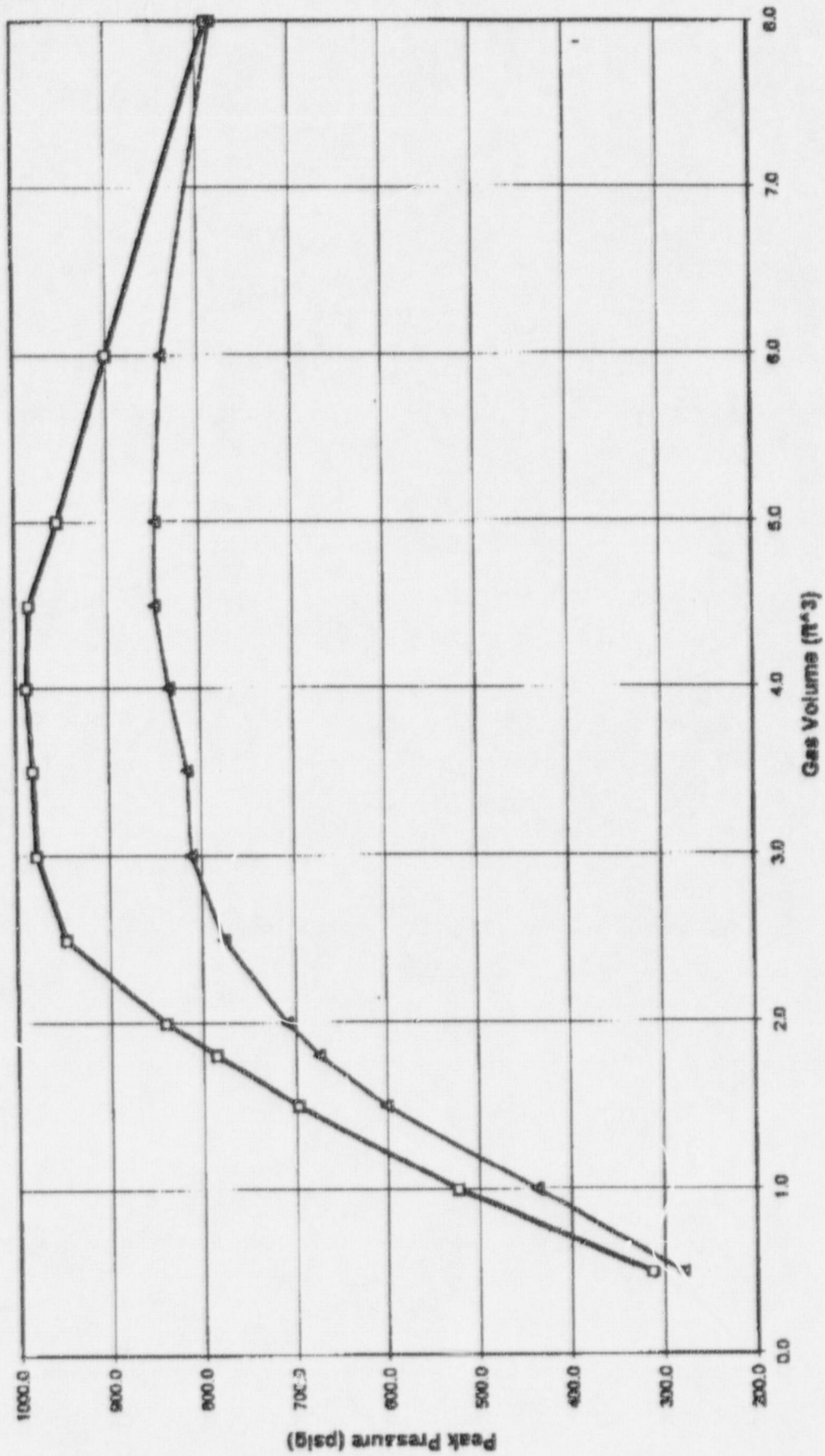
Summary of Parametric Study Results

Gas Volume @ Pen #36 (ft ³)	Peak Pressure (psig)		Peak Forces (lbs)				Peak Reverse Flow	
			Leg 18		Leg 42		Node 3 Check Valve	
	Node 43 Bubble	Node 8 Pressure Gage	Max	Min	Max	Min	Flow (cfs)	Time (sec)
0.5	312.0	279.0	3425	-2364	2855	-2051	-0.44	1.04
1.0	522.0	437.0	6283	-4724	5455	-2442	-0.63	1.55
1.5	697.0	601.0	8492	-7481	7665	-3446	-0.74	1.28
1.802	785.0	674.0	9951	-8572	8719	-3727	-0.81	1.34
2.0	840.0	709.0	11131	-9536	9579	-4144	-0.87	1.37
2.5	947.0	776.0	12637	-10969	11156	-5139	-0.98	1.45
3.0	978.0	811.0	13065	-11555	11411	-4676	-0.97	1.52
3.5	982.0	815.0	13086	-11332	10919	-4599	-1.00	1.59
4.0	988.0	834.0	12813	-10441	10649	-5002	-1.04	1.66
4.5	985.0	849.0	12445	-9499	10234	-5024	-1.03	1.74
5.0	954.0	848.0	12019	-9682	9618	-4389	-1.04	1.81
6.0	900.0	840.0	11279	-9421	8173	-4391	-1.02	1.93
8.0	789.0	784.0	9774	-7892	6068	-3744	-0.95	2.18

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Peak Pressure vs. Bubble Size

—○— Node 43 - Gas Bubble Location —▲— Node 6 - Pressure Gage Location



Peak Force vs. Bubble Size

—○— Leg 18 Max —x— Leg 18 Min —□— Leg 42 Max —●— Leg 42 Min

