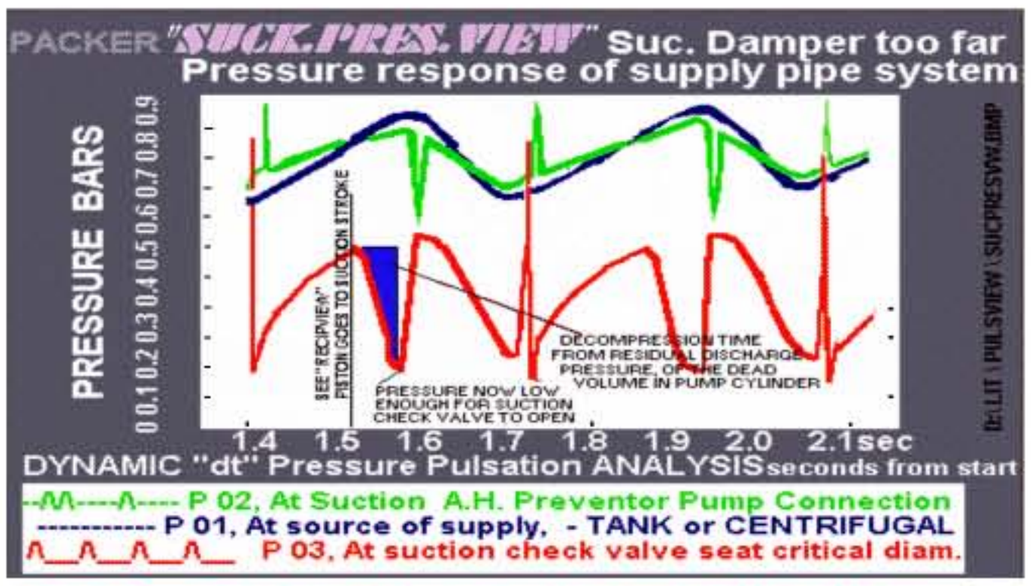
LDi-P30

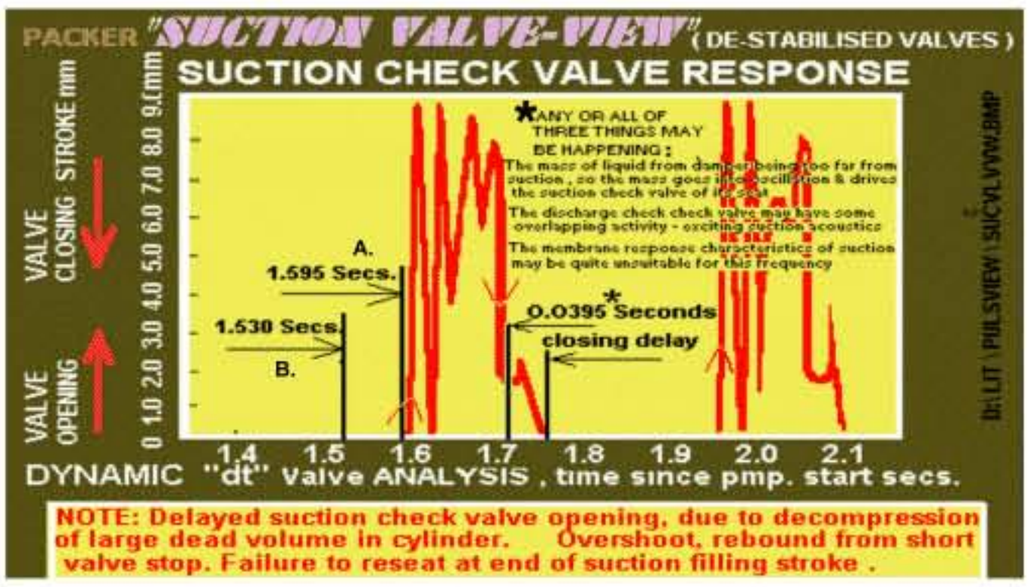
*These examples of **LDi PulseView** output, are from a version compiled for a deep sub sea methanol injection system, 6.25 miles / 10 Kilometer to the well-head. Flow was generated by a multi-layer diaphragm head pump, against a total system resistance at the pump, of 700 Bar.*

L. D. i. A Subsidiary of Liquid Dynamics International Ltd. Since 1965

To read each set of plot lines, relate each to "RECIP-VIEW" piston position



Saving the cost of building a system which mafunctions, by generating an *LDi PulseView* model first, is only practical, when the necessary investment is made, to collect accurate input data. **Please see page 31.**

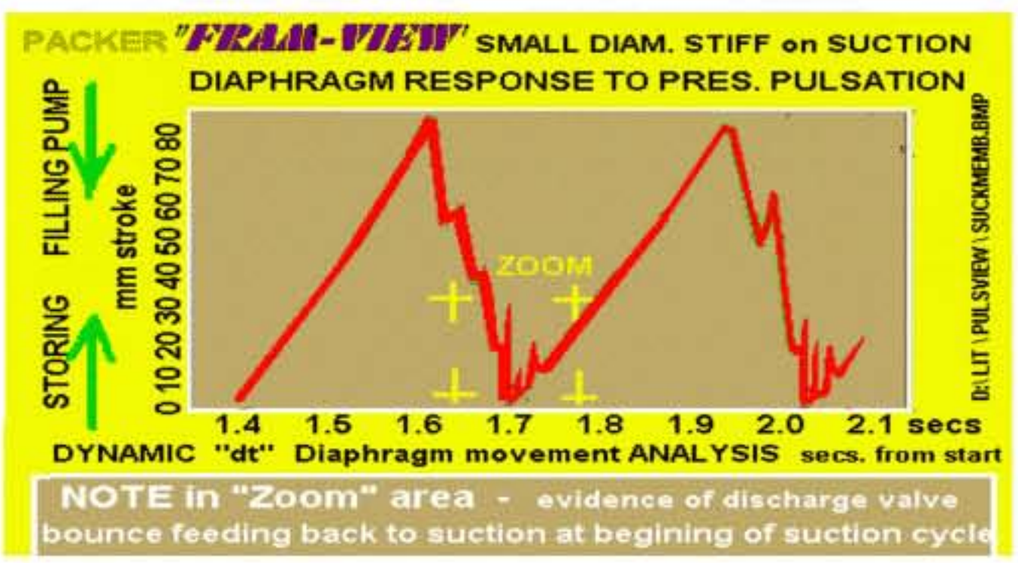


A. See "SUC-PRES-VIEW", For enough pressure decay to allow the suction check valve to open

B. See "RECIP-VIEW", When Suction Valve should open

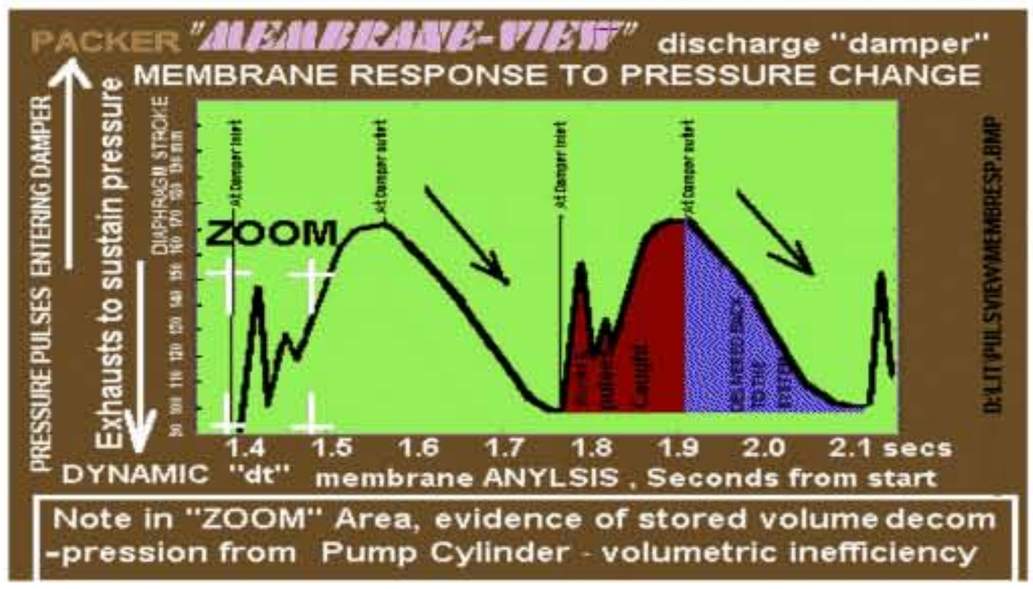
* ANY OR ALL OF 3 THINGS MAY BE HAPPENING :-

1. The liquid mass between damper and suction is too long. Slugs are going into oscillation and driving the checks off their seats.
2. Membrane response characteristics of suction damper may be unsuitable for this frequency.
3. Discharge checks may have some overlapping activity, and be exciting suction acoustics.

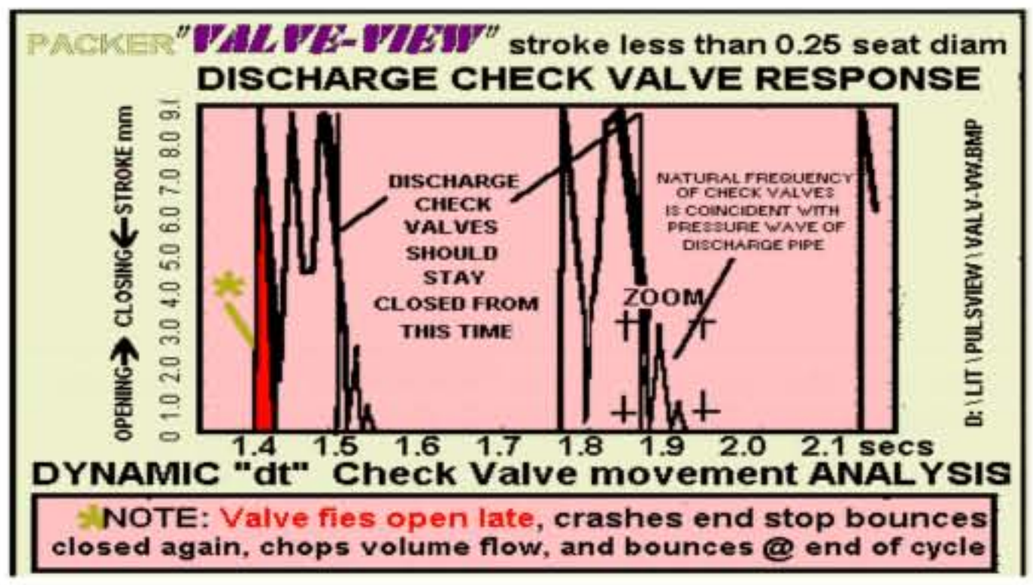


The typed notations on the plots are added to assist in understanding how a pump is affected by all the system parameters.

The response characteristics of diaphragm membranes are generated when attempting to stabilize pump & system.



In a system with a reciprocating pump, the root cause of the great majority of problems, begin with suction check valve response opening and closing delay. This is always found to be caused by the compressibility, SG, & cP of the system liquid, and the pipe design coming to the pump. The most common problem is too much suction force. Next are oversized suction pipes, and frequently, interaction / interconnection between pumps or between individual check valve pockets. *Please see pages 34 & 35.*



Pumps make flow, systems make pressure. The inertias in mass transfer are the essential components that require analysis. When the mass dynamics are established, then we examine "acoustic" response - Know ACTION, before reaction.

Understanding the effect of pipe design on pump performance, will keep systems out of trouble.

Tech. License M. Packer since '63

LIQUID DYNAMICS INTERNATIONAL Inc.

Analysis, Diagnostics, and Prediction by Software

Phone USA --910-270-2737 Color Fax --910-270-0320 UK (for EC) --44-161-442-6222 Color Fax --44-161-443-1486
Box 506 Hampstead NC 28443 www.liquid-dynamics.com Box 47, Stockport, SK3-0LH, UK