Enhanced Vapor Recovery Workshop January 19, 2000

- New Test Procedures

Spillage	(TP-201.2C)
“Dripless” Nozzles	(TP-201.2D)
Pressure Integrity of Phase I Drop Tubes	(TP-201.2O)

Spillage Test Procedure
TP-201.2C

Current Procedure

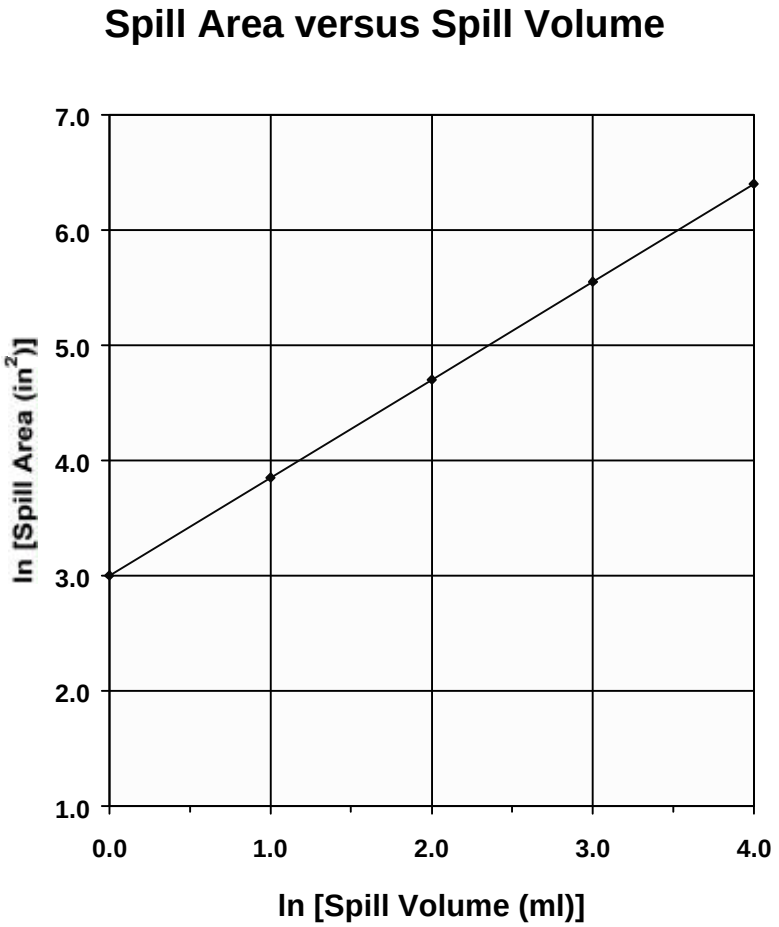
- Calibration at each fueling location
- Three trials at each of 1, 5 and 25 ml
- Ignores spills less than 1 ml in size

New Procedure

- One calibration per facility
- Three trials at 1, 2, 3, 4, 5, 10, 25 and 50 ml
- Trials are averaged and Calibration Graph is generated.
- All spills of 1 drop or more included

Spillage Test Procedure
TP-201.2C

Calibration Graph



TP-201.2F
“Dripless” Nozzles

No more than 1 drop per fueling.

Proposed Test Methodology

- ✦ Customer asked if fueling is to be a fill-up
- ✦ If yes, CARB staff requests to fuel vehicle
- ✦ Fueling is at high clip or, if no clip, fully open
- ✦ When nozzle shuts off, wait (timed) 10 secs.
- ✦ Remove nozzle from fillpipe
- ✦ Away from car, point nozzle downward
- ✦ Observe for 5 secs. and record drips

Magnitude of Emissions From Spillage and “Dripless” Nozzles

1998 - 14.2 Billion Gallons of Gasoline Sold in California

Assume 10 gallons and 1 drop per fueling

20 drops = 1 ml

3785 ml = I gallon

6.24 pounds per gallon of gasoline

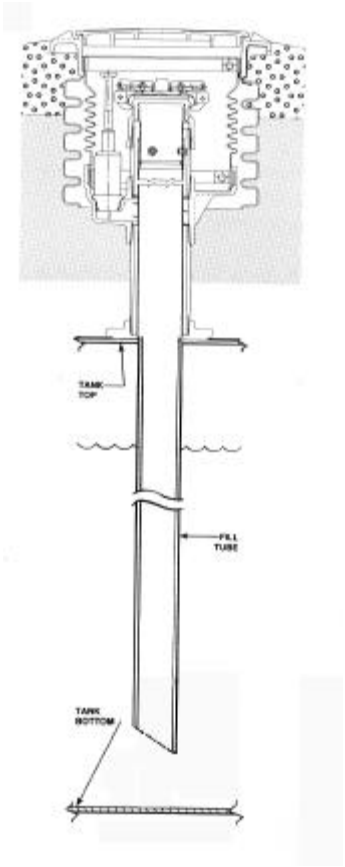
1 drop/10 gal fueling = **58.4 TPY** in CA

TP-201.2O
Pressure Integrity of Phase I
Drop Tube Protection Devices

- UST Pressure Reduced to Zero Gauge Pressure
- Test Cap Assembly Attached to Drop Tube
- Nitrogen Introduced at Maximum Allowable Leakrate
- Pressure In Drop Tube Must Reach At Least 2” W.C. To Pass

Pressure Integrity of Phase I Drop Tube Protection Devices

- Straight Drop Tubes
- No Allowable Leakrate



Pressure Integrity of Phase I Drop Tube Protection Devices

- Overfill Protection
- Allowable Leakrate as Specified in CP - 201

Field Test Results

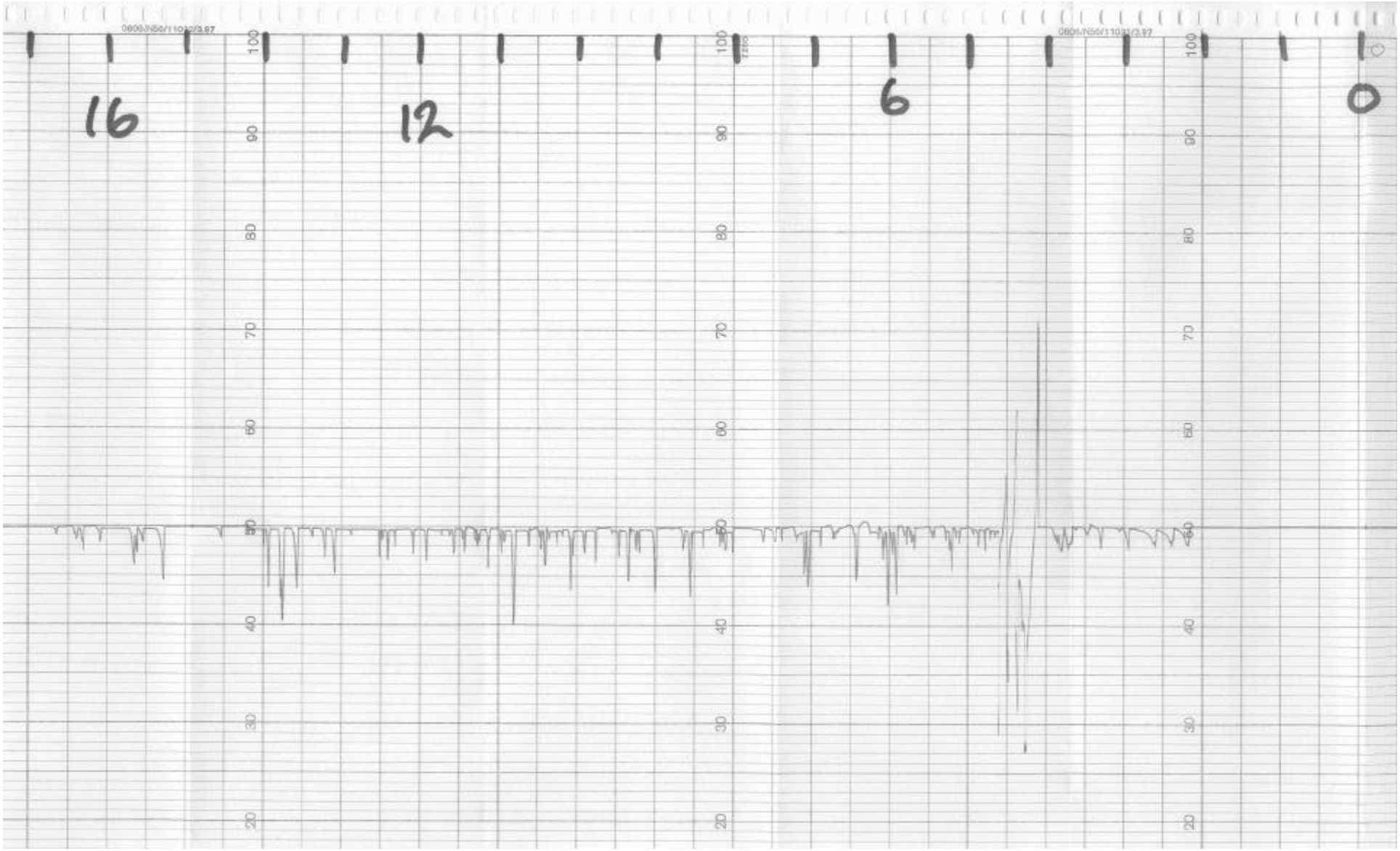
- ORVR Vehicle Impact On Balance Vapor Recovery

- Pilot Field Study of PV Valve Pressure Vacuum Performance Specifications As Per TP-201.2B, Appendix 1

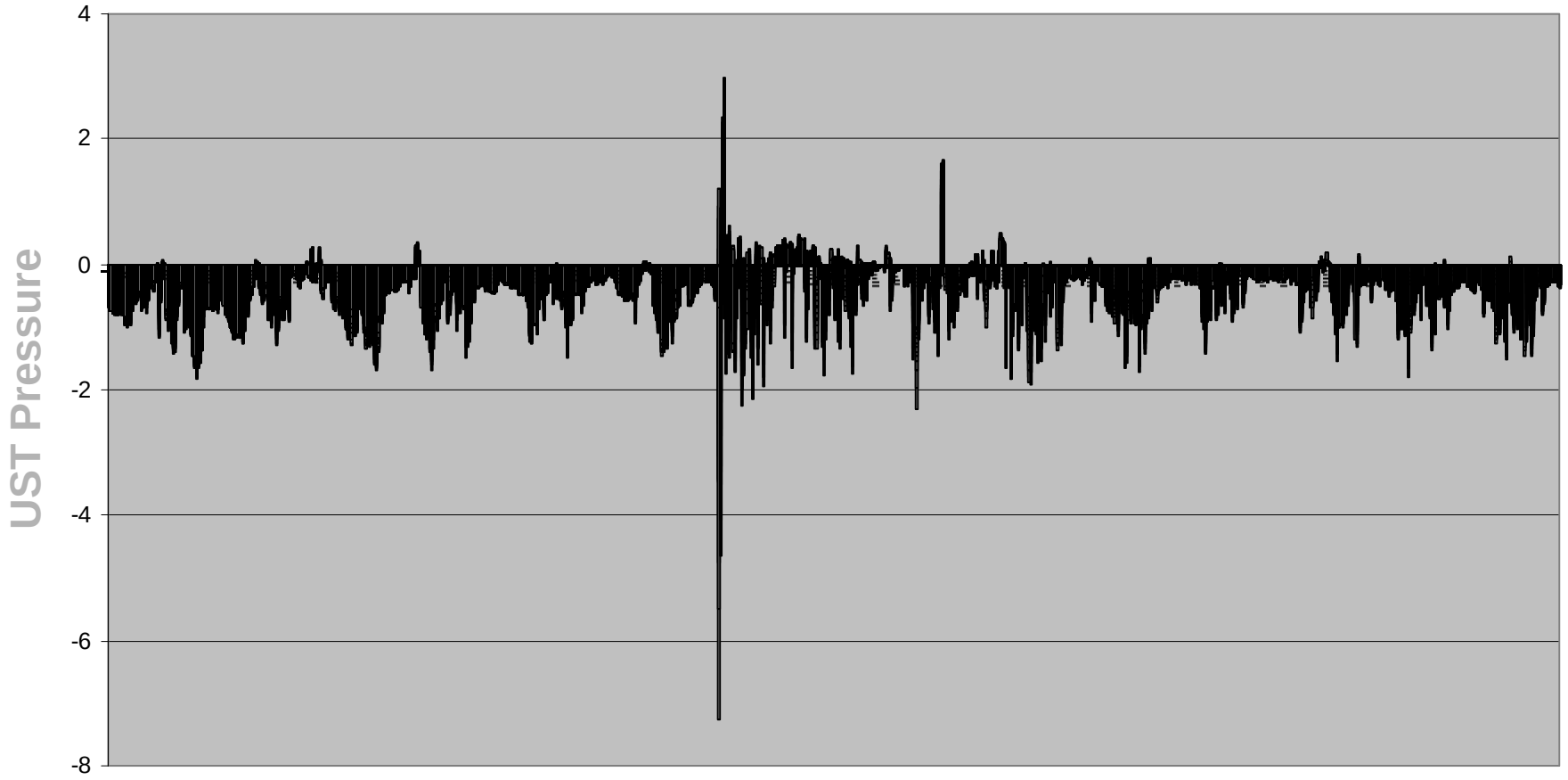
ORVR Vehicle Impact On Balance Vapor Recovery

- Basic Station Layout
  - Balance System
    - 2 Dispensers
    - 4 Nozzles
    - Coaxial Phase I on Single 12K Gallon UST
    - Single P/V Vent Valve
    - Monthly Throughput of ≅ 10,000 Gallons
  - ORVR Vehicle Population > 95%

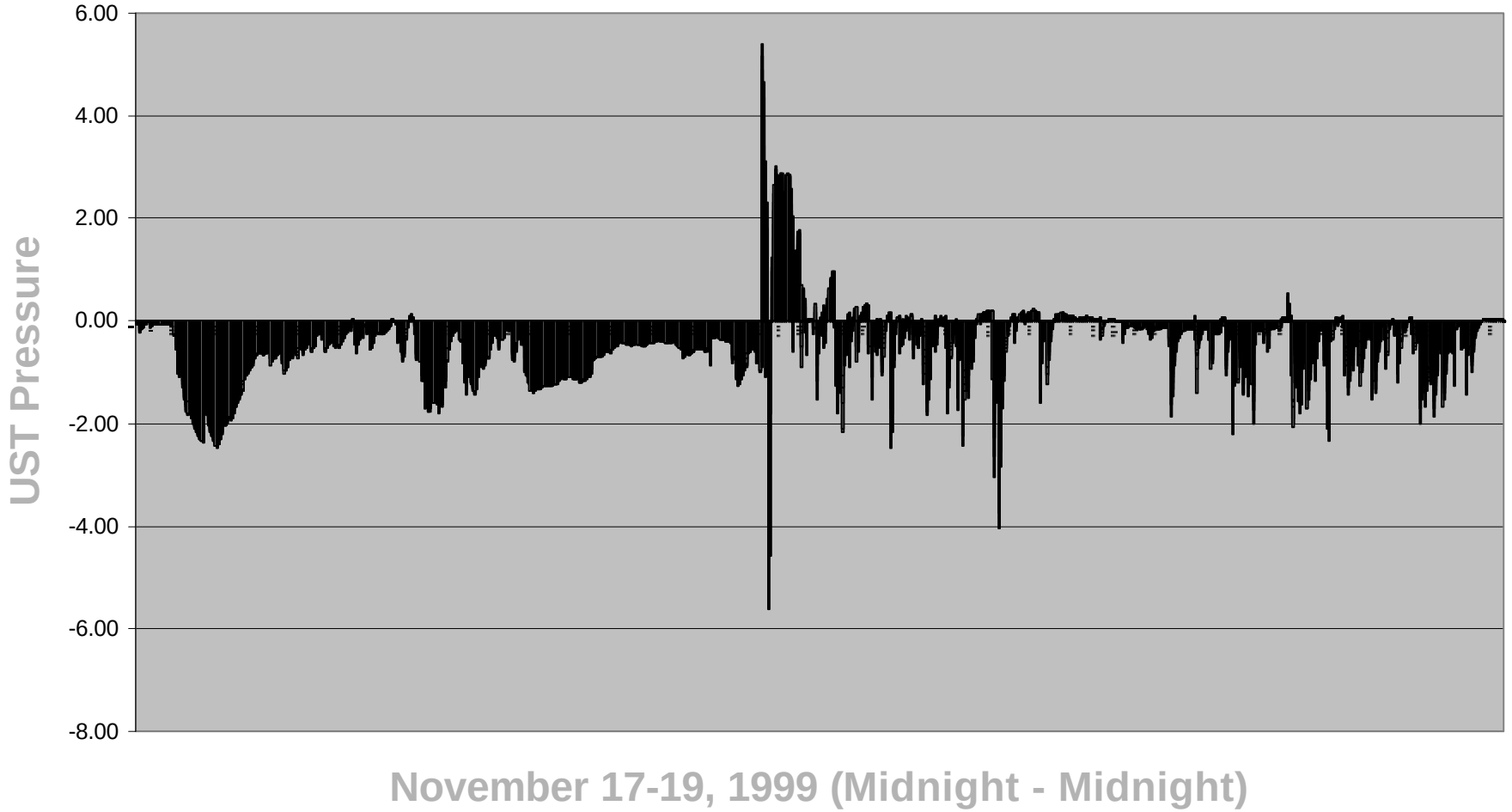
Initial Station UST Pressure Profile



ORVR Vehicle Impact On Balance Vapor Recovery

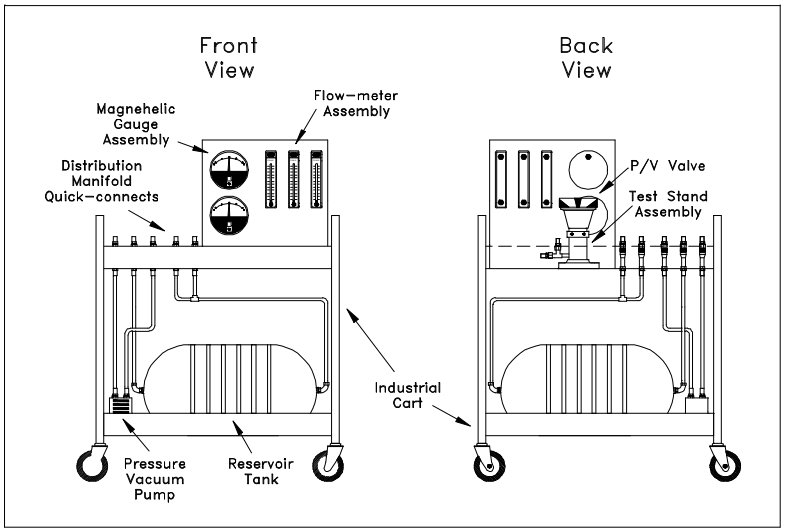


ORVR Impact on Balance Vapor Recovery Systems
(Bad Phase I Delivery)



TP-201.2B, Appendix 1
Determination of Pressure and Vacuum Performance Specifications For Pressure/Vacuum Vent Valves

- Pilot Study
- Mobile Test Cart
- Testing New P/V Valves From Parts Houses



Questions?