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## **TECH TALK 020**

### **BOTTOM LOADING RATES WITH VAPOUR RECOVERY**

**08/08/1996**

#### **Equipment Assumed To Be In Use**

Liquip API450 loading adaptor. Aluminium 100mm o/d x 94mm i/d truck pipework.

Liquip SLV5 internal valve.

Liquip AVV3 pneumatically operated vapour recovery valve.

Liquip VOH series manhole with PVV104 pressure vacuum vent.

(These generalised part numbers also cover those associated models made for overseas markets such as PVV104U, AVV3U etc).

#### **Per Compartment**

Maximum allowable loading rate / arm is 2,500 l/min typically in order to avoid static electricity generation. Pressure drop through AVV3 is less than 0.5kpa.

#### **Per Tanker**

The limit to the number of arms which can be loaded simultaneously is set by the maximum allowable back pressure imposed on the tanker.

As pressure increases it has various effects including increased leakage of vapour, a slow-down in loading rate and eventually a lift-off of pressure vents. Local policy will determine the limiting allowable pressure level.

The problem from the tanker manufacturer's point of view is that each terminal has different characteristics and different back pressures. Therefore a tanker venting straight out to atmosphere will have a far higher flow capability than one loading with vapour recovery against a high back pressure.

The following is a recommendation for tanker signage which will, from experience, cover almost all circumstances. It is not, however, definitive because of the variables at each terminal.

#### **Max Loading Rate**

2,500 litres/min per compartment

7,500 litres/min per tanker



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### **Max Unloading Rate (Gravity)**

All compartments can be unloaded simultaneously at the natural discharge rate the tanker allows.

### **Max Unloading Rate (Pump)**

If a hatch cannot be opened when pumping out there is a danger of failure to open by the vapour vent and a suck-in of the barrel. Capacity is provided by the pressure-vacuum vent only in this case and pump-out should be limited to less than 1,000 litres/minute.

Always check with Liquip if pumping out at these rates to ensure sufficient capacity if a vapour vent fails.

David Gregory  
8 August 1996