

# **Have You Been Grounded?**

10 August 1995

Tech Talk No:       **T013**

Subject:               **Tanker grounding and overfill protection.**

Attached are documents detailing the subject of ensuring road tankers are bonded to the loading rack to prevent static electricity sparks while loading.

Why is Liquip writing this? Because a spark at a major terminal is not something to be ignored.

1. A driver reported a large and loud spark jumping from his API coupler to the truck adaptor at a modern Sydney terminal.

**This Terminal Is Equipped With A Well-Known American Ground-Assurance System Linked In With The Overfill Protection Monitor.**

Liquip were called in to check the vehicle and the loading arms for continuity. No problems were detected in these areas but it was discovered the ground assurance unit was incorrectly wired.

2. It has been noted on several occasions in the past that some tankers will not get a green light on the overfill monitor until either the vapour recovery hose or the loading arm is connected.

**This Means The Overfill Protection Plug Is Not Ensuring A Grounding Of The Tanker And It Is Likely That Dissipation Of Static Is Occurring In An Area Containing Vapour/Air Mixture.**

### **Further investigation can be summarised as follows:-**

- \* Ground-assurance systems give assurance only that the component to which the grounding-bolt is fastened is properly bonded. This is frequently **not** the tank.
- eg. LPG tankers have been seen with the ground-bolt on the bumper bar or on the chassis. This gives no assurance of grounding the tanks, to which the pipelines and product connections are attached.
- eg. White-product tankers typically have a grounding wire to a post in the truck plug. This gives no assurance of grounding anything, not even the truck plug.

Grounding assurance is only obtained if the earth-return is forced to go through the **tank** structure .

- \* The overfill monitor is quite adequate as a grounding assurance system so long as the wiring on the truck is correctly installed.
- \* There appears to be a lack of knowledge on how the USA grounding assurance device works when linked in with the overfill monitor.
- ie. To operate correctly, every vehicle must be equipped with a diode in the wiring which fulfils the same function as the grounding bolt on stand-alone systems such as LPG tankers.

At the terminal where the spark occurred the ground assurance device had been 'fixed' so that a simple short across pins 9 and 10 gave the green light. (Presumably a diode has been inserted in the gantry wiring to simulate all tankers being so equipped). Therefore there is no earth assurance at all.

### **Recommendations.**

- (a) All white product trucks should be wired so that the common earth return wire of the overfill system is forced to pass through the tank structure.

The Liquip 'Ground Boss' attached is one method of achieving this. Also attached is an old Scully instruction which achieves the same purpose but at greater cost due to the conduit requirements.

- (b) A clear method of identifying complying trucks should be agreed upon.
- (c) The terminal with the 'by-passed' earth assurance system may wish to take action so as not to create a false sense of security.

### ***Attachments***

**David Gregory 10/8/95**