



# Safety Check

## **LUBRICANT FOUND ON LIQUID OXYGEN CYLINDER PRESSURE BUILDER ADJUSTMENT BOLT**



**Pressure Building  
Regulator**

**Pressure Adjustment  
Bolt**

**Internal tension spring &  
suspected fire residue**



A liquid oxygen cylinder was sent to the Brampton fill plant with a maintenance tag attached to it indicating a problem with the pressure builder. The Brampton maintenance technician confirmed the cylinder was constantly building pressure. He removed the pressure building regulator and inspected it internally to find indications of a suspected flash fire on the dome side of the regulator. This was the second such regulator discovered like this in recent months.

The two regulators were sent to an engineering firm for analysis. While the presence of an internal flash fire was inconclusive (the discolouration appears to be corrosion of the brass), it was concluded that an oil based lubricant was present on the threads of the pressure adjustment bolt on one of the regulators. When tightened inwards (clockwise), the pressure adjustment bolt compresses the internal tension spring which in turn applies pressure against the valve diaphragm (flat disc located under the spring) to build pressure in the cylinder.

The probable cause was someone applying a penetrating lubricant (like WD40) to help loosen a frozen pressure adjustment bolt. The lubricant has the potential to seep inside the regulator via the threads on the adjuster bolt - **this is very dangerous as high concentration oxygen at high pressures reacts violently with hydrocarbon materials such as oil or grease.**



***Hydrocarbon lubricants must never be used on oxygen equipment.***



***If oil or grease is found on oxygen cylinders or equipment, quarantine in a safe location and inform you PORT immediately.***



***Never convert a liquid cylinder to another gas service without following the MOC (Management of Change) procedure MGP-0079.***

➤ ***Must be approved by Senior Plant Management***

➤ ***There are also conversion risks, for example, where a nitrogen cylinder may have hydrocarbon residue on it (which does not react negatively with nitrogen) - but it will with oxygen!***



***If a valve or component is seized or difficult to move, have the liquid cylinder tagged for maintenance and replaced.***