nationalgrid

Incident Investigation Summary

Responsible Managers: Alan Rankin/David Wright
Incident Reference No: 19893/08/NG
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Failure of a Plug Valve Stem Sealing Compound Injector

This Summary is issued to disseminate incident investigation findings and recommendations/ learning for consideration and (as appropriate) action by other operating units, contractors, etc.

What happened? A stem sealing compound injector consists of a hexagonal shaped casing that is screwed into the valve body. Inside it is a check valve. Stem sealing compound is forced through the check valve by the operation of a hexagon socket screw that threads into the end of the casing.
Whilst carrying out an operation, at a compressor site, to inject Stem Packing Material the force of injecting the sealing material caused the Compound Injector to be jacked out its housing in the valve body.

Why Did This Happen? On examination it was seen that the first few threads on the injector were stripped. Indication was that the injector was not full screwed home into the valve body, this was not readily identifiable due the presence of heavy paint coating which masked the fact the injector was not fully screwed home. The force applied to the injector screw was enough to jack it out of the locating thread.
There was potential, had the valve not been adequately sealed, for an uncontrolled escape of gas at 65 bar.

Learning points? If there is any doubt as to whether devices such as these are not securely fitted then they should not be operated until suitability for operation has been established.
It is good practise to inject Valve Sealant via the Valve Sealant Injector prior to commencing Stem Packing Compound injection. By doing this the likelihood of the valve leaking from the packing injector port, in the event of an incident like the one highlighted here, is significantly reduced.

It is also good practise to not stand with your body in front of any device like the Stem Packing Injector whilst operating it. By standing to one side the risk of injury is reduced should the device fail.

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Other relevant Information.

National Grid procedure T/PM/MAINT/2 Part 3 is the guiding document for maintenance on this type of work, and states:

B.6.2.10 Carry out lubrication procedure for valve (excluding ball valves), gearbox (where applicable) and actuators (where applicable) in accordance with manufacturers recommendations.
Check condition of extended sealant injection lines and body vent/drain lines on ball valves which are buried or located in a pit, for excess corrosion.

The OEM instructions relating to use of Sealing Compound Injectors are, typically:

INJECTING STEM SEALING COMPOUND
To inject stem sealing compound already in the fitting, into the valve stem area, insert an allen key wrench into the hexagon socket screw, and rotate it clockwise until it becomes hard to turn. Normally only 1-3 turns will be possible. A maximum torque of 10 foot-pounds (13.5 Netwon-metres) onto the allen key wrench is all that is required to sufficiently inject the stem sealing compound.
Operating the valve during the injection of stem sealing compound can assist in resealing the valve stem.

RELOADING THE STEM SEALING COMPOUND INJECTOR
If the hexagon socket screw bottoms out inside the injector, and the stem is still leaking, then more stem sealing compound needs to be loaded into the injector. This is done by backing-out the socket screw, putting a new piece of stem sealing compound into the injector and screwing the socket screw back in.

CAUTION: Never unscrew the stem sealing compound injector body out of the valve body whilst the valve is under pressure.

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