PERIODIC INSPECTION OF REGULATORS AND RELIEF VALVES

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Introduction

Inspections and tests on regulators and relief valves are a Department of Transportation (DOT) compliance rule. The sections within the DOT manual stating the rule include 192.351 through 192.359, 192.751, 192.479, 192.481, 192.739, and 192.741. Keep in mind; these rules are the minimum required tests. Your company or governing regulatory agency may be more stringent and require more detailed testing. You must also keep in mind that the manufacturer of your equipment will provide guidelines pertaining to maintenance of the equipment. These tests are not only required for safe, reliable service to your customers, but the results could also be used in any legal proceeding for documentation purposes.

There are many important tasks and precautionary measures to perform before you actually start the testing. Listing these items in a checklist could provide a useful reminder. Some station designs and equipment installations may require more than one person to perform a safe, reliable test. Plan the procedure within your work group, be sure all safety equipment and notifications are in place, perform the task, and document the results according to your company procedures.

We must also be aware of the Operator Qualifications (OQ) rule. The technician must be completely OQ qualified and have the proof of completion of all the required OQ tests readily accessible.

Most importantly, these required DOT and regulatory agency tests are done for the safety of the system, your customers, and you.

Communications

Before the testing begins, there may be many other departments within your company, as well as customers, who must be notified of the pending test work.

SCADA systems may be attached to the piping. These systems, called telemeters or RTUs, are used to control pressures within the system.

Customers within a local, general area may need to be notified of any pending blowing gas noise or smell. This notification is easy and could eliminate a possible emergency situation. Local authorities may require notification as well.

Customer call center notification is also a good policy. In case a passerby or someone not within your communication loop does notify the call center of a possible incident, the center personnel will be aware of the circumstances and can explain the situation to the person calling.

Prepare and Observe

Be aware of your surroundings. The station and components must be readily accessible and protected from stress, rain, and debris. The station must also be protected from equipment submergence possibilities, if the facility is within a possible flood zone. Traffic control or other appropriate controls should be implemented, if necessary. This could revert to the communication effort to the authorities. Observe the stations surroundings, such as fences or vehicular crash barriers. Be aware of any above-head power lines or other ignition sources.

Review the station design and recognize the flow pattern of the station. Observe valve locations and their correct operation. Bypassing the station may be required. Check all valves for proper operation and required locking devices before the testing begins. Be attentive to pressure setting stamps or tags. Check all pipefittings, such as nipples. These fittings must meet wall thickness requirements of the system Maximum Allowable Operating Pressure (MAOP). Check for atmospheric corrosion issues. All above-ground piping must be properly coated to eliminate atmospheric corrosion. Observe station cathodic protection insulators (if applicable). Be sure tubing and/or nipples are not connected to the piping around an insulator. This could result in a transient or stray current coming in contact with your measurement electronic devices.

Use the proper tools and equipment, along with your Personal Protective Equipment (PPE). Do not take a short cut! Injuries are usually the outcome of a shortcut.
In summation, prepare yourself and others before the task begins. The items listed above, if found abnormal, may affect the proper operation of the station and, therefore, nullify your efforts during the tests.

**Test Minimum Requirements**

When you are ready to begin the testing of the regulator(s), be sure you have made your communication efforts, surveyed your surroundings and made all safety precautions, recognized the station design and flow pattern, and installed all appropriate gauges along the station piping for monitoring pressures as you test.

According to the DOT Rule, 192.479 all pressure reducing devices, such as single-reducing regulator(s) and a worker/monitor setup must be tested once each calendar year, not to exceed 15 months. The technician must monitor inlet and outlet pressures as the testing is performed (that is the minimum requirement). The technician must also be positively knowledgeable of the normal operational pressure and MAOP of the system. A lock-up test must be performed, as well as proper operation of the equipment. The regulator vents must be protected from debris and rain and, if inside a structure, the vent must be piped to the outside atmosphere. A worker/monitor setup system must be recognized as to which regulator is performing what duty in the system, and the correct pressure settings known. A stamp or tag may be very useful when attached to the equipment.

Manufacturer requirements for maintenance should be considered during every inspection or test, along with your regulatory agency requirements.

**Relief Valve or Pressure Limiting**

Relief valve testing is also required, just as pressure-reducing devices are under the sub part 192 sections of the DOT rule. These devices must be tested once each calendar year, not to exceed 15 months. A proper operational test of the relief valves is imperative to safety for the system and for the protection of our customers, should a failure occur. Relief valves are set to a pressure that will allow the activation of the device such that the system MAOP is not compromised. That pressure setting must be stamped or tagged on the device and accessible at all times. A valve located under the relieving device must also be locked into the open position during normal conditions. A valve located under the relieving device must also be locked into the open position during normal conditions. Rain caps or other barriers must be placed on the device to prevent debris or rain from penetrating the internal components of the device.

The capacity of the relief valve must be reviewed annually. If any station parameter is changed, such as spring ranges, regulator core size, component changes, or anything that may affect the capacity of the station output, a review of the capacity of that relief valve must be performed by qualified personnel. This may require a new calculation sheet and/or re-sizing of the component.

**Notables**

Another part of the DOT rule 192.741 that applies to regulator stations pertains to the recording of pressures that are output into the system.

If a system has more than one regulator station providing service, the operator must have pressure-recording device(s) placed within the system or a telemeter/RTU monitoring the output of the station. These recording devices will provide feedback on indications of high or low abnormal system pressure. When an indication such as this occurs, the regulator(s) must be inspected for proper operation and any unsatisfactory condition identified and repaired.

If the system has only one regulator station providing service, the operator has the discretion of installing such pressure recording or telemeter/RTU equipment. The operator should take into account several items before making that decision. These items may include customer count, location, condition, or any safety-related issue.

**Documentation**

All DOT-required test documentation must be kept for the life of the facility. These records should be accessible at all times by regulatory authorities and other company personnel. The technician must be accurate and complete with all test documentation. These documents not only provide the information required to satisfy the DOT Rule, but can also be used in legal proceedings.

**Conclusion**

The testing procedures for satisfying the DOT section 192 sub-parts for regulators and relief valves are about safety. That safety is specifically stated to our systems that provide our customers the fuel for their comforts. As stated, the DOT sub-part 192 sections applicable to this compliance are the minimum requirements necessary. There are many other items of importance that we, as operators, must observe during these tests. Ironically, all of these items also immediately bring safety and reliable service to the forefront.
Our OQ procedures must also be followed to ensure the competency of the technician for the tasks being performed.

Consult with the vendors or manufacturers of the specific equipment that your company chooses to purchase and use. They are a great source for specific training needs.