

PERIODIC INSPECTION OF REGFULATORS AND RELIEF VALVES

James M. Doyle
Operations Supervisor
Atmos Energy Co.
106 N. Bradshaw
Denton, Texas USA

Introduction

Inspections and tests on regulators and relief valves is a Department of Transportation 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 Regulatory Agency may be more stringent and require more or detailed testing. You must also keep in mind that the Manufacturer of your equipment will also provide a guideline pertaining to maintenance. These tests are not only required for safe, reliable service to your Customers, but also could be used in any legal proceeding for documentation and purpose.

There are many important tasks and precautionary measures to perform and inform before you actually start the actual testing. Listing these items and performing a checklist could provide to be a 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 rule. The Technician must be completely OQ qualified and have the proof 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, customers and you.

Communications

Before the testing begins, there may be many other departments within your company and customers that requires to be notified of the task.

SCADA systems may be attached to the piping. These systems which are called telemeters or RTU's are used to control pressures within the system.

Customers within a local, general area may need to be notified of blowing gas noise or smell.

This notification is easy and could eliminate a possible emergency situation. Local Authorities may require a notification as well.

Customer call center notification is also a good policy. In case of a passerby or some one not within your communications loop, does notify the Call Center of a possible indecent, the Center will be aware of the task and can explain the reasoning to the person for their concern and call.

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 submerge possibilities if within a possible flooding area. Traffic control or concerns should be implemented if required. This could revert back to the communication effort to Authorities. Observe the stations surroundings such as a fence or vehicular crash barriers. Be aware of above head power lines, or any source of ignition.

Review the station design and recognize the flow pattern of the station. Observe valve locations and their correct operation. By-passing the station may be required. Check all valves before the testing for proper operation and required locking devices. Be attentive to pressure setting stamps or tags. Check pipe fittings such as nipples. These fittings must meet wall thickness requirements in which the system Maximum Allowable Operating Pressure (MAOP) dictates. Check for atmospheric corrosion issues. All above ground piping must be properly coated as 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 into contact with your measurement electronic devices.

Use the proper tools and equipment, along with your PPE. Do not take a short cut! Injuries are usually the out come of a short cut.

In summation, prepare yourself and others before the task begins. These 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, recognize 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, 192.739 all pressure reducing devices such as single reducing regulator(s) and a worker/monitor set up must be test 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 systems normal operational pressure and MAOP. A Lock-up test may 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 set-up 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 provide to 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 test once each calendar year, not to exceed 15 months. The relief valves proper operational test is imperative to safety for the system and protection to our customers should a failure occur. Relief valves are set to a pressure that will allow the activation of the device so that the systems MAOP are 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. Rain caps or other barriers must be

placed on the device as to not allow debris or rain to penetrate 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 that relief valve capacity must be checked and calculated 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 concerns recording 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 found 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 test required documentation must be kept for the life of the facility. These records should be accessible by Regulatory Authorities and other Company Personnel at all times. The Technician must be accurate and complete with all testing information. These documents not only provide the information required to satisfy the DOT Rule, but can also be used in a legal proceeding.

Conclusion

The testing procedures for satisfying the DOT section 192 sub-parts for regulators and relief valves is all 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 is the minimum requirement necessary. There are many other items of importance that we as Operators must observe during these tests. Ironically, all these items also immediately bring safety and reliable service to the fore front.

Our OQ procedures must also be followed as to the competency of the Technician and the tasks being performed.

Refer to your Vendors or manufacturers of the specific equipment that your Company chooses to purchase and use. They are a great source for specific training needs.