

## Chapter 8

### Post-Test Tasks

#### Objectives

Upon completion of this chapter, you should be able to:

1. Review Inspection and Test results to determine compliance with applicable requirements.
2. Identify appropriate action(s) to be taken in the event that the device examined does not comply with requirements.
3. Describe specific post-test tasks relating to sealing of examined equipment, notification of the device operator, and other administrative activities.
4. Understand the documentation and recordkeeping tasks required by your jurisdiction.

#### Introduction

After you have completed all the procedures outlined in the Test portion of the EPO, several post-test tasks remain to be performed before the examination is complete. Most of these tasks are administrative in nature, and specific procedures vary from jurisdiction to jurisdiction.

However, the major post-test tasks can be summarized as follows:

- installation of security seals on the meter adjustment mechanism, between the meter and register, on the automatic temperature compensator (if the system is equipped with one), and on other components as appropriate;
- recording of audit trail information, if the device is equipped with an audit trail;
- recording of final totalizer readings;
- evaluation of examination results;
- determination of appropriate compliance action;
- notification of the owner or operator of the device(s) of examination results and compliance determinations;
- marking of the device(s) to indicate official approval or rejection; and
- completion and submission of examination report forms and other required documentation.

Several of these post-test tasks are included at the end of the EPO's, as shown in Figure 8-1. These procedures must be performed immediately after the conclusion of the Test and before the system is restored to service.

<p><b>Security Seal</b> - Apply physical security seals to secure meter and temperature adjusting mechanisms. Also seal register to the meter.</p> <p><b>Audit Trail Information</b> – Record audit trail information, if applicable, on the official report.</p> <p><b>Record Ending Totalizer Reading</b> - Note final totalizer reading and record on the official report the number of gallons of product dispensed during test.</p>
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**Figure 8-1. EPO, Post-Test Tasks.**

These and the other basic post-test tasks listed above will be described in the remaining sections of this chapter.

## **Security Seals**

To minimize the possibility of fraudulent use, all adjusting elements whose manipulation may affect registration of a measuring device must be provided with provision for sealing. In LPG metering systems, the adjusting elements are the adjustment mechanisms (they may consist of switches and circuitry in an electronic system) for the meter and for the automatic temperature compensator (if the system is equipped with one).

One of your first inspection tasks generally will be to observe if existing physical security seals are intact and installed correctly. There is generally no need to remove the physical security seals that protect the accuracy adjustment mechanisms in the course of a routine field examination. However, if you are examining a meter for the first time since its installation or a meter that has just been re-calibrated, or if the seal has been damaged or broken, you will have to install a new seal. In addition, many jurisdictions use dated seals or tags that are attached to the seal wire, and these must be installed after each examination. If you are examining a system that is equipped with an automatic temperature compensator, you will need to install a new security seal, since the original will have to be broken in order to deactivate the ATC for the uncompensated test runs.

Most jurisdictions use some type of lead-and-wire seal for sealing meter adjusters and other components. The operation of these security seals is simple and very effective: a length of wire, usually stainless steel, is passed through holes located in the movable element and in a fixed element of the mechanism. The ends of the wire are then sealed together with a piece of lead or other soft metal, using a special applicator.

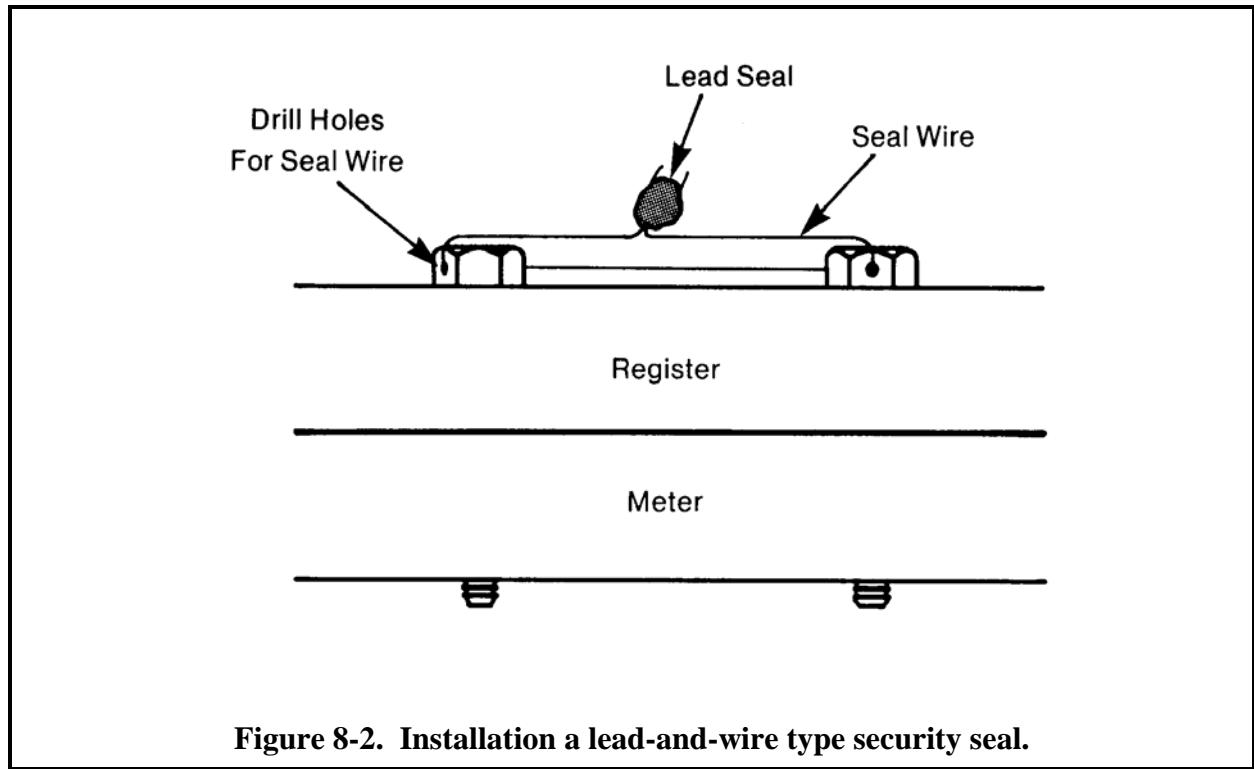
The design of the meter and its enclosure, the adjustment mechanism, and in some cases the register, will dictate the appropriate method for sealing. For example, as you learned in Chapter 3, the meter adjustment mechanism for most systems with mechanical registers is located either inside the

register or as part of a subassembly between the meter and the register. If access to the adjustor can only be gained by detaching the meter from the register, sealing the meter to the register will provide adequate and readily observable assurance that tampering has not occurred. The most efficient method of sealing the meter to the register is to pass the a seal wire through holes drilled through two of the bolts that fasten the meter and the register together, as shown in Figure 8-2, which illustrates the use of a lead-and-wire type security seal.

The seal is then affixed to the two ends of the security seal wire using, in the case of a lead-type seal, a special applicator called a sealing press. Your instructor will demonstrate the use of the sealing press in the classroom session devoted to this chapter. For some types of seals, a special locking clamp, which cannot be opened again without mutilating or destroying the seal, is snapped into place over the security seal wire. Other types of seals are affixed by threading the end of the security seal wire (which has small, raised ridges) through a hole in the seal; the ridges on the wire and the design of the seal prevent the wire from being pulled out without mutilating or destroying the seal. Another type of physical security seal, which is less commonly used in these applications, is a pressure-sensitive seal that cannot be removed without mutilating or destroying the seal.

In some models, access to the adjustment mechanism may also be gained by removing a plate on one side of the meter. The cover plate itself may be sealable. If it is not, it will be necessary to remove (or have the assistant provided by the operator remove) the cover plate to install a seal directly on the adjustor. Again, designs vary from one model to another, but the principle of sealing is as described above. The meter should also be sealed to the register to prevent tampering with the measuring mechanism that could affect registration.

In most systems equipped with electronic registers, the primary adjustment mechanism is at the register. The switches that control this function are usually located behind a panel that can be sealed when it is closed. The meter should also be sealed to the register, even if the adjustment mechanism on the meter itself is not used, since tampering with it could affect registration and, again, because tampering with the meter itself could affect the quantity indicated.



The adjustment mechanism for most automatic temperature compensators is hidden behind a plate or panel that may be sealed with a physical security seal. In general, you must install the seal(s) in such a way that access and physical manipulation by any means is rendered impossible without leaving evidence in the form of a broken seal.

You should note the location of all installed security seals, either on your examination report or in your own field notes. This will facilitate checking them at the next regular examination.

### **Recording Audit Trail Information**

Since the amendment in 1989 of Handbook 44 General Code paragraph G-S.8., other approved means such as an audit trail, may be used as a form of security. For devices equipped with an audit trail you should record information provided by the audit trail for the device; for example, the numbers shown on the event counters. This information can be compared with the information contained in the audit trail at the time of the next examination of the device; this comparison will indicate how many adjustments and changes have been made to the device since the last inspection. This information can be used as an enforcement tool to indicate whether or not further investigation into the use of the device is warranted.

Procedures for accessing audit trail information typically differ from manufacturer to manufacturer; different models produced by the same manufacturer may also use different procedures. Instructions for gaining access to audit trail information are provided in the owner's manual for the device and, for devices covered by an National Type Evaluation Program (NTEP) Certificate of Conformance, this information should also be provided on the Certificate.

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### **Noting the Totalizer Readings**

You must include on your official examination report the total number of gallons of product that were dispensed for each device tested. This is necessary so that the operator can reconcile inventory figures (since product dispensed during the test will have been registered on the totalizers even though it has been returned to the storage tank).

You must also make sure that you have recorded final totalizer readings at the conclusion of the test but before the system is put back into service. This is especially important at an installation where you are testing more than one system since the operator will want to restore each device to service as soon as possible after your examination, and accurate totalizer readings will not be available once a regular service delivery is begun. It is, therefore, good practice to record the reading immediately after the conclusion of the test, before turning to other post-test tasks.

### **Evaluating Examination Results**

Throughout the Inspection and Test you will have systematically recorded results for each item. Since approval or rejection of the device examined will depend upon these results, you should review all items and identify any for which non-compliance is evident. The most efficient means of doing this is to use a checklist that indicates compliance or non-compliance with each applicable requirement, specification, or performance tolerance.

The report form used by your jurisdiction may provide such a checklist. If it does not, or if the list is not sufficiently comprehensive or specific, you may want to adapt the EPO's to use as a checklist.

### **Determination of Compliance Action**

Your evaluation of examination results should provide the basis for determining the appropriate compliance action. A separate determination must be made for each metering system examined.

A device is either "correct" or "incorrect." If all items to be checked during the inspection of the device are in conformance with the requirements of Handbook 44, and the device meets all the

requirements of the applicable tolerance tests, the device is correct. Some items may be corrected by the owner or operator during the examination, such as dirt on the register glass; however, they must always be noted on the written report so that you keep an accurate record of how the device is being maintained by the owner.

If the device is correct, approval is written on the test report. A copy of the report is given to the establishment. Most jurisdictions require owners or operators to sign the report form as proof that they have seen it. In many jurisdictions, an approval notice or seal is placed on the device in some conspicuous location. This seal serves as an assurance that the device is suitable for use in its present location and that it was accurate when tested.

If, during the inspection or test, you determine that the device is incorrect (it is not accurate or does not meet all applicable requirements), it should be rejected. The report given to the owner or operator should state that the device may not be used in commercial service until all unsatisfactory conditions (listed in the report) have been corrected and the device reexamined. A rejection tag should be attached to the device.

A rejection removes the device from commerce. It cannot then be used commercially until corrections have been made and the device reexamined. Only a weights and measures official may remove the rejection tag and place the device back in commerce (unless that authority is delegated to a repair agency or the device owner by the official).

When the device is rejected, it usually remains under control of weights and measures until it has been reinspected and approved. Normally, a rejected device should be repaired within a period of time specified by the inspector. If the repair is not made within the specified time, you may choose to seize the device or a part of it (such as the indicating element) that would make the device unusable.

Another reason for seizing a rejected device is to use it as evidence in a court case should your jurisdiction decide to take formal action against an owner or operator. In this instance, your jurisdiction may require you to issue a receipt to the device owner.

The Uniform Weights and Measures Law in NIST Handbook 130, *Uniform Laws and Regulations in the Areas of Legal Metrology and Engine Fuel Quality*, states that the director of weights and measures "shall remove from service and may seize the weights and measures found to be incorrect that are not capable of being made correct."

Therefore, if, after rejection, a device is found to be either impractical or impossible to adjust or repair, it should be condemned and removed from service and, if necessary, destroyed. This action might also be appropriate in a case where a device has been seized and has not been claimed by a repair agency within the prescribed time frame.

It should be noted that condemnation is a last resort. When deciding what action to take, keep in mind that your goal is to provide accuracy in the marketplace. You have an equal responsibility to the buyer and to the seller and should strive to make a decision that will not cause an unnecessary hardship to either party.

## **Notifying the Owner or Operator**

When you have determined an appropriate compliance action, you must notify the owner or operator of the device of the disposition and discuss it with him or her. The owner or operator must understand:

- why the action is being ordered;
- what will happen as a result of the order (temporary or permanent removal from service, physical removal, condemnation, etc.);
- what actions must be taken to bring the equipment into full compliance;
- when required correction must be completed and the date and procedure for reexamination, and the consequences of failure to comply with the official order.

You must give the owner or operator a copy of the official examination report that indicates specific items of non-conformance. Have the owner or operator sign the report to acknowledge its receipt. However; this signature does not necessarily indicate acceptance of the findings.

You should make every effort to explain specifically what is wrong with the device. It is not, however, your responsibility to troubleshoot mechanical or electrical problems or to recommend specific repair procedures, and you should avoid doing so. Nor is it proper to recommend a serviceperson or service by name since this might be misconstrued as an official endorsement. Under no circumstances should you make any repair or adjustments to the equipment yourself.

If the compliance order must be approved by your supervisor or some other official, indicate the recommendation you will be making and explain exactly what will happen if your recommendation is approved. If the owner or operator of the device is entitled to request reconsideration or appeal of a compliance order, you should explain the procedures for doing so.

Remember that your purpose is to ensure that accurate and correct LPG liquid-measuring devices are used in the marketplace

## **Marking the Device**

As mentioned above, each device examined should bear some indication of the date of the examination and the disposition (approval or rejection, etc.). Appropriate markings (stickers, tags, seals, etc.) affixed to the device or in some other conspicuous place provide assurance to customers and protect them from accidental or intentional use of non-approved measuring equipment. The marking should be performed immediately upon your final determination of a disposition and before you leave the examination site.

Your instructor will show you the various marking devices used by your jurisdiction and tell you where and how each of them should be applied.

## **Report Forms and Recordkeeping**

Your instructor will also show you how to complete the examination report forms that are used by your jurisdiction and will tell you how and when they should be submitted. In addition, other types of documentation or written information may be appropriate. Examples of such additional recordkeeping are logs of telephone calls, conversations, or written correspondence with owners or operators, servicepersons, supervisors, etc. You will also find it useful to keep notes of problems encountered in the field and the compliance history of particular devices or operators. Accurate, systematic, and comprehensive recordkeeping is as important a part of your job as the correct use of test equipment, mastery of examination procedures, or knowledge of codes and regulations.

## **Summary**

The last phase of an official field examination begins with the sealing of adjustable mechanisms that may affect registration and the recording of audit trail information (if applicable) and final totalizer readings. The inspector then evaluates Inspection and Test results and makes a decision whether to approve, reject, or condemn the device. Once an appropriate disposition has been made, it must be recorded on the official examination report and a copy, signed by the inspector, given to the owner or operator, who must also sign it. The inspector explains the findings and disposition to the owner or operator of the device and the equipment is tagged or sealed to indicate the actions taken. The last step in the examination is to complete all documentation and recordkeeping tasks.