

## The Lease Pumper's Handbook

### Chapter 12 Gauging and Analyzing Daily Production

#### Section E

#### REPAIRS AND MAINTENANCE

##### E-1. Effects of Reduced Production.

The lease pumper is expected to continually maintain and repair everything mechanical in the field. For example, when there is a flat on the lease vehicle, the punctured tire is not automatically discarded. If it is repairable, it should be patched and expected to continue to give satisfactory performance for the life of the tire.

This is also true for the tank battery, pumping units, engines, equipment that has been pulled out of service, other materials stored in the pipe yard, and all equipment on the lease. All of the equipment is manufactured to be repairable, and the lease pumper must learn to maintain many systems. A lease with high oil production will have more funds available for contract and company repair personnel, but the company will still strive for maximum efficiency and production.

As production declines, so do the dollars available for maintenance and repair support. When production has declined to marginal well level, it may be approaching the point where the operator will lose money if the company contracts out many repairs. In this situation, the lease pumper wears many hats, must be skilled at many lease maintenance tasks, and is a highly valued employee.

This does not imply that the job is more difficult but that job duties are more varied. As production declines, the entire lease slows down. Since less oil is produced there

is more time available for treating. This added time requires less chemical per hundred barrels for treatment because there is additional circulation time to give more treating and settling time.

The tank battery is also easier to operate and maintain. Less automated equipment will be required on the lease. As formation pressure declines, the volume of gas produced may drop so low that gas is vented at the well casing valve, a vacuum may be pulled on the formation, and the tank battery may not produce enough gas to sell. The heater/treater may be switched to atmospheric operation rather than pressurized and during the warmer months act just as a three-stage separator. As these changes begin, the lease pumper's job description also changes to meet the lease needs.

##### E-2. A Reasonable Workload.

As lease income is reduced, the pumper will perform some duties that would normally be performed by other personnel when the income was greater. The lease operator, however, must limit the amount of physical effort lifting jobs that the lease pumper is expected to perform to a level that one person can safely perform.

The lease pumper must be skilled in a number of tasks and willingly perform lease tasks that are acceptable for one person to do. The lease pumper must also recognize

that some jobs require two or more people to safely perform, and a single individual should not be required or expected to perform these alone. Some safety rules include the following:

- Use common sense in every task performed. **Never** take needless chances.
- Avoid lifting objects that are too heavy for one person.
- Safety comes first. Sometimes a task takes longer to do it safely. Take the safe way.
- The lease operator must always observe the same practices and insist that good field procedures always be followed.

### E-3. At the Tank Battery.

The lease pumper is commonly expected to perform the following maintenance tasks:

- Repair small leaks on the sides of vessels. These are usually low on the vessels and repaired with patches and plugs. Always lower the level of the liquid in the vessel below the spot being repaired. Never try to patch a leak on the side when the oil level is above the leak.
- Clean oil spots on tanks as they are made. Keep everything as clean as possible.
- Cut weeds around walkways and automatic control boxes, especially where snakes are common.
- Do not allow bees to make hives in the equipment.
- Tighten small fittings when they seep oil. Always remove the pressure first.
- Lubricate plug valves as needed.
- Replace valve stem packing as needed.
- Adjust linkage on dump valves.
- Install leak clamps.
- Tighten bolts when bolted tanks leak.

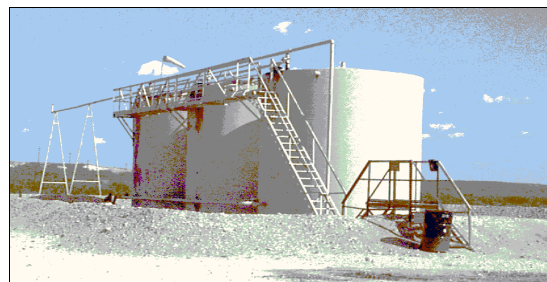
- Clean and replace sight glasses.
- Paint repaired items that cannot be allowed to rust.
- Adjust temperature controls.
- Maintain automated equipment.

### E-4. Leaks in Lines.

The lease pumper is usually expected to install leak clamps on flow lines when needed. Repairing leaks can be extremely dangerous, especially when working alone. Gas cannot be smelled after a few minutes or seconds, so lines should be repaired *after bleeding* the pressure off the line. No assistance is typically available to a lease pumper fixing leaks.

#### Upwind precautions when gas is present.

A person should always be positioned upwind from a natural gas source. However, the breeze passing on both sides of a person creates a low pressure area in front. Gas is sucked towards the person's face. Standing a little to the right or left will break the vacuum effect and will reduce the amount of gas being sucked up into the face. When gauging a tank, the lease pumper should also stand with the wind directly at the back, facing the direction the windsock points (Figure 1) and turned slightly to one side so the wind will keep the gas out of the face.



**Figure 1. During maintenance, the lease pumper must remain aware of wind direction.**

**E-5. Pumping Unit and Wellhead Maintenance.**

The lease pumper is always required to service pumping units. This includes lubricating bearings and maintaining gear oil levels. On small units the pumper may also be expected to perform the following tasks:

- Tighten belts and adjust as needed.
- Replace belts when needed.
- Lower rods to bump bottom and raise them back up to stimulate pumping.
- Pack stuffing boxes and adjust packing as needed.
- Replace fuses when they burn out.
- Maintain chemical pumps.
- Batch treat wells with chemical by dumping it down the annulus.

**E-6. Automation Control Maintenance.**

There are many actions that the lease pumper can take to keep automated equipment functioning correctly. The equipment manufacturer is usually very cooperative in supplying the needed literature to explain how a piece of equipment operates. Local supply companies can offer invaluable advice on where to acquire this information.

The functions of most unfamiliar items that need to be repaired can be understood after careful examination. Good field mechanics do this on a regular basis and perform a good job. The pumper should not hesitate to ask questions of other people. These tasks will become easier as experienced is gained.

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