

## The Lease Pumper's Handbook

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## The Lease Pumper's Handbook

### Chapter 12 Gauging and Analyzing Daily Production

#### Section A

#### LEASE DUTIES

##### A-1. What Makes an Outstanding Lease Pumper?

Although some lease pumpers are hard working individuals, they may barely achieve satisfactory production levels. Fortunately, the majority are *good* lease pumpers. However, a few have an *outstanding* ability to produce wells. This ability is built by excellent work habits and the desire to continuously improve their analytical and operational skills.

**Skills needed to become an outstanding lease pumper.** Outstanding lease pumpers have the ability to understand what is occurring on the lease, in the formation, and how all facets of the operation can be improved. This includes understanding how to coax additional oil out of the formation, superior knowledge of oil treating, and excellent operations management.

Outstanding lease pumpers:

- Have job satisfaction. They enjoy their job and keep an active interest in their profession.
- Show pride in their work. They take pride in their ability, appearance, the appearance of the site, equipment and supply organization, and cleanliness.
- Have the ability to make as much oil as possible. They continuously study how production can be improved.

- Keep tank bottoms clean. This begins even before production is switched into the tank.
- End the month with less than one tank of oil on hand at each tank battery if possible. They schedule tank sales in advance and call the gauger early.
- Put in a full day of constructive work without resentment. Outstanding lease pumpers never get into the habit of leaving the job early.
- Keep lease expenses to a minimum but recognize when a special expenditure will pay dividends.
- Take care of the vehicle and tools.
- Drive conservatively.
- Work well with all types of people.
- Are honest.
- Do not abuse alcohol or drugs.
- Observe good safety practices.

##### A-2. Beginning the Day on the Lease.

When arriving on the lease in the morning, the pumper should review the work schedule. The scheduled duties should be aggressively worked so that there is time for special projects and challenges.

The pumper must have the ability to stay productive during the entire workday and efficiently identify and solve the day's problems.

**Everything should be checked and observed during the morning rounds.**

Light work should be completed during the morning so that the afternoon can be devoted to outstanding lease needs. This will prevent the need to double back on previously covered ground. Light work includes checking pumping units, observing stuffing boxes, and making sure that everything is operating normally.

The typical work day includes the following activities:

- Tank gauging. Tanks should be gauged as early as possible. Many companies will let the pumper set the starting time.
- Performance of other required daily and scheduled duties.
- Production computation and checking for problems.
- Observing all wells and equipment.
- Identifying and solving problems as they arise while still keeping the regularly scheduled maintenance program.

One or more units should be scheduled to be pumping at the beginning of the day. If a well is pumping, the electrical service is in working order. If not, this is likely the first problem to be corrected. If a well is not pumping, it may be best to turn the electric controller from *automatic* to *manual* to observe it in motion.

A section of a pumping unit should be observed for a full rotation. If an air space opens up, the unusual action will be noted instantly. A white line should be painted on a pitman arm nut and observed at least one time a week. This is to allow the lease pumper to observe any movement of the nut.

After an inspection, the lease pumper should check to see that the controller has been set to the *automatic* position.

**Visual inspection.** Trash should not be allowed on the ground around pumping units or moving equipment. Debris should be removed from a location after well work has been performed to prevent problems from being obscured. Clean grounds will allow the observation of some problems from inside the vehicle.

Any loose parts on the ground should be noted. Small bolts, nuts, or washers in an area that is regularly cleaned may be an indication of problems. The pumping unit may need to be shut down until the source is identified.

The height of the liquid line on the sight glass of a pressure vessel should be observed every day. A small string can be tied around the sight glass and slid up or down to the exact producing liquid level. When passed on a daily basis, the performance of the vessel can be observed at a glance. This can make a significant difference in the gauge analysis when pumping marginal wells. When the oil level begins creeping upward, it may be an indication of water in the oil line to the tanks. It can also indicate when the vessel develops enough *liquid head* above it to kick part of the water over into the stock tank. When this occurs, the level will go down below the marker level and this cycle will begin the process again.

The pumper should listen while observing. If a pumping unit is squeaking, it either has a problem or may require lubrication.

Observations are only useful when combined with thoughtful analysis. Correctly analyzing problems helps to build a better pumper.

### **A-3. Planning and Scheduling.**

Whether serving a small company or a pumper contractor, outstanding lease pumpers work from a *planned schedule*.

They understand what makes up a good schedule, develop one, and follow it as closely as possible.

Each detail of work is not planned down to the exact day for most lease work, but some duties are so important that they will be scheduled with clear time objectives. Many projects, such as individual well tests, lubricating pumping units, treating wells, walking flow lines, pressure testing flow lines at the wellhead, filling chemical pumps, lubricating valve stems, and a host of other activities, can be planned and performed on a schedule.

**Monthly, quarterly, semiannual, and annual maintenance.** Maintenance schedules should be completed and posted in the lease records book (discussed in Chapter 19). Some pages must be custom designed to fit the specific maintenance needs of the lease operation. Tasks will be shared by both regular and relief pumpers. Depending on the specifics of the lease, this may include, but is not limited to, servicing pumping units, checking gearboxes, changing engine oil, and lubricating plug valves.

**Monthly Schedule.** The lease pumper should have specific maintenance goals that are achieved every month. A monthly pumping plan is easy to develop and begins the same way every month. With time, the plan is fine-tuned and becomes a valuable tool. Monthly activities include:

- Well testing
- Circulating tank bottoms
- Chemical treating
- Planning upcoming tasks

**Well testing.** Well testing should begin in the first few days of the month, and each

well should be tested once per month. The regular pumper must maintain a testing record. This essential task should not be relegated to a relief pumper.

Reviewing the most recent record against those from previous months helps maintain a pulse on the condition of every well. The record reveals when wells are maintaining production, falling, need pulling, or can increase production.

For a one-well battery, a typical day is chosen and recorded as a test. Averaging the month produces invalid results because it usually also includes down time.

Testing procedures are reviewed in Chapter 13, Testing, Treating, and Selling Crude Oil.

**Circulating tank bottoms.** Every time oil is sold, the bottom must be cleaned. If problems are encountered while treating oil, every time that a tank of oil is sold, the remaining oil and bottom emulsion should be circulated through the treating system and into the receiving tank. If it did not circulate out to a low level it should be switched back and produced there until it accumulates approximately one foot of new oil. It is then circulated out again into the receiving tank. This should be repeated until the bottom is satisfactorily clean.

Bad tank bottoms are often caused by neglect and accumulation. It may sometimes be necessary to pump water into the tank to lift the emulsion and stir so that it can move and treat. Even after tank bottoms are satisfactorily clean, this procedure is repeated with every tank sale. At the beginning of the month when oil selling times are known, the tank should be circulated and kept as clean as possible. This is reviewed in more detail under Chapter 13, Testing, Treating, and Selling Crude Oil.

**Chemical treating schedule.** Chemical consumption should be computed on a regular schedule. This should be balanced against the barrels of emulsion produced. Treating must be kept on schedule to keep the amount of time and chemical consumed to a minimum. Chemical action is often improved by simply circulating the oil. Movement provides additional conditioning.

**Planning upcoming tasks.** As the end of the month approaches, the upcoming month's activities should be planned, including those tasks required in the first week of the month. An efficient schedule

balances sufficient maintenance time to prevent problems while avoiding the unnecessary expense and time of over-servicing. Planning becomes easier as experience is gained.

Some duties such as well tests should be performed within the first three weeks of the month. This will free the latter part of the month for oil treating and other important duties. Delaying treatment of a tank of oil may result in its not being sold until the next month, and thus payment to the oil company will be delayed for another month.