

Dredging Rules of Thumb

Per the Merriam Webster Collegiate Dictionary a rule of thumb is:

A general principle regarded as roughly correct but not intended to be scientifically accurate.

Translated this means a rule of thumb is:

A general principle regarded as roughly correct based on experience and common sense, not intended to be scientifically accurate, but useful as a general guide in the absence of any other information or knowledge.

Many of these rules of thumb exist in the dredging community. Some of them are classic and have been passed down from those who came before us. Others are new and add present day experience to the body of dredging knowledge. When studied and applied correctly, all of the rules of thumb can be useful. As a service to the dredging community we have assembled this list of one-line wisdom so that everyone may benefit.

Dredge Pumps

- A. The maximum particle size that can pass through the dredge pump is 1/2 the size of the discharge port. (An 8" pump can pump a 4" particle.)
- B. The service water pressure measured at the dredge pump packing gland should be at least 10 psi higher than the discharge pressure.
- C. A deck-mounted dredge pump loses approximately 1" of usable vacuum for every 12" of vertical distance between dredge pump impeller eye and water surface.
- D. A dredge loses approximately 1" of usable vacuum for every 1,000-foot increase in height above sea level.
- E. When priming a dredge pump, air is the enemy.

Cutters

- A. A dredge with a mechanical digger will be more productive than a dredge with an open suction.
- B. A full-length ablative chain ladder is the worst conveyor in the world.
- C. A rotary cutter dredge working in a deposit that contains oversize material cannot swing faster than the oversize accumulates.
- D. “Hardpan” is found only in deposits that are being dredged using a rotary cutter or open suction.
- E. Assuming that it covers the suction inlet, a small-diameter rotary cutter basket is more productive than one with a large diameter.
- F. The minimum mining depth to achieve continuous production with a rotary cutter is one half of the straight ladder’s length.

Instruments

- A. More instruments equal more production.
- B. A magnetic type flow meter is more accurate than a Doppler type flow meter.
- C. A dredge with a flow meter that is used correctly will be more productive than a dredge without a flow meter, or worse yet, a flow meter that is used incorrectly.
- D. To measure is to know.

Management/Operation

- A. An experienced dredge operator is not always a good dredge operator.
- B. All dredge variables vary.
- C. Pumping water does not pay.
- D. The density of a plugged pipeline is 50% solids by weight.
- E. Empirical evidence is a better indicator of dredge performance than a pump curve.
- F. If the ambient noise level in the cab is too high to use a cell phone; the noise level is too high.
- G. A hoist winch, fast enough to “beat” a cave-in, does not exist.
- H. Four 90’s in a dredge pipe is a stop.

- I. If a dredge is operated both day and night, the catastrophic failures will always occur during the night.

Maintenance

- A. Run-to-failure is not a maintenance plan.
- B. The interval between wear part maintenance is a poor measure of dredge performance - the cost per ton of material is the only true measure of dredge performance.
- C. Having spare wear parts is better than not having spare wear parts.
- D. The wind will always blow during pipeline maintenance.

General

- A. A hydraulic dredge will retain more fines than a mechanical dredge.
- B. \$0.07 cents per kilowatt electricity is equivalent to \$1.00 per gallon diesel fuel.
- C. Owners of dredges with open-top main hulls should have the name and number of the local salvage diver on file.
- D. Regardless of the shape, sealed and compartmentalized flotation is better than flotation with access holes and open compartments.
- E. Dredges, named after creatures that live in the sea, often emulate them.
- F. "About 10%" is a good factor to use when estimating a change in any facet of dredge operation.
- G. The bottom of the dredge should never touch the bottom of the deposit.
- H. A dredge that pumps fast does not pump far.
- I. If it does not enter the suction inlet it is not coming out the discharge.

Used Dredges

- A. There are good dredges and there are used dredges, there are very few good used dredges.
- B. When considering a used dredge, beware of the pay now or pay later principle.