

## Study Guide for ADSO Test

The following study is designed to give you a list of topics covered in the Apprentice Distribution System Operator test. It is not intended to be all inclusive or cover all questions that may be on the test.

- Know general duties of an ADSO and DSO (refer to job description).
- Know Irrigation Rules and Regulations
- Basic measurements (feet in mile, feet in acre, feet in meter, cubic feet per second, etc.)
- Basic algebraic equations
- Methods of ordering water available to customers.
- Directions
- Average water consumption of most common MID crops.
- Basic construction/maintenance methods
- Water flow through different types of canals and pipelines.
- Common Tools Used to Perform Job
  - Staff Gauge
  - CFS Hour Chart
  - Pressure Rating Chart
- Basic computer skills and ability to maneuver in spreadsheets.
- MID Well and Booster Operations:
  - Check and adjust valves/gates to deliver water to desired locations.
  - Turn on well, MID employees only
  - Check oil pot for oil and oiler to make sure it is working properly.
  - Verify water is getting to the location desired (this is done to make sure there isn't a problem such as a broken pipeline).
  - Check for vandalism/bare wires, etc.

### **Check Structures**

- Standard Weir/Drop with boards
  - Main purpose is to hold the water level constant in the canal.
  - Boards are used to raise or lower the water level in the canal.
  - Can be used to measure flow with the Clausen Rule (for example).
  - Boards can be replaced with gates manual or automated.
- Long-Crested Weir (LCW)
  - Also used to maintain constant water level.
  - Longer to minimize or eliminate the need to adjust boards.
  - The length allows large fluctuations in the flow with minimal fluctuations in the canal level (MID's typical design is for six inches over the weir at the maximum flow of the canal and the top of the weir set to the operational level of the canal).
- Broad-Crested Weir
  - Mainly used for measurement purposes.
  - Minimal head required for large flows (Main Canal/Fairfield Canal).
- Multi-function Weir
  - Combination of LCW and Standard Weir.
- Many other types, but these are the main ones used by MID.

### **Pipelines**

- Priming Pipeline
  - Open head gate slowly until pipeline is full.
- Pipeline Hydraulics
  - Description of the affects of U/S and D/S head on a pipeline.
- Describe the effects of varying pipe sizes.

### Gates

- Delivery Gates
  - Upright delivery
    - One of the two most common at MID
    - Best type of gate for measurement because it has a stilling well for measurement.
    - Many head gates of canals and laterals are this type.
    - More expensive than Slant Delivery
  - Slant Delivery
    - Other most common delivery in MID
    - Cannot be measured accurately
    - Today are only allowed if delivering to a booster station with a flow meter.
    - Cheaper than upright delivery.
  - Other Types
    - Rotating screen
    - Overpour
- Canal Gates
  - Under Shot Gates (know how to measure)
    - Can be used as head gates or check gates.
    - As check gate replacing boards it allows more flow through same opening.
  - Automated Gates (know use and measurements)
    - Beggeman
    - Lopac
    - Laneman
    - Rubicon

### Crops

- Ridge and levee uses
  - Efficient distribution of water
  - Prevents flooding of adjacent lands
  - Provides uniform water depth
- Soil Types
  - Sand – uses most water
  - Loan heavy or sandy – mixture of sand salt and clay
  - Clay – uses least amount of water

### Standard Terms

- Land Sectioning