

# Operations Technician (Ops Tech) Test

## Study Guide

### Overview

This study guide is designed to familiarize you with the basic knowledge and skills required by Southern Power Company's Operations Technician positions and what is covered on the Ops Tech Test.

The Ops Tech Test measures a person's knowledge and ability to apply concepts, terms, and principles related to the electrical, operations, and mechanical tasks performed by an Operations Technician. The test contains questions that emphasize the understanding of the subjects, along with the ability to apply the knowledge. The test is multiple choice. Some questions refer to figures containing diagrams, schematics, drawings, and charts. The test will last approximately eight (8) hours with breaks provided.

Some questions require calculations, and an online calculator will be available to you. Some questions also require the use of formulas. A list of formulas that might be used is provided during the testing, so it is not necessary to have them memorized.

The Ops Tech Test includes several different types of test questions. The types of questions include the following:

- **Terms and definitions:** These questions ask for the definition of a term, the name for a concept or device, or characteristics of a component.
- **Relationships and Principles:** These questions ask how two concepts or measurements relate to each other.
- **Interpreting Facts:** For these questions, a situation or problem will be described and the answer that describes what is happening or what is wrong must be selected.
- **Calculating Values:** These questions require the calculation of amounts, measurements, or electrical values given specific information.
- **How-To:** These questions ask how to perform a task or specific activity.

### Ops Tech Test Competencies

Electrical Theory--Knowledge of all concepts, principles, symbols and calculations related to electricity; definitions, theories, formulas, and different types of circuits (e.g., series, parallel and series-parallel).

Electrical Troubleshooting-- Knowledge of methods of diagnosing problems and analyzing symptoms of problems with electrical equipment.

Electrical Test Equipment-- Knowledge of types and operation of electrical test equipment.

Print Reading-- Knowledge of and ability to read various types of schematics and diagrams (e.g., circuit diagrams, P & ID, relay logic); includes equipment components, equipment operation and electrical values (e.g., current) based on drawings.

Electrical Applications-- Knowledge of various types of electrical applications, their principles and their operation; includes batteries, protective devices, solenoids, diodes, transformers, and motors.

Electrical/Mechanical Procedures-- Knowledge of all lock out/tag out or clearance and isolation procedures for safely removing and/or returning equipment from or to service; includes procedures for working with electrical equipment.

Mechanical Applications—Knowledge, application, and troubleshooting of basic mechanical principles and concepts.

Plant Auxiliaries-- Knowledge of plant equipment (e.g., pumps, motors) that runs, controls, or operates different systems (e.g., boiler, turbine).

Electrical/Mechanical Clearances-- Knowledge of procedures for safely issuing and executing lock-out/tag-out or clearances (e.g., step-by-step procedure for electrical or mechanical isolation of a piece of equipment); terms used to describe isolation of equipment (e.g., breakers).

General Power Plant Operation--Knowledge of various power plant equipment and components (e.g., valves); characteristics of substances used in the generation of electricity (e.g., steam, gases, hydro); unit start-up and shut-down procedures.

Boiler Operation-- Knowledge of the characteristics and types of boilers; includes boiler operation and components in the system.

Turbine Operation-- Knowledge of the characteristics and types of steam and gas turbines; includes turbine operation and components in the system.

Generator Operation-- Knowledge of the characteristics and types of generators; includes generator operation and components in the system.

Plant Electrical-- Knowledge of basic functions and electrical operations of plant equipment such as relay protection equipment, electric motors, and transformers.

Basic Hand and Power Tools-- Knowledge of types of basic hand tools, power tools, and their proper use.

Rigging and Hoisting-- Knowledge of materials, procedures, and safety procedures involved in lifting or transporting equipment and/or materials; includes selection of proper materials and technique based on material size and weight.

Precision Measurement-- Knowledge of precision measurement tools (e.g., inside and outside micrometers); includes their function and how to read them.

Millwright Work-- Knowledge of millwright procedures for equipment repair and fabrication; includes pumps, belt drives, bearings, couplings, and valves.

Equipment Lubrication-- Knowledge of various types of lubricants (e.g., grease, oil); includes uses and purposes for lubrication.

Mechanical Prints and Drawings-- Knowledge of types of prints and drawings (e.g., schematics, diagrams, mechanical drawings); includes ability to read and interpret specifications and calculate dimensions.

General Plant Safety-- Knowledge of all aspects of general plant safety; knowledge of proper tool use and personal protection equipment.

Fire Prevention-- Knowledge of the different classes of fires, how they differ, and what type of extinguisher is used for each class (e.g., water, carbon dioxide); includes proper procedures for use of extinguishers and knowledge of different extinguishing systems.