

# General Plant Operator Test

## Study Guide

### Overview

This study guide is designed to familiarize you with the basic knowledge and skills required by Georgia Power Company's General Plant Operator (GPO) and Southern Power's Operations Technician positions and what is covered on the General Plant Operator test.

The GPO Test measures a person's knowledge and ability to apply concepts, terms, and principles related to the electrical, operations, and mechanical tasks performed by a General Plant Operator or 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. Calculators are permitted and will be provided for you. Some questions also require the use of formulas. A list of formulas that might be used is provided during the test, so it is not necessary to have them memorized.

The GPO 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.

### GPO 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.

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/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.

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

Hydraulics & Pneumatics-- Knowledge of basic principles of hydraulics and pneumatics.

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

General Power Plant Operations-- 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.

Hydro— Knowledge of the characteristics, equipment, and operation of a hydro-electric plant.

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

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).

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

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

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

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

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

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

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

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.

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.

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.