

Information Guide
for
ENERGY SERVICES PLANT OPERATOR

Test #2764

Human Resources
Performance Assessment Services
Southern California Edison
An Edison International Company

Introduction

The Energy Services Plant Operator Test is a job knowledge test designed to cover the major knowledge necessary to perform the job. This *Guide* contains strategies to use for taking tests and a study outline, which includes knowledge categories and study references.

Test Scheduling

Employees who apply for positions, bids, and transfers requiring testing before March 9, 2009, will be scheduled for testing by their Supervisor through Human Resources. For those who apply after March 9, 2009, both the employee and their Supervisor will be notified of a scheduled test date by Human Resources. Test times and dates for positions requiring testing will be specified in the bid/transfer/requisition/job posting. Employees should be prepared to test on the specified dates. Only employees who apply for positions requiring testing, and who meet basic qualifications, will be invited to test. Applicants will be scheduled through the recruiter. If you have any questions, please call 626-302-9830.

Test Session

It is important that you follow the directions of the Test Administrator *exactly*. If you have any questions about the testing session, be sure to ask the Test Administrator before the testing begins. During testing, you may not leave the room, talk, smoke, eat, or drink. Since some tests take several hours, you should consider these factors before the test begins.

All questions on this test are multiple-choice with four possible answers. Prior to March 9, 2009, your answers to the questions are indicated by filling in a circle on an answer sheet with a special mark-sense pencil. For your answers to be read accurately by the scanner, you must fill in the circles completely and erase completely any answer you wish to change. After March 9, 2009 you will take the exam on a computer. For more information on this, please see the next section of this study guide, Computer Based Testing.

You will receive a Test Comment form so that you can make comments about test questions. Write any comments you have and turn it in with your test when you are done.

Test Aids

You are allowed to use a non-programmable scientific calculator for the Energy Services Plant Operator Test. **Calculators will be provided by the Test Administrator, and will be one of the following three models: Casio fx-250HC, Texas Instruments TI-30XA, TI 36-X.**

Information Guide Feedback

At the end of this *Guide* you have been provided with an Information Guide Feedback page. If a procedure or policy has changed, making any part of this *Guide* incorrect, your feedback would be appreciated so that corrections can be made.

Computer Based Testing

Effective **March 9, 2009**, all knowledge tests will be administered on the computer. This information will help prepare you for a knowledge test taken on or after **March 9, 2009**.

Taking an SCE knowledge test on the computer is simple. You do not need any computer experience or typing skills. You will only use the keyboard to enter your candidate ID and password. You'll answer all questions by pressing a single button on the mouse.

Log in Screen

You will be seated at a testing station. When you are seated, the computer will prompt you to enter the candidate ID and password you received in your invitation e-mail. You **MUST** have your candidate ID and password or you will be unable to take the test. Once you have confirmed your identity by entering this information, you will see a list of tests available to you.

Sample/Tutorial

Before you start your actual test, a Sample/Tutorial Test is provided to help you become familiar with the computer and the mouse. From the list of exams that appear when you complete the log in, you will select Sample/Tutorial. You will have up to 10 minutes to take the Sample/Tutorial Test. The time you spend on this Sample Test DOES NOT count toward your examination time. Sample questions are included so that you may practice answering questions. In the Sample/Tutorial Test, you will get feedback on your answers. You will not receive feedback on your actual test.

Example

During the test, to answer each question, you should move the mouse pointer over the circle (radio button) next to the answer of your choice, and click the left mouse button. The amount of time you have remaining to take the test will always be shown in the top left corner of the screen. A sample is show below:

1. When you begin the test, you can see the total time allowed for completion displayed at the top of the screen. You can scroll up to see that information at any time during the test.
2. In order to answer each question, first read the question and determine the response that best answers the question. Put the mouse pointer directly over the circle corresponding to that response.



Time remaining: 29:54

Sample

Please select the best answer for each question below. If you have any comments, please record them on the Test Comments form given to you by the Test Administrator. Good luck!

1 of 13

Two resistors of 20 ohms each are connected in series. The total resistance of the circuit is _____ ohms.

- a. 10
- b. 20
- c. 30
- d. 40

3. While the pointer is over the circle corresponding to the best answer, click the left mouse button.



Click the left button when the pointer icon is over your answer choice.

4. The answer you selected should now have a green dot in the circle. If you need to select an alternate answer, simply move the pointer over that circle, and click again.



Time remaining:

Sample

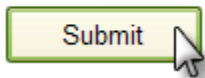
Please select the best answer for each question below. If you have any comments, please record them on the Test Comments form given to you by the Test Administrator. Good luck!

1 of 13

Two resistors of 20 ohms each are connected in series. The total resistance of the circuit is _____ ohms.

- a. 10
- b. 20
- c. 30
- d. 40

5. You can change your answers at any time during the test until the time runs out, or you click the "Submit" button.



Test Taking Strategies

Introduction

The Energy Services Plant Operator Test contains multiple-choice questions. The purpose of this section is to help you to identify some special features of a multiple-choice test and to suggest techniques for you to use when taking one.

Your emotional and physical state during the test may determine whether you are prepared to do your best. The following list provides common sense techniques you can use before the test begins.

Technique	Remarks
<i>Be confident</i>	<ul style="list-style-type: none">• If you feel confident about passing the test, you may lose some of your anxiety.• Think of the test as a way of demonstrating how much you know, the skills you can apply, the problems you can solve, and your good judgment capabilities.
<i>Be punctual</i>	<ul style="list-style-type: none">• Arrive early enough to feel relaxed and comfortable before the test begins.
<i>Concentrate</i>	<ul style="list-style-type: none">• Try to block out all distractions and concentrate only on the test. You will not only finish faster but you will reduce your chances of making careless mistakes.• If possible, select a seat away from others who might be distracting.• If lighting in the room is poor, sit under a light fixture.• If the test room becomes noisy or there are other distractions or irregularities, mention them to the Test Administrator <i>immediately</i>.
<i>Budget your time</i>	<ul style="list-style-type: none">• You are allowed three hours to complete each part of the two parts of the test.• Pace yourself carefully to ensure that you will have enough time to complete all items and review your answers.
<i>Read critically</i>	<ul style="list-style-type: none">• Read all directions and questions carefully.

- Even though the first or second answer choice looks good, be sure to read all the choices before selecting your answer.
- Make educated guesses*
- Make an educated guess if you do not know the answer or if you are unsure of it.
- Changing answers*
- If you need to change an answer, be sure to erase your previous answer completely. On the computer, be sure that the new answer is selected instead of the old one.
- Return to difficult questions*
- If particular questions seem difficult to understand, make a note of them, continue with the test and return to them later.
- Doublecheck mathematical calculations*
- Use scratch paper to double check your mathematical calculations.
- Review*
- If time permits, review your answers.
 - Do the questions you skipped previously.
 - Make sure each answer bubble is *completely* filled in. Erase any stray marks on your answer sheet. When testing on the computer, make sure each question has a green dot next to the correct answer.

Remember the techniques described in this section are only suggestions. You should follow the test taking methods that work best for you.

Job Knowledge Categories

Below are the major job knowledge categories that are covered on the Energy Services Plant Operator Test.

A. Electrical, Mechanical, and Steam Operation

Includes AC/DC theory, single line and elementary diagrams, piping and instrumentation drawings (P&IDs), electrical symbols, use of basic electrical test instruments (e.g., multimeter), terminology, basic math (e.g., multiplication, division), general principles of physics and water chemistry including thermal dynamics and fluid flow.

B. Inspection Criteria and Equipment Function and Terminology

Standards of physical equipment integrity, instrumentation for operational checks and regulations and restrictions that apply to steam plant and packaged boiler operation specifically in the areas of start up, shut down, and loading procedures. Knowledge related to purpose and function of energy services plant equipment and electrical equipment as it relates to meeting customer needs of ensuring uninterrupted supplies of steam, air, and chilled water.

C. Emergency and Standard Operating Procedures

Procedures established for normal routine operation and emergency situations as set forth in standard plant orders and operating instructions used for monitoring and diagnosing chiller and compressor operation and the control and safe operation of packaged boilers. Includes knowledge of steam plant and electrical auxiliary operating procedures.

D. Safety and Clearance Procedures

First aid, firefighting, accident prevention programs, and methods of switching and clearing equipment and operating components. Knowledge of environmental rules and regulations and their application to energy services plant operation. Lockout/Tagout-Work Authorizations Cal/OSHA CCR Title 8 Section 3314 and Fed/OSHA Regulations Standard 29 CFR Section 1910.147. Accident Prevention Cal/OSHA General Industry Sections (3200-6184).

Job Duties

Below are the major job duties performed by the Energy Services Plant Operator.

- Operates all mechanical, pneumatic and electrical equipment associated with an energy service facility.
- Starts, stops, tends and adjusts high temperature hot water heaters, process steam boilers, refrigeration water chillers, compressors, heat exchangers, motors, pumps, cooling towers and related auxiliary equipment.
- Determines operating status from other personnel, log book and inspection of equipment and control panels.
- Reviews program book for operating schedule and equipment to be cleared for work.
- Obtains work clearances.
- Clears circuits and performs electrical operations as necessary.
- Operates equipment arranged for local or remote operations.
- Observes instruments, gages and foreign noises to detect malfunctions and makes adjustments or stops faulty equipment.
- Maintains daily log of operations.
- Makes routine water analysis tests and maintains within prescribed limits.
- Lubricates equipment.
- Paints, repacks valves, tightens leaking joints and makes minor repairs to equipment.
- Prepares reports and summaries of records of equipment, operation, fuel consumption and outages.
- Changes charts, performs general cleaning and housekeeping duties.

Study References

The following books may be purchased by accessing the internet's various book sellers or at a local technical book dealer or used book store.

- The Control of Boilers
By: Sam Dukelow
- TPC Training Systems: Electrical Systems
Series 201-210
- Erie City Ironworks Boiler
Product Information and Repair Manual
- Electricity One-Seven, Revised Third Edition
By: Harry Mileaf
- Physics The Easy Way, Third Edition
By: Robert L. Lehrman
- Math The Easy Way, Third Edition
By: Anthony Prindle and Katie Prindle
- Electric Machines, Drive, and Power Systems, Fifth Edition
By: Theodore Wildi

The following reference materials Internet Access. To begin, go to <http://www.google.com>.

- Nitrogen Oxides NOx Emission Reduction Systems
From Google type: "Selective Catalytic Reduction"
Click on and review the many links on this website
- Lockout/Tagout-Work Authorizations
California Occupational Safety and Health Administration
From Google type: www.dir.ca.gov
Click on the link: Department of Industrial Relations Home Page
Click Regulations
Click on CAL/OSHA
Enter Query: Title 8 Section 3314
Click Search
Click on: CCR Title 8 Section 3314
This brings up 3314, Cleaning, Repairing, Servicing and Adjusting Prime Movers,
Machinery and Equipment.
Click on and review the many links on this website

- Lockout/Tagout-Work Authorizations
 US Department of Labor
 Occupational Safety and Health Administration
 From Google type: www.osha.gov
 Click on the link: Occupational Safety and Health Administration Home Page
 On the Fed/OSHA mission statement page type “Lockout/Tagout” in the search window and click “go”.
 In the Document Section type: Lockout/Tagout
 In the Title Section type: 1910.147
 Limit search to Regulations Standards 29 CFR only
 Click on the above link.
 Listing appears 1910.147 The Control of Hazardous Energy (Lockout/Tagout)
 Open Document: The Control of Hazardous Energy (Lockout/Tagout) 1910.147.
 View and research other links on this website.
- Hazardous Waste
 US Environmental Protection Agency-EPA.
 From Google type: Hazardous Waste.
 Click on the link: Wastes: Hazardous Waste, Subtitle C of RCRA (Resource Conservation and Recovery Act).
 Review related links on this website.
- Waste Minimization
 From Google type: <http://www.epa.gov/wastemin/>
 Click on link: Minimization-Home Page
 Welcome to the National Waste Minimization Program link will appear.
 Review related links on this website.
- Accident Prevention
 From Google type: www.dir.ca.gov
 Click on link: California Department of Industrial Relations-Home Page.
 Click on regulations
 Click on Cal/OSHA
 In the query section type: Accident Prevention
 Limit search: General Industry Sections (3200-6184)
 Review related links on this website.
- Fire Protection
 From Google type: www.dir.ca.gov
 Click on link: California Department of Industrial Relations-Home Page
 Welcome to California-The Department of Industrial relations will appear.
 Click on Regulations
 Click on Cal/OSHA
 In the query section type: Fire Protection
 Limit search to: General Industry (Sections 3200-6184)
 Review related links on this website.

