Information Guide
For the
2449 Field Hydrographer Knowledge Test

Test Number: 2449
Talent and Assessment Programs
Human Resources
Southern California Edison Company
Introduction

The purpose of this study guide is to assist test takers in preparation for the Field Hydrographer Job Knowledge Test. This guide contains strategies to use for taking these tests and a study outline, which includes knowledge categories, major job activities, and study references. The 2449 Field Hydrographer knowledge test is a computerized, job knowledge test designed to cover the major knowledge areas necessary to perform the job of a Field Hydrographer.

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 cell phones or other electronic equipment will NOT be allowed in the testing area.

All questions on this test are multiple-choice. Multiple choice questions have four possible answers. All knowledge tests will be taken on the computer. For more information on computer based testing, follow the link: www.edison.com/studyguides and click on Computer Based Testing Information.

The test has a three hour time limit.

You will receive a Test Comment form so that you can make comments about the test. Write your comments on the form when you have completed the test battery.

Test Materials

You will be provided with all of the materials necessary to complete the performance test. A scientific calculator will be provided for you to use during the test. The calculator provided during the test session will be one of these models:

- Casio fx-250HC,
- Texas Instruments TI-30XA,
- Texas Instruments TI-36X

You will NOT be able to bring or use your own calculator during testing.
Test Taking Strategies

Introduction

The 2409 Field Hydrographer knowledge 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.

<table>
<thead>
<tr>
<th>Technique</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>Be confident</td>
<td>If you feel confident about passing the test, you may lose some of your anxiety.</td>
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<tr>
<td></td>
<td>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.</td>
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<td>Be punctual</td>
<td>Arrive early enough to feel relaxed and comfortable before the test begins.</td>
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<td>Concentrate</td>
<td>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.</td>
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<td>If possible, select a seat away from others who might be distracting.</td>
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<td></td>
<td>If lighting in the room is poor, sit under a light fixture.</td>
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<td></td>
<td>If the test room becomes noisy or there are other distractions or irregularities, mention them to the Test Administrator immediately.</td>
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<tr>
<td>Budget your time</td>
<td>Pace yourself carefully to ensure that you will have enough time to complete all items and review your answers.</td>
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<tr>
<td>Read critically</td>
<td>Read all directions and questions carefully.</td>
</tr>
<tr>
<td></td>
<td>Even though the first or second answer choice looks good, be sure to read all the choices before selecting your answer.</td>
</tr>
</tbody>
</table>
Make educated - Make an educated guess if you do not know the answer or guesses 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 - If particular questions seem difficult to understand, make a questions note of them, continue with the test and return to them later.

Double-check math - Use scratch paper to double check your calculations 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 multiple choice 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 and Study References

Below are the major job knowledge areas (topics) covered on the 2449 Field Hydrographer knowledge test. Listed next to each knowledge category is the number of items on the exam that will measure that topic. You can use this information to guide your studying. Some exams also contain additional pretest items. Pretest items will appear just like all of the other items on your exam, but they will not affect your score. They are an essential part of ensuring the 2449 Field Hydrographer knowledge test remains relevant to successful performance of the job.

There are 57 items on the 2449 Field Hydrographer knowledge test and the passing score is 68%.

A. Hydrography (22 items)

Includes knowledge of basic hydrographic formulas such as calculating flow/discharge and average velocity of water, making unit conversions, making basic computations and basic interpretations of hydrographic charts, and hydrographic quality control in collection and maintenance of data. Also includes knowledge of the safety procedures when working with hydrographic and meteorological equipment and tools.

B. Algebra and Trigonometry (18 items)

Knowledge of mathematical principles including intermediate algebra and intermediate trigonometry for solving various computational problems.

C. Safety and Survival (6 items)

Includes knowledge of general safe work practices, as well as basic first-aid, winter and backcountry survival, driving in foul weather, and recognizing safety hazards.

D. Electricity (6 items)

Knowledge of basic electrical principles including electrical circuits and electrical resistance, batteries, and calculating power output from batteries.

E. Measuring Precipitation (5 items)

Includes knowledge of basic snow surveying principles, techniques, and guidelines as well as knowledge of the proper use of precipitation gauges.
Sample Questions

The following sample questions should give you some idea of the form the test will take.

Hydrography

1. Water has been flowing into a reservoir at 54 acre-feet per day. What is the cubic feet per second (ft³/s)?
   a. 27 ft³/s
   b. 300 ft³/s
   c. 594 ft³/s
   d. 1,175 ft³/s

Algebra and Trigonometry

2. Find the approximate value of x. Image is not to scale.

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  19
  
  17

   x
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   a. 8.5
   b. 9.1
   c. 9.7
   d. 10.3
Safety and Survival

3. Which of the following is NOT true about frostbite?
   a. Affected skin should be thawed even if there is a chance of re-freezing.
   b. Affected skin can turn into a white or gray-yellow color.
   c. Those with poor blood circulation are at greater risk for frostbite.
   d. Victims are often unaware that they have frostbite until someone else points it out.

Electricity

4. Suppose 3 resistors each at 10Ω are placed on the circuit depicted below. What is the total resistance?

![Circuit diagram]

   a. 1Ω  
   b. 3.33Ω  
   c. 10Ω  
   d. 30Ω

Measuring Precipitation

5. A weigh recording gage has advantages over other automatic recording gages when:
   a. accurate timing of precipitation events is desired.
   b. solid and liquid precipitation are expected.
   c. heavy precipitation is expected in a short time-span.
   d. large evaporation losses are expected.
Sample Question Answers

1. a) 27 ft³/s
2. a) 8.5
3. a) Affected skin should be thawed even if there is a chance of re-freezing.
4. d) 30Ω
5. b) solid and liquid precipitation are expected.
Below is a list of references you may wish to review in preparation for taking the Field Hydrographer test.

**Hydrography**

- Computation of Water-Surface Profiles in Open Channels
- Part 630 Hydrology National Engineering Handbook (Chapter 16 Hydrographs)
- USGS report. Determination of error in individual discharge measurements.
- USGS Water Science School
  [https://water.usgs.gov/edu/streamflow2.html](https://water.usgs.gov/edu/streamflow2.html)
- Water Resources Division Memo 99.92, Appendix 1 (p.3)
- USGS Techniques of Water-Resources Investigations Reports (Chapter A15)
- Discharge Measurements at Gaging Stations
  [http://pubs.usgs.gov/tm/tm3-a8/](http://pubs.usgs.gov/tm/tm3-a8/)

**Algebra and Trigonometry**

  [https://d3bxy9euw4e147.cloudfront.net/oscms-prodcms/media/documents/AlgebraAndTrigonometry-OP_NpLRuqX.pdf](https://d3bxy9euw4e147.cloudfront.net/oscms-prodcms/media/documents/AlgebraAndTrigonometry-OP_NpLRuqX.pdf)
  - Section 1.3 Radicals and Rational Expressions
  - Section 2.3 Models and Applications (pg. 110)
  - Section 5.2 Power Functions and Polynomial Functions
  - Section 7.2 Right Triangle Trigonometry
  - Section 8.3 Inverse Trigonometric Functions
Safety and Survival

- Prospectors & Developers Association of Canada (PDAC), Excellence in Health and Safety e-toolkit (EHS) Version-01
  - Section 8.5.1 – Survival Advice for Cold Climate Conditions
  - Section 9.4 – Avalanches
  - Section 9.1 – Weather and Environmental Risks
  - Section 9.9 – Cold Injuries
  - Section 9.10 – Heat Illnesses and Solar Injuries
- MAYO CLINIC Severe Bleeding: First Aid
  https://www.mayoclinic.org/first-aid/first-aid-severe-bleeding/basics/art-20056661

Electricity

- The Physics Classroom
  https://www.physicsclassroom.com/Class/circuits/u9l3c.cfm

Measuring Precipitation

- California Cooperative Snow Surveys
  http://cdec.water.ca.gov/cgi-progs/products/SnowSurveyProcedureManualv20141027.pdf
- USDA Natural Resources Conservation Service (NRCS)
  https://www.nrcs.usda.gov/wps/portal/nrcs/detail/or/snow/?cid=nrcs142p2_046155
- World Meteorological Organization (WMO) (Page 10)

Water Measurements – These conversions should be memorized.

- 1 acre foot = 43.560 cubic feet
- 1 acre foot = 325.900 gallons
- 1 cubic foot = 7.48 gallons
- 1 cubic foot per second = 450 gallons per minute
- 1.9835= one cubic foot flow for 24 hours
- For every foot of height you gain 0.434 P.S.I.
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- For every foot of height you gain 0.434 P.S.I.