



# LETTER AGREEMENT

No. 92-8-PGE



Pacific Gas and Electric Company  
Industrial Relations Department  
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San Francisco, California 94106  
[415] 973-1125

International Brotherhood of  
Electrical Workers, AFL-CIO  
Local Union 1245, IBEW  
P.O. Box 4790  
Walnut Creek, California 94596  
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Ronald L. Bailey, Manager or  
David J. Bergman, Director and Chief Negotiator

Jack McNally, Business Manager

January 22, 1992

International Brotherhood of  
Electrical Workers, AFL-CIO  
Local union No. 1245  
P.O. Box 4790  
Walnut Creek, CA 94596

**Attention: Jack McNally  
Business Manager**


Gentlemen:

Pursuant to Letter of Agreement R1-91-21-PGE, the Company has developed the attached proposed training program for the Apprentice Water Systems Repairmen.

If you are in accord with the foregoing and agree thereto, please so indicate in the space provided below and return one executed copy of this letter to the Union.


Very truly yours,


PACIFIC GAS AND ELECTRIC COMPANY

By:   
David J. Bergman  
Director & Chief Negotiator

The Company is in accord with the foregoing and agrees thereto.

LOCAL UNION NO. 1245, INTERNATIONAL  
BROTHERHOOD OF ELECTRICAL WORKERS, AFL-CIO

 , 1992

By:   
Jack McNally  
Business Manager

12/3/91

**GUIDELINES FOR THE**  
**APPRENTICE WATER SYSTEMS REPAIRMAN PROGRAM**

**OBJECTIVE**

The need for trained and fully qualified Water Systems Repairmen (WSR) resulted in the development of this Apprenticeship Training Program. The goal is to train employees consistent with company standards, safety, and business goals through extensive On-The-Job and related Academic Training. This systematic acquisition of knowledge and skill offer the employee in training opportunities to attain self-confidence and satisfaction in his or her work, as well as provide the correct and safe methods of performing the company's business.

**TRAINING**

During the 36 months of the apprenticeship, you will be offered job training divided into six time periods which coincide with the wage steps of the classification. In order that uniform and safe work practices will be followed in the training period, the assignment of duties and work procedures shall follow the Academic & On-The-Job Training Schedules outlined in these guidelines. The amounts of time or units of work indicated in the Training Schedules are believed sufficient to permit you to develop proficiency in required duties and work procedures, but should not be considered inflexible dependent on the demonstrated ability of each individual. The Academic Schedule specifies the training periods in which you will receive academic or classroom training.

**1. On-The-Job Training**

The on-the-job phase of the training program is designed to give you practical training that will develop your abilities and prepare you for journeyman responsibilities. This training will include instruction on the construction, operation and maintenance of the water collection and distribution facilities associated with the Hydro Department. This phase of your training will fully utilize the variety of work offered by the daily assignment of jobs in your area.

The duties and amount of such training, as specified in the On-The-Job Training schedule, shall apply to the extent that such duties are performed by the journeymen where you are headquartered. In the event that such duties are not performed by journeymen where you are headquartered and therefore not available it shall be noted in your work record. However, progression through the training or to journeyman or higher classification shall not be deterred for this reason.

## **2. Related Academic Training**

As early as possible in the training period, you will be assigned related Academic Training. The courses are outlined in the WSR Academic Schedule and describe where such training is to take place. Certain topics are to be covered at your headquarters. Others such as Backhoe, Rigging, Welding and Valve training will be conducted by centralized training organizations in locations such as San Ramon, Santa Rita and Livermore Calif. The academics are to be completed within the first 30 months of your apprenticeship.

### **GENERAL GUIDELINES**

1. It is intended that the assignment of the On-The-Job Training hours are made for each Apprentice as early in each time period as practical.
2. Progressive work experience in all phases of WS responsibilities will be provided throughout the first five time periods (30 months) in accordance with the attached On-The-Job Training Schedule.
3. Job assignments for the last or sixth time period will be made for the purpose of rounding out the Apprentices experience.
4. Hours indicated within all phases of training exclude travel time. However, such hours do include time needed to plan jobs and prepare tools and equipment.
5. Except where otherwise specified, Apprentices shall be trained by assignment to work with qualified Journeymen.

6. The supervision of your training program is the primary responsibility of the Water Foreman. He or she will be aided, as may be necessary, by other qualified personnel. Thus, through association with more than one person, you will receive a wider range of view points and experience.
7. Periodic testing and interviews will be held for the purpose of evaluating you overall progress and determining your level within the program. Records of your progress will be kept and reviewed as part of your evaluation. If your academic progress becomes unsatisfactory, below the minimum level of 70 percent for any area, your supervisor will review your performance with you and recommend steps for improvement in accordance with the Master Apprenticeship Agreement Section "G". Notice shall also be given to Union's Business Representative.
8. The use of additional or remedial study is not provided for by this program. If you are having difficulty in any phase of your training, it will be to your advantage to utilize extra study for review and improvement. Outside courses can be used, on your own behalf, to supplement the program.
9. Apprentices may be assigned work without direct supervision only after:
  - a.) Instruction on the required duties, safe work practices and/or work procedures have been completed.
  - b.) Such work has been performed under direct supervision.
  - c.) The capability of performing such work safely has been demonstrated.
10. It shall be your responsibility to maintain your own records in collaboration with your Water Foreman and Training Coordinator. Upon completion, each periodic record shall be submitted to your Water Foreman for review.
11. Records shall be available at all times during the Apprenticeship for review by Water Foreman or higher levels of supervision, the employee, and Union Representatives.
12. In addition to and precedent to these guidelines, the provisions of the Master Apprenticeship Agreement are applicable.

**- 0 THRU 6 MONTH ACADEMIC SCHEDULE -**

<b>COURSE *</b>	<b>LOCATION</b>	<b>HOURS</b>
Handtools	Apprentices Headquarters	18 hrs study 1 hr test
Mathematics	Apprentices Headquarters	10 hrs study 1 hr test
Dump Truck	Apprentices Headquarters	8 hrs minimum 40 hrs maximum
Tractor, Low-Boy	Apprentices Headquarters	8 hrs minimum 40 hrs maximum
Welding Oxy / actyl	SGTC San Ramon	80 hours Classroom/Lab

**- 7 THRU 12 MONTH ACADEMIC SCHEDULE -**

<b>COURSE *</b>	<b>LOCATION</b>	<b>HOURS</b>
Portable Power Tools	Apprentices Headquarters	16 hrs study 1 hr test
Making Measurements	Apprentices Headquarters	12 hrs study 1 hr test
Basic Electricity	Apprentices Headquarters	20 hrs study 1 hr test
Backhoe	Santa Rita Livermore	100 hrs maximum
Boom Truck	Apprentices Headquarters	8 hrs minimum 40 hrs maximum
Sno-Cat	Apprentices Headquarters	8 hrs minimum 40 hrs maximum
Forklift	Apprentices Headquarters	8 hours

**- 13 THRU 18 MONTH ACADEMIC SCHEDULE -**

<b>COURSE *</b>	<b>LOCATION</b>	<b>HOURS</b>
Reading Blue Prints	Apprentices Headquarters	16 hrs study 1 hr test
Basic Plumbing	Apprentices Headquarters	10 hrs study 1 hr test
Motorgrader	Apprentices Headquarters	8 hrs minimum 40 hrs maximum
Loader	Apprentices Headquarters	8 hrs minimum 40 hrs maximum
Excavator	Apprentices Headquarters	8 hrs minimum 40 hrs maximum

**- 19 THRU 24 MONTH ACADEMIC SCHEDULE -**

<b>COURSE *</b>	<b>LOCATION</b>	<b>HOURS</b>
<b>Carpentry</b>	<b>Apprentices Headquarters</b>	<b>6 hrs study 1 hr test</b>
<b>Cat</b>	<b>Apprentices Headquarters</b>	<b>8 hrs minimum 40 hrs maximum</b>
<b>Rigging</b>	<b>SGTC San Ramon</b>	<b>120 hours</b>
<b>Loader</b>	<b>Apprentices Headquarters</b>	<b>8 hrs minimum 40 hrs maximum</b>

**- 25 THRU 30 MONTH ACADEMIC SCHEDULE -**

<b>COURSE *</b>	<b>LOCATION</b>	<b>HOURS</b>
<b>Surveying (Running Levels)</b>	<b>GC Yard Auburn</b>	<b>8 Hours</b>
<b>Construction Practices</b>	<b>Apprentices Headquarters</b>	<b>12 hrs study</b>
<b>Flumes</b>	<b>Apprentices Headquarters</b>	<b>12 hrs study</b>
<b>Valve Overhaul &amp; Repair</b>	<b>SGTC San Ramon</b>	<b>64 hours</b>
<b>Rigging</b>	<b>SGTC San Ramon</b>	<b>60 hours</b>

\* Tests in any time period (six Month intervals) may be taken in any order.

## COURSE OBJECTIVES, OUTLINES AND/OR DESCRIPTIONS

### ACADEMIC TRAINING

The training will begin with an orientation period consisting of a short introduction to various aspects of the company system, division organization, and facilities of the Hydro Department. This period will provide basic understanding of the Apprentice Water Systems Repairman Training Program, job duties, as well as other related areas including accounting procedures, safety, first aid, fire prevention, union contract, etc.

### MATH REVIEW

General review of math including problems involving the use of fractions, decimals, ratios, areas and volumes, and geometry relating to construction practices in the Water Departments.

### RIGGING

The fundamentals of rigging to include use of rope, slings, and calculations for determining weight of objects, size of blocks, advantage for using levers, and maintenance of equipment (From the Mechanical Maintenance Training Program, Steam Department, San Ramon).

### WELDING

Welding principles including coverage of basic fundamentals, equipment both gas and electric arc, oxygen cutting, brazing, soldering, and layout, etc. (From the Mechanical Maintenance Training Program, Steam Dept., San Ramon).

### EQUIPMENT OPERATION

Basic instruction and training in the operation of the various types of equipment utilized in the Hydro Departments. To include preoperative inspection and service requirements, operating procedures, company rules and regulations, use of complaint forms, records, etc., study material including manufacturers' instruction manuals, check sheets, etc. Instruction to be provided at the training facility at San Ramon and local headquarters as appropriate for the equipment utilized at each headquarters.

### HAND TOOLS

Information and practice in using measuring tools, wrenches, pipe fitting, concrete, woodworking, hoisting and pulling tools. How to use, sharpen, and maintain.

### PORTABLE POWER TOOLS

Instruction and safe practice using portable electric and air powered drills, hammers, saws, routers, planes, sanders, screwdrivers, wrenches, and grinders.

CARPENTRY

Basic information about lumber, selection, and safe use of tools, hardware, and general practices involving construction type carpentry.

CONSTRUCTION PRACTICE

Instruction and training in the appropriate skills required in performing work in the Hydro Departments associated with piping, concrete, levelling, and print reading. Instruction for print reading to be provided at each respective headquarters utilizing appropriate drawings for the specific types of structures and facilities maintained in that area or system.

FLUMES

The application and instructions for construction, reconstruction, and maintenance of the various types of flumes utilizing for water conveyance.

BASIC ELECTRICITY

Instruction and training in the appropriate skills required in performing work in the Hydro Departments associated with building maintenance electrical work.

SURVEYING (LEVELING)

Instruction and training in the appropriate skills required in performing the running of levels. (Available at G.C. Yard in Auburn)

VALVE OVERHAUL/REPAIR

Instruction and training in the appropriate skills required in performing maintenance and overhaul of valves. (Available at San Ramon Training Center)

BASIC PLUMBING

Instruction and training in the appropriate skills required in performing work in the Hydro Departments associated with building maintenance plumbing work.

READING BLUE PRINTS

Instruction and training in the appropriate skills required in performing work requiring the use of working drawings.

MAKING MEASUREMENTS

Instruction and training in the appropriate skills required in performing all work requiring measurements.



## HAND TOOLS

### INTRODUCTION

The correct and safe use of hand tools and their care are essential skills for Water Department personnel. Upon completion of this unit, the student will be able to make accurate measurements, identify tools by their correct name, cite the specific purpose and use of each tool, describe their correct operation, and provide the care and maintenance required to keep tools in proper operating condition. The importance of good workmanship is stressed and good safety practices are emphasized to prevent or minimize injury and equipment damage.

### STUDY GUIDE

The textbook to be used is Technical Publishing Company's USING HAND TOOLS. Read and study all of the lessons and answer the programmed exercises and self-check quizzes after each lesson.

### PERFORMANCE OBJECTIVE

The objective of this unit is to provide the employee with information to help acquire a good working knowledge of the use and operation of each hand tool. The completion of this unit will require about eighteen (18) hours of study time and one (1) hour for the performance test.

## HAND TOOLS

### Lesson 1: MEASURING TOOLS

Linear and angular measurement; Units of linear measurement; Rules and measuring tapes; Using rules and tapes; Calipers; Slide calipers; Vernier calipers; Micrometer caliper; Using the micrometer; Squares.

### Lesson 2: WRENCHES AND SCREWDRIVERS

WRENCHES--Using wrenches; Open-end wrenches; Box-end wrenches; Combination wrenches; Socket wrenches; Socket handles; Socket-head wrenches; Adjustable wrenches; Torque wrenches; Using wrenches safely.

SCREWDRIVERS--Using screwdrivers; Standard screwdrivers; Cross-slot screwdrivers; Spiral ratchet screwdrivers; Offset screwdrivers; Driving a screw; Removing a screw; Restoring a screwdriver blade; Using screwdrivers safely.

HAND TOOLS

Lesson 3: PIPE FITTING TOOLS Pipe wrenches, Using a pipe wrench; Pipe vises; Cutting pipe; Threading pipe; Reaming pipe; Tapping pipe; Cutting tubing and plastic pipe; Flaring metal tubing; Caring for pipe tools.

Lesson 4: PLUMBING TOOLS

Plumbing codes; Plumbing system; Joining copper pipe; Tube bending; Cutting cast-iron pipe; Joining cast-iron pipe; Assembling plastic pipe; Force-cup plungers; Augers; Line-clearing tools; Sewer tapes; Special wrenches; Measuring pipe.

Lesson 5: ELECTRICIAN'S TOOLS

The electrician; EMT bender; Correcting knocked-over stubs; Bending rigid conduit; Assembling rigid conduit; Knockout punches; Fish tapes; Pliers; Wire and cable strippers; Special screwdrivers; Test and safety equipment.

Lesson 6: WOODWORKING TOOLS

Handsaws; Crosscut saws; Ripsaws; Special purpose saws; Planes; Scrapers; Drills; Chisels; Levels; Plumb bobs; Hammers and nail sets.

Lesson 7: MASONRY, PLASTERING, AND GLAZING TOOLS

Concrete and mortar; Preparing mortar; Working with bricks and mortar; Tuckpointing; Working with concrete; Edging, jointing, and finishing; Repairing plaster; Repairing wallboard; Cutting glass; Installing glass; Safety on the job.

Lesson 8: SHEET METALWORKING TOOLS

Sheet metal; Sheet metal gages; Layout tools; Dividers; Punches; Rivets and riveting tools; metal cutting chisels; Using a chisel; Hammers; Metal cutting snips; Dressing, Notchers; Bench stakes; Forming tools; Hand seamer; Soldering sheet metal safety.

Lesson 9: METALWORKING TOOLS

Vises; Hacksaws; Using hacksaws; Files; File cuts; File specifications; Selecting a file; Using files; Taps; Tap sizes; using taps; Dies; Thread classes; Using dies; Reamers; Using Reamers.

HAND TOOLS

Lesson 10: HOISTING AND PULLING TOOLS

Hoisting with rope; Knots; Wire rope; Slings; Sling angles; Sling hitches; Center of gravity; Sling spreader beams; Block and tackle; Chain fall; Chain load pullers; Machine part pullers; Jaw pullers; Slide hammer pullers; Choosing the proper puller.

MATH REVIEW

## INTRODUCTION

A working knowledge of mathematics is an important part of the skills which an Apprentice Water Systems Repairman needs to do his job. Mathematical calculations are frequently used for most construction type jobs to determine required materials and in the assembly process involving use of measurements.

Safe rigging practices require the need to determine weights of objects, calculate the advantage of levers, determine size of pulling blocks and the number of lines needed to support a given load, and the sizes of slings to support the load.

The functions to be covered in this unit will provide all of the math needed by the Apprentice in his daily work.

## STUDY GUIDE

The textbook to be used is Technical Publishing Company's USING MATHEMATICS IN THE PLANT. Read and study all of the lessons as indicated in the index and answer the programmed exercises and self-check quizzes after each lesson.

PERFORMANCE OBJECTIVE

The object of this unit is for use as a refresher study for use in solving problems involving fractions, decimals, ratios, geometry, areas and volumes as related to Hydro Department work. The completion of this unit will require about ten (10) hours of study time and one (1) hour for the performance test.

MATH REVIEWLesson 1: WHOLE NUMBERS

Numbers and numerals; Decimal system; Positive and negative numbers; Addition; Carrying; Multiplication; Subtraction; Borrowing; Division.

Lesson 2: COMMON FRACTIONS

Definition of a fraction; Value of a fraction; Improper fractions; Mixed numbers; Equivalent fractions; Reducing fractions; Common denominators; Lowest common denominator; Adding fractions; Subtracting fractions; Subtracting mixed numbers; Multiplying fractions; Canceling; Dividing fractions.

MATH REVIEW

Lesson 3: DECIMAL FRACTIONS

Decimal form; Rounding off; Adding decimal fractions; Rounding off in addition; Subtracting decimal fractions; Rounding off in subtraction; Decimal fractions in shop; Multiplying decimal fractions; Rounding off in multiplication; Adding extra zeros; Dividing decimal fractions; Rounding off in division; Changing decimal fractions to common fractions.

Lesson 4: RATIOS AND PROPORTION

Comparing numbers; Ratios; Expressing ratios; Writing ratios; Units in ratios; proportion.

Lesson 5: POWERS AND ROOTS

Repeating multiplication and division; Exponential form; Multiplying in exponential form; Dividing in exponential form; Zero power; Fractions with exponents; Products with exponents; Powers of powers; Powers of sums and differences; Roots; Fractional exponents; Negative fractional exponents.

Lesson 6: CALCULATORS

What a calculator does; Inside a calculator; Internal logic; Basic functions; Special purpose calculators.

Lesson 7: GEOMETRY

Lines and curves; Circles; Angles; Measuring angles; Polygons; Triangles; Quadrilaterals; Constructions.

Lesson 8: ALGEBRA

Need for algebra; Symbols; Expressions and equations; Order of operations; Parentheses; Numbers and variables; Equations; Algebraic laws; Writing equations; Solving equations.

Lesson 9: USING FORMULAS

A real problem; Solving the problem; Length, area and volume; Solving other problems.

Lesson 10: TRIGONOMETRY

Properties of triangles; Trig functions; Trig tables; Inverse trig functions; Using trig functions.

PORTABLE POWER TOOLS

INTRODUCTION

Portable power tools have made it possible to perform many tasks with ease that formerly were time-consuming and laborious.

Many portable power tools are made for the jobs a student or craftsman is expected to perform in their work. Some are electric and others are air-powered. Either type can perform the same type of work but the amount done varies with application.

Most portable electric power tools have universal motors that operate on 120 or 240 volts, AC or DC. The electric tools are designed especially for intermittent work. Pneumatic tools perform better than electrical tools on long, continuous operations.

This unit describes the more common power tools and employee may use. All students should know as much as possible about the different power tools, to know which tools are best for each application. This unit describes in detail both electrical and pneumatic tools. It explains how to operate them properly and stresses safety in handling each tool.

STUDY GUIDE

The textbook to be used is Technical Publishing Company's Using Portable Power Tools. Read and study all of the lessons and answer the programmed exercises and self-check quizzes after each lesson.

PERFORMANCE OBJECTIVE

The objective of this unit is to provide the employee with information to help acquire a good working knowledge of safe operation and application of portable power tools. The completion of this unit will require about sixteen (16) hours of study time and one (1) hour for the performance test.

PORTABLE POWER TOOLS

Lesson 1: ELECTRIC DRILLS

Parts of electric drills; Light duty drills; Heavy duty drills; Accessories; Drill sizes; Drill bits; Preparing to drill; Using the electric drill; Electric drill maintenance; Drill safety.

Lesson 2: ELECTRIC HAMMERS

Types of hammers; Operating electric hammers; Bits and chisels; Core bits; Self-drilling anchors; Mechanical safety; Electrical safety; Environmental safety.

Lesson 3: PNEUMATIC DRILLS and HAMMERS

Pneumatic Drills - Air power; Types of pneumatic drills; Sizes of pneumatic drills; Bits for pneumatic drills; Preparing to drill; Operating pneumatic drills.

Pneumatic Hammers - Types of pneumatic hammers; Chipping and scaling; Drilling; Riveting; Tampers; Needle scalers; Diggers; Lubrication and maintenance.

Lesson 4: SCREWDRIVERS, NUTRUNNERS and WRENCHES

Screwdrivers and nutrunners; Clutch mechanisms; Power wrenches; Bits and sockets; Operating power screwdrivers and wrenches; Lubricators and moisture separators; Tool safety.

Lesson 5: LINEAR MOTION SAWS

Straight blade power saws; Saber saws; Saber saw blades; Plunge cutting; Straight cutting; Cutting metals; Saber saw techniques; Reciprocating saws; Reciprocating saw blades; Band saws.

Lesson 6: CIRCULAR SAWS

Circular saws; Using the circular saw; Circular saw blades; Special saw blades; Crosscutting; Ripping; Angular cutting; Plunge cutting; Notching and grooving; Cutoff wheels; Arbors and arbor adaptors; Circular saw accessories; Safety rules.

Lesson 7: ROUTERS and PLANES

Routers - Router characteristics; collet chucks; Bits; Using a router; Direction of feed; Grooves and dadoes; Rabbet cuts; Decorative trim; Circular cuts; Using templates; Hinge-butt mortising; Jointing.

Planes - Plane characteristics; Using a plane; Safety.

PORTABLE POWER TOOLS

Lesson 8: ELECTRIC SANDERS

Belt sanders; Installing a sanding belt; using the belt sander; Belt sander lubrication; Motor maintenance; Pad sanders; Loading the sander; Using the pad sander; Pad sander maintenance; Disk sanders; Using the disk sander; Disk assembly; Disk sander maintenance; Safety.

Lesson 9: GRINDERS and SHEARS

Grinders - Selecting a grinder; Grinding wheels; Mounting grinding wheels; Using a grinder; Grinder maintenance; Safety.

Shears - Selecting shears; Using shears and nibblers.

Lesson 10: TOOL SHARPENING

Reasons for sharpening; Whetstones; Using a bench grinder; Sharpening chisels; Sharpening drill bits; Sharpening screwdrivers; Sharpening pointed tools; Sharpening reamers; Sharpening taps and dies; Other sharpening tools.



CARPENTRY

INTRODUCTION

The carpenter and other crafts are closely related in many areas, and in some cases, overlap. It is common practice for some portion of your duties to be carpentry work. While the journeyman carpenter trade includes everything from rough construction through trim and finish work, your particular craft is usually concerned with construction-type carpentry only. This section, therefore, is limited to those carpentry operations that may be performed by your craft.

STUDY GUIDE

The text book to be used is Technical Publishing Company's INTRODUCTION TO CARPENTRY. Read and study all of the lessons provided and answer the programmed exercises and self-check quizzes after each lesson.

PERFORMANCE OBJECTIVE

The objective of this unit is to provide the employee with information to help acquire a good working knowledge of basic carpentry. The completion of this unit will require about six (6) hours of study time and one (1) hour for the performance test.

CARPENTRY

Lesson 1: LAYOUT AND HAND TOOLS

Introduction; Dressing for carpentry work; Safety accessories and equipment; Layout tools; Straightedge; Marking gage; T-Bevel and protractor; Framing square; Testing a framing square; Chalk box and line; Work-holding vices and clamps; Hand tools; Your toolbox.

Lesson 2: CARPENTER'S POWER TOOLS

Rules for power tool safety; Blades for circular saws; Correct use of a circular saw; The sabre saw; Reciprocating saw; The power drill; The power plane; The router; Belt sander; Finishing sander; Specialty tools for carpenters; Nailers and tackers; Power actuated fastening tools; The screw gun.

CARPENTRY

Lesson 3: LUMBER, WOOD PRODUCTS AND FASTENERS

Hardwood vs. softwood; Lumber sizes; Lumber grading; Lumber defects; Moisture content; Milling methods; Millwork; Plywood; Plywood grading; Working with plywood; Hardboard; Particleboard; Proper storage of lumber; Standard nails; Special nails; Wood screws.

Lesson 4: ESTIMATING CARPENTRY COSTS

Units for ordering materials; Reducing waste material; Using waste material; Bill of materials; Preparing a cost estimate; Overhead; Guides for cost estimating; Tips on organizing a task.

Lesson 5: PLANS, SPECIFICATIONS AND CODES

Architectural drawings; Presentation drawings; How to read drawings; Dimensions on drawings; Symbols used in drawings; Equipment schedules; A full set of plans; Specifications for construction; Building codes and zoning laws; Building permits; Making your own drawings.

## COURSE OBJECTIVES, OUTLINES AND/OR DESCRIPTIONS

### EQUIPMENT TRAINING

Course Title: Backhoe/Loader Training

This course involves intensive hands-on and lecture in procedures and techniques required for safe, effective backhoe/loader operation. Meets Company/Union agreement; employee must satisfactorily complete this training in order to remain in classification. The trainee will encounter a number of job related modules that are practiced to enhance proficiency. A Written Exam and Proficiency Evaluation is given and a grade of 70 percent or better is required to satisfactorily pass.

Who Should Attend:

Apprentice Water System Repairmen

Length of Course:

100 Hours maximum total hours: 80 Hour initial training  
20 hour retest if the initial  
80 hour course is failed  
3 day training course is available if employee has accumulated  
200 or more hours of prior experience.

What is to be accomplished:

Participants will be able to:

- Perform daily maintenance
- Perform effective loader operation, backfilling, leveling and 4 in 1 bucket operation
- Perform smooth, effective backhoe operation
- Demonstrate safe, efficient operational techniques

Instructors and Methods:

A 2:1 participant/instructor ratio. Training conducted at the Santa Rita Training Center. A combined classroom/field approach emphasizes hands-on experience. Instruction begins with basic control lever coordination exercises and advances daily through the more difficult situations encountered on-the-job. Each exercise is practiced until a measure of proficiency is obtained. A written examination is given at the completion of the classroom portion of training (day 2). Proficiency Evaluation is given on the last day.

## COURSE OBJECTIVES, OUTLINES AND/OR DESCRIPTIONS

### EQUIPMENT TRAINING (continued)

Course Title: Various

This training is to provide hands-on experience enabling employees to safely operate the various types of equipment utilized by the Hydro Generation Department. Also familiarizes them with proper daily maintenance procedures.

Includes but not limited to:

- Dump Truck
- Tractor/Lowboy Trailer
- Utility Crane (Boom) Truck
- Snow-cat
- Forklift
- Motorgrader
- Front Loader
- Excavator
- Crawler Tractor

Length of Course:

Minimum 8 hours. Instruction varies according to employee's ability and type of equipment. MAXIMUM 40 hours training expended.

What is to be accomplished:

Participants will be able to:

- Perform daily inspection and maintenance
- Demonstrate safe and efficient operation

Instructors and their Methods:

Training is conducted at the employee's headquarters. Equipment utilized for training is to be supplied by the requesting Headquarters.

A ratio of 1:1 participant/instructor is recommended. Facilities to show audio/video aids may be required. Safety rules, operating techniques and maintenance procedures will be reviewed. Written tests will be administered.

Hands on operation will be conducted at the headquarters; prefer to conduct on-the-job operation if practical.

# Backhoe/Loader Training - 80 Hour

## WEEK 1

### DAY 1:

#### I. Classroom

● 8:00 - 9:00

##### A. Introduction

1. Accommodations
2. Timecards
3. Meals

4. Sheriff Rules
5. Forms - Daily Report, Written Test, Proficiency Test, Letter
6. Retesting
7. Course Outline
8. Housekeeping Rules

#### II. Safety

● 9:00 - 10:00

- ##### A. Video "It Always Happens to the Other Guy"
- ##### B. Video "Spit Seconds to Live"

● 10:00 - 10:15

(BREAK)

● 10:15 - 10:30

##### C. General Safety Rules

1. Seat Belts
2. Securement of Hoe (parking)
3. Before turning seat
4. Maneuvering

#### III. Walk Around

● 10:30 - 10:45

- ##### A. View Trenching Area's

#### IV. Review Books

● 10:45 - 11:00

- ##### A. Tractor/Loader/Backhoe
- ##### B. Gas DSBN Black Book
- ##### C. Operator Manuals

#### V. Maintenance

● 11:00 - 12:00

- ##### A. Video - "Maintenance Procedures"
- ##### B. PG&E Operator Maintenance Requirements
- ##### C. Hands-On Review of Machines

● 12:00 - 12:30

(LUNCH)

Backhoe/Loader Training  
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VI. Check Points

- 12:30 - 1:15
  - A. Daily Check Done
  - B. Grease Machines
    - 1. Loading Grease Guns
    - 2. Lube Points Reviewed

VII. Straight Trenching

- 1:15 - 2:30
  - A. Control Lever Familiarization

VIII. Coordination Exercises

- 2:30 - 4:00
  - A. Fan Exercise

DAY 2:

I. Classroom

- 8:00 - 9:00
  - A. Review
    - 1. Maintenance Intervals
    - 2. Warm up - Shut down
    - 3. Safety Precautions:  
Set-Up, Parking, Rooding, Loading on  
Trailer, Hills
- 9:00 - 10:00
  - B. Video "Operating Tips"
    - 1. Loader Safety, Backfilling Technique
    - 2. Backhoe Components - Trenching  
Technique, Danger Zone, Tunneling,  
Elect., Hoisting
    - 3. Benching/Sloping
- 10:00 - 10:15 (BREAK)

II. Written Test

- 10:30 - 11:30
  - A. Grade and Review Tests

III. Daily Check Performed

- 11:30 - 12:00
- 12:00 - 12:30 (LUNCH)

IV. Trenching Exercises

- 12:30 - 4:30
  - A. Straight Trench
  - B. Coordination Exercises
    - 1. Fan
    - 2. Fish
    - 3. ⚡

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DAY 3:

I. Trenching Exercises

● 8:00 - 10:30

- A. Straight Trench
- B. Coordination Exercise
- 1. ⚡

● 10:00 - 10:15

(BREAK)

II. Straight Trench

● 10:15 - 3:00

III. Backfilling

● 3:00 - 4:30

DAY 4:

I. Lube Backhoe

● 8:00 - 8:30

II. Straight Trench

● 8:30 - 4:30

- A. Obstacle Trench
- B. Backfill

DAY 5:

I. Obstacle Trench

● 8:00 - 4:30

- A. Wall Trench
- B. Backfill

WEEK 2

DAY 6:

I. Lube Loader

● 8:00 - 8:30

- A. Check Points

II. Cul-de-Sac

● 8:30 - 4:30

- A. Dump Truck
- B. Obstacle
- C. Backfill

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DAY 7:

III. Cul-de-Sac

● 8:00 - 4:30

- A. Dump Truck
- B. Obstacle
- C. Backfill

DAY 8:

I. Lube Backhoe

● 8:00 - 8:30

- A. Check Points

II. Branch Service

● 8:30 - 4:30

- A. Dump Truck
- B. Straight Trench
- C. Tap Hole
- D. Backfill

DAY 9:

I. Branch Service

● 8:00 - 4:30

- A. Straddle Trench
- B. Straight Trench
- C. Hill Trench
- D. Backfill

DAY 10:

I. Proficiency Test

● 8:00 - 4:30

- A. Hill Trench
- B. Straddle/Jump Trench
- C. Backfill
- D. Review



# BACKHOE/LOADER TRAINING - 3 DAY

## COURSE OUTLINE

### I CLASSROOM (DAY #1)

- A. Introduction
  - 1. Personal/School Background
  - 2. Company/Union Agreement
  - 3. Learning Ctr. Accommodations
  - 4. Time Cards (travel time, mileage)
  - 5. Emerg. phone numbers + Forms
  - 6. Housekeeping Rules (ear plugs)

### COURSE CONTENTS (Flipchart)

- B. Classroom (6 hours)
  - 1. Safety/Maintenance Videos
  - 2. Safety Rules and Proced.
  - 3. Walk-around
  - 4. WRITTEN TEST
  - 5. DRAW STRAWS (Proficiency Test)  
-- Grease Hoes + Practice

### SAFETY (Video)

- C. Video "It Always Happens to the Other Guy"
- D. General Safety Rules
  - 1. Seat Belts
  - 2. Securing of Hoe (parking)
  - 3. Before Turning the Seat Around
  - 4. Maneuvering (ANCHOR OUT)

## BREAK

- E. Walk-around Trenching Area's
- F. Video "Hazards of Hurry"

### PROCEDURES (DSBN Book)

- G. Review Tractor/Loader/Backhoe Book
- H. Review DSNB Backhoe Book
  - 1. Read Pages 2 through 6-  
-Leaf through Loader Operation +  
Backhoe Operation.
- I. Mention Operator Manuals are Available.

### REVIEW (Overheads)

DANGER AREA  
VISIBILITY + STABILITY  
CENTER OF GRAVITY  
LOADER TECHNIQUES  
CRANING  
RUN-AWAY

## LUNCH

BENCHING/SLOPING J. Theory of a Cave-In  
(Overheads) 1. Benching  
2. Sloping

K. Point-Out Sections:

GRADE STAKES / COMMERCIAL DRIVERS LICENSE REQUIREMENTS

MAINTENANCE L. Video "Maintenance Procedures"  
(Video) 1. Discussion on Company policies  
A. Operator Responsibility  
B. BIT Program (Inspection Sheets)

WRITTEN TEST

DRAW STRAWS

GREASE HOES + PRACTICE

II HANDS-ON A. Fluid Checks  
(DAY #2) B. Straight Trenching  
C. Practice Proficiency Test  
D. Practice Jump/Straddle

III TRENCHING PROFICIENCY TEST  
(DAY #3)

NAME \_\_\_\_\_ SS. # \_\_\_\_\_

HEADQUARTERS \_\_\_\_\_ DATE \_\_\_\_\_

BACKHOE/LOADER TEST QUESTIONS SCORE \_\_\_\_\_ %

CIRCLE THE LETTER NEXT TO THE MOST CORRECT ANSWER:

1. TRENCHES 5' DEEP OR DEEPER, SPOIL IS TO BE PLACED AT LEAST:
  - A. 4' from the edge of the trench
  - B. 2' from the edge of the trench
  - C. 3' from the edge of the trench
  - D. 1' from the edge of the trench
2. TRENCHES LESS THAN 5' IN DEPTH, SPOIL IS TO BE PLACED:
  - A. 2' from the edge of the trench
  - B. Next to the edge of the trench
  - C. 1' from the edge of the trench
  - D. 18" from the edge of the trench
3. HOW OFTEN IS A BACKHOE/LOADER TO BE GREASED?
  - A. Monthly
  - B. Every day
  - C. At least every 50 hours
  - D. Before operating
4. IF U.G. ELECTRIC IS TO BE DUG OVER AND EXACT DEPTH IS NOT KNOWN, YOU ARE TO:
  - A. Not dig
  - B. Notify the Electric Department
  - C. Dig all but the last 12"
  - D. Dig only the surface pavement-12" maximum

5. THE RECOMMENDED WARM-UP PERIOD FOR A BACKHOE IS:
  - A. None needed
  - B. 10 minutes
  - C. 15 minutes
  - D. 5 minutes
  
6. IF YOU ARE PERFORMING MAINTENANCE OR SERVICE WITH THE LOADER BUCKET RAISED YOU SHOULD:
  - A. Raise the loader no more than one foot off the ground.
  - B. Block the wheels.
  - C. Support the loader with a lift arm lock or a supporting beam.
  - D. Lower the stabilizers.
  
7. DAILY MAINTENANCE SHOULD ALWAYS INCLUDE:
  - A. Checking the gauges.
  - B. Fluid checks, including water, oil, and hydraulic fluid.
  - C. Seating platform area cleaned.
  - D. All the above
  
8. THE KEY TO SAFE, EFFICIENT BACKHOE OPERATION IS :
  - A. Solid stability, beginning with proper positioning of the stabilizers.
  - B. Operating the engine rpms at maximum to maintain hydraulic pressure.
  - C. Operating one lever at a time.
  - D. Reading the operators manual.

9. WHEN YOU ARE LOADING A TRUCK, LOAD FROM THE TRUCKS :
- A. Low side
  - B. Rear
  - C. High side
  - D. Is not important
10. WHEN DIGGING ON A SLOPE, WHENEVER POSSIBLE, PLACE THE SPOIL ON THE:
- A. Downhill side
  - B. Uphill side
  - C. In two piles, one on each side.
  - D. As far from the trench as possible.
11. TO LEVEL YOUR MACHINE WHILE TRENCHING ACROSS A STEEP SLOPE, YOU MAY NEED TO :
- A. Pile some blocks under the downhill stabilizer.
  - B. Face uphill and do your digging from an extreme swing position.
  - C. Use the loader bucket to cut a level surface for positioning.
  - D. Curl your loader bucket down so that it can dig-in for more stability.
12. WHEN LIFTING A LOAD WITH THE BACKHOE, POSITION THE TRACTOR:
- A. To lift it from the side opposite the spot where you plan to place it.
  - B. To lift it from the side closest to the spot where you plan to place it.
  - C. To crane with the boom locked in the transport position.
  - D. To lift it from the back of the unit not the side.

13. IF YOU ARE ROADING YOUR BACKHOE/LOADER AND TRAFFIC BEGINS TO BACKUP BEHIND YOU:
- A. Slow down to let traffic go around you.
  - B. Wave for them to pass when its clear.
  - C. Pull over to a safe, level area and let the traffic pass.
  - D. Don't worry about it, you have as much right to the road as they do.
14. DON'T START EXTENDED LOADER OPERATION UNTIL YOU:
- A. Have put the backhoe stabilizers in the down position.
  - B. Secured the backhoe in the transport position.
  - C. Locked both brake petals together.
  - D. None of the above.
15. WHEN MOVING A LOAD, KEEP THE LOADER BUCKET:
- A. As high as possible for best visibility.
  - B. Three foot off of the ground.
  - C. As low as possible for maximum visibility and stability.
  - D. Curled all the way back.

IF YOU BELIEVE THAT THE STATEMENT IS MORE TRUE THAN FALSE  
DRAW A CIRCLE AROUND THE T; IF YOU BELIEVE THE STATEMENT IS  
MORE FALSE THAN TRUE, DRAW A CIRCLE AROUND THE F

16. T F It is the operator's responsibility to do a thorough inspection of his/her equipment at the start of each day.
17. T F It is advisable to have your warning flashers on when roading .

18. T F In most cases it is necessary for the operator to crawl under the backhoe/loader to reach several grease fittings.
19. T F To check the fluid level in a power shuttle transmission you are to leave the motor running, place the shuttle in neutral and the transmission in 4th gear.
20. T F If the air filter warning light comes on during operation, stop operation and call for a garageman and do not continue till the filter has been replaced.
21. T F When loading a dump truck with a backhoe, it is permissible to swing the digging bucket over the cab of the truck.
22. T F Seat belts are to be worn whenever the operator is facing in the driving position.
23. T F It is acceptable for an experienced operator to drag the backhoe teeth over a underground facility.
24. T F When roading, or when loading and unloading from a trailer you are to lock both brake petals together.
25. T F Always place the gear shift lever and forward and reverse shuttle in neutral before turning the seat around to perform backhoe operation.

# DAILY REPORT FOR BACKHOE TRAINING

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

## TYPE OF WORK DONE:

CLASSROOM: \_\_\_\_\_ HRS.

DIGGING TRENCHES:            Straight     Obstacle     Branch   
                                 Tunnel Curb     Cul-De-Sac     Wall     ----HRS.

COORDINATION EXERCISES:            S             Fan             Fish   
   4 in 1             Push/Pull             ----HRS.

DIGGING TAPHOLES: \_\_\_\_\_ HRS.

JUMPING TRENCHES:            Jump     Straddle     ----HRS.

BACKFILLING: \_\_\_\_\_ HRS.

LOADING DUMP TRUCKS: \_\_\_\_\_ HRS.

OPERATING ON HILLS:            Trench     Backfill   
   Drive up/down     ----HRS.

SETTING STEEL PLATES: \_\_\_\_\_ HRS.

MAINTENANCE ON EQUIPMENT: \_\_\_\_\_ HRS.

REVIEWING DAILY WORK: \_\_\_\_\_ HRS.

TOTAL HOURS IN CLASSROOM: \_\_\_\_\_ HRS.

TOTAL HOURS ON JOB SITE: \_\_\_\_\_ HRS.

TYPE OF EQUIPMENT: \_\_\_\_\_

INSTRUCTORS NAME: \_\_\_\_\_

REMARKS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

GOOD            FAIR            POOR  
10 9 8            7 6 5            4 3 2



# BACKHOE PROFICIENCY EVALUATION

Name	Classification	Date		
Region	Division	Department		
OPERATIONS		STANDARDS		
<b>Safe Equipment Operation</b>  1. Smoothly Operated 2. Loader Control 3. Proper Speed 4. Hand and Verbal Instruction	<b>Below</b>  5 5 5 2	<b>Meets</b>  7 6 6 3	<b>Exceeds</b>  9 9 9 6 (33pts)	<b>Score</b>      _____
<b>Proper Operating Procedures</b>  1. Proper Trench / Taphole Config. 2. Maneuvering Ability 3. Backfilling 4. Jumping / Straddling Trench	<b>Below</b>  5 5 5 2	<b>Meets</b>  7 7 6 3	<b>Exceeds</b>  9 9 9 6 (33pts)	    _____
<b>Productivity</b>  1. Accomplish in Allotted Time  Note 24 Meets	<b>Minus 1 pt.</b> for every min. over  No lower than 9pts or 15min. over	<b>Refer to</b> <b>Test</b> # _____ <b>Allotted</b> <b>Time:</b> _____ (24std)	<b>Plus 2 pts</b> for every 5 mins. under Not to exceed 33pts  <b>Time:</b> _____	    _____
<b>Maintenance</b>  1. Maintenance Performed 2. Vehicle Inspected	0 0	1/2 1/2	1/2 1/2 (1pt)	   _____

Total Score \_\_\_\_\_

Passing Score is 70 out of a possible 100 pts.

\_\_\_\_\_  
 TRAINEE

\_\_\_\_\_  
 INSTRUCTOR

## COURSE OBJECTIVES, OUTLINES AND/OR DESCRIPTIONS

### EQUIPMENT TRAINING (continued)

Course Title: Various

This training is to provide hands-on experience enabling employees to safely operate the various types of equipment utilized by the Hydro Generation Department. Also familiarizes them with proper daily maintenance procedures.

Includes but not limited to:

- Dump Truck
- Tractor/Lowboy Trailer
- Utility Crane (Boom) Truck
- Snow-cat
- Forklift
- Motorgrader
- Front Loader
- Excavator
- Crawler Tractor

Length of Course:

Minimum 8 hours. Instruction varies according to employee's ability and type of equipment. MAXIMUM 40 hours training expended.

What is to be accomplished:

Participants will be able to:

- Perform daily inspection and maintenance
- Demonstrate safe and efficient operation

Instructors and their Methods:

Training is conducted at the employee's headquarters. Equipment utilized for training is to be supplied by the requesting Headquarters.

A ratio of 1:1 participant/instructor is recommended. Facilities to show audio/video aids may be required. Safety rules, operating techniques and maintenance procedures will be reviewed. Written tests will be administered.

Hands on operation will be conducted at the headquarters; prefer to conduct on-the-job operation if practical.

**DUMP TRUCK**  
**INTRODUCTION**

The purpose of this training is to familiarize you with the Dump Truck.

Proper application of this training course will result in increased efficiency and safe operation of the equipment.

We will discuss the various job site operations that should be continually considered and maintained during the course of the day's construction activities.

## OUTLINE / SCHEDULE

	INSTRUCTION TIME
I. INTRODUCTION	5 minutes
II. SUBJECT MATTER (CLASS ROOM)	1 hour 30 minutes
A. General Information	
B. To load the dump body	
C. To empty the dump body	
D. Lubrication of the dump body	
E. Daily Inspection	
III. QUIZ	15 minutes
IV. FIELD EXERCISE	6 hours
V. SUMMARY	10 minutes
<b>TOTAL</b>	<b>8 HOURS</b>

**BOOM TRUCK**  
**INTRODUCTION**

The purpose of this training course is to familiarize you with the Boom Truck.

Proper application of this training course will result in increased operating efficiency and safe operation of the Boom Truck.

We will discuss the various job-site operations that should be continually considered and maintained during the course of the training session.

## OUTLINE / SCHEDULE

	INSTRUCTION TIME
I. INTRODUCTION	5 minutes
II. SUBJECT MATTER (CLASS ROOM)	1 hour 30 minutes
A. General Information	
B. Start Up	
C. Safety Precautions for Start Up	
D. Operation of the Boom	
E. Safety Precautions for Boom Operations	
F. Winch Operations	
G. Safety Precautions for Winch Operations	
H. Securing the Boom for Travel	
I. Safety Precautions for Travel	
J. Maintenance	
K. Trouble Shooting in the Field	
L. Daily and Monthly Inspection	
III. QUIZ	15 minutes
IV. FIELD EXERCISE	6 hours
V. SUMMARY	10 minutes
<b>TOTAL</b>	<b>8 HOURS</b>

## **FORKLIFT TRUCKS**

### **INTRODUCTION**

The purpose of this training course is to familiarize you with our Company equipment and to help you prepare yourself for job advancement.

Proper application of this training course is designed for the purpose of upgrading the skills of operators in order that they may increase operating efficiency and work safely at all times.

We will discuss the various job site operations that should be continuously considered and maintained during the course of the day's activities.