

# PACIFIC GAS AND ELECTRIC COMPANY

PGE

245 MARKET STREET • SAN FRANCISCO, CALIFORNIA 94106 • (415) 781-4211 • TWX 910-372-6587

April 30, 1984

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

Attention: Mr. Jack McNally, Business Manager

Gentlemen:

This letter cancels and supersedes our letter of February 15, 1984.

Pursuant to Section 304.4 of the Physical Agreement, Company proposes to establish a new classification and wage rates as follows:

#### Station Mechanic

Start	\$507.60 per week
End 6 mo.	524.00 per week
End 1 yr.	543.70 per week
End 18 mo.	560.00 per week
End 2 yrs.	576.80 per week
End 30 mo.	594.10 per week
End 3 yrs.	635.95 per week

Company further proposes the adoption of the attached Station Construction Department, Station Mechanic Training Program Administration Manual, which has the full recommendation of the Joint Training Committee. Application of the above will be as follows:

Upon the effective date of this Agreement, those employees of record holding the Hydro/Station Mechanic classification, and at a wage rate no greater than 24 months, will be granted 60 calendar days in which to initially elect to participate in the training. Those employees who elect to take the training will begin the training as soon after the election as possible. They will then progress through the classification and attain the top step of Station Mechanic, provided they have met the required Standards of Achievement.

An employee will not have a PWI withheld if such employee has not had six months time in which to meet the Standards of Achievement, as provided for in Section 4.7 of the Administration Manual, for any given wage step. However, before progressing to the next wage step, all Standards of Achievement for the previous step must have been met.

February 15, 1984

An incumbent (at the 24-month step or less) who elects not to participate in the training or one who fails to meet the Standards of Achievement, will be allowed to progress to the top wage step of the Hydro/Station Mechanic classification only. If such employee later elects to participate in the training, the employee shall nevertheless be held at the top wage step of Hydro/Station Mechanic until all Standards of Achievement have been met for the complete training program.

The Hydro/Station Mechanic classification shall be considered a "Present Incumbent Only" classification, and no new employees will be allowed to enter after the effective date of this Agreement except as provided below.

Those incumbents who are at the 30 and 36-month wage steps on the effective date, and who elect, within 60 calendar days to take the training, will begin the training as soon as possible after giving notification. Those at the top wage step will be reclassified to Station Mechanic at the top wage step. Those at the 30-month wage step, upon completion of 6 months at that step, will progress to the top wage step of Station Mechanic. These employees must complete the following seven courses: MB-10, M10, M-35, M-15, M-20, M-60 and MB-25.

The above courses must be completed within nine months or less, inclusive of any retests, and these employees must attempt a minimum of one course final per month. An employee who fails one of the course finals will be granted one retest which must be passed within 30 days of the date of failure or the employee shall be returned to the top wage step of the Hydro/Station Mechanic and remain there until all seven courses are completed.

Employees who enter the Station Mechanic classification on or after the date of this agreement, will be placed at the starting rate of pay and will progress pursuant to the Station Mechanic Training Program Administrative Manual.

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

Yours very truly,

PACIFIC GAS AND ELECTRIC COMPANY

By *W. Bonbright*  
Manager of Industrial Relations

The Union is in accord with the foregoing and its attachment and agrees thereto as of the date hereof.

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

*June 6*, 1984

By *Jack McHenry*  
Business Manager

# PACIFIC GAS AND ELECTRIC COMPANY

PG&E + 77 BEALE STREET • SAN FRANCISCO, CALIFORNIA 94106 • (415) 781-4211 • TWX 910-372-6587

②

①

Dear ③:

Attached for your information is a recently signed letter of agreement between Local 1245, I.B.E.W. and PG&E concerning the establishment of a new classification, Station Mechanic. The agreement also establishes a training program for this new classification.

As an incumbent Hydro/Station Mechanic, you have until ④ to decide whether or not you will participate in the training program. Please indicate your decision in the space provided below and return this letter to ⑤ 345 Mission Street, Room ⑥ San Francisco.

I elect to participate in the Station Mechanic Training Program.

I do not elect to participate in the Station Mechanic Training Program.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

- 1 = Date
- 2 = Name of emp & Co address
- 3 = Name of emp
- 4 = 60 days from date of signature on LIA
- 5 = Name of individual to return letter to.
- 6 = Room #

STATION CONSTRUCTION DEPARTMENT  
STATION MECHANIC TRAINING PROGRAM  
ADMINISTRATION MANUAL

## CONTENTS

PAGE

1. INTRODUCTION
2. ENTRANCE QUALIFICATIONS
3. OUTLINE OF ADMINISTRATIVE DETAILS
  - 3.1 GENERAL ADMINISTRATION
  - 3.2 GENERAL SUPERVISION
  - 3.3 DIRECT SUPERVISION
4. ACADEMIC OUTLINE AND PROCEDURE
  - 4.1 COURSE MAP, PROGRESS CHART, "ON-THE-JOB" TRAINING RECORD, AND STANDARDS OF ACHIEVEMENT RECORD
    - 4.11 COURSE MAP
    - 4.12 PROGRESS CHART
    - 4.13 "ON-THE-JOB" TRAINING RECORD
    - 4.14 STANDARDS OF ACHIEVEMENT RECORD
  - 4.2 ACADEMIC COURSE OUTLINE
  - 4.3 COURSE PROCEDURES
    - 4.31 COURSE MAP
    - 4.32 UNIT LESSONS
  - 4.4 UNIT TESTS
    - 4.41 CHALLENGING THE UNIT TEST
  - 4.5 WRITTEN/PERFORMANCE TESTS
  - 4.6 EVALUATION OF EMPLOYEE'S PROGRESS
  - 4.7 COMPLETION OR DISCONTINUANCE OF THE PROGRAM
  - 4.8 GUIDELINES FOR STATION MECHANIC TRAINING PROGRAM

ADMINISTRATION MANUAL

FOR

SUPERVISORS

STATION MECHANIC TRAINING PROGRAM

1. INTRODUCTION

An important obligation of the supervisor is the training of employees to handle the ever-expanding technological challenges of the energy industry. The many changes in the science of power generation, transmission, distribution, system protection, and metering have necessitated the training of personnel with definite goals in the fields of qualification and job potential. This manual has been prepared to assist supervisors in the administration of the Station Mechanic Training Program, and aid with achieving these goals.

Once an employee has qualified for and has been selected to enter the Station Mechanic Training Program, a step-by-step program together with continual help, guidance, and encouragement from the supervisor will be provided. Supervisors must follow established procedures to assure that the program will be administered uniformly. The Station Mechanic Training Program shall, in the end, benefit the students and the Company.

The objective of this program is to assist employees in gaining knowledge of their chosen trade, thereby giving them confidence in their ability to earn a living and assisting them to become safer and more productive employees.

The Training Program is comprised of two components, namely:

- A. Academic Training - The written material to be studied.
- B. On-the-job Training - The physical work performed during the Training Program.

An employee must have certain qualifications to enter the program, must meet minimum standards to remain in the program, and must successfully pass the tests of proficiency to advance in the program.

2. ENTRANCE QUALIFICATIONS

To qualify for the classification of Station Mechanic, the employee must meet the seniority requirements of the union contract.

### 3. OUTLINE OF ADMINISTRATIVE DETAILS

The Station Mechanic Training Program is designed to be compatible with the roving-type crew found in General Construction. The Program is designed to provide self-paced, self-instructional training. When an employee is transferred, the course material is carried by the employee. The Foreman's copy of the employee's training record is forwarded immediately with the employment records to the employee's new job headquarters.

#### 3.1 GENERAL ADMINISTRATION

Under the direction of the Manager, the Educational Supervisor is responsible for the administration and supervision of the Training Program. The Supervisor will organize and coordinate all phases of the Training Program including:

- A. Prepare and furnish all Training Program material.
- B. Instruct and advise the supervisors.
- C. Cooperate with the General Foreman, Project Superintendent, Resident Engineer, or other designated Supervisor in scheduling the days required for administering tests.
- D. Grade Unit Tests and Written Tests. Inform the trainee and the supervisor of incomplete or incorrect answers and advise them of the topics to be reviewed.
- E. Assure that a complete set of Training Program records, both academic and physical, are maintained at all field offices involved in the individual employee training.
- F. Advise the Foreman and the Manager's Office regarding any failure to maintain proper scheduling of the employee's Academic and physical training.
- G. Advise the Foreman and General Foreman of those tests failed by trainees in writing with copies to IBEW AND Industrial Relation representatives.
- H. Collect data from the Foreman and candidates on the Station Mechanic Training Program. This information may be used:
  1. To determine what changes are required to improve the Station Mechanic Training Program. This refining process is a continual program to assure that the trainees are provided with accurate and up-to-date course material, and must be agreed to by union.
  2. To determine which employees may have potential for a higher level of training such as an Instrumentation or Electrical Technician.

3. To determine what assistance is required to help those employees that are having trouble in understanding the course material.

### 3.2 GENERAL SUPERVISION

The General Foreman, Project Superintendent, Resident Engineer, or other designated Supervisor shall be responsible for supervision of the Training Program for all the personnel under their direction. Qualified Technical Advisors shall be provided to meet the needs of the Station Mechanic Training Program. Individual foreman shall provide a place for each trainee to take the required Unit Tests.

The full cooperation of the General Foreman, Project Superintendent, Resident Engineer, and Foreman is essential to the success of the Training Program. A problem which may be encountered is that the students may not, in some cases, complete the course in the time allotted. Trainees shall be continuously encouraged to maintain course schedules.

### 3.3. DIRECT SUPERVISION

The direct supervision of each employee's Station Mechanic Training Program is the responsibility of the individual's Foreman. The Foreman will be assisted by other qualified personnel as necessary. Thus, through association with more than one person, the employee will receive a wider range of knowledge and experience.

Upon transfer to a new crew, the employee will report to the Foreman who will review the training records. The Foreman will, if possible, assign work to help fill the gaps in the trainee's "On-the job" Training Record. It is the responsibility of the Foreman to:

- A. Provide for a prearranged period of a minimum of two hours per week during which time a Technical Advisor will be available to answer questions, assist the trainees with troublesome concepts or problems, and for the purpose of taking tests. It is not intended as a prearranged time for study. This period of time may be scheduled a minimum of two hours once a week or one hour two days a week.
- B. At least once each month review the trainee's Training Records in the presence of the trainee. The review will be held individually to maintain confidentiality. At this meeting the Foreman will:
  1. Review the trainee's "On-the-job" Training Record.
  2. Make sure the trainee's academic and physical work records are up to date and determine if there are any problems that need to be corrected.
  3. Inform the trainee of his general progress.



4. Give encouragement and praise when it is deserved, and provide the time to answer any troublesome questions or help in any problems.
  5. Counsel the trainee of consequences or deficiencies in skills and not maintaining the academic training schedule. The Foreman shall document the date of counseling on the trainee's record card.
- C. Every month forward a copy of the "On-the-Job" Training record to the Manager's Office where the progress of the trainee will be discussed. The Superintendent will determine if further skilled training is needed.
  - D. Prepare an evaluation report at the end of the first five months of the trainee's program, and every six months thereafter until the training program is completed.
  - E. Prepare an evaluation report when the trainee is transferred from the crew.
  - F. Maintain and keep current the "On-the-Job" Training Record (physical work).
  - G. Upon transfer, immediately forward all training records. These records will accompany the trainee's employment record.
  - H. Notify the Educational Supervisor immediately of any transfer of personnel in training, giving the name of the trainee and location points of transfer.
  - I. Perform the duties of the Technical Advisor when required.
  - J. Administer and grade all performance tests and forward the results of the tests to the Educational Supervisor.

#### 4. ACADEMIC OUTLINE AND PROCEDURE

The Academic Program consists of self-study courses so designed that trainees can quickly assimilate basic theory pertaining to their occupation.

Each self-study course contains a Study Outline, which consists of a set of Lessons, averaging 10 lessons per course, and self-check quizzes with answers. The quiz tests the knowledge of the trainee on the subject material just covered. Each course is based on the premise that the trainee has no prior knowledge of the subject other than material previously covered in the program.

Required books and course material will be furnished by the Company. The trainee may keep the study aids of courses successfully completed, but any lost or damaged books shall be replaced at the employee's expense. If for any reason a trainee fails to successfully complete a course, the books and material must be returned in good condition to the Company.

4.1 COURSE MAP, PROGRESS CHART, "ON-THE-JOB" TRAINING RECORD AND STANDARD OF ACHIEVEMENT RECORD

The following charts and records will be used in the Training Program:

4.11 COURSE MAP

The outline of progressive Study Units required for the Training Program.

4.12 PROGRESS CHART

A list of Study Units which will show the date each lesson unit is received and the date and grade of all tests and retests taken.

4.13 "ON-THE-JOB" TRAINING RECORD

This record will indicate the work experience and exposure the student acquires while working on various skills. If the student can perform the skill in less time and the performance attained, the trainee can then be qualified. The trainee must qualify in the following skills in order to advance to the top step of the craft.

	<u>Skill</u>	<u>Estimated Qualifying Time</u>	<u>Standards of Achievement</u>	<u>Location of Work Area</u>
1-	DUCT (Transite or Plastic)	5 weeks	Layout Excavate Fabricate Install Backfill	POWER PLANT AND SUBSTATION
2-	CONDUIT (Rigid or T.W.)	3 weeks	Layout Fabricate Install	POWER PLANT AND SUBSTATION
3-	STEEL STRUCTURES (Transmission, or Distribution, or Building)	7 weeks	Layout Rigging Assemble Erect	SUBSTATION
4-	SWITCH ASSEMBLY - AIR (60 KV or above)	8 weeks	Layout Rigging Assemble Erect Adjust	SUBSTATION

	<u>Skill</u>	<u>Estimated Qualifying Time</u>	<u>Standards of Achievement</u>	<u>Location of Work Area</u>
5-	BUS (Copper - Rigid or Cable) (Alum. - Rigid or Cable)	5 weeks	Layout Rigging Install Connect	SUBSTATION
6-	TRANSFORMERS OR REGULATORS	5 weeks	Layout Rigging Assemble Adjust LTC Connect	SUBSTATION
7-	POWER CIRCUIT BREAKERS	9 weeks	Layout Rigging Assemble Adjust Connect	POWER PLANT AND SUBSTATION
8-	SWITCHBOARDS	4 weeks	Layout Fabricate Paint Install Panels	POWER PLANT AND SUBSTATION
9-	WELDING - OXY-ACETYLENE (Cutting)	4 weeks	Pipe Plate Angle	POWER PLANT AND SUBSTATION
10-	WELDING - BRAZING	3 weeks	Layout Fit Up Braze	POWER PLANT AND SUBSTATION
11-	WELDING - CADWELD	2 weeks	Layout Fabricate Install Connect Weld	POWER PLANT AND SUBSTATION

	<u>Skill</u>	<u>Estimated Qualifying Time</u>	<u>Standards of Achievement</u>	<u>Location of Work Area</u>
12-	METAL BUILDINGS	4 weeks	Segregate Erect Bolt Weld	POWER PLANT and SUBSTATION
13-	EQUIPMENT - PUMPS	6 weeks	Check Fdn. Bolts Install Set to Elev. Rough Align Final Align	POWER PLANT
14-	EQUIPMENT - MOTORS	6 weeks	Check Fdn. Bolts Install Set to Elev. Bearing Check Air Gap Check	POWER PLANT
15-	EQUIPMENT - FANS	6 weeks	Check Fdn. Bolts Install Set to Elev. Align Housing Install Rotating Element Clearance Checks	POWER PLANT
16-	EQUIPMENT - GENERATOR	6 weeks	Check Fdn. Bolts Install Set to Elev. Install Rotating Field Final Assembly	POWER PLANT
17-	EQUIPMENT - TANKS	4 weeks	Check Fdn. Check Fdn. Bolts Install Bottom Sections Erect Sides Install Roof Sections Install Penetrations Test	POWER PLANT
18-	PLATFORMS	3 weeks	Layout Fabricate Rigging Bolt Weld	POWER PLANT
19-	HANDRAILS	3 weeks	Layout Fabricate Rigging Bolt Weld	POWER PLANT

	<u>Skill</u>	<u>Estimated Qualifying Time</u>	<u>Standards of Achievement</u>	<u>Location of Work Area</u>
20-	PIPING or TUBING (Copper)	5 weeks	Layout Fabricate Connect	POWER PLANT
20-	PIPING or TUBING (Steel)	8 weeks	Layout Fabricate Connect	POWER PLANT
20-	PIPING or TUBING (Plastic)	5 weeks	Layout Fabricate Connect	POWER PLANT
21-	CABLE TRAYS	6 weeks	Layout Fabricate Install	POWER PLANT
22-	CONDUIT HANGERS	2 weeks	Layout Fabricate Install	POWER PLANT
23-	PIPE HANGERS	4 weeks	Layout Rigging Fit Pipe Spools Weld Pipe Spools	POWER PLANT

The "On-the-Job" Training Record card is designed to show all the required skills needed for the trainee to qualify as a Station Mechanic. Shaded squares represent qualifying skills and the average number of weeks and exposures to qualify.

The reverse side of the "On-the-Job" Training Record is the "Employee/Foreman Review Record." This record is to be installed and dated by the employee and foreman after a review.

#### 4.14 STANDARD OF ACHIEVEMENT RECORD

The Achievement Record is to be filled out every time a weekly qualifying entry is made on the "On-the-Job" Training Record. It is to document strength or weakness in any of the Standards of Achievement performed by the trainee. Should the trainee be transferred, the Standards of Achievement shall be updated at once and forwarded to the trainee's next supervisor.





NAME \_\_\_\_\_ CLASSIFICATION \_\_\_\_\_

STANDARDS OF ACHIEVEMENT RECORD  
FOR  
"ON-THE-JOB" TRAINING SKILLS

1 DUCT  
Layout \_\_\_\_\_  
Excavate \_\_\_\_\_  
Fabricate \_\_\_\_\_  
Install \_\_\_\_\_  
Backfill \_\_\_\_\_

2 CONDUIT  
Layout \_\_\_\_\_  
Fabricate \_\_\_\_\_  
Install \_\_\_\_\_

3 STEEL STRUCTURES  
Layout \_\_\_\_\_  
Rigging \_\_\_\_\_  
Assemble \_\_\_\_\_  
Erect \_\_\_\_\_

4 SWITCH ASSEMBLY - AIR  
Layout \_\_\_\_\_  
Rigging \_\_\_\_\_  
Assemble \_\_\_\_\_  
Erect \_\_\_\_\_  
Adjust \_\_\_\_\_

5 BUS  
Layout \_\_\_\_\_  
Rigging \_\_\_\_\_  
Install \_\_\_\_\_  
Connect \_\_\_\_\_



NAME \_\_\_\_\_

CLASSIFICATION \_\_\_\_\_

STANDARDS OF ACHIEVEMENT RECORD

FOR

"ON-THE-JOB" TRAINING SKILLS

6 TRANSFORMERS

Layout \_\_\_\_\_

Rigging \_\_\_\_\_

Assemble \_\_\_\_\_

Adjust LTC \_\_\_\_\_

Connect \_\_\_\_\_

6 REGULATORS

Layout \_\_\_\_\_

Rigging \_\_\_\_\_

Assemble \_\_\_\_\_

Adjust LTC \_\_\_\_\_

Connect \_\_\_\_\_

7 POWER CIRCUIT BREAKERS

Layout \_\_\_\_\_

Rigging \_\_\_\_\_

Assemble \_\_\_\_\_

Adjust \_\_\_\_\_

Connect \_\_\_\_\_

8 SWITCHBOARDS

Layout \_\_\_\_\_

Fabricate \_\_\_\_\_

Paint \_\_\_\_\_

Install Panels \_\_\_\_\_

9 WELDING - CUTTING

Pipe \_\_\_\_\_

Plate \_\_\_\_\_

Angle \_\_\_\_\_

NAME \_\_\_\_\_ CLASSIFICATION \_\_\_\_\_

STANDARDS OF ACHIEVEMENT RECORD

FOR

"ON-THE-JOB" TRAINING SKILLS

10 WELDING - BRAZING \_\_\_\_\_

Layout \_\_\_\_\_

Fit Up \_\_\_\_\_

Braze \_\_\_\_\_

11 WELDING - CADWELDING \_\_\_\_\_

Layout \_\_\_\_\_

Install \_\_\_\_\_

Connect \_\_\_\_\_

Weld \_\_\_\_\_

12 METAL BUILDINGS \_\_\_\_\_

Layout \_\_\_\_\_

Segregate Material \_\_\_\_\_

Erect \_\_\_\_\_

Bolt \_\_\_\_\_

Weld \_\_\_\_\_

13 EQUIPMENT - PUMPS \_\_\_\_\_

Check Foundation Bolts \_\_\_\_\_

Install \_\_\_\_\_

Set to Elevation \_\_\_\_\_

Rough Alignment \_\_\_\_\_

Final Alignment \_\_\_\_\_

NAME \_\_\_\_\_

CLASSIFICATION \_\_\_\_\_

STANDARDS OF ACHIEVEMENT RECORD  
FOR  
"ON-THE-JOB" TRAINING SKILLS

14 EQUIPMENT - MOTORS \_\_\_\_\_  
Check Foundation Bolts \_\_\_\_\_

Install \_\_\_\_\_

Set to Elevation \_\_\_\_\_

Bearing Check \_\_\_\_\_

Air Gap Check \_\_\_\_\_

15 EQUIPMENT - FANS \_\_\_\_\_  
Check Foundation Bolts \_\_\_\_\_

Install \_\_\_\_\_

Set to Elevation \_\_\_\_\_

Align Housing \_\_\_\_\_

Install Rotating Element \_\_\_\_\_

Clearance Checks \_\_\_\_\_

16 EQUIPMENT - GENERATORS \_\_\_\_\_  
Check Foundation Bolts \_\_\_\_\_

Install \_\_\_\_\_

Set to Elevation \_\_\_\_\_

Install Rotating Field \_\_\_\_\_

Final Assembly \_\_\_\_\_

17 EQUIPMENT - TANKS \_\_\_\_\_  
Check Foundation \_\_\_\_\_

Check Foundation Bolts \_\_\_\_\_

Install Bottom Sections \_\_\_\_\_

Erect Sides \_\_\_\_\_

Install Roof Sections \_\_\_\_\_

Install Penetrations \_\_\_\_\_

Tests \_\_\_\_\_

NAME \_\_\_\_\_ CLASSIFICATION \_\_\_\_\_

STANDARDS OF ACHIEVEMENT RECORDS

FOR

"ON-THE-JOB" TRAINING SKILLS

- 18 PLATFORMS \_\_\_\_\_  
Layout \_\_\_\_\_  
Fabricate \_\_\_\_\_  
Rigging \_\_\_\_\_  
Bolt \_\_\_\_\_  
Weld \_\_\_\_\_

- 19 HANDRAILS \_\_\_\_\_  
Layout \_\_\_\_\_  
Fabricate \_\_\_\_\_  
Rigging \_\_\_\_\_  
Bolt \_\_\_\_\_  
Weld \_\_\_\_\_

- 20 PIPE/TUBING \_\_\_\_\_  
Layout \_\_\_\_\_  
Fabricate \_\_\_\_\_  
Connect \_\_\_\_\_

- 21 CABLE TRAYS \_\_\_\_\_  
Layout \_\_\_\_\_  
Fabricate \_\_\_\_\_  
Install \_\_\_\_\_

- 22 CONDUIT HANGERS \_\_\_\_\_  
Layout \_\_\_\_\_  
Fabricate \_\_\_\_\_  
Install \_\_\_\_\_

- 23 PIPE HANGERS \_\_\_\_\_  
Layout \_\_\_\_\_  
Rigging \_\_\_\_\_  
Fit Pipe Spools \_\_\_\_\_  
Weld Pipe Spools \_\_\_\_\_



**MECHANIC'S JOB SKILLS & REQUIREMENTS**

M-10  
PIPING  
SYSTEMS

M-35  
WELDING

M-15  
ELEMENTS OF  
MECHANICS

M-20  
HYDRAULICS

M-60  
EQUIPMENT  
INSTALLATION  
& SETTING

M-75  
FIELD  
TESTING

(Reference only)

MB-40  
RIGGING

MB-45  
CARPENTRY

MB-55  
HAND TOOLS

MB-56  
POWER TOOLS

MB-65  
CONDUIT  
CABLE & WIRE

B-70  
CADWELDING

MB-30  
RECEIVE & STORE

MB-20  
SAFETY

MB-25  
OPERATING PROCEDURES

MB-16  
PRINT READING PG&E DRWGS.

MB-10  
BASIC MATH

MB-15  
BASIC PRINT READING

17

**COURSE  
MAP**

## 4.2 ACADEMIC COURSE OUTLINE

### MB-10 BASIC MATH

The text for this unit is "Basic Shop Math" by TPC Training Systems. The average completion time is 3 hours home study, ½ hour unit test, and 2 hours written test.

### MB-15 BASIC PRINT READING

The text for this unit is "Basic Blueprint Reading" by TPC Training Systems. The average completion time is 4 hours home study, and 1 hour unit test.

### MB-16 PRINT READING - PGandE DRAWINGS

The subject material for this unit is the use of PGandE's prints. Standard symbols and designations will be studied, followed by the application of actual construction field drawings, bills of material, and standard drawings. The average completion time is 7 hours home study, 1 hour unit test, and 2 hours written/performance test.

### MB-20 SAFETY

The text for this unit is PGandE's "Accident Prevention Rules" book together with subject material that is vital for the trainee to know. The average completion time is 4 hours home study, 1 hour unit test, and 2 hours written/performance test.

### MB-25 OPERATING PROCEDURES

The subject material for this unit is PGandE's Operating and Construction Procedures together with Standard Practice and Substation Bulletins. The average completion time is 10 hours home study, 1 hour unit test, and 3 hours written test.

### MB-30 RECEIVE AND STORE

The subject material for this unit is PGandE's procedures for Receiving and Storing Material and Equipment. The average completion time is 10 hours home study, 1 hour unit test, and 3 hours written test.

### MB-40 RIGGING

The text for this unit is "Rigging" by TPC Training Systems. The average completion time is 12 hours home study, 1 hour unit test, and 3 hours performance test.

### MB-45 CARPENTRY

The text for this unit is "Fundamentals of Carpentry" by Walter E. Durbahn and Robert E. Putnam, Fifth Edition. The average completion time is 8 hours home study, 1 hour unit test, and 1½ hours for the written test.

MB-55 HAND TOOLS

The text for this unit is "Hand Tools" by TPC Training Systems. The average completion time is 10 hours home study, 1 hour unit test, and 2 hours performance test.

MB-56 POWER TOOLS

The text for this unit is "Portable Power Tools" by TPC Training Systems. The average completion time is 10 hours home study, 1 hour unit test, and 3 hours written/performance test.

MB-65 CONDUIT, CABLE, AND WIRE

The subject material for this unit is the use of PGandE's Engineering Standards and Drawings together with copies of data taken from the text "Handbook for Pipe and Rigid Conduit Bending" by Greenlee Tool Company. The average completion time is 10 hours home study, 1 hour unit test, and 3 hours written/performance test.

B-70 CADWELDING

The text for this unit is "Instructions for Cadweld Electrical Connections" by Erico Products, Inc., together with PGandE's Standard Drawings. The average completion time is 3 hours performance test only.

M-10 PIPING

The text for this unit is "Piping Systems" by TPC Training Systems. The average completion time is 10 hours home study, 1 hour unit test, and 3 hours performance test.

M-15 ELEMENTS OF MECHANICS

The text for this unit is "Elements of Mechanics" TPC Training Systems. The average completion time is 10 hours home study, 1 hour unit test, and 1 hour written test.

M-20 HYDRAULICS

The text for this unit is "Basic Hydraulics" by TPC Training Systems. The average completion time is 10 hours home study, 1 hour unit test, and 1 hour written test.

M-35 WELDING

The text for this unit is "Welding Principles and Practices" by TPC Training Systems. The average completion time is 10 hours home study, 1 hour unit test, and 3 hours performance test.



M-60 EQUIPMENT INSTALLATION & SETTING

The text for this unit is "Basic Equipment Installation" by TPC Training Systems along with PGandE's Technical Requirements and Procedures. The average completion time is 9 hours home study, 1 hour unit test, and 2 hours written test.

M-75 FIELD TESTING

The subject material for this unit is material prepared specifically for PGandE. Data from various manufacturer's manuals and instructions should be studied. This is a reference manual only.

### 4.3 COURSE PROCEDURES

Following are the procedures or rules which shall govern this course. In general, the procedure tells the trainees to select from the Course Map the unit lesson they wish to study, to proceed at their own rate, to ask for the unit test when they are ready, and to use as many or as few resources as they feel they need.

#### 4.31 COURSE MAP

The Course Map portrays how each unit lesson of the course is related to other unit lessons and to the course as a whole.

4.311 To start, the trainee is allowed to choose any of the two unit lessons on the bottom line (beginning) of the Course Map. These are MB-10 and MB-15. They may be studied in any order desired.

4.312 The two initial unit lessons (MB-10 & MB-15) must be completed before proceeding to unit lesson MB-16. MB-16 must be completed before unit lessons MB-20 and MB-25 can be started.

#### 4.32 UNIT LESSONS

4.321 Before beginning a new unit lesson, the trainee shall read the introductory comments. There are two types of unit lessons which are used in this training course. One is prepared by TPC Training Systems and the other by PGandE.

4.322 Trainees should study one unit lesson at a time. Enrollment in more than one unit lesson may be arranged, but special written permission will be required.

4.323 If the trainee feels qualified and wishes to do so, he or she may challenge the course by taking the qualifying test. This arrangement is made through the supervisor for the required test.

### 4.4 UNIT TESTS

The unit test will be given when the trainee feels competent to take the test. If the trainee fails to obtain a passing grade (70% must be attained to pass a given unit lesson.), a retest will be given two weeks after notification of the grade attained and the areas of study where deficiencies are evident and will be given every two weeks at the request of trainee until successfully completed. The time limit for taking the unit test is covered in Paragraph 4.7. The tests will be given by the supervisor and graded by the Educational Supervisor.

The examination papers will be filed in the Educational Supervisor's office.

No test papers will be returned to the employee; however, when a test is graded less than 70%, the Educational Supervisor shall inform the supervisor the section and paragraph of weakness on missed questions. The supervisor will discuss with the student the areas where errors were made and need to be studied.

#### 4.41 CHALLENGING THE UNIT TEST

4.411 After examining the course material and prior to taking the course, the trainee may request to challenge the Unit Test. The test will be provided, if the trainee receives a passing grade; credit for the unit will be given. (If a Written/Performance Test are required in addition to the Unit Test, they must also be taken and passed successfully for full credit.) If a passing grade is not achieved, trainee will be required to enroll and successfully complete the unit course.

#### 4.5 WRITTEN/PERFORMANCE TEST

The purpose of this test is to demonstrate to the supervisor or foreman that the trainee can perform instructional test objectives.

#### 4.6 EVALUATION OF EMPLOYEE'S PROGRESS

There are several factors contributing to the overall evaluation of an employee's progress. These factors include:

4.61 All types of work an employee must perform with respect to proficiency, quality and ability, while performing assigned work.

4.62 The employee's cooperation and general attitude, such as:  
Shows interest and initiative in the work. Exercises safe working habits.

#### 4.7 COMPLETION OR DISCONTINUANCE OF THE PROGRAM

Academic Courses in the Training Program are normally completed in 36 months. The trainee shall meet the following Academic Standards of Achievement before progressing to the higher step in the progression:

<u>Time</u>	<u>Requirements</u>
6 months	- Complete the following 5 basic units: MB-10, MB-15, MB-16, MB-20 and MB-25.
12 months	- Complete the following 3 basic units: MB-30, MB-40 and MB-45.
18 months	- Complete the following 4 basic units: MB-55, MB-56, MB-65 and B-70

- 24 months - Complete the following 2 required units:  
M-10 and M-35.
- 30 months - Complete the following 2 required units:  
M-15 and M-20.
- 36 months - Complete the following 1 required unit:  
M-60.

"On-the-Job" Training skills require completion within 36 months. The trainee shall meet the Standards of Achievement for the skills as grouped to progress to the higher step in the progression:

<u>Time</u>	<u>Requirements</u>
6 months	- Complete 20 weeks of skilled work and has qualified in 4 of the 23 required skills.
12 months	- Complete 45 weeks of skilled work and has qualified in 8 of the 23 required skills.
18 months	- Complete 65 weeks of skilled work and has qualified in 12 of the 23 required skills.
24 months	- Complete 90 weeks of skilled work and has qualified in 16 of the 23 required skills.
30 months	- Complete 110 weeks of skilled work and has qualified in 20 of the 23 required skills.
36 months	- Complete 138 weeks of skilled work and has qualified in all 23 required skills.

- 4.71 A Station Mechanic who has spent six months at the employee's current wage step and who meets or exceeds the established Standards of Achievement for such wage step shall be advanced to the next higher wage step of the progressive wage rate.
- 4.72 A Station Mechanic who is due to progress to the employee's next higher wage step in the wage progression, and who does not meet the established Standards of Achievement shall:
- a. be notified of inadequate performance in writing prior to the date the Station Mechanic is scheduled to receive the next higher wage step.
  - b. be held in the Station Mechanic's present wage step, and
  - c. be allowed a maximum of three months to meet the established Standards of Achievement for the wage step at which the Station Mechanic is being held.
  - d. A copy of the written notification shall be furnished to the Union Business Representative.
- 4.73 If, during such three-month period, the employee meets the established Standards of Achievement, he or she shall receive the next higher step wage rate effective the date such Standards are met. The employee will not be eligible for further progression in the wage rate until six months have elapsed since the date he or she received such wage increase and until Standards of Achievement for such wage step have been met.
- 4.74
- a. If an employee who is attempting to meet the Standards of Achievement established to progress from the first to the second step of the wage progression, fails to meet the established Standards as provided above, the employee shall, after such three-month additional period of time, be removed from the classification and demoted in accordance with Title 306 of the Agreement.
  - b. If an employee who is attempting to meet the Standards of Achievement established to progress from other than the first step of the wage progression fails to meet the established Standards within the allotted time (including the three-month extension), his or her progression shall be reviewed by the Apprenticeship Committee. Action of this Committee shall be limited to the determination of the further extension of time which is believed to be required to meet the Standards of Achievement. If an additional extension is granted and the Station Mechanic still fails to meet the prescribed Standards of Achievement to receive the next wage step in the wage progression in the period of time determined by the above Committee, he or she shall be removed from the classification and demoted in accordance with Title 306 of the Agreement.

4.75 An employee within one year of demotion from a Station Mechanic classification under the provisions of Paragraph 4.74 above, upon presentation of acceptable evidence that the deficiencies which caused his or her demotion have been remedied or, if demotion was due to academic failure, that he or she has pursued an outside study program and by completing the required tests meets the established Standards of Achievement for the wage step in the classification that he or she left, may be considered for repromotion to such Station Mechanic classification. If promoted, the employee shall be restored to the training program at the wage step he or she left and will progress to the next higher wage step six months after re-entering the Station Mechanic classification, provided he or she meets the Standards of Achievement.

GUIDE LINES FOR THE  
4.8 STATION MECHANIC TRAINING PROGRAM

I. Objective of the Station Mechanic Training Program

The need for trained and fully qualified employees to accomplish the duties of a Station mechanic in a manner consistent with Company's Standards, Safety and Performance has resulted in this program which coordinates extensive on-the-job and related academic training. The acquisition of knowledge and skill offers the employee in training the vehicle to attain self-confidence, assuredness and satisfaction in his or her work, and the correct and safe method of performing Company's work.

II. Training

During the 36 months of the training program, the trainee will be given job training divided into six time periods which coincides with the wage steps of the classification. In order that uniform and safe practices will be followed in the training period, various assignment of duties and work procedures will be provided in each of the wage steps as outlined in these guide lines and the attached Schedule. The amount of time or units of work as indicated in the Schedule are sufficient to permit the trainee to develop proficiency in such duty or work procedures, but should not be considered as inflexible dependent on the demonstrated ability of each individual trainee.

The attached Schedule also specifies those study courses in which the trainee shall receive.

On-the-job training in the duties and amount of such training as specified in the Schedule shall apply to the extent that such duties are performed by a Station mechanic where the trainee is headquartered. In the event that certain of the required items of work experience are not being performed at a headquarter, and the training is therefore not available to the trainee for his or her work experience record, the reason for this deficiency shall be noted in the trainee's work record. The trainee's progression through the training steps will not be held up due to shortcomings of this nature; however, during the 30 and 36 month wage step and before the trainee is eligible for promotion to Station mechanic, these deficiencies will be either waived or the training experience be created.

A. General Guide Lines

1. It is intended that assignment of training on the job for each period of the training program will be made to the trainee as early in the period as is practicable.
2. Trainees shall be trained by assignment to work with qualified Station mechanics.

A. General Guide Lines (Continued)

3. Upon entering each new wage step and period of training, the work assignments in the period shall be such that the trainee will gain the basic knowledge and confidence in himself or herself, the equipment and the procedure being used. More complex assignments shall be made progressively as the trainee gains in knowledge and capability.
4. A trainee may be assigned to work without direct supervision only after he or she has performed such work under direct supervision and is capable of performing such work safely.
5. A trainee who is due to progress to the employee's next higher wage step in the wage progression, and who does not meet the established Standards of Achievement shall:
  - (a) be notified of inadequate performance in writing prior to the date the trainee is scheduled to receive the next higher wage step.
  - (b) be held in the trainee's present wage step, and
  - (c) be allowed a maximum of three months to meet the established Standards of Achievement for the wage step at which the trainee is being held.

6. Notices

- (a) When a trainee fails any Unit Course test, notice shall be given to the Foreman and General Foreman with copies to Union's Business Representative and Company's Industrial Relation Representative.
- (b) If a trainee does not maintain an acceptable on-the-job work level, and does not meet the established Standards of Achievement, notice shall be given to the Manager's Office with copies to Union's Business Representative and Company's Industrial Relation Representative and Foreman's immediate supervisor.

B. Guide Lines for Training Periods

1. 0 to 6 Months' Step

During this period the trainee shall learn the use and care of tools and equipment in the performance of Power Plant and/or Substation construction and other related work.

The trainee will be assigned work experience as shown on the attached schedule and should qualify in at least 4 of the scheduled skills.

The trainee shall become familiar with various standards and regulations applicable to the work that he or she performs and acquaint themselves with the safety aspects of their job.



B. Guide Lines for Training Period (Continued)

During this period the trainee shall learn on his or her own time the following academic courses: MB-10 Basic Math, MB-15 Basic Print Reading, MB-16 Print Reading PGandE Drawings, MB-20 Safety and MB-25 Operating Procedures. The attached schedule shows that MB-10 and MB-15 are the first courses to be taken. The trainee can select any one of the two courses they wish to study. Only one course of study will be given and must be successfully completed before the next course of study is issued. Course Units MB-10 and MB-15 must be completed before MB-16 is issued and MB-16 must be completed before MB-20 or MB-25 is issued. Five courses must be successfully completed during this period.

- (a) A unit test will be given after each course unit when the trainee feels competent to take the test. (70% must be attained to pass a given unit lesson). Should the trainee fail to receive a passing score, he or she shall be given a notice in writing of the areas of study where deficiencies are evident.
- (b) After such failure, the trainee shall be allowed to take a retest two weeks after notification. He or she will be allowed a maximum of three months to meet the established academic standards of achievement. Failure to meet this standard of achievement will then be reviewed by the Course Supervisor to determine if additional extension of time is justified in order that the individual meet the standard of achievement. If additional extension is granted and the trainee still fails to meet the prescribed standards of achievement, he or she shall be automatically dropped from the program.
- (c) A written/performance test will be given to the trainee after successful completion of the unit test. The purpose of this test is to demonstrate to the supervisor and/or the foreman that the trainee can perform instructional test objectives derived from the course previously studied. The attached schedule shows which course units will require tests.

2. 7 - 12 Months' Step

The trainee shall continue to perform functions of the prior period and, in addition, will be assigned work experience as shown on the attached schedule. During this period the trainee will be required to ~~qualify in at least 4 of the scheduled 23 skills and at the end of this period have qualified in 8 skills.~~

During this period the trainee shall learn on his or her own time the following additional prerequisite academic courses: MB-30 Receive and Store, MB-40 Rigging and MB-45 Carpentry. The procedures for study and testing will be the same as outlined in Section B-1. A total of eight courses should be completed by the end of this period.

B. Guide Lines for Training Period (Continued)

3. 13 - 18 Months' Step

The trainee shall continue to perform functions of the prior periods and, in addition, will be assigned work experience as shown on the attached schedule. During this period the trainee will be required to qualify in at least 4 of the scheduled 23 skills and, at the end of this period, have qualified in a total of 12 skills.

The trainee shall continue to learn on his or her own time the following additional academic courses: MB-55 Hand Tools, MB-56 Power Tools, MB-65 Conduit, Cable and Wire and B-70 Cadwelding. The procedures for study and testing will be the same as outlined in Section B-1. All 12 courses should be completed by the end of this period.

4. 19 - 24 Months' Step

The trainee shall continue to perform functions of the prior periods and, in addition, will be assigned work experience as shown on the attached schedule. During this period the trainee will be required to qualify in at least 4 of the scheduled 23 skills and at the end of this period the trainee shall have qualified in a total of 16 skills.

The trainee shall continue to learn on his or her own time the following required academic courses: M-10 Piping and M-35 Welding. The procedures for study and testing will be the same as outlined in Section B-1.

5. 25 - 30 Months' Step

The trainee shall continue to perform functions of the prior periods and, in addition, will be assigned work experience as shown on the attached schedule. During this period the trainee will be required to qualify in at least 4 of the scheduled 23 skills and at the end of this period have qualified in 20 skills.

During this period the trainee shall learn on his or own time the following required courses: M-15 Elements of Mechanics and M-20 Hydraulics. The procedures for study and testing will be the same as outlined in Section B-1 for these guide lines. A total of four of the five required courses should be completed by the end of this period.

6. 31 - 36 Months' Step

The trainee shall continue to perform functions of the prior periods and, in addition, will be assigned work experience as shown on the attached schedule. During this period the trainee will be required to qualify in at least 3 of the schedule 23 skills and, at the end of this period, have qualified in all 23 skills.

## B. Guide Lines for Training Period (Continued)

During this period the trainee shall learn on his or her own time the following required academic course: M-60 Equipment Installation and Setting. The procedures for study and testing will be the same as outlined in Section B-1 of these guide lines. All 5 of the required academic courses should be completed by the end of this period.

The trainee will be allowed to do any work normally performed by a Station mechanic, under the direction of a Station mechanic, as required by the job.

## C. Records

1. It shall be the responsibility of each trainee to maintain his or her own records in collaboration with each foreman to whom they are assigned.
2. It shall be the responsibility of each foreman to keep necessary files of records on each trainee and to ascertain that each trainee has a reasonable opportunity of meeting the Standards of Achievement set forth in these guide lines.
  - (a) At least once each month the foreman will review the Training Records in the presence of the trainee to verify and update all records. To counsel the trainee of consequences or deficiencies in skills and not maintaining the academic training schedules.

STATION MECHANIC TRAINING PROGRAM

SCHEDULE

"ON-THE-JOB" ASSIGNMENTS

	<u>Skill</u>	<u>Estimated Qualifying Time</u>	<u>Standards of Achievement</u>	<u>Location of Work Area</u>
1-	DUCT (Transite or Plastic)	5 weeks	Layout Excavate Fabricate Install Backfill	POWER PLANT AND SUBSTATION
2-	CONDUIT (Rigid or T.W.)	3 weeks	Layout Fabricate Install	POWER PLANT AND SUBSTATION
3-	STEEL STRUCTURES (Transmission, or Distribution, or Building)	7 weeks	Layout Rigging Assemble Erect	SUBSTATION
4-	SWITCH ASSEMBLY - AIR (60 KV or above)	8 weeks	Layout Rigging Assemble Erect Adjust	SUBSTATION
5-	Bus (Copper - Rigid or Cable) (Alum. - Rigid or Cable)	5 weeks	Layout Rigging Install Connect	SUBSTATION
6-	TRANSFORMERS or REGULATORS	5 weeks	Layout Rigging Assemble Adjust LTC Connect	SUBSTATION
7-	POWER CIRCUIT BREAKERS	9 weeks	Layout Rigging Assemble Adjust Connect	POWER PLANT AND SUBSTATION
8-	SWITCHBOARDS	4 weeks	Layout Fabricate Paint Install Panels	POWER PLANT AND SUBSTATION

STATION MECHANIC TRAINING PROGRAM

SCHEDULE

"ON-THE-JOB" ASSIGNMENTS

	<u>Skill</u>	<u>Estimated Qualifying Time</u>	<u>Standards of Achievement</u>	<u>Location of Work Area</u>
9-	WELDING - OXY-ACETYLENE (Cutting)	4 weeks	Pipe Plate Angle	POWER PLANT AND SUBSTATION
10-	WELDING - BRAZING	3 weeks	Layout Fit Up Braze	POWER PLANT AND SUBSTATION
11-	WELDING - CADWELDING	2 weeks	Layout Fabricate Install Connect Weld	POWER PLANT AND SUBSTATION
12-	METAL BUILDING	4 weeks	Segregate Erect Bolt Weld	POWER PLANT AND SUBSTATION
13-	EQUIPMENT - PUMPS	6 weeks	Check Fdn. Bolts Install Set to Elev. Rough Align Final Aligh	POWER PLANT
14-	EQUIPMENT - MOTORS	6 weeks	Check Fdn. Bolts Install Set to Elev. Bearing Check Air Gap Check	POWER PLANT
15.	EQUIPMENT - FANS	6 weeks	Check Fdn. Bolts Install Set to Elev. Align Housing Install Rotating Element Clearance Checks	POWER PLANT
16.	EQUIPMENT - GENERATOR	6 weeks	Check Fdn. Bolts Install Set to Elev. Install Rotating Field Final Assembly	POWER PLANT

STATION MECHANIC TRAINING PROGRAM

SCHEDULE

"ON-THE-JOB" ASSIGNMENTS

<u>Skill</u>	<u>Estimated Qualifying Time</u>	<u>Standards of Achievement</u>	<u>Location of Work Area</u>
17- EQUIPMENT - TANKS	4 weeks	Check Fdn. Check Fdn. Bolts Install Bottom Sections Erect Sides Install Roof Sections Install Penetrations Test	POWER PLANT
18- PLATFORMS	3 weeks	Layout Fabricate Rigging Bolt Weld	POWER PLANT
19- HANDRAILS	3 weeks	Layout Fabricate Rigging Bolt Weld	POWER PLANT
20- PIPING or TUBING (Copper)	5 weeks	Layout Fabricate Connect	POWER PLANT
20- PIPING or TUBING (Steel)	8 weeks	Layout Fabricate Connect	POWER PLANT
20- PIPING or TUBING (Plastic)	5 weeks	Layout Fabricate Connect	POWER PLANT
21- CABLE TRAYS	6 weeks	Layout Fabricate Install	POWER PLANT
22- CONDUIT HANGERS	2 weeks	Layout Fabricate Install	POWER PLANT
23- PIPE HANGERS	4 weeks	Layout Rigging Fit Pipe Spools Weld Pipe Spools	POWER PLANT

## ACADEMIC ASSIGNMENTS

### MB-10 BASIC MATH

The text for this unit is "Basic Shop Math" by TPC Training Systems. The average completion time is 3 hours home study, 1/2 hour unit test and 2 hours written test.

### MB-15 BASIC PRINT READING

The text for this unit is "Basic Blueprint Reading" by TPC Training Systems. The average completion time is 4 hours home study and 1 hour unit test.

### MB-16 PRINT READING - PGandE DRAWINGS

The subject material for this unit is the use of PGandE's prints. Standard symbols and designations will be studied followed by the application of actual construction field drawings, bills of material and standard drawings. The average completion time is 7 hours home study, 1 hour unit test and 2 hours written/performance test.

### MB-20 SAFETY

The text for this unit is PGandE's "Accident Prevention Rules" book together with subject material that is vital for the trainee to know. The average completion time is 4 hours home study, 1 hour unit test and 2 hours written/performance test.

### MB-25 OPERATING PROCEDURES

The subject material for this unit is PGandE's Operating and Construction Procedures together with Standard Practice and Substation Bulletins. The average completion time is 10 hours home study, 1 hour unit test and 3 hours written test.

### MB-30 RECEIVE AND STORE

The subject material for this unit is PGandE's procedure for Receiving and Storing Material and Equipment. The average completion time is 10 hours home study, 1 hour unit test and 3 hours written test.

### MB-40 RIGGING

The text for this unit is "Rigging" by TPC Training Systems. The average completion time is 12 hours home study, 1 hour unit test and 3 hours performance test.

### MB-45 CARPENTRY

The textbook for this unit is "Fundamentals of Carpentry" by Walter E. Durbahn and Robert E. Putnam, Fifth Edition. The average completion time is 8 hours home study, 1 hour unit test and 1 1/2 hours for the written test.

#### MB-55 HAND TOOLS

The text for this unit is "Hand Tools" by TPC Training Systems. The average completion time is 10 hours home study, 1 hour unit test and 2 hours performance test.

#### MB-56 POWER TOOLS

The text for this unit is "Portable Power Tools" by TPC Training Systems. The average completion time is 10 hours home study, 1 hour unit test and 3 hours written/performance test.

#### MB-65 CONDUIT, CABLE AND WIRE

The subject material for this unit is the use of PGandE's Engineering Standards and Drawings together with copies of data taken from the text "Handbook for Pipe and Rigid Conduit Bending" by Greenlee Tool Company. The average completion time is 10 hours home study, 1 hour unit test and 3 hours written/performance test.

#### B-70 CADWELDING

The text for this unit is "Instructions for Cadweld Electrical Connections" by Erico Products, Inc., together with PGandE's Standard Drawings. The average completion time is 3 hours performance test only.

#### M-10 PIPING

The text for this unit is "Piping Systems" by TPC Training Systems. The average completion time is 10 hours home study, 1 hour unit test and 3 hours performance test.

#### M-15 ELEMENTS OF MECHANICS

The text for this unit is "Elements of Mechanics" by TPC Training Systems. The average completion time is 10 hours home study, 1 hour unit test and 1 hour written test.

#### M-20 HYDRAULICS

The text for this unit is "Basic Hydraulics" by TPC Training Systems. The average completion time is 10 hours home study, 1 hour unit test and 1 hour written test.

#### M-35 WELDING

The text for this unit is "Welding Principles and Practices" by TPC Training Systems. The average completion time is 10 hours home study, 1 hour unit test and 3 hours performance test.

#### M-60 EQUIPMENT INSTALLATION & SETTING

The text for this unit is "Basic Equipment Installation" by TPC Training Systems along with PGandE's Technical Requirements and Procedures. The average completion time is 9 hours home study, 1 hour unit test and 2 hours written test.



M-75 FIELD TESTING

The subject material for this unit is material prepared specifically for PGandE. Data from various manufacturer's manuals and instructions should be studied. This is a reference manual only.