Pacific Gas and Electric Company

LETTER AGREEMENT NO. 07-49-PGE

IBEW

PACIFIC GAS AND ELECTRIC COMPANY
LABOR RELATIONS DEPARTMENT
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INTERNATIONAL BROTHERHOOD OF
ELECTRICAL WORKERS, AFL-CIO
LOCAL UNION 1245, I.B.E.W.
P.O. BOX 2547
VACAVILLE, CALIFORNIA 95696
(707) 452-2700

STEPHEN A. RAYBURN,
DIRECTOR AND CHIEF NEGOTIATOR

TOM DALZELL,
BUSINESS MANAGER

October 22, 2007

Mr. Tom Dalzell, Business Manager
Local Union No. 1245
International Brotherhood of
Electrical Workers, AFL-CIO
P.O. Box 2547
Vacaville, CA 95696

Dear Mr. Dalzell:

The Company and Union agreed to revisions of the Apprentice Machinist Training Program in Power Generation, Diablo Canyon Power Plant. The joint subcommittee's recommendations have been reviewed and agreed to by the Joint Apprenticeship and Training Committee.

The JATC recommends and approves the attached revised program to replace the existing Apprentice Machinist Training Program.

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 Company.

Very truly yours,

PACIFIC GAS & ELECTRIC COMPANY

By: _____
Stephen A. Rayburn
Director and Chief Negotiator

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

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

November 29, 2007

By: _____
Tom Dalzell
Business Manager

References

1. Training Program for the Apprentice Machinist in Nuclear Power Plants, 3/1/89 Edition
2. M/M Initial Training Program of Instruction
3. TQ1.ID4, Non-Accredited training Records
4. TQ2.ID4, Training Implementation
4. TQ2.DC6, Maintenance Training Program
5. Division Master Apprenticeship Agreement, Rev. 7.02

Remarks

1. Assumed entry level skills and knowledge – The Apprentice Machinist Training Program is an entry level program and assumes little or no maintenance experience from Apprentice candidates. Candidates will meet the following:
   - Applicable union bidding specifications as dictated by the Division Master Apprenticeship Agreement
   - Satisfactory completion of the Arithmetic Computation Test (ACT) as dictated by the Division Master Apprenticeship Agreement
   - Satisfactory completion of discipline Aptitude Test at the discretion of plant Supervision
   - Completion of one year as a Plant Utility Worker
2. Evaluation of students will be conducted per TQ2.ID4. The frequency of evaluations will be the end of each course/lesson.
3. Welding instruction presented by this Apprentice Program, both academic and OJT, is for instructional purposes only. The qualification for Machinists will be for oxy-acetylene heating and cutting only.

AUTHOR: JOHN C. HURTADO DATE: _____

REVIEWED BY: _____ DATE: _____

REVIEWED BY: _____ DATE: _____

REVIEWED BY: _____ DATE: _____

REVIEWED BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____

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SECTION I - Introduction

A. Introduction

Upon selection of the Machinist Apprenticeship the candidate has selected an occupation that can be extremely rewarding. The management of Pacific Gas and Electric is committed in its endeavor of guiding and assisting each Apprentice candidate through the Apprentice Training Program. The objective is satisfactory completion of both the "technical (classroom) training" phase and the related "On-the-Job" (OJT) of the chosen craft. It is intended that each Apprentice become familiar with how the Apprentice Training Program is organized and how to optimize comprehension and retention of the learning material presented in each training phase.

The Apprentice program is comprised of 30 months of classroom, laboratory, and OJT. An additional 6 month period will be utilized for continued, additional or make-up qualification necessary to complete the program.

As with any apprentice program there will be challenges, which if approached properly become opportunities. The instructors and journeymen you will be involved with will do all they can to assist you in turning these challenges into opportunities.

The upcoming expansion of the nuclear power generation and the increasing complexity of power plant equipment during the last few decades have necessitated the selection of personnel with specific qualifications and job potential. This along with the retirement and looming retirement, of many of the personnel that have been performing this work for a number of years creates opportunities for others. Through cooperative efforts, a great deal of select training material has been assembled. This material has been carefully chosen to give sound training in the discipline of machining and power plant mechanical maintenance.

This training program will provide the Apprentice candidate with the means to associate theories with the practices of the Machinist craft. Once the training is mastered the candidate will be able to plan work and solve problems relating to his/her job. The academic portion of this training program is enhanced by progressive experiences of OJT. This is essential for the successful advancement to a higher level of skill.

Acquiring the skills and knowledge required to be proficient at any craft is not a simple matter. The apprentice training is designed to allow the trainee to gain the necessary skills and knowledge in a meaningful and systematic manner. The material is covered in a way that is designed to maintain interest, with frequent checks to ensure you are learning at the expected pace. It is the apprentice's responsibility to gain all that is possible from each class.

It is the responsibility of craft management and journeymen to ensure the apprentices get time and assistance to develop proficiency in the items they have been trained on.

Job progression and Bidding Procedure

Within a chosen field, normal lines of progression have been established and agreed to by both Company and Union. These lines of progression are shown in Exhibit VI, B of the Company-Union Agreement. Your foreman can show them to you if you desire to review them. Generally the line of progression for the various maintenance classifications in ascending order is Utility Worker, Apprentice, Journeyman and Foreman.

The procedures related to the job bidding and promotions are beyond the scope of this section. They can be found in Section 205 of the Company-Union Agreement.

SECTION II – Program Overview

A. Academic Training

The academic phase of the Apprentice Training Program is designed to provide sufficient technical knowledge to solve problems encountered as a Journeyman. Academic instruction places emphasis on "theory", principal of operation, and construction. Academic instruction works in conjunction with performance-based training such as OJT, laboratory, or simulator. Academic instruction is tested by quizzes, tests, and exams that become part of the Apprentice's training record.

Tests and exams will be administered at the end of each lesson or course, respectively, in accordance with TQ2.ID4, Training Implementation.

Self-study is usually performed in the training building where instructors are available for assistance. Self-study hours will be documented on Attachment 14, Master Assignment Chart in the location specified. The Apprentice is expected to meet or exceed the hours specified.

B. On-the-Job Training (OJT)

OJT is performance-based training designed to provide instruction in job-related skills and knowledge in a work environment. The "OJT" phase of the Apprentice Training Program is designed to allow the Apprentice to work side-by-side with Journeyman level personnel to provide practical training with hands-on applications to prepare for Journeyman responsibilities. It is preferred that OJT be conducted by task qualified Journeyman level personnel. It is, however, recognized that in-plant OJT may not always be available or feasible. Therefore, portions of OJT may be conducted in a laboratory or simulator setting by line and other than line personnel, providing they are task qualified in the task to be trained.
The OJT hours shown in Section V.B, General Program Schedule, are adequate to complete the program in the allotted time.

Scheduling - OJT is divided into categories (e.g., pumps, valves, etc.) with minimum hourly OJT requirements given (See Section IV). The foreman is responsible for assigning the Apprentice to plant work. Utilizing the Master Assignment Chart (Attachment 14), the foreman will be capable of resource loading the schedule for the required Apprentice OJT training hours when ever practical.

C. Program Management

It is the intent of the Apprentice Training Program and PG&E management that rather than completing this Apprentice program in its entirety and then entering into the M/M Initial Training Program, the Apprentice candidate will complete selected portions of the Apprentice program and be allowed to enter into the applicable qualification portions of the M/M Initial Training Program. It is intended that the Apprentice finish the Apprentice Training Program with some or all of his/her fundamental and basic qualifications as listed in the M/M Initial Training Program of Instruction. Supervision of the Apprentice Training Program is the responsibility of the maintenance General Foreman. The maintenance General Foreman is responsible for assigning the Apprentice to plant work, review of training records, and remedial study plans. The General Foreman is assisted, as necessary, by other plant personnel such as Journeymen and training department instructors.

D. Progress Evaluation

Evaluation of successful progress through the Machinist Apprentice Program consists of two criteria. The first is academic achievement evaluated by quizzes, tests, and exams. The second is hourly OJT requirements as stated in Section IV of this document. Periodic tests and reviews will be held for the purpose of evaluating overall progress and determining success within the program. If academic progress becomes unsatisfactory, below the minimum level of 70%, the General Foreman/Instructor will review performance and recommend steps for remediation. It is recognized that it may not be possible to attain the scheduled OJT hours due to plant evolutions or training availability in a particular area. Should the Apprentice fail to complete the scheduled hours, they may be made up at a later date. Satisfactory completion of the Apprentice Program requires completing the total OJT hours as shown in Section V.B, General Program Schedule.

After a failure of a test or exam, line supervision will be notified, and the Apprentice shall be offered remediation and allowed to retake the test. Two additional tests shall be allowed at line supervision discretion. Academic failure will be addressed per the Letter of Agreement No. R1-02-22-PGE

The above shall also apply to hourly requirements of OJT given in conjunction with academic training. Records of progress will be kept and reviewed as part of the evaluation process.

If an Apprentice does not maintain an acceptable OJT and academic work level, notice shall be given to the Union's Business Representative or their designee. Progress to the next higher wage step, or demotion, shall be in accordance with Paragraphs F3, 4, 5, and 6 of the Master Apprenticeship Agreement. An Apprentice shall not be held back from the next higher wage step because the necessary academic training was not provided prior to one of these steps.

E. Apprentice Responsibility

It is the Apprentice's responsibility to maintain a grade average above the minimum level of 70%, satisfy OJT hourly requirements, and obtain plant signatures during OJT to remain in the program. If the need for assistance arises, it is the Apprentice's responsibility to discuss these matters with plant supervision.

SECTION III - Guidelines

A. Goals of the Apprentice Machinist Program

The need for trained and fully qualified employees to accomplish their duties in a manner consistent with the Company's Standards of Construction, Safety, and Performance has resulted in this program, which coordinates OJT and related academic training.

The systematic acquisition of knowledge and skills offers the employee in training the vehicle to attain self-confidence, assuredness, satisfaction in his/her job, and to learn the correct and safe method of performing the Company's work.

B. Training

During the 36 months of the Apprenticeship, the Apprentice will be offered job training divided into six time periods, which coincide with the wage steps of the classification. To ensure that uniform and safe practices will be followed during training, assignment of duties and work procedures shall be provided in each of the wage steps as outlined here and in Section IV and V. The amounts of time as indicated in these sections are believed to be sufficient for the Apprentice to develop proficiency.

The Apprentice shall not be assigned to work independently until he/she has a qualification in that task.

The program Map in Section V also specify those training periods in which the Apprentice shall receive specified classroom training.

The amount of OJT training as specified in Section IV, shall apply, to the extent that, such duties are performed by Journeymen where the Apprentice is headquartered. In the event a duty is not performed by the journeymen at the Apprentice's headquarters, and is therefore not available in the training program, it shall be noted in the Apprentice's work record. Progression through the Apprenticeship, or to Journeyman, or to higher classification shall not be deterred for this reason. If such a duty later becomes applicable, the Apprentice (or Journeyman if classification has since changed) shall receive the training, as may be required, to attain the expected Journeyman proficiency. If, after a reasonable opportunity, proficiency is not attained, bids for progression to higher classification may be subject to the provisions of Section 205.11 of the Agreement.

C. General Guidelines

It is intended that assignment of the specified hours of OJT (Section IV) for each period of the Apprenticeship will be made to the Apprentice as early in the period as is practical.

Hours shown in Section IV exclude any travel time needed to reach the place where training is to be, given; however such hours include time needed to prepare tools and equipment.

Except where otherwise specified, Apprentices shall be trained by assignment to work with qualified journeymen. Progressive work experience in all phases of work should be provided throughout the first five periods of the Apprenticeship. Assignments during the last or sixth period will be made for the purpose of rounding out the Apprentice's experience.

Upon entering each new wage step and period of training, the work assignments in the period shall be such that the Apprentice will gain the basic knowledge and confidence on the equipment and the procedures being used. More complex assignments shall be made progressively as the Apprentice gains knowledge and capability.

As an Apprentice, work may be assigned without direct supervision only after instruction on the required duties and/or work procedures; after such work has been performed under direct supervision; and after the capability of performing such work safely has been demonstrated. At DCPP, only task-qualified personnel will perform work independently.

Except in emergency circumstances, an Apprentice shall not be temporarily assigned to the classification of Sub-foreman. If assigned to such classification, the Apprentice shall not be given the responsibility for duties beyond their current step of training.

At the end of the first six-months, and at the end of each succeeding six-month interval, progress will be examined to determine that the Standards of Achievement for current status in the program have been met and to determine whether the apprentice is qualified to advance to the next step in the program in accordance with SECTION VII – Progress Documentation Procedures and Attachment 14, Master Assignment Chart.

D. Guidelines for Training Periods

During the training periods, the Apprentice shall learn the use and care of tools and equipment and will gain knowledge of a Journeyman Machinist's work by participating in such work. The Apprentice will become familiar with the various Clearance Procedures, General Orders and Instructions applicable to the work that they perform.

The academics will be provided as outlined in Section IV and in accordance with the program map and schedule of Section V.

The OJT training portion of the Apprentice Program has been planned, both in the subject material covered and the amount of training given, to provide the basic knowledge of the Machinist's duties. A Minimum number of training hours has been established for each phase of the OJT training as shown on the Master Assignment Chart in Attachment 14.

At the end of the first six months, and at the end of each of the next three, six month intervals, the Apprentice will be required to satisfactorily complete a project to demonstrate machining ability. These demonstration tests will be based on the length of time in the program and the training received.

SECTION IV - Outline of Subject Matter

A. Academic Training

Academic training will consist of 12 courses. The instructional settings, facility, and duration for these courses are outlined in the paragraphs that follow. Course content is described in Section IV.C. Specific details, such as lesson titles and numbers, are covered in Attachments 1 through 12.

Academic Course Content	Training Hours
Machinist Fundamentals	
Math	62
Basic Science	24
Power Plant Fundamentals	71
Basic Tools and Equipment	88
Mechanical Drawing & Print Reading	50
Mechanical Drawing - Practical	20
Piping and Piping Components	125
Bearings and Lubrication	40
Machinist Basic Qualification	
Rigging Fundamentals	40
Valve Fundamentals	127
Pump Fundamentals	220
Oxy-acetylene Heating and Cutting	10
Heat Treating	10
Machinist Modules	373
Total	1260

B. On-The-Job Training

The OJT portion of this Apprentice Program has been carefully designed, both in the subject matter covered and the amount of time. For each phase of the OJT, a minimum number of training hours have been established and is shown on Attachment 13. The total hours are as follows:

Equipment	OJT Hours
Pumps	250
Valves	250
Bearings and Lubrication	100
Rigging	50
Forklift	50
Piping	200
Tools and Shop Equipment	220
Staging	200
Oxy-acetylene Heating and Cutting	30
Arbor & Hydraulic Presses	50
Floor Drill Press	10
Radial Arm Drill Press	40
Engine Lathe	600
Milling Machine	400
Horizontal Boring Mill	200
Vertical Boring Mill	200
Surface Grinders	50
Sheet Metal Brake	30
Metal Shear	30
Portable Equipment	60
Total	3020

Each category is divided into individual items or components and the schedule (see Attachment 13 – Daily OJT Hours) specifies the training hours the Apprentice shall devote to complete the required level of training for each of the items.

C. Machinist Fundamentals Overview

1. Mathematics

Provides instruction in whole number and fraction equation solving, simplifying arithmetic expressions, unit analysis and conversion, converting quantities with a calculator, significant figures, powers of ten and scientific notation problem solving, exponential and logarithmic expression problem solving, square, cube and fractional exponent problem solving, basic algebraic equations with one unknown problem solving, define trigonometric functions, calculate variables in area, volume and circumference, rectangular and logarithmic coordinate system graph plotting and information from strip and circular charts and monograms. Mathematics consists of classroom lectures in various areas of instruction. See individual Course descriptions, Attachment 1. The course consists of 13 lessons. The material of the course is covered during 62 hours of classroom instruction during the first six months in the program at the Diablo Canyon Training Center.

2. Machinist Basic Science

Physics: provides instruction in defining terms, energy conversion from one form to another, the six basic simple machines and Newton's laws of motion and gravity.

Electrical Science: provides instruction in structure of the atom, the six principle methods of generating electricity, common electrical properties of materials, definition of electrical terms, relationship between magnetism and electricity, the three requirements for producing an induced voltage, advantages and disadvantages of alternating current and the basic elements of electrical safety.

Heat Transfer and Fluid Flow: provides instruction in identifying terms, describes the four elements of the heat cycle and plant component for each, modes of heat transfer and examples of each, relationship between pressure, temperature and specific volume for sub-cooled, saturated, and superheated fluids, effects of plant components on fluid parameters, causes and effects of water hammer, operating characteristics of centrifugal and positive displacement pumps, and the causes and effects of cavitation.

Machinist Basic Science (Cont.)

Fundamentals of Hydraulics and Pneumatics: provides instruction in the process of transmitting force and energy though solids, liquids and gases, effects on air when compressed and allowed to expand, Pascal's Law, operation of simple fluid power cylinder, gauge pressure scales and applications, inefficiencies found in basic pneumatic system, defining basic terms and concepts related to hydraulics, how hydraulic energy is transmitted trough a system, relationship between resistance and pressure in a hydraulic system, effects of heat, pressure differential, velocity and flow rate.

Basic Chemistry: provides instruction in definition of terms, the periodic table, the components of atomic zymology, properties and states of matter, differentiate between acids, bases and salts, relating concentration of H+ in a liquid to pH, the pH scale, two forms of corrosion and factors that promote corrosion, impurities in plant water systems, primary methods of water chemistry control, purposes for controlling reactor coolant chemistry, effects that plant components and systems can have on secondary water chemistry, and types of sampling methods used at DCPP.

Basic Atomic and Nuclear Physics: provides instruction in structure and components of the atom, units for atomic structure and particle nomenclature, the radioactive decay process, nuclear interactions such as charged particles, photons and neutrons, the nuclear fission process, reactivity control in a nuclear reactor, and types of reactors used for power generation.

Properties of Nuclear Plant Materials: provides instruction in description of three basic metal crystal structures, simple stresses which may affect materials, basic properties of metals, metal failure mechanisms, properties of metals found in nuclear plant components, and the effects of corrosion on metals and corrosion controls, thermal stress, and radiation effects on metal.

Basic Science consists of classroom lectures in various areas of instruction. See individual Course descriptions, Attachment 2. The course consists of 7 lessons. The material of the course is covered during 21 hours of classroom instruction during the first six months in the program at the Diablo Canyon Training Center.

3. Power Plant Fundamentals

Reactor and Refueling Systems: provides instruction in purpose of Reactor Vessel & Internals, core components, Spent Fuel Pool Cooling (SFP) system, and Fuel Handling system to include basic diagrams, purpose and location of major components, importance to plant safety, interrelationships between them and other systems, Technical Specification LCOs and ECGs, purpose of Integral Fuel Burnable Absorbers, and system flow paths, and fuel handling tools and components.

Primary Systems: provides instruction in the purpose of the Reactor Coolant System (RCS), Reactor Coolant Pump System (RCP), the Steam Generator system (SG), Containment Structure System, and Containment Spray System to include basic block diagrams, identifying major components, functions and locations, process flow paths, importance to plant safety and/or radioactive containment and relationship with other plant components, and the physical connections and/or cause effect relationships between the RCS and containment.

Steam Systems: provides instruction in the purpose of the Main Steam (MS) System, Moisture Separator Reheaters (MSRs), Main Turbine System, EH Oil Supply System to include basic block diagrams, identifying major components, functions and locations, process flow paths, importance to plant safety and relationship with other plant systems. It also discusses Main Turbine – Generator LO System, turbine supervisory instrumentation, and Steam Dump System importance to radioactivity containment.

Feed Systems: provides instruction in the purpose of the Condensate System, MFW System, Auxiliary Feedwater Water (AFW) System, Condenser and Condenser Air Removal System, and Circulating Water System (CWS) to include basic block diagrams, identifying major components, functions and locations, process flow paths, importance to plant safety and relationship with other plant systems.

Safety Systems: provides instruction in the purpose of the Chemical and Volume Control System (CVCS), Reactor Makeup Water System, Residual Heat Removal (RHR) System, Emergency Core Cooling System (ECCS), Component Cooling Water (CCW) System, and Auxiliary Salt Water (ASW) System to include purpose, basic block diagrams, identifying major components, functions and locations, process flow paths, and importance to plant safety and radioactive containment, relationship with other plant systems and the physical connections and/or cause effect relationships between the Fire Water System and the Centrifugal Charging Pumps (CCPs)

Power Plant Fundamentals (Cont.)

Ventilation and Control Systems: provides instruction in Auxiliary Building Ventilation System, Control Room Ventilation System, Fuel Handling Building Ventilation System, Rod Control System, and Main Feedwater Control System to include purpose, basic block diagrams, identifying major components, functions and locations, process flow paths, Control Room Ventilation System alignments, and importance to plant safety and radioactive containment, relationship with other plant systems.

Electrical Systems: provides instruction in the Plant Electrical System, Main Generator and related equipment, and the DG System to include purpose, basic block diagrams, identifying major components, functions and locations, process flow paths, Control Room Ventilation System alignments, and importance to plant safety and radioactive containment, relationship with other plant systems.

Plant Protective Systems: provides instruction in Reactor Protections System, Eagle 21 and Solid State Protection Systems, Nuclear Instrumentation Systems, In-core Instrument Systems, DC Power System, and Instrument AC System to include purpose, basic block diagrams, identifying major components, functions and locations, process flow paths, importance to plant safety and radioactive containment, and relationship with other plant systems.

Miscellaneous Systems: provides instruction in Liquid Radwaste Systems, Gaseous Radwaste System (GRS), Service Cooling Water (SWC) System, Fire Detection System, Cardox System and Fire Water System. Areas covered include purpose of system, block diagram, the importance to plant safety and/or radioactive containment, basic interrelationship between the system and other systems, location of major components, and specific area/and or components of each system are discussed.

Power Plant Fundamentals consists of classroom lecture in various areas of instruction. See individual Course description, Attachment 3. The course consists of 9 lessons.
The material of the course is covered during 71 hours of classroom instruction during the first six months in the program at the Diablo Canyon Training Center.

4. Basic Tools and Shop Equipment

Provide instruction in hand tools and hand tool safety, precision measuring tools, portable power tools, layout and drill press operations, horizontal band saw, vertical band saw, abrasive wheel saw, hydro-blaster, bead blaster, hydraulic press, basic carpentry, screw threads, tapers, mechanical fasteners, gears and gearbox fundamentals, site specific gears and gearboxes, mechanical power transmission.

Basic Equipment and Tools consists of classroom lectures and lab exercises in various areas of instruction. See individual Course descriptions, Attachment 4. The course consists of 11 lessons. The material of the course is covered during 88 hours of classroom and laboratory instruction during the first six months in the program at the Diablo Canyon Training Center.

5. Mechanical Drawing, & Print Reading

Provides instruction in reading technical drawings, multi-view drawings, dimensions and tolerances, auxiliary views and revolutions, sectional views and conventions, fasteners, working drawings, pictorial drawings, pictorial and technical illustrations, welding drafting, surface developments & illustrations, cams & gears, print reading, plant drawings and prints.

Mechanical Drawing and Print Reading consists of classroom lectures and lab exercises in various areas of instruction. See individual Course description, Attachment 5. The course consists of 2 lessons. The material of the course is covered during 50 hours of classroom instruction during the first six months in the program at the Diablo Canyon Training Center.

6. Mechanical Drawing – Practical

Provides hands on mechanical drawing experience for the machinist apprentice. There will be finished parts which the apprentices will use to make drawings showing dimensions, angles, etc. so that an identical part can be made from that drawing. There will be 1 lesson covered in 20 hours of classroom instruction during the first 6 months in the program at the Diablo Canyon Training Center.

7. Piping and Piping Components Fundamentals

Provides instruction in basic piping (size and schedule), pipe fittings, plate stock, round stock, square stock, structural steel, hanger and Snubber basics, heat exchanger basics, steam traps, filters and strainers, condensers, bolting & spiral wound gaskets.

Piping and Piping Components consists of classroom lecture and lab exercises in various area of instruction. See individual Course description, Attachment 6. The course consists of 10 lessons. The material of the course is covered during 125 hours of classroom and Laboratory instruction during the first six months in the program at the Diablo Canyon.

8. Bearing and Lubrication Fundamentals

Provides instruction in basic bearing types, bearing use, axial support, radial support, thrust, bearing replacement, bearing maintenance, bearing lubrication systems, lubrication types and uses.

Bearing and Lubrication Fundamentals consists of classroom lecture and lab exercises in various area of instruction. See individual Course description, Attachment 7. The course consists of 2 lessons. The material of the course is covered during 40 hours of classroom instruction during the second six months in the program at the Diablo Canyon Training Center.

D. Machinist Basic Qualifications Overview

1. Rigging Fundamentals

Provides instruction in rigging principles required for Machinists. Slings, adjusters, eyebolts and other rigging hardware are covered as well as inspections, procedures, etc.

Rigging consists of classroom lecture and lab exercises in various area of instruction. See individual Course description, Attachment 8. The course consists of 2 lessons. The material of the course is covered during 40 hours of classroom and Laboratory instruction during the second six months in the program at the Diablo Canyon

2. Valve Fundamentals

Provides instruction in valve fundamentals, diaphragm valves, valve actuator fundamentals, back-flow-preventer fundamentals, globe and flow control valve maintenance & repair, gate/check valve maintenance & repair, ball, plug, and butterfly valve maintenance & repair, safety & relief valve repair & testing, valve stem packing.

Valve Fundamentals consists of classroom lecture and lab exercises in various area of instruction. See individual Course description, Attachment 10. The course consists of 7 lessons. The material of the course is covered during 127 hours of classroom instruction during the third six months in the program at the Diablo Canyon Training Center.

3. Pump Fundamentals

Provides instruction in pump fundamentals, pump nomenclature, impeller types, wear rings, Bernoulli's Law, classifications, head pressure, pump lubrication systems, pump packing, mechanical seals, centrifugal pump maintenance, rotary pump maintenance, positive displacement pump maintenance, diaphragm pump maintenance, couplings and shaft alignment.

Pump Fundamentals consists of classroom lecture and lab exercises in various area of instruction. See individual Course description, Attachment 11. The course consists of 10 lessons. The material of the course is covered during 220 hours of classroom instruction during the third six months in the program at the Diablo Canyon Training Center.

4. Oxy-acetylene Heating and Cutting Fundamentals/Heat Treating

Provides instruction in oxy-acetylene heating and cutting, types of cutting tips, type of cutting flame, welding safety, and gas cylinder bottle safety. Heat treating will also be covered so the apprentice can see the effects of heat treating on machining processes.

Oxy-acetylene Heating and Cutting consists of classroom lecture and lab exercises in various area of instruction. See individual Course description, Attachment 12. The course consists of 2 lessons.
The material of the course is covered during 20 hours of classroom and laboratory instruction during the third six months in the program.

5. Machining Fundamentals

Provides introduction and instruction into the use of various machine tools including; Arbor/Hydraulic Presses, Drill Presses, Engine Lathes, Milling Machines, Horizontal/Vertical Boring Mills, Surface Grinders, Sheet Metal Brake, Sheet Metal Shear and portable equipment available on site.

This material is covered in 32 modules during 392 hours of classroom and laboratory instruction.

Machining Fundamentals may be covered at any time during the apprentice training program based on availability of time and an instructor.

The training will be broken out into modules to be covered during each six month period but circumstances may allow for more or less training.

6. Rigging Projects for the Machinist Program

The following are examples of projects that will be used in the Machinist Program for the purpose of allowing the apprentice to demonstrate rigging capabilities. They will typically be performed in the Maintenance Shops Building.

a. Rig, lift and move a 24" butterfly valve with actuator

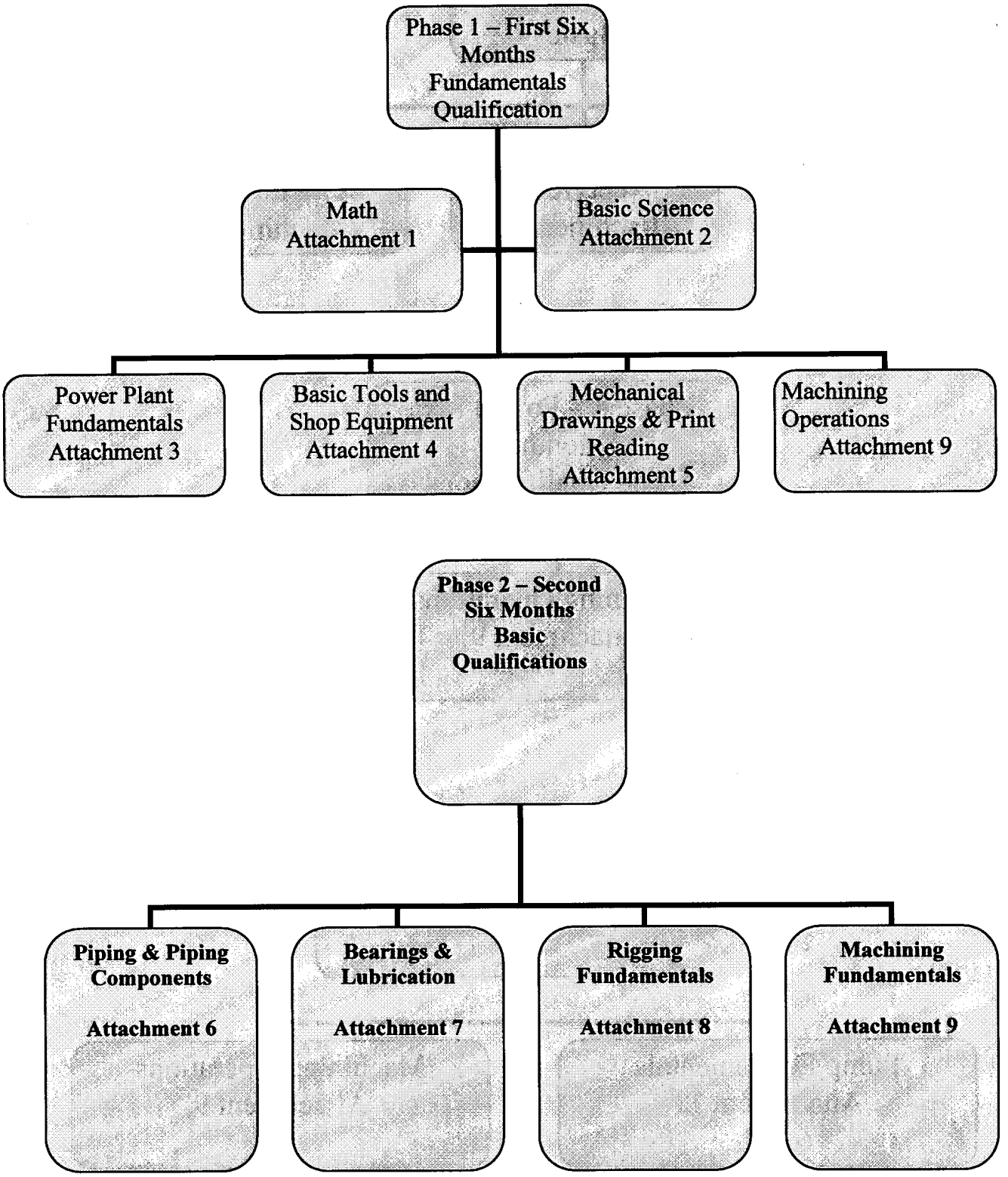
b. Rig, lift and move a skid-mounted pump and motor.

c. Rig and lift a section of barstock into an Engine Lathe.

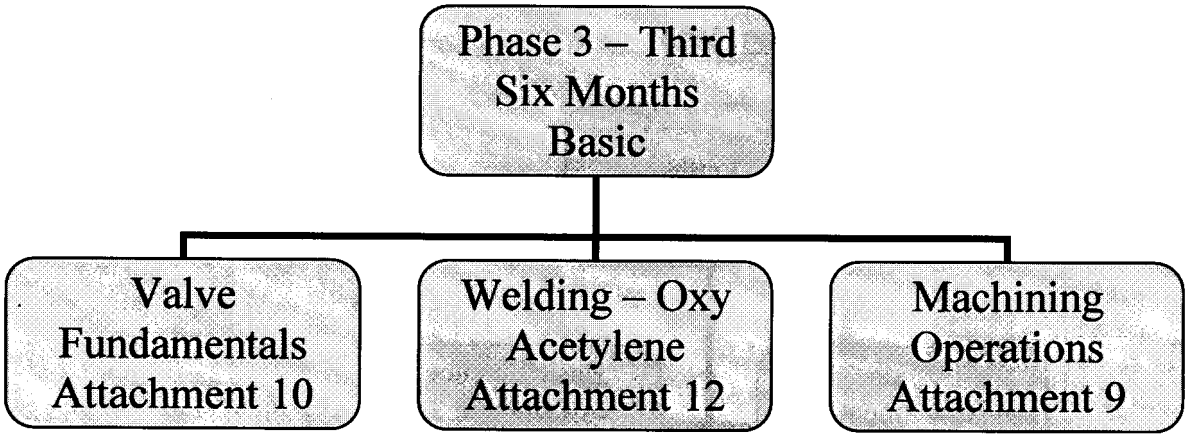
d. Rig and lift a piece of plate onto a layout table.

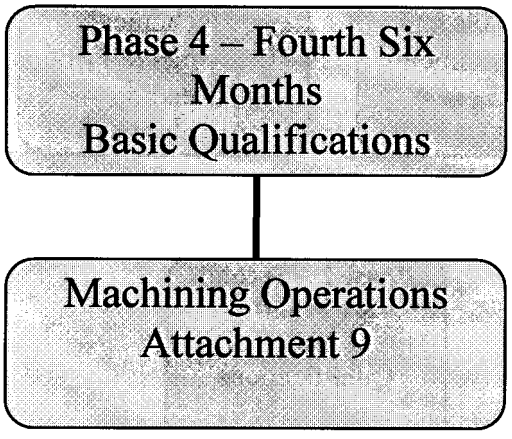
SECTION V - Apprentice Machinist Program Map

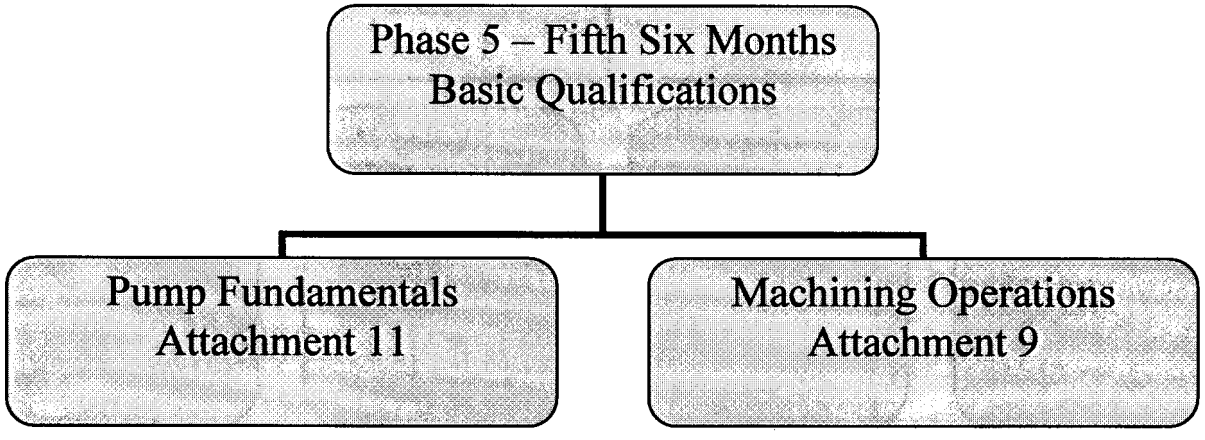
A. Apprentice Machinist Program Map



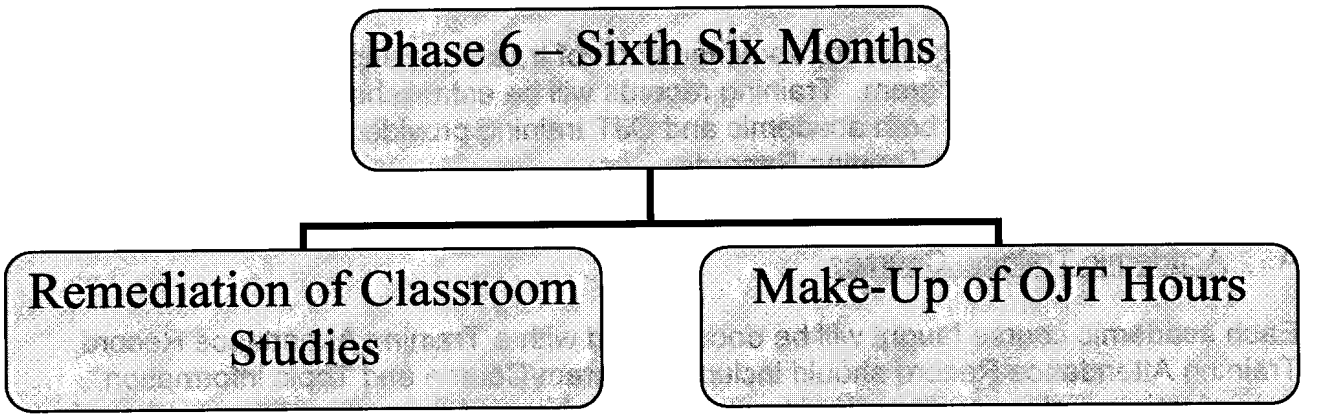
Apprentice Machinist Program Map (Cont)







Apprentice Machinist Program Map (Cont)



SECTION VI - Training Records Management

Auditable records are required for documentation of training in support of the Machinist Apprentice Program. Training records will be established for each Apprentice candidate for both academic and OJT training provided in accordance with TQ1.ID4, Non-Accredited Training Records.

A. Academic Training Courses

Each academic course taught will be documented with a Training Attendance Record. Training Attendance Record should include: Program/Course and Topic information, date of training, class number, lesson revision number and date, class title, number of class hours, instructor(s) signature(s), program coordinator signature, date student attended, student name student identification, student signature, quiz, test, and/or exam score, as applicable. If a course is made up of multiple lessons (e.g., Basic Sciences – Arithmetic, decimals, etc.) a Training Attendance Record will be developed for each lesson.

B. On-The-Job Training

Each Apprentice will be issued a Qualification Book upon his/her acceptance into the Apprentice Training Program. The Qualification Book consists of OJT tasks that will be completed and signed off during the 36-month Apprenticeship. Each Apprentice is responsible for obtaining his/her sign-offs by a task qualified Journeyman in the task to be trained. It should be noted that obtaining a sign-off for completed OJT, does not by itself fulfill the hourly requirements stipulated in Section IV of this document. Nor does OJT sign-offs task qualify the Apprentice.

It is recognized that academic and OJT, while vital to the learning process, are not by themselves a stand-alone methodology to completely train the Apprentice in all the skills and knowledge necessary for Journeyman status. This program recognizes the importance of plant work and time-in-grade to complete a well-rounded training program.

Thus, OJT will be documented by the line organization in accordance with the hourly requirements of Section IV, B of this document. The forms provided in Attachment 13, 14, will be used to maintain a record of hourly performance in the various subject areas covered by the OJT portion of the Apprentice Training Program. The Journeyman providing the OJT will verify OJT hours completed. As progress through this training is achieved, a Supervisor will review and evaluate performance on each Apprentice.

C. TPE Evaluation

Task Performance Evaluation (TPE) - Evaluation of the student's performance of a task under controlled conditions, and measured against observable and quantifiable standards. TPE is the evaluation of those skills and knowledge performed during the OJT phase of Apprentice training. Task qualification is accomplished with TPE's. Task qualification will not be granted until academic and hourly OJT requirements are completed. TPE's will be documented in accordance with TQ2.ID4, Training Program Implementation.

SECTION VII – Progress Documentation Procedures

A. Daily On-The-Job Training Hours

Attachment 13 "Training Hours" column is the total hours required for the entire 30-month period for each of the items listed.

The required hours for each 6-month period are shown on Attachment 14, On-The-Job Training. The Apprentice should meet or exceed these times for each area.

OJT hours in the specified areas shown on Attachment 13 will be documented as follows:

The Apprentice will document hours spent in the non-shaded block of Attachment 13 for that date. The Journeyman who is assigned to work with the Apprentice will initial in the shaded block immediately below the hours marked to indicate that the time spent was acceptable. See example below.

Portion of Attachment 13, Daily OJT Hours

Item	Training Hours	Total Hours	Day of the Month				
			1	2	3	4	5
Pumps	10				6		
					HB		
Valves	7						
Bearings & Lube	4			3			
				HB			

At the end of each month, the Apprentice will add the hours in each area and record the total time in the "Total Hours" column. See example below.

Portion of Attachment 13, Daily OJT Hours

Item	Training Hours	Total Hours	Day of the Month				
			12	13	14	15	16
Pumps	10	13			6		7
					HB		HB
Valves	7	3				3	
						HB	
Bearings & Lube	20	21		3			
				HB			
Supervisor Review							

The supervisor will review and initial at the bottom of each topic area as shown below.

(A Portion of Attachment 13, Daily OJT Hours)

Item	Training Hours	Total Hours	Day of the Month				
			12	13	14	15	16
Pumps	10	13			6		7
					HB		HB
Valves	7	3				3	
						HB	
Bearings & Lube	20	21		3			
				HB			
Supervisor Review							

B. Total Hours

At the end of each month, the Apprentice will total the "Total Hours" column in Attachment 13 and insert this number in the "TOTAL HOURS FOR MONTH" on Attachment 13 and the "Actual Hours" block of the appropriate month on Attachment 14. When a training phase has been completed, he will total the hours listed in each month and put that number in the row below the required "Training Hours." The "Training Hours" are the minimum number of hours that must be completed. The "Actual Hours" should equal or exceed the number in the "Training Hours."

Each month shade in the "Time in Program" bar.

The supervisor will review the hours and initial and date each month period. He will also review the "Actual Hours" at the end of each training period and initial in the shaded block below the recorded hours for that period.

The Apprentice will fill in the self-study hours on Attachment 14 where indicated.

(Portion of Attachment 14, Master Assignment Chart)

Supervisor's Initials	HB	HB	HB	HB	HB	HB	HB					
Date (Month and Year)	01/06	02/06	03/06	04/06	05/06	05/06	05/06					
Month			3			6				9		
Time in Program												
Program Period						1						

OJT TRAINING

Pumps	Training Hours							225						
	Actual Hours	45	25	47	46	28	51	242	51					
	Supervisor Init							HB						
Valves	Training Hours							50						
	Actual Hours	6		12	14	8	11	51	8					
	Supervisor Init							HB						

Submit Attachments 13 and 14 and the Master Assignment Chart Review and Comments form on the following page to the Plant Manager for his review and comment at the start of the seventh, thirteenth, nineteenth, twenty-fifth and thirty-first month. The Plant Manager will forward the forms to the Human Resources Department for their review and comment and return them to the plant prior to the end of the month. These forms will be filed in the Apprentice's training folder.

MASTER ASSIGNMENT CHART REVIEW AND COMMENTS

Apprentice Name: _____ _____
Start Date

FIRST PERIOD REVIEW

Comment: _____

_____ _____ _____
(Signed) Line Manager Date

Comment: _____

_____ _____ _____
(Signed) Human Resources Date

SECOND PERIOD REVIEW

Comment: _____

_____ _____ _____
(Signed) Line Manager Date

Comment: _____

_____ _____ _____
(Signed) Human Resources Date

THIRD PERIOD REVIEW

Comment: _____

_____ _____ _____
(Signed) Line Manager Date

Comment: _____

_____ _____ _____
(Signed) Human Resources Date

FOURTH PERIOD REVIEW

Comment: _____

_____ _____ _____
(Signed) Line Manager Date

Comment: _____

_____ _____ _____
(Signed) Human Resources Date

FIFTH PERIOD REVIEW

Comment: _____

_____ _____ _____
(Signed) Line Manager Date

Comment: _____

_____ _____ _____
(Signed) Human Resources Date

Attachment 1 – Mathematics

COURSE: **Math**

LESSONS: 13

Lesson Text: Mathematics for Technical and Vocational Students, Boyce, Margolis, and Slade, 9th Edition

[illegible]	Lesson Title	Set*	[illegible]	[illegible]
MG0201	Arithmetic Operations	C	1	6
MG0202	Common Fractions	C	6	6
MG0203	Decimal Fractions	C	3	6
MG0204	Percentages	C	3	6
MG0205	Ratio and Proportion	C	3	6
MG0206	Practical Algebra	C	8	6
MG0207	Rectangles and Triangles	C	4	6
MG0208	Regular Polygons and Circles	C	11	6
MG0209	Solids	C	9	6
MG0210	The Essentials of Trigonometry	C	7	6
MG0211	Speed Ratios of Pulleys and Gears	C	3	6
MG0212	Metric Measure	C	2	6
MG0213	Graphs	C	2	6
Total Math Training Hours			**62**	

(#) – Sequence that lessons are to be presented.
Set* - Settings are: C = Classroom, L = Lab or Lab OJT, P = in Plant OJT

Attachment 2 – Machinist Basic Science

COURSE: **Basic Science Course Outline**

LESSONS: 7

Lesson Text: (see Lesson Guides/Student Handouts)

PIMS I.D.#	Lesson Title	Set*	Hrs	Max
MBS0100	Physics	C	3	10
MBS0200	Electrical Science	C	3	10
MBS0300	Properties of Nuclear Plant Material	C	3	10
MBS0400	Basic Atomic and Nuclear Physics	C	3	10
MBS0500	Heat transfer and Fluid Flow	C	4	10
MBS0600	Fundamentals of Hydraulics and Pneumatics	C	4	10
MBS0700	Basic Chemistry	C	4	10
Total Training Hours for Basic Sciences			**24**	

(#) – Sequence that lessons are to be presented.
Set* - Settings are: C = Classroom, L = Lab or Lab OJT, P = in Plant OJT

Attachment 3 – Power Plant Fundamentals

COURSE: **Machinist Power Plant Fundamentals**

LESSONS: 9

Lesson Text: (see Lesson Guides/Student Handouts)

PIMS I.D.#	Lesson Title	Set*	Hrs	Max
MPS1	Reactor and Refueling System	C	6	6
MPS2	Primary systems	C	10	6
MPS3	Steam Systems	C	10	6
MPS4	Feed Systems	C	10	6
MPS5	Safety Systems	C	8	6
MPS6	Ventilation and Control Systems	C	6	6
MPS7	Electrical Systems	C	8	6
MPS8	Plant Protective Systems	C	8	6
MPS9	Miscellaneous Systems	C	5	6
Power Plant Fundamentals Total Training Hours			**71**	

(#) – Sequence that lessons are to be presented.
Set* - Settings are: C = Classroom, L = Lab or Lab OJT, P = in Plant OJT

Attachment 4 – Basic Tools and Shop Equipment

COURSE: **Basic Tools and Shop Equipment Course Outline**

LESSONS: 11

Lesson Text: (see Lesson Guides/Student Handouts)

PIMS I.D.#	Basic Tools and Shop Equipment	Set*	Hrs.	Max
MM0701	Hand Tools	C + L	10	6
MM0702	Power Tools	C + L	10	6
MM0703	Layout and Drill Press Operations	C + L	4	6
MM0700	Precision Measuring Tools	C + L	20	
MM0704	Metal Cutting, Horizontal Hacksaw, Vertical Band Saw, Abrasive Wheel Saw	C + L	4	6
MM0705	Hydro-Blaster	C + L	4	6
MM0706	Mechanical Fasteners	C + L	4	6
MM0707	Mechanical Power Transmission	C + L	4	6
MM0708	Basic Carpentry	C	4	6
MM2801	Gear Fundamentals	C	8	8
MM2810	Gears and Gearboxes	C + L	16	8
Total Training Hours for Basic Tools and Shop Equipment			**88**	

JPMs for Precision Tools

Topic #	Precision Tools			
PIMS I.D.#	**JPM Title**	**Set***	**Hrs.**	**Max**
MM0700J	Measuring Tools JPM	L	4	N/A
Total JPM Hours for Measuring Tools			**4**	

(#) – Sequence that lessons are to be presented.
Set* - Settings are: C = Classroom, L = Lab or Lab OJT, P = in Plant OJT

Attachment 5 – Mechanical Drawing & Print Reading

COURSE: **Mechanical Drawing and Print Reading Course Outline**

LESSONS: 2

Lesson Text: Blueprint Reading Course by Technicomp, Inc. 1992
(see Lesson Guide/Student Handout)

Print Set	Lesson Title	Set*	Hrs	Max
MM0715	Blueprint Reading	C	20	6
MM0300	Plant Drawings and Prints	C	30	6
	Mechanical Drawing – Practical	C	20	6
Mechanical Drawing and Blueprint Reading Total Training Hours			**70**	

(#) – Sequence that lessons are to be presented.
Set* - Settings are: C = Classroom, L = Lab or Lab OJT, P = in Plant OJT

Attachment 6 – Piping and Piping Components

COURSE: **Piping and Piping Components Fundamentals Course Outline**

LESSONS: 10

Lesson Text: (see Lesson Guide/Student Handout)

PIMS ID#	Lesson Title	Set*	Hrs.	Max
MM2120	Piping Systems Maintenance	C	30	6
MM0709	Rigid Pipe Machine	C + L	8	6
MM0712	Plate, Round Stock, Square Stock, Structural Steel	C	4	6
MM1171	Snubber and Hanger Maintenance	C + L	20	6
MM0930	Heat Exchanger Tube Repair	C + L	8	6
MM2130	Installation and Removal of Anchors	C + L	10	6
MM2140	Removal and Re-Installation of Pipe Supports	C + L	15	6
MM0710	Steam Traps,	C	10	6
MM0711	Filters and Strainers	C	10	6
MM0600	Bolting Practices and Torquing	C + L	10	6
Total Training Hours for Piping and Piping Components			**125**	

JPMs for Piping

PIMS ID#	JPM Title	Set*	Hrs.	Max
MM2130J	Installation and Removal of Anchors JPM (Prerequisite: MM0600J)	L	4	N/A
MM2140J	Removal and Re-installation of Pipe Supports JPM (Prerequisite: MM2130Q)	L	4	N/A
JPM Hours for Anchors and Pipe Supports			**8**	

(#) – Sequence that lessons are to be presented.
Set* - Settings are: C = Classroom, L = Lab or Lab OJT, P = in Plant OJT

Attachment 7 – Bearings & Lubrication

COURSE: **Bearing and Lubrication Fundamentals Course Outline**

LESSONS: 2

Lesson Text: (see Lesson Guide/Student Handout)

[redacted]	[redacted]	Set*	Hrs.	Max
MM0500	Basic Lubrication Principles	C	10	6
MM2700	Bearing Maintenance	C + L	30	6
Total Training Hours for Bearings and Lubrication			**40**	

JPMs for Lubrication and Bearings

[redacted]	[redacted]	Set*	Hrs.	Max
MM0500J	Lubrication JPM	L	1	N/A
MM2700J	Bearing Maintenance JPM (Prerequisite MM0100Q)	L	1	N/A
Total JPM Hours for Lubrication			**2**	

(#) – Sequence that lessons are to be presented.
Set* - Settings are: C = Classroom, L = Lab or Lab OJT, P = in Plant OJT

Attachment 8 - Rigging

COURSE: **Rigging Fundamentals Course Outline**

LESSONS: 7

Lesson Text: (see Lesson Guide/Student Handout)

PIMS ID #	Lesson Title	Set*	Hrs	Max
MG0801	Rigging Fundamentals	C + L	30	6
MG08020	Rigging Setup and Dismantling	C + L	6	6
MG0850	Scaffolding	C + L	60	6
FSSLADD	Ladder Safety	CBT	1	6
MG0844	Fork Lifts	C + L	10	6
Total Training Hours for Rigging Fundamentals			**107**	

JPMs for Rigging

PIMS ID #	JPM Title	Set*	Hrs	Max
MG0801J	Rigging Fundamentals JPM	L	3	N/A
MG0850J	Basic Scaffold Erection JPM	L	6	N/A
MG0844J	Forklift Operation JPM	L	5	N/A
Total Hours for Rigging Fundamentals JPM's			**14**	

(#) – Sequence that lessons are to be presented.
Set* - Settings are: C = Classroom, L = Lab or Lab OJT, P = in Plant OJT

Attachment 9 – Machining Functions

COURSE: **Machining Functions Course Outline**

LESSONS: 32 (may be taught at any time during the apprenticeship)

Lesson Text: (see Lesson Guide/Student Handout)

PIMS I.D. #	Lesson Title	Set*	Hrs.	Max.	RPI**
MM1	General Safety for Machinery	C	3	6	1
MM1	Use of Arbor and Hydraulic Presses	C/L	5	5	2
MM1	Tool Selection and Use/Speeds and Feeds	C	4	6	1
MM1	Attachments and Holding Devices	C/L	15	6	1
MM1	Introduction to Drill Presses	C	3	6	2
MM1	Use of a Floor Drill Press	C/L	4	6	2
MM1	Use of a Radial Arm Drill Press	C/L	7	6	2
MM1	Introduction to Engine Lathes	C/L	15	6	1
MM1	Alignment, Turning and Facing on a Lathe	C/L	15	6	1
MM1	Turn, Face and Bore on a Lathe	C/L	15	6	1
MM1	Thread (Internal/External) on a Lathe	C/L	20	6	2
MM1	Turn and Thread Tapers on a Lathe	C/L	20	6	3
MM1	Cut Grooves and Part Off on a Lathe	C/L	20	6	3
MM1	Use Tool Post Grinder (Internal and External) on a Lathe	C/l	20	6	3
MM1	Change Chucks and Other Attachments	L	5	6	1
MM1	Introduction to Milling Machines	C/L	5	6	3
MM1	Use of Various Milling Cutters and Processes	C/L	25	6	3
MM1	Perform Facing, Turning, Boring, Slot and Straddle Cutting on a Milling Machine Using Various Holding Devices	C/L	50	6	3
MM1	Introduction to Horizontal Boring Mills	C/L	3	6	1
MM1	Perform Boring, Facing and Turning on a Horizontal Boring Mill	C/L	40	6	1
MM1	Introduction to Vertical Boring Mills	C/L	4	6	2
MM1	Perform Boring, Facing and Turning on a Vertical Boring Mill	C/L	40	6	2

(#) – Sequence that lessons are to be presented. This is a recommendation only.
Set* - Settings are: C = Classroom, L = Lab or Lab OJT, P = in Plant OJT
RPI** - Recommended Period of Instruction 9i.e. 1 = 1st 6 months; 2 = 2nd 6 months; etc.)

Attachment 9 – Machining Functions (continued)

COURSE: **Machining Functions Course Outline**

LESSONS: 32 (may be taught at any time during the apprenticeship)

Lesson Text: (see Lesson Guide/Student Handout)

PIMS I.D. #	Lesson Title	Set*	Hrs	Max	RPI**
MM1	Introduction to Surface Grinders	C/L	4	6	3
MM1	Perform Surface Grinding	C/L	10	6	3
MM1	Introduction to the Sheet Metal Brake	C/L	2	6	2
MM1	Fabrication of Material Using a Sheet Metal Brake	L	8	6	2
MM1	Introduction to the Metal Shear	C/L	2	6	3
MM1	Use of the Metal Shear	L	8	6	3
MM1	Introduction to Portable Equipment	C/L	4	6	4
MM1	Use of a Portable Flange Facer	L	10	6	4
MM1	Use of a Portable Boring Mill	L	10	6	4
MM1	Use of a Portable Keyway Cutter	L	10	6	4
Total Classroom and Lab Hours for Machinist Fundamentals			**392**		

(#) – Sequence that lessons are to be presented. This is a recommendation only.
Set* - Settings are: C = Classroom, L = Lab or Lab OJT, P = in Plant OJT
RPI** - Recommended Period of Instruction 9i.e. 1 = 1st 6 months; 2 = 2nd 6 months; etc.)

Attachment 10 - Valves

COURSE: **Valve Fundamentals Course Outline**

LESSONS: 7

Lesson Text: (see Lesson Guide/Student Handout)

(#) – Sequence that lessons are to be presented.

Set* - Settings are: C = Classroom, L = Lab or Lab OJT, P = in Plant OJT

RIMS I.D.#	(#)	Lesson Title	*Set*	Hrs. Min	Max
MM1201		Valve Fundamentals	C	12	6
MM1202		Valve Stem Packing	C/L	8	6
MM1295		Valve Actuator Fundamentals	C/L	40	6
MM1230		Globe and Flow Control Valve Maintenance & Repair	C/L	14	6
MM1210		Gate/Check Valve Maintenance & Repair	C/L	11	6
MM1236		Ball, Plug, and Butterfly Valve Maintenance & Repair	C/L	22	6
MM1270		Safety & Relief Valve Repair & Testing	C/L	20	6
Total Training Hours for Valve Fundamentals				127	

JPMs for Valves

RIMS I.D.#	JPM Title	Set*	Hrs.	Max
MM1202J	Valve Stem Packing JPM	L	2	N/A
MM1210J	Gate & Check Valve Maintenance JPM	L	1	N/A
MM1230J	Globe/Flow Control Valve Maintenance JPM	L	4	N/A
MM1236J	Ball, Plug, & Butterfly Valve Maintenance JPM	L	2	N/A
MM1295J	POV Operator Maintenance JPM	L	10	N/A
MM1236J	Ball, Plug, & Butterfly Valve Maintenance JPM	L	2	N/A

Attachment 11 - Pumps

COURSE: **Pump Fundamentals Course Outline**

LESSONS: 10

Lesson Text: see Lesson Guide/Student Handout)

PIMS I.D.#	Lesson Title	Set*	Hrs	Max
MM1400	Pump Fundamentals	C	20	6
MM1450	Pump Lubrication Systems	C	5	6
MM1453	Pump Packing	C/L	5	6
MM1456	Mechanical Seals	C/L	30	6
MM1470	Centrifugal Pump Maintenance	C/L	30	6
MM1460	Rotary Pump Maintenance	C/L	20	6
MM1465	Positive Displacement Pump Maintenance	C/L	30	6
MM1430	Diaphragm Pump Maintenance	C/L	20	6
MM1430	Couplings and Shaft Alignment	C/L	40	6
MM1500	Air Compressor Maintenance	C/L	20	6
Total Training Hours for Pump Fundamentals			220	

(#) – Sequence that lessons are to be presented.
Set* - Settings are: C = Classroom, L = Lab or Lab OJT, P = in Plant OJT

JPMs for Pumps

PIMS I.D.#	JPM Title	Set*	Hrs	Max
MM1470J	Centrifugal Pump Inspect & Repair JPM	L	6	N/A
MM1465BJ	Inspect and Repair Diaphragm Pumps JPM	L	5	N/A
MM1430J	Shaft Alignment JPM	L	5	N/A
MM1456J	Replace Mechanical Seal - JPM	L	5	N/A
MM1310J	Fan Maintenance - JPM	L	1	N/A
Total JPM Hours for Pump Fundamentals			22	

Attachment 12 – Oxyacetylene Heating & Cutting

COURSE: **Oxy-acetylene Heating and Cutting Fundamentals Course Outline**

LESSONS: 2

Lesson Text:

RIMS-JBM	Lesson Title	Set*	Hrs.	Max
TBD	Oxy-Acetylene Heating and Cutting.	C/L	10	6
	Heat Treating	C/L	10	6
Total Training Hours for Oxy-acetylene Heating and Cutting			20	

(#) – Sequence that lessons are to be presented.
Set* - Settings are: C = Classroom, L = Lab or Lab OJT, P = in Plant OJT

Attachment 13 – Daily OJT Hours

Name: _____ User ID: _____ Plant: _____ Starting Date: _____

PUMPS

Item	Training Hours	Total Hours	DAY OF THE MONTH																												
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Centrifugal Pumps	50																																
Diaphragm Pumps	20																																
Gear Pumps	20																																
Screw Pumps	20																																
Vane Pumps	20																																
Lobe Pumps	20																																
Pump Alignment	50																																
Pump Packing	25																																
Mechanical Seals	25																																
Supervisor Review																																	

Attachment 13 – Daily OJT Hours (Cont)

Name: _____ User ID: _____ Plant: _____ Starting Date: _____

Valves

Item	Training Hours	Total Hours	DAY OF THE MONTH																												
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Globe Valves	25																																
Gate Valves	25																																
Butterfly Valves	25																																
Ball Valves	25																																
Diaphragm Valves	25																																
Check Valves	25																																
Control Valves	25																																
Safety and Relief Valves	25																																
Pneumatic Operators	25																																
Valve Packing	25																																
Supervisor Review																																	

Attachment 13 – Daily OJT Hours (Cont)

Name: _____ User ID: _____ Plant: _____ Starting Date: _____

Bearings and Lubrication

Item	Training Hours	Total Hours	DAY OF THE MONTH																												
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Rolling Contact Bearings	25																														
Plain Bearings	25																														
Thrust Bearing	25																														
Lubrication	25																														
Supervisor Review																															

Attachment 13 – Daily OJT Hours (Cont)

Name: _____ User ID: _____ Plant: _____ Starting Date: _____

Rigging

Item	Training Hours	Total Hours	DAY OF THE MONTH																												
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Rig Load	40																														
Calculate Load Weight	10																														
Supervisor Review																															

Attachment 13 – Daily OJT Hours (Cont)

Name: _____ User ID: _____ Plant: _____ Starting Date: _____

Forklift

Item	Training Hours	Total Hours	DAY OF THE MONTH																													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Forklift Operation	50																																
Supervisor Review																																	

Name: _____ User ID: _____ Plant: _____ Starting Date: _____

Piping and Piping Components

Item	Training Hours	Total Hours	DAY OF THE MONTH																													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Tubing and Tube Fittings	40																																
Pipe and Pipe Fittings	40																																
Hydrostatic Test Pipe System	40																																
Pipe Hangers	40																																
Pipe Snubbers	40																																
Supervisor Review																																	

Attachment 13 – Daily OJT Hours (Cont)

Name: _____ User ID: _____ Plant: _____ Starting Date: _____

Tools and Shop Equipment

Item	Training Hours	Total Hours	DAY OF THE MONTH																													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Hand Tools	20																																
Portable Power Tools	20																																
Precision Measuring Tools	20																																
Layout and Drill Press	30																																
Horizontal Band Saw	20																																
Vertical Band Saw	20																																
Abrasive Wheel Saw	10																																
Hydro-Blaster	20																																
Bead Blaster	20																																
Hydraulic Press	20																																
Basic Carpentry	20																																
Supervisor Review																																	

Attachment 13 – Daily OJT Hours (Cont)

Name: _____ User ID: _____ Plant: _____ Starting Date: _____

Machine Tools

Item	Training Hours	Total Hours	DAY OF THE MONTH																												
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Arbor & Hydraulic Presses	50																																
Floor Drill Press	10																																
Radial Arm Drill Press	40																																
Engine Lathe	600																																
Milling Machine	400																																
Horizontal Boring Mill	200																																
Vertical Boring Mill	200																																
Surface Grinders	200																																
Sheet Metal Brake	30																																
Metal Shear	30																																
Portable Flange Facer	20																																
Portable Boring Mill	20																																
Portable Keyway Cutter	20																																
Supervisor Review																																	

Attachment 13 – Daily OJT Hours (Cont)

Name: _____ User ID: _____ Plant: _____ Starting Date: _____

Staging

Item	Training Hours	Total Hours	DAY OF THE MONTH																														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Assemble and Disassemble Scaffolding	200																																
Supervisor Review																																	

Name: _____ User ID: _____ Plant: _____ Starting Date: _____

Oxy-acetylene Heating and Cutting

Item	Training Hours	Total Hours	DAY OF THE MONTH																														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Oxy-Acetylene	30																																
Supervisor Review																																	

REVIEWED BY: _____ DATE: _____
STUDENT

REVIEWED BY: _____ DATE: _____
FOREMAN

REVIEWED BY: _____ DATE: _____
MANAGER/GF

Attachment 14 – Master Assignment Chart

APPRENTICE MACHINIST
MASTER ASSIGNMENT CHART

Name:_____ USER ID:_____ Starting Date:_____

Supervisor's Initials																															
Date (Month and Year)																															

		3		6			9			12			15			18				24						30						
Time in Program																															
Program Period					1					2						3				4											

Pumps	Training Hours			50				100				150				200				250											
	Actual Hours																														
	Supervisor Initials																														
Valves	Training Hours			50				100				150				200				250											
	Actual Hours																														
	Supervisor Initials																														
Bearings & Lubrication	Training Hours			20				40				60				80				100											
	Actual Hours																														
	Supervisor Initials																														
Rigging	Training Hours			10				20				30				40				50											
	Actual Hours																														
	Supervisor Initials																														
Forklift	Training Hours			10				20				30				40				50											
	Actual Hours																														
	Supervisor Initials																														

Attachment 14 – Master Assignment Chart (Cont)

Piping	Training Hours			40				80				120				160			200	
	Actual Hours																			
	Supervisor Initials																			
Tools & Shop Equipment	Training Hours			44				88				132				176			220	
	Actual Hours																			
	Supervisor Initials																			
Staging	Training Hours			40				80				120				160			200	
	Actual Hours																			
	Supervisor Initials																			
Oxy-acetylene Heating and Cutting	Training Hours			6				12				18				24			30	
	Actual Hours																			
	Supervisor Initials																			
Machine Tools	Training Hours			604				1208				1812				2416			3020	
	Actual Hours																			
	Supervisor Initials																			

Attachment 14 Master Assignment Chart (Cont.)

Academic Training