

# POWER SYSTEM SAFETY AND TRAINING

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Workplace Learning and Performance

## Fall 2006 Course Catalog

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Truesdale Learning Center

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This course catalog has been prepared to assist trainers and training coordinators to select appropriate course codes and titles for courses they are teaching or enrolling employees into. The tasks are difficult enough without adding the extra burden of selecting course codes in the Human Resources Management System (HRMS) PeopleSoft. We hope that you will find value in this course catalog and that it simplifies your workload.

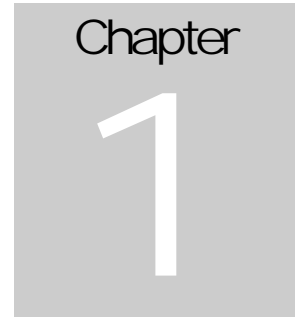
This course catalog will be updated twice a year, spring and fall. As of this printing every course in the catalog is in HRMS. To create a training session you can locate courses by searching either the course title or course code then create a session using that course.

Again we hope that this catalog provides assistance to you.

Wesley Pyle

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Power System Safety and Training



## ARC Course Descriptions

This course catalog is designed to assist the Department of Water and Power's Power Business units to design their curriculum in order to comply with regulatory mandated safety training and maintain a safe work environment for its employees.

Business groups can select from these courses to create and customize an Annual Refresher Course (ARC) to meet the needs of their employees. The ARC program can be customized according to craft, duties or task.

### Operating Order 1 - S OPO101

Employees working on and around power transmission and distribution systems face grave dangers from electrocution, falls, and other serious hazards. Safety-related work practices shall be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts, when work is performed near or on equipment or circuits that are or may be energized.

This course is designed for employees that work on or near energized equipment. Topics include Clearances and OKTO\_\_, Accident Prevention Tags, work procedures, and grounding practices. This course covers topics in LADWP Operating Order 2, LADWP Operating Order 5, OSHA 1910.269 and 1910.301-399 Subpart S

### Operating Order 2 – S OPO102

Employees working on and around power transmission and distribution systems face grave dangers from electrocution, falls, and other serious hazards. Safety-related work practices shall be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts, when work is performed near or on equipment or circuits that are or may be energized.

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### Operating Order 5 – S OPO105

Employees performing service or maintenance on machinery and equipment may be exposed to injuries from the unexpected energization, startup of the machinery or equipment, or release of stored energy in the equipment. The Lockout/Tagout standard requires the adoption and implementation of practices and procedures to shut down equipment, isolate it from its energy source(s), and prevent the release of potentially hazardous energy while maintenance and servicing activities are being performed.

This course is for employees whose duties require them to service, maintain or work around energized equipment. Topics included an overview of LADWP Operating Order 5, OSHA's Control of Hazardous Energy, 29CFR 1910.147, overview of controls and procedures required to prevent the unexpected energization, start-up or release of stored energy and the dangers involved. This includes methods to recognize different types of energy hazards, definitions of authorized, affected, and other employees, energy-isolating device definitions, recognition and use of tags, and appropriate control procedures. This course focuses on the specific requirements of LADWP Operating Order 5 and OSHA 29 CFR 1910.147 Subpart J.

### Operating Order 6 – S OPO106

This course covers procedures for energizing and testing circuits and station equipment after interruptions. Reporting requirements, testing restrictions, and load dropping instructions are also covered. Also, ways to handle emergency operations to provide maximum safety to personnel and equipment and minimize disturbance and outage to customers will be discussed.

### Operating Order 8 – S OPO108

This course is designed for employees that are involved in declaring high-voltage equipment in or out of service.

Topics include jurisdiction of equipment, placing bids, basic procedures for putting equipment in or out of service. This course covers LADWP Operating Order 8.

### Operating Order 16 – S OPO116

This course covers the division of responsibility between the Load Dispatcher and the Control Gorge Power Plant Operator. It also reviews the coordination of the operations of the Owens Valley Electric System (OVES) with the power system.

### Operating Order 18 – S OPO118

The LADWP operates and owns various facilities that contain many types of hazards. Many of these facilities are unattended and in isolated locations. Safe entry is a skill that is needed both for the safety of the employee and for the secure operations of the Department's facilities.

This course is intended for the employee that on occasion may be required to enter DWP facilities. Topics include who, when, how to notify the controlling headquarters, common hazards, personal protective equipment, and the LADWP Safety Rule Book. This course covers topics in Operating Order 18.

### Operating Order 22 – S OPO122

This course reviews the responsibility for the normal and emergency operation of remotely controlled stations. Procedures for handling feeder lockout and other alarms, and for reporting inoperative remote control equipment are also covered. Information for placing bids for work in unattended stations, for maintenance or construction work on building or non-electrical equipment, or on electrical equipment not under Power Operating and Maintenance (PO&M) Division's jurisdiction is also discussed.

### Operating Order 24 – S OPO124

The Federal Government has issued regulations on the handling and safe disposition of PCBs. These regulations are detailed in the Environmental Protection Agency (EPA) Regulations for Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions for Polychlorinated Biphenyls under the Toxic Substances Control Act (40 CFR 761) and the Comprehensive Emergency Response, Compensation and Liability Act (40 CFR 302, 40 CFR 355).

This course provides specific Polychlorinated Biphenyl (PCB) requirements and procedures concerning identification, reporting, record keeping, spill control and cleanup, storage, personnel protection, disposal of equipment, dielectric fluids and waste, testing, usage restrictions, and major fire response.

### Operating Order 28 – S OPO128

The Environmental Protection Agency (EPA), under the authority of the Federal Water Pollution Control Act authority of the Federal Water Pollution Control Act of 1972 (40 CFR 112), requires a Spill Prevention, Control and Countermeasure Plan (Plan). A Plan is required for facilities handling oil or oil-related products with underground storage of more than 42,000 gallons and accumulated above-ground storage of more than 1,320 gallons or single containers having a capacity in excess of 660 gallons. This requirement shall apply regardless of oil type (i.e., hydrocarbon based or other substance) and whether contained in equipment (e.g., transformer with insulating oil) or in storage tanks.

This course covers oil spill prevention, control, and cleanup plans. It discusses who has administrative responsibility for these plans and requirements to make the plans readily available, personnel to be trained to put the plans into effect, inspections routinely conducted to prevent spills, records maintained of the inspections and spills. The course also covers requirements pertaining to plan preparation, maintenance, and content.

### Operating Order 30 – S OPO130

This course covers the requirements in Operating Order 30 that unusual events be reported to Line Management and other offices specified herein. It also stipulates, in general terms, the types of unusual events that are to be reported, the time limitations imposed on making such reports, the contents of the reports, and the manner in which such reports shall be made.

### Operating Order 32 – S OPO132

This course covers Operating Order 32, a comprehensive document which lists and describes the Power System Emergency and Disaster procedures and their interrelationship for handling various types of emergencies involving operating facilities. The fundamental elements of the Department's emergency procedures will also be reviewed.

## Operating Order 36 – S OPO136

This course reviews the normal and alternate communication service available to personnel. It also describes the required actions in the event of communication service failure.

## Operating Order 42 – S OPO142

This course covers Operating Order 42 and provides procedures to be followed when working in 345kV metal-enclosed switchgear.

## Operating Order 44 – S OPO144

This course reviews the precautions to be taken and procedures to be followed when responding to a possible catastrophic failure of SF6 gas-filled equipment or release of SF6 by-products. These precautions and procedures will protect the community and environment from hazardous substances, and ensure the safety of personnel working on or near failed SF6 gas-filled equipment.

## Personal Protective Equipment – S PPE101

OSHA requires the use of personal protective equipment (PPE) to reduce employees' exposures to hazards when engineering and administrative controls are not feasible or effective in reducing these exposures to acceptable levels. Employers are required to determine all exposures to hazards in their workplace and determine if PPE should be used to protect their workers. This program contains identification and evaluation of hazards in the workplace and if use of PPE is an appropriate control measure; if PPE is to be used, how it is selected, and maintained.

This course is designed for workers who are required to use PPE in the performance of their duties. Topics include training on what PPE is necessary, when it is necessary, how to properly don, doff, adjust, and wear PPE, the limitations of PPE, and the proper care, maintenance, useful life, and disposal of PPE. This course covers topics included in DWP Safety Rule Book, PD Safety Rule Book, OSHA 29 CFR 1910.132-139 Subpart I and Cal/OSHA Title 8 CCR 3380.

## Bids For work Authority – C BWA101

Work on system-controlled equipment requires that programs for Clearances and OK TO \_\_\_\_, be made in advance for routine work. This includes putting new equipment into service, taking equipment out of service, conducting test, or performing any other type of operation that is programmed by the load dispatcher.

Topics include when, where, and how to place programs (bids). This course covers topics included in LADWP Operating Order 2, LADWP Operating Order 8, and LADWP Operating Bulletin 4.

### Confined Space Training – S COS101

Many DWP facilities contain spaces that are considered "confined" because their configurations hinder the activities of employees who must enter, work in, and exit them. OSHA uses the term "confined space" to describe such spaces. In addition, there are many instances where employees who work in confined spaces face increased risk of exposure to serious hazards. The Confined Space Entry Program is provided to protect authorized employees that will enter confined spaces and may be exposed to hazardous atmospheres, engulfment in materials, conditions which may trap or asphyxiate due to converging or sloping walls, or contains any other safety or health hazards.

This course is designed to enable students to recognize, evaluate, control, and abate safety and health hazards associated with permit-required confined space entry. This course focuses on the specific requirements of OSHA 29 CFR 1910.146 (a) through (l) Subpart J and Cal/OSHA Title 8 CCR 5157 and the LADWP Confined Space Program.

### Basic Electrical Safety – S BES101

Electricity is a source of power that many people take for granted. However, working with electricity can be dangerous. Engineers, electricians, and people who do wiring, work with electricity directly, including working on overhead lines, cable harnesses, and circuit assemblies are familiar with the dangers. However, others, such as office workers, plumbers, carpenters, and landscapers, work with electricity indirectly may also be exposed to electrical hazards.

This course provides an overview of basic electrical safety for individuals with little or limited training or familiarity with electrical hazards and is designed for any worker who may use extension cords, electric tools, etc. This course covers the topics included in OSHA 29 CFR 1910.301-399 Subpart S.

### Worksite Safety Standards – S WSS101

The Los Angeles Department of Water and Power owns and operates various types of facilities. These include converter stations, hydro and steam generating stations, electric sub-stations, customer and industrial

stations. All facilities present hazards, some are common others are unique to each facility.

This course provides an overview of common hazards found in electric utility facilities and review of the LADWP Safety Rule Book.

## Respiratory Protection – S REP101

The United States Department of Labor states that “OSHA's Respiratory Protection Standard covers an estimated 5 million respirator wearers working in an estimated 1.3 million workplaces in the covered sectors”. OSHA estimates that compliance with this standard will avert hundreds of deaths and thousands of illnesses annually. The standard applies to general industry, construction, shipyard, longshoring, and marine terminal workplaces and requires employers to establish or maintain a respiratory protection program to protect their respirator-wearing employees.

Topics include voluntary use of respirators, respiratory protection safety procedures, selection of respirators and filters, use and maintenance of respirators. You will also be fit tested at the end of this training. This course covers topics included in LADWP Respiratory Protection Program, OSHA 29 CFR 1910.134, and Cal/OSHA Title 8 CCR 5144.

## CPR, First Aid, AED – S CPR101

Coronary and heart disease is the single greatest cause of death in the United States. Furthermore electric utility work introduces shock hazards that may contribute to sudden cardiac arrest if the employee makes contact with energized equipment. Trained people at the scene may save victims of sudden cardiac arrest, heart attacks, or other emergencies. OSHA regulation 1910.269(b)(1) (ii) requires that fixed location such as generating plants have sufficient number of employees trained to provide timely assistance to an electric shock victim.

This course covers information regarding First Aid, CPR, and AED use and includes practice of the techniques learned.

## Hazardous Communications – S HAC101

Chemicals pose a wide range of health hazards (such as irritation, sensitization, and carcinogenicity) and physical hazards (such as flammability, corrosion, and reactivity). OSHA's Hazard Communication Standard is designed to ensure that information about these hazards and associated protective measures is disseminated to workers and employers. All employers with hazardous chemicals in their workplaces must prepare

and implement a written hazard communication program, and must ensure that all containers are labeled, employees are provided access to MSDSs, and an effective training program is conducted for all potentially exposed employees.

This course will ensure that students understand the potential for exposure and their liability and responsibility as it relates to the Department's Hazard Communication program. Individuals participating in this program will be given an overview of the standards and the Department written policies and procedures relating to how hazardous materials/chemicals affect their daily lives.

### High Voltage Testing – S HVT101

The LADWP uses various types of proximity and direct contact types of voltage detectors. Each voltage detectors have specific applications and limitations and must be used to verify that circuits are de-energized for safe working conditions.

Topics included are types of detectors, care of equipment, high-voltage detecting procedure, hazards, and minimum approach distances. This course reviews DWP Hazardous Work Procedures.

### Low Voltage Testing – S LVT101

Electrical shocks caused by the improper handling of energized electrical equipment can be serious if not fatal. Hazards associated with high voltage are well known, generally recognized, and sometimes forgotten by personnel while working on low voltage equipment.

Topics include hazards associated with low voltage circuits, LADWP Operating Order 2 and Operating Order 5, and the use of safety equipment including rubber gloves.

### Hazardous Waste Operations – First Responder – S HWO101

This course is designed for employees who work in facilities that may have uncontrolled spills of hazardous waste or materials and may respond to emergencies involving hazardous materials. Topics include Safety & Health Programs, work plan, site evaluation, site-specific safety & health plans, information & training program, personal protective equipment program, monitoring, medical surveillance, decontamination procedures, and emergency response.

This course covers the topics included in OSHA 29 CFR 1910.120 Subpart H and Cal/OSHA Title 22 CCR 66262.34(d). Note: This course does NOT fulfill requirements for the 8 hour, 24 hour, or 40 hour HAZWOPER training.

### Fall Protection – S FAP101

In 1997, 1,107 construction workers died on the job, with 34%, or 371 of them, resulting from falls (National Safety Council, Injury Facts). Each year, falls consistently account for the greatest number of fatalities in the construction industry, and are always a major concern in other industries. Events surrounding these types of accidents often involve a number of factors, including unstable working surfaces, misuse of fall protection equipment, and human error. Studies have shown that the use of guardrails, fall arrest systems, safety nets, covers, and travel restriction systems can prevent many deaths and injuries from falls.

This course teaches employees to use fall protection systems. Main topics include: the OSHA fall protection standards, fall protection systems, selection of fall protection measures, and inspection and maintenance of fall protection systems. This course covers the topics included in OSHA 29 CFR part 1926.500-503 Subpart M.

### Ladder Safety – S LAS101

This course covers the safe use of ladders. topics include inspections before use, safety label requirements, safe climbing techniques, and tying off the ladder.

### Ladder Inspector Training – S LIT101

This program is designed to certify Department personnel regarding proper Ladder Inspection Techniques. This course covers OSHA regulation and ANSI standards as well as LA City and LADWP requirements for ladders and the proper inspection technique for both portable self-supporting and non-self supporting ladders. Additionally, issues of Safety, Proper usage, Care, and the Transporting of ladders is also covered in this session. Hands-on and group activities are incorporated into this program so that each trainee gets first hand experience in what is required for a comprehensive inspection.

### Hazardous Materials Handling – S HMH101

This course is designed for workers who are interested in learning about safely handling and storing materials. Topics include improperly handling and storing of materials, potential accidents that may occur from unsafe or

improperly handled equipment, improper work practices, and recognition of methods for eliminating or at least minimizing the occurrence of those accidents.

This course covers the topics included in OSHA 29 CFR part 1910.176-184 Subpart N.

### Electrical Gloves – S ELG101

This course contains the policy for the care, use, inspection, and testing of electrical insulating rubber gloves used by employees within the Department of Water and Power.

Topics include the different classes of rubber gloves, instructions for their use, inspection, maintenance, and testing in accordance with the Cal/OSHA electrical safety orders and the ASTM (American Society for Testing and Materials) Standards; D 120 – Specification for Rubber Insulating Gloves and F 496 – Specification for In-Service Care of Insulating Gloves and Sleeves.

### Integrated Emergency Response Plan – S IER101

The intent of this course is familiarize the employees with the contents of the Integrated Emergency Response Plan (IERP) and what appropriate actions to be taken in the event of an emergency. This course contains generic information on fires, earthquakes, bomb threats, hazardous material spills, and other emergencies. Specific information regarding your facility is contained in your facilities IERP.

This is a two-part course; after completing part one you are to review your facility's IERP and discuss it with your supervisor. This Course covers topics in the IERP, OSHA 29 CFR 1910.38, and Cal/OSHA Title 8 CCR 3220.

### Machine Safeguarding – S MAS101

Moving machine parts have the potential for causing severe workplace injuries, such as crushed fingers or hands, amputations, burns, blindness, just to name a few. Safeguards are essential for protecting workers from these needless and preventable injuries. When the operation of a machine or accidental contact with it can injure the operator or others in the vicinity, the hazards must be either eliminated or controlled.

This course familiarizes the student with various types of common machinery and the related safety standards. Guidance is provided on the

hazards associated with various kinds of machinery and the control of hazardous energy sources (lockout/ tagout). The course presents an approach to machinery inspection that enables participants to recognize hazards and to provide options to active abatement. These hazards include mechanical motions and actions created by points of operation and other machinery processes. This course covers topics included in OSHA 29 CFR 1910.211-219 Subpart O.

### Egress and Fire Protection – S EFP101

An emergency action plan describes the actions employees should take to ensure their safety if a fire or other emergency occurs. Well-developed emergency plans and proper employee training (such that employees understand their roles and responsibilities within the plan) will result in fewer and less severe employee injuries and less structural damage to the facility during emergencies. A poorly prepared plan, likely will lead to a disorganized evacuation or emergency response, resulting in confusion, injury, and property damage.

This course introduces the student to the recognition of potential fire hazards and emergency procedures. Topics include the chemistry of fire, types and effectiveness of extinguishing agents, means of egress, detection and alarm systems, and fire prevention plans. This course covers the topics included in OSHA 29 CFR 1910, Subparts E and L.

### Hearing Conservation – S HEC101

According to United States Department of Labor every year approximately 30 million people in the U.S. are occupationally exposed to hazardous noise. The incidence of work related noise-induced hearing loss can be reduced or eliminated through the successful application of engineering controls (removing or reducing the noise) and hearing conservation programs.

This course covers the how, when and what type of PPE to use also covers the LADWP Hearing Conservation Program, Cal/OSHA Title 8 CCR 5095 and OSHA 29CFR 1910.134

### Hand and Portable Power Tools – S HPP101

Hand and power tools are a common part of our everyday lives and are present in nearly every industry. These tools help us to easily perform tasks that otherwise would be difficult or impossible. However, these simple tools can be hazardous, and have the potential for causing severe injuries when

used or maintained improperly. Special attention toward hand and power tool safety is necessary in order to reduce or eliminate these hazards.

This course is intended for employees who use hand and power tools during the course of their work. Topics include general OSHA requirements, hazard recognition, hand tools, power-operated hand tools, abrasive wheels & tools, woodworking tools, jacks-lever & ratchet, screw, & hydraulic, air receivers, mechanical power-transmission apparatus. This course covers the topics included in OSHA 29 CFR 1926 Subpart I.

### OSHA Act – S OSA101

This course is designed for anyone who wants to learn about OSHA and what and how they govern. This course provides an overview of OSHA history, organization, and operations.

Topics covered include the OSHA Act, the inspection process, various programs within OSHA, clause 5(a)(1), CFR Part 1903), OSHA, OSHA Act, standards, citations, and penalties.

### Forklift – S FOL101

Employees have been injured when lift trucks are inadvertently driven off loading docks or lifts fall between docks and an unsecured trailer. Employees are also struck by a lift truck or fall while on elevated pallets and tines. Many incidents also involve property damage, including damage to overhead sprinklers, racking, pipes, walls, and machinery.

This course is designed for personnel to enhance the safe operation of powered industrial trucks in the workplace. Topics include an overview of OSHA 29 CFR 1910.178, and safety standards for safe operation of industrial trucks. This course requires a performance-based examination. After successful completion of this course, students will be considered trained operator of the specific powered industrial trucks/forklifts they trained on. This course covers the topics included in the Department policy and procedures and OSHA 29 CFR 1910.178 Subpart N.

### Man lift Operations – S MLO101

This course applies to elevating work platforms and vehicle mounted or self-propelled aerial devices which are used to position personnel, along with their tools and necessary materials, to work locations. The course will cover the differences between aerial device and elevated work platforms.

This course covers Cal/OSHA T8 CCR3636, CCR3646, and CCR3648. The information includes training in the correct procedures for performing assigned duties, the nature of hazards associated with the equipment, including electrical hazards, fall hazards and falling object hazards in the work area and correct procedures for dealing with those hazards. The safe operation and use of elevating work platforms and the proper handling of materials on the work platform. The maximum load capacity of the work platform based upon installed configuration. This course should also include a skill demonstration on the specific equipment being used.

### Walking / Working Surfaces – S WWS101

Slips, trips, and falls constitute the majority of general industry accidents. They cause 16,600 of all accidental deaths, and are second only to motor vehicles as a cause of fatalities (National Safety Council Injury Facts). The OSHA standards for walking and working surfaces apply to all permanent places of employment, except where only domestic, mining, or agricultural work is performed.

This course is for workers who are interested in learning about the dangers of slip and fall accidents. Slips and falls on walking & working surfaces constitute the majority of general industry accidents. Topics include applicable OSHA Standard overview, walking on surfaces, and the dangers of OSHA 29 CFR 1910.21-30 Subpart D.

### Welding, Cutting, and Brazing Safety – S WCB101

Welding, cutting, and brazing are hazardous activities that pose a unique combination of both safety and health risks. Metals give off fumes during the welding process that can be toxic and the heat generated could ignite surrounding material.

This course familiarizes the student of basic precautions as well as a delineation of the fire protection and prevention responsibilities of welders and cutters. This course covers the topics included in LADWP Hot Work Policy and OSHA 29 CFR 1910.251-255 Subpart Q.

### Injury and Illness Prevention Plan – S IIP101

DWP must establish, implement and maintain a written Injury and Illness Prevention Program and training must be provided for its employees. This course reviews the IIPP and the requirements for establishing, implementing and maintaining an effective written injury and illness prevention program. Topics included are contained in Title 8 of the California Code of Regulations, Section 3203 (T8 CCR 3203) and consist of

the following eight elements: Responsibility, Compliance, Communication Hazard Assessment Accident/Exposure Investigation Hazard Correction Training and Instruction Recordkeeping.

### Biohazards – S BIO101

Workers in many different occupations are at risk of exposure to bloodborne pathogens. Co-workers that may provide first aid, janitors, and nurses are examples of workers who may be at risk of exposure. Needlestick injuries and other sharps-related injuries due to occupational exposure to bloodborne pathogens continue to be an important public health concern.

This course is for workers with potential occupational exposure to blood or other potentially infectious materials in the course of performing their assigned duties and tasks. Topics include an overview of the regulatory requirements covering bloodborne pathogens, symptoms of bloodborne diseases, recommended engineering control measures, proper disposal of contaminated materials, selection of personal protective equipment (PPE), corrective actions, information on post-exposure evaluation, and signs and labels. This course focuses on the requirements of OSHA 29 CFR 1910.1030 Subpart Z.

### Lead Level 2 – S LEL102

At the Los Angeles Department of Water and Power, There many facilities that have lead containing materials. For the majority of employees conducting routine work task, lead exposures at this facilities do not pose a health hazard. However, there some employees whose work task may lead to exposure at or above to Cal/OSHA's Action Level for airborne lead. This training program is intended to satisfy the lead training requirements for those employees. Training on this program will give employees the knowledge and information on lead hazards so they will be able to conduct their work safely.

The coarse reviews Cal/OSHA, Title 8 CCR 1532.1 and Department Policies and procedures regarding lead. Also covered are how to protect yourself from absorbing harmful quantities of lead to prevent acute and long term lead related illnesses.

### Asbestos Class IV – S ASC104

This training is for employees who will come into contact with, but not disturb, asbestos containing materials while performing maintenance and/or custodial type activities or who will assist in cleaning up dust, waste and debris resulting from Class I, II or III activities. Attendees will receive

information regarding identification of asbestos containing materials, hazards of exposure to asbestos and the precautions to take in order to minimize exposures. This class satisfies the requirements for Level IV asbestos work as detailed in Title 8 Construction Safety Order Section 1529(k)(9)(F).

### Fire Extinguisher – S FIE101

No description available

## EDMTC

### Course Descriptions

This curriculum is designed to provide trained employees, skilled in the safe practices overhead and underground work, by supplementing on-the-job training with classroom and outdoor environment training, this will provide “actual” experience under simulated work situations.

#### Electric Distribution Mechanic A – C

Course duration: four weeks at the EDMTC. This is an intensive course focused on teaching the trainee how to make up material both overhead and underground and how to send it to the Journey-level worker on the pole or in an underground substructures. The trainee is also required to climb a wooden pole at least ten times daily to increase confidence and climbing ability.

#### Electric Distribution Mechanic B – C EDM102

Course duration: four weeks at the EDMTC. This is an intensive course focused on pole climbing with the main objective to ensure that the trainee is qualified as a "Certified Climber". The trainee is also required to perform task such as installing cross arms, transferring conductors and installing transformer etc...

#### Electric Distribution Mechanic 1 – C EDM201

Course duration: two weeks at the EDMTC. This course focuses working on energized conductors below 600 volts. Also covered are safe practices of climbing above 4.8kv conductors covered with insulated devices.

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### Electric Distribution Mechanic 2 – C EDM202

Course duration: two weeks at the EDMTC. This course focuses on rigging practices, trolley poles, replacing poles.

### Electric Distribution Mechanic 3 – C EDM203

Course duration: two weeks at the EDMTC. This course focuses on teaching the trainee how to work safely on energized conductors up to and including 4800 volts.

### Electric Distribution Mechanic 4 – C EDM204

Course duration: two weeks at the EDMTC. This course focuses on advanced rigging practices such as stringing new conductors, transferring heavy conductors to new poles etc...

### Electric Distribution Mechanic 5 – C EDM205

Course duration: two weeks at the EDMTC. This course covers "hot sticking" simulated energized 34,500 volts conductors. This includes working with various tools attached to insulated fiberglass sticks common in the industry.

### Underground Module 1 – C UNM101

Course duration: two weeks at the EDMTC. This course is an introductory course in underground synthetic cable splicing.

### Underground Module 2 – C UNM201

Course duration: two weeks at the EDMTC. This course covers advanced task related to underground synthetic cable splicing and working with underground specific equipment.

### Line Patrol Mechanic – C LPM101

Course Duration: Five days at the EDMTC. This course covers comprehensive training in various aspects of troubleshooting problems in the transmission, distribution, and street lighting systems both overhead and underground. Students are exposed to simulation scenarios both routine and abnormal in nature. This course is geared towards developing a linear problem solving thought process in the restoration of electric power.

### Vault Rescue – S VAR101

No description available

Pole Top Rescue – S PTR101

No description available

Aerial Lift Rescue – S AEL 101

No description available

Emergency Radio Procedures – S EMR101

No description available

Revenue Watt-hour Meter – C RWM101

No description available

Safety Rules – S SAR101

No description available

Troubleshooting Minor Electrical – C TME101

No description available

Elect Substation Configuration – C ESC101

No description available

Primary Map Reading – C PMR101

No description available

Hands-on Hot-stick Use – C HOS101

No description available

General order 95 – C GEO101

No description available

General order 95 Review – C GEO102

No description available

DDR Review – C DDR101

No description available

## Switching Procedures - EDM – C SPS101

No description available

## Simulated Underground Jobs – C SUJ101

No description available

## Electric Meter Setting – C EMS101

This course covers how to install, change, and remove electric meters and metering equipment connected to residential, commercial, and industrial customers. This course includes safe working practices.

## ECH Training Program – C ECH101

Course duration: four weeks at the EDMTC. This is an intensive course focused on teaching the trainee how to make up material both overhead and underground and how to send it to the Journey-level worker on the pole or in an underground substructures. Course focuses on best work practices in assisting journey-level worker engaged in the maintenance and construction of Department's electrical transmission and distribution system.

## ESOTC COURSE DESCRIPTIONS

### ESO Training – C ESO101

This is a two-year apprenticeship training program for the Job Classification Electric Station Operator. Participation in this program requires Civil Service appointment to the Electric Station Operator Job Classification. This course is a combination of lecture, simulation, field training, and home study.

### SSO Re-familiarization – C SSO 201

Curriculum for this course is custom designed to update an individual Electric Station Operator's craft skills after they have completed C ESO 101 and are working as Journeyman Electric Station Operators. This class is given on an "as-needed" basis, usually when training deficiencies are identified as a result of an Electric Station Operator Bid Plan Bid into a new location or the employee has demonstrated skill deficiency.

### ESO Hot Work – C SSO 202

Classroom and hands-on training in the policies and safe work practices associated working on energized 4.8 kV equipment in Electrical Substations. This course is specifically tailored to meet the needs of Electric Station Operators who use these skills in the very compact substation environment when cleaning station equipment and responding to insulator maintenance requirements. The class consists of two hours lecture and 2 hours hands on work at an energized substation. Class is required Bi-annually to maintain Qualified Electrical Worker Status for Electric Station Operators.

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## Safe Entry – C SAE 111

This course provides information for safe entry practices into Electric Substations for non-Electric Station Operator employees. The class presents pertinent Policies and Procedures required for employees to understand the safety issues associated with the Electric Substation environment and how to safely enter and move within this environment. The course includes an instructor led field trip to an Electric Substation to demonstrate the principles taught in the classroom.

## Switch and Leave – C SSO 121

A four-hour course to familiarize Journey level Electric Craft Employees with the policies and procedures required to prepare for and work in an Electric Substation without the services of an assigned Electric Station Operator. Issues include communications, bidding work, job site preparation, multiple-day work, reporting responsibilities, individual and organizational responsibilities.

## 4.8KV Grounds – C SSO203

This course provides the technical instruction and practical hands on skills to identify and locate accidental 4.8KV grounds, high phase-to-ground voltage conditions and the hazards involved in conducting ground searches. Topics covered are: Effects of 4.8KV grounds on the distribution system. Ground detector circuits and meter indications. Hazards involved in “normal” ground search procedures. Hazards involved in high voltage conditions and ground search problems.

## Insulator Maintenance and Hot Insulator Washing – C SSO204

This course is intended for employees that will be part of a work crew involved in that washing or wiping energized substation equipment. Topics covered include work practices and safety procedures in the maintenance, washing and cleaning of energized and de-energized equipment in substations.

## General Control Safety – C SSO131

This course reviews general information on circuit breaker controls, semaphores, disagreement positions and resetting procedures. Also included are safe practices and equipment related to the operation of circuit breakers.

## Emergency Response Procedures – C SSO141

This course will provide the student with and awareness of the more common substation emergencies and unusual occurrences which are not considered “switching” problems. The course covers substation problems that are general in nature.

## Special Equipment Hazards and Procedures – C SSO151

The LADWP operates and owns various facilities that contain many types of hazards. Many of these facilities are unattended and in isolated locations. The equipment found in the facilities varies widely by location, therefore this course covers general principles of equipment safety.

This course topics will familiarize you with general knowledge of equipment such as high voltage fuses and fused disconnects, load interrupters and circuit switchers, voltage regulating equipment and various types of circuit breakers. This is a two-part course; after completing part one you are to review equipment found in your facilities and discuss any question with your supervisor or field trainer. Your supervisor will then sign off on this training.

## Work Crews in Substations - C SSO161

This course covers topics related to work practices and safety procedures while working as a member of a crew in energized facilities.

## EMTC COURSE DESCRIPTIONS

### ELECTRIC MECHANIC TRAINING – C EMT101

The Electrical Mechanic Training Program is a three-year program consisting of 53 separate course modules and includes traditional classroom style, laboratory course, and on-the-job training sessions in the field. Course modules consist of various combinations of lectures, field trips, and “hands-on” laboratory exercises.

### ESO POLICY – S ELS101

Electrical Safety Observer training.

### FAMILIARIZATION TOUR – C FTO101

Overview of electrical system

### GROUNDING FOR MAINTENANCE – C GRO101

Training in proper application of portable grounds

### HI-POT TRAINING – C HIP101

Training in use of High Potential oil testing device.

### INTEGRATED EMERGENCY PROCEDURE– S IEM101

Training on proper notification procedure requirements

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## GENERATION COURSE DESCRIPTIONS

### Evaluation Class – C SPA101

This is a 9 day class for new SPA's that introduces them to Steam Generating Station practices. Candidates selected for this class are expected to attain a 70% or better grade to maintain employment with the LADWP

### New Employee Safety Indoctrination – S SPA102

This is a mandatory training program for all new generating station employees and covers Department safety rules, identification of hazardous areas, and potentially hazardous working activities in the workplace. This training program covers a period of 5 days and conducted by the employees assigned station.

### Safety & Basic Skills Workshop – C SPA103

A preparatory class for SPA's beginning their 1 year assignment to the Maintenance section. This is a 4 week class which provides the student with classroom lecture, video, demonstrations, hands-on experience, and evaluation as they begin an intensive training program in the maintenance of a steam generating station.

### Principles Steam Generation. Home Study Course – C SPA201

The PSEG course is assigned to the SPA once they are assigned to Operations at a Steam Generating facility. The two volume, 21 chapter course is required to be completed by the trainee at a rate of 3 chapters

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every six week. A mid-term and final exam are administered in this program.

### Competent Person Scaffolding Course – S CPE101

An 8 hours course designed for maintenance and instrument shop personnel in steam generation. The course covers safety factors to look for when either using or erecting scaffolding as well as OSHA and ANSI regulation governing the proper and approved method of erecting scaffold. Course is taught by an outside vendor and "Certificate of Completion" is presented.

### Ovation Data Acquisition (OV100-WIN/NT) – C OVD101

This is a 5 day class and is the first in a series of 10 training classes for Steam Generating Instrument and Engineering personnel. It is designed to provide them with the knowledge and skills required maintain, troubleshoot and update the Distributed Control System installed at Haynes Unites 8, 9, &10 and VGS Units 6, 7, &8. This class provides experience using a Ovation(R) Data Acquisition System. Students are introduced to Ovation tools, given exercises to modify and build database records and hands-on experience.

### Build & Maintain Ovation Contr (OV200-WIN/NT) C OVD102

A 5 day course, Provides proficiency in reading, tuning and building/implementing new Ovation functional controls schemes. Both modulating (analog) and logic (digital) control schemes are included in the scope of this course. Discussions include the various types of control algorithms and how they can be used to create effective control. This course is intended for people who work with Ovation controllers to tune and build analog and digital control schemes in a Windows environment. Pre-requisite - OVD 101

### Building Ovations Graphics (OV210-WIN/NT) – C ODA103

A 5 day course requiring OVD 102. This course will teach the user to build Ovation system graphic diagrams. Students will learn how to use the Ovation Graphics Builder in various applications. Course topics include the layout and implementation of static and dynamic object, linking to control, and creating perspective-type diagrams. Methods for standardizing information entities and control interfaces, and trouble-shooting problems within graphics code are also covered. This course is intended for anyone who will build process diagram displays for the Ovation system. Pre-requisite - OVD 102

### Administering Ovation System (OV230-WIN/NT) – C OVD104

This course addresses how to configure and maintain the integrity of the Ovation system software and will present operating system commands and programs that facilitate system administration. This course is intended for anyone who will be responsible for administering the Ovation system.

### Ovation EDB Historian (OV240-WIN/NT) – C OVD105

A 5 day course. This course teaches students to set up and retrieve historical and real-time data using the EDB Historian. Students will learn how to create the historical database and how to configure its subsystems. Students will also learn how to create, schedule, automate, modify and generate periodic, event, and trip reports. The course also includes basic troubleshooting skills. This course is intended for people who will configure, access, and maintain the EDB Historian and the Report Scanner/Report Generator drops of the Ovation system. OVD 101 & OVD 104 recommended.

### Configuring Ovation Serial - Link Controller I/O Module (OV250) – C OVD106

This course addresses how to configure and maintain the integrity of the Ovation system software and will present operating system commands and programs that facilitate system administration. This course is intended for anyone who will be responsible for administering the Ovation system.

### Configuring the Ovation Data Link - Server (OV260) – C OVD107

This course will give students the ability to create specialized I/O links to non-Ovation controllers using the Serial Link I/O Module. This course will define the data path and any memory mapping needed for the I/O link. Troubleshooting concepts illustrate how the I/O links are designed and programmed. This course is intended for those responsible for any specialized I/O links within the Ovation system.

### Ovation Trouble Shooting (OV300-WIN/NT) – C OVD108

This course provides students with the skill and methods to troubleshoot and repair faults in the data acquisition and control functions of the Ovation system. Students will be required to isolate faults anywhere in the signal path -- from the field terminations, to the I/O modules, through the controller, across the network, and into the graphic display. Students will evaluate single and multiple problem scenarios. This course is intended for

anyone who may be called to troubleshoot any part of the data acquisition, control or display areas of the Ovation system.

### Ovation Network Administration (OV320 WIN/NT) – C OVD109

This introductory networking course will provide students with an understanding of the network design at a plant site and the ability to interface with various network devices. Students will learn to implement secure remote sessions on the Ovation network. This course is intended for anyone who administers or maintains the Ovation network and must link it to other networks within the plant.

### Ovation Advance Control (OV330-WIN/NT) – C OVD110

This course is for personnel who will implement their own control programs or will make significant modifications to existing programs. Using previous control-building knowledge, the student will learn how to implement control designing an Ovation environment. This course is a continuation of the control topics discussed in OV200 (OVD102). This will emphasize the proper selection, configuration, and application of algorithms in the Ovation control system.

## POWER SYSTEM FACILITY COURSE DESCRIPTIONS

### ADELANTO CONVERTER STATION

#### ACS 2nd Operator Break in – C ACS101

This course provides the employee with a detailed coverage of all station systems and equipment and related operation procedures and requirement that the station 2nd operator is responsible for. It prepares an experienced operator to do all of the functions of a Converter Station 2nd Operator. Time required is approximately 2 to 6 months.

#### ACS 1st Operator Break in – C ACS201

This course provides the employee with a detailed coverage of all station systems and equipment and related operation procedures and requirement that the station 1st operator is responsible for. It prepares an experienced operator to do all of the functions of a Converter Station 1st Operator. Time required is approximately 2 to 6 months.

#### ACS Fire Protection System – S ACS111

This course provides ACS operators with a detailed coverage of the fire protection systems at Adelanto Converter Station as needed for operations personnel in detecting and responding to a fire alarm or unusual system condition or operation. Time required is approximately 16 hr.

#### Static VAR Compensator – C ACS121

This course provides ACS operators with a detailed coverage of the Static VAR Compensator systems at Adelanto Converter Station as needed for local and remote operation. This course also covers the Static VAR

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Compensator fine water and Halon fire protection systems. Time required is approximately 1 hr.

## **AQUADUCT POWER PLANTS**

Power Plant 1 Control Operator – C APP201

No description available

Traveling Relief Operator PP1 – C APP111

No description available

Traveling Relief Operator PP2 – C APP121

No description available

Traveling Relief Operator PP3 – C APP131

No description available

Traveling Relief Operator PP4 – C APP141

No description available

Traveling Relief Operator PP5 – C APP151

No description available

Traveling Relief Operator PP6 – C APP161

No description available

Reservoir Operator – C APP171

No description available

## **CASTAIC POWER PLANT**

Safety Orientation – S CPP111

All personnel (DWP or Contractor) must receive a plant orientation once a year, consisting of Plant policy, emergency fire alarms and evacuation procedures. The proper methods of handling and disposing of hazardous material. What to do during an oil spill. Entry and work authorization

procedures. Emergency evacuation procedure for outlying areas such as Outlet Tower, South Portal, Unit 7, Compressor house. Emergency phone numbers. Parking policy and Safety suggestion form.

### Traveling Relief Operator – C CPP101

A one year training program consisting of classroom and on-the-job training in equipment description, equipment operation, and trouble shooting techniques. This includes Turbine operator training for main plant, and Auxiliary operator training to learn all exterior equipment and inspection requirements. To learn safe operating requirements for high pressure oil and air systems and Inspection procedures. Must complete operator check offs, all drawings, and fill out a daily training log. Must pass a qualifying exam (90% minimum passing score required). Operator will be required to work the Turbine and Auxiliary operator positions for a minimum of twelve consecutive weeks for experience.

### Assistant Control Operator – C CPP102

Before beginning this training, the TRO must be knowledgeable in all areas of the plant, units, and auxiliary equipment functions. It is a necessary requirement that the operator complete all Turbine and Auxiliary Operator check-off sheets. The operator must then successfully pass a TRO “Refresher” exam (90% minimum passing score required). Operator will receive classroom instruction and “hands-on” training in all areas of the control room. All information will be provided and will include, but not limited to: Equipment Description Manual, Plant Operating Manual, Plant Policies, Procedures, and Operating Memos. Learn to start, stop, and synchronize Generators and pumps to the grid system You will be evaluated by the Training Coordinator and/or the Training Manager for your knowledge and skills in performing Assistant Control Operator duties (switching, etc). Written exams will be given at the end of training (90% minimum passing score required). All practical evaluations must be 100% for qualification.

### Control Operator – C CPP201

The position of Control Operator (CO) requires that the operator be knowledgeable in all areas of the plant, units, and auxiliary equipment functions. It is a necessary requirement that the operator, prior to being trained for the CO position, must successfully pass a Turbine/Auxiliary Operator (TRO) Refresher Training exam (90%). The operator-in-training must also successfully pass an Assistant Control Room Operator (ACO) Refresher Training exam (90%). The operator-in-training will receive classroom instruction and “hands on” training in all areas. All information will be provided and will include, but not limited to: Equipment Description

Manual, Plant Operating Manual, Plant Instruction Bulletins, DWP Operating Orders, Policies, Procedures, and Operating Memos. The Safety and Training Manager and/or Coordinator will evaluate the operator-in-training. Written exams will be administered on subjects listed in the Training Summary. Performance on all the exams must be 90%. All practical evaluations must be 100% for qualification.

## HARBOR GENERATING PLANT

## HAYNES GENERATING PLANT

## OWENS VALLEY POWER PLANTS

OVES Control Operator – C OVG 201

No description available

OVES Traveling Relief Operator – C OVG 101

No description available

Upper Gorge Break-in – C OVG 111

No description available

Middle Gorge Break-in – C OVG 121

No description available

Control Gorge Break-in – C OVG 131

No description available

Pleasant Valley Break-in – C OVG 141

No description available

Big Pine Break-in – C OVG 151

No description available

### Division Creek Break-in – C OVG 161

No description available

### Cottonwood Break-in – C OVG 171

No description available

### Haiwee Break-in – C OVG 181

No description available

### Dispatching Bulletins – S OPO 211

No description available

## SCATTERGOOD GENERATING PLANT

### SYLMAR CONVERTER STATION

#### SCS Operator – C SCS101

This is a 4 - 6 month training program for the Job Classification of Converter Station Operator. Course work includes Sylmar Converter Station familiarity, switching procedures, policies, and hazards for an assistant (2nd) operator working under the direction of a Control Operator.

#### SCS Control Operator – C SCS201

This is a 2 - 4 month training program for the Job Classification of Converter Station Control Operator. This program is designed to qualify the operator as a Control operator. Course work includes Sylmar Converter Station familiarity, switching procedures, policies, and hazards for a Control (1st) Operator in charge of the station.

#### SCS Re-familiarization – C SCS102

Annual 1 day Refresher Course specifically developed for Scheduled Inspection and Repair of Sylmar Converter Station. Course work includes a review of Operating Orders, Operation Policies and procedures, current topics, S.I.R. specifics and Regulatory required subject matter.

### SCS Authorized Person – S SCS111

This is a four hour course developed to provide information for safe entry practices, and familiarization of Sylmar Converter Station. The class presents pertinent Policies and Procedures required for employees to understand the safety issues associated with holding Authorizations at Sylmar Converter Station , understanding boundaries of Authorizations, and how to safely work and move within the station. Participation in this program requires employee to be a Qualified Electrical Worker.

### SCS Safe Entry – S SCS121

This is an four hour course developed to provide information for safe entry practices into Sylmar Converter Station for non-Electrical employees. The class presents pertinent Policies and Procedures required for employees to understand the safety issues associated with the Converter Station environment and how to safely enter and move within this environment. The course is also designed for outside contractors to identify hazards and proper reporting procedures.

## VALLEY GENERATING PLANT

## REFERENCES

Hazardous Work Procedures (1990)

(Procedure) Los Angeles Department of Water and Power, Author

National Safety Council (1999) Injury facts

Itasca, IL: Author

Operating Order 2 (1991) Procedure to work on or near energized equipment

(Procedure) Los Angeles Department of Water and Power, Author

Operating Order 3 (2003) Procedure for grounding electrical equipment

(Procedure) Los Angeles Department of Water and Power, Author

Operating Order 5 (1988) Accident prevention tagging

(Procedure) Los Angeles Department of Water and Power, Author

Operating Order 8 (1998) High voltage equipment in-service and out of service procedure

(Procedure) Los Angeles Department of Water and Power, Author

OSHA Standards for general industry (29 Code of Federal Regulations 1910.) (2003)

Chicago, CHH Incorporated

OSHA 501 Volume 1, Trainer course, OSHA training institute

San Diego, University of California

OSHA 501 Volume 2, Trainer course, OSHA training institute

San Diego, University of California

Safety Rule Book (1992) Department Of Water and Power

Los Angeles Department of Water and Power, Author

Title 8 California Code of Regulations

California Occupational Safety and Health Administration, Author

Qualified Worker Program 2005, Substation Operations

Los Angeles Department of Water and Power, Author