1.0 PURPOSE
PLANT OPERATIONS AND MAINTENANCE, CENTRAL PLANT PERSONNEL ARE RESPONSIBLE FOR USING THE BEST SAFE WORK PRACTICES IN ACCOMPLISHING THE VARIOUS JOB TASKS ESTABLISHED IN THEIR JOB DESCRIPTION. THIS POLICY AND PROCEDURE OUTLINES THE BEST SAFE WORK PRACTICES AND SAFETY EQUIPMENT TO BE USED BY THE CENTRAL PLANT PERSONNEL TO ENSURE THEIR SAFETY AND THE RELIABILITY OF THE CENTRAL PLANT EQUIPMENT AND SERVICES PROVIDED.

2.0 REFERENCES
UCD P&P Manual, Section 290-15, Safety Management Plan
PO&M P&P #3009, Safety Plan: Injury/Illness Program

3.0 POLICY & PROCEDURE
3.01 Rotating Equipment
The Central Plant contains many pieces of rotating equipment. This equipment may start and stop automatically. Loose clothing, long hair, and misplaced limbs can easily become wrapped around rotating shafts. Personnel shall stay away from rotating equipment unless it is to be worked on. Personnel shall report, to a plant superintendent, any rotating equipment that is missing its shaft guards.

3.02 Equipment Status
After performing any maintenance and repair work, all personnel shall inform the control room operator of the status of the job and the equipment. All loose or potentially unstable equipment, piping, support structures, and tools shall be secured. Personnel shall clean up their work site and stow all tools so as to not block access to any Central Plant equipment. All water, oil, grease, or any other slipping hazard shall be cleaned up.

3.03 Safety Shoes
All Central Plant personnel shall wear steel toe safety shoes while working in the Central Plant.

3.04 Hearing Protection
All Central Plant personnel shall wear hearing protection while working in Central Plant locations that are posted with “Hearing Protection Required” signs. These areas include:
1) The Emergency Generator Room, Rm. #1004.
2) The Gas Turbine Compartment
3) The Cogen Area in the vicinity of the GT Hydraulic Start Unit, when this equipment is operating.
4) The main equipment floor in the vicinity of the centrifugal and steam absorption chillers.

All personnel are encouraged to wear hearing protection whenever they engaged in any activity on the Central Plant main floor, cogen area, and the pump room (basement).

3.05 Electrical Safety
When work is to be performed on or near electrical circuit parts, the circuit is to be de-energized and isolated in accordance with the UCDMC Central Plant Lockout/Tagout program.

Personnel involved in work on energized low voltage electrical equipment (600 volts or less) shall receive instruction in the work techniques and hazards involved. Only “qualified electrical workers” shall work on energized conductors or equipment connected to energized high voltage (greater than 600 volt) systems.

3.06 Lockout/Tagout
If equipment is to be worked on, it shall be secured and locked out and/or tagged out, in accordance with the UCDMC Central Plant Lockout/Tagout program. Maintenance personnel shall first contact the control room operator for approval to secure any equipment that is going to be worked on.

It is the University’s policy that contractors abide by our lockout/tagout procedures. Central Plant personnel shall perform the lockout/tagout function on any equipment that contractors are going to work on. However, contractors are encouraged to place their own lock along side ours on the lockout device and/or lockout box.

3.07 Hot Piping / Ductwork
This plant contains many steam pipes, hot water pipes (240 °F), valves, fittings, and hot exhaust ductwork that can easily burn. We have made every attempt to insulate these items for personnel protection. However it is not feasible to insulate every item that may be hot enough to burn, or the insulation may have been removed to repair a piece of equipment. Be aware of this and be careful of what you touch. Ensure that insulation and insulation pads are reinstalled on hot piping and equipment upon completion of the work. Central Plant personnel shall submit a work order to repair any insulation or insulation pads that were damaged beyond repair, or for piping and equipment that has never been insulated but requires it for personnel safety.

3.08 Hazardous Chemicals
There are a variety of hazardous chemicals on site, such as aqueous ammonia, boiler water treatment chemicals, and cooling tower biocides. The plant has been designed
and built, and a water treatment vendor contracted, so as to minimize the handling of chemicals by plant personnel. Economic Alternatives Inc. (EAI) is our supplier of water treatment chemicals. They have the responsibility to transfer chemicals into the portafeed units and also to maintain and repair the chemical feed equipment.

However, plant personnel may be required to perform emergency repairs to this equipment. Should this occur, plant personnel shall wear appropriate personal protective equipment, including: face shield or goggles, rubber gloves and rubber apron. Systems shall be secured, locked/tagged out, and depressurized prior to working on them.

3.09 **Personal Protective Equipment**

Personal protective equipment shall be worn by Central Plant personnel while handling any chemicals or performing maintenance/repair work on any equipment containing chemicals or other hazardous materials. Personal protective equipment shall include: eye protection (face shield or goggles), rubber/leather gloves, rubber apron, chemical resistant coveralls, rubber boots, respirators, dust masks, etc.

Personal protective equipment is stored at the following locations:
1) The Deaerator Room, Rm. #1005.
2) The RO Skid area.
3) The Battery Rooms.
4) The spill containment kits, located in the Auxiliary Boiler Room, Rm. #1002.

Goggles or a face shield shall be worn when doing any work involving danger to the eyes and must be worn in those locations and during those operations for which they have been specified.

Loose or torn clothing, rings, or pendant jewelry shall not be worn around moving machinery or equipment.

3.10 **Safety Belts**

Safety belts or other adequate protection, as required, shall be used for all work in elevated positions. A safety belt is located in the safety equipment locker in the deaerator room.

3.11 **Respiratory Protection**

Aqueous Ammonia is the most hazardous chemical we have on site. Central Plant operations and maintenance personnel have been fitted and trained in the use of full face respirators and the portable hazardous gas detector (including ammonia), in the event of a spill/release of ammonia. Personnel shall follow the procedures outlined in the “Central Plant - Ammonia Leak Emergency Operating Procedure, OP-AIS-002” in the event of an ammonia leak. Personnel shall follow the procedures outlined on
the “Central Plant - Ammonia Storage Tank Filling Operating Procedure, OP-AIS-003" when the ammonia storage tank is being filled.

Central Plant personnel shall wear dust masks (or their full face respirators) when working in a dusty/dirty environment (i.e. changing filters, sweeping floors, etc.)

3.12 Safety Shower / Eyewash Stations
There are four safety shower/eyewash stations located throughout the plant. They are located as follows:
1) Exterior south wall of building, adjacent to the cooling tower chemical storage/containment area.
2) Cogen area, adjacent to the demin tanks.
3) Cogen area, outside the ammonia equipment room, just south of the gas turbine air management skid.
4) Second floor corridor, outside the battery rooms.

There are five additional eyewash only stations located throughout the plant. They are located as follows:
5) Deaerator Room
6) Auxiliary Boiler Room
7) Ammonia Equipment Room
8) Basement by the RO Units
9) Basement by Chilled Water Pump, 73-P-1051

These units are tested monthly and are ready for use in an emergency. Know how to get to them and how to use them with your eyes closed, as this will be the most likely scenario when they are needed.

3.13 Confined Spaces
The Central Plant has numerous confined spaces. These are all properly labeled as such. If it is necessary to enter one of these spaces to perform work, notify the Senior Superintendent - Central Plant, the Superintendent of Maintenance and Repair, or the Superintendent of Operations for approval. It will be necessary to perform confined space testing and issue a “Confined Space Entry Permit”. Issuing of the permit shall only be performed by the Senior Superintendent, the Superintendent of Maintenance and Repair, the Superintendent of Operations, or qualified UCDMC EH&S staff. Note that EH&S staff wants 24 hours advance notice to perform this testing.

3.14 Hot Work
Central plant staff have a standing hot work permit for work performed in the maintenance shop. All hot work outside the maintenance shop requires a hot work permit issued by the UCDHS Fire Safety Office. If a contractor needs to perform hot work, then it will be the responsibility of the contractor to obtain a hot work permit, and to abide by all the OSHA requirements for such work. The Central Plant staff are not set up to support contractor work.
3.15 **Smoking**
Effective July 1, 2008 smoking is completely prohibited in any indoor or outdoor area on the main UCDHS Sacramento campus, in accordance with UCDHS Policy & Procedure #1628.

3.16 **Equipment**
The following equipment safety practices shall be adhered to in the Central Plant:
1) Tools shall be inspected regularly and repaired as required. Tools that are unfit or in need of repair shall not be used.
2) Safeguards shall not be removed or made inoperative except for maintenance. Such safeguards shall be reinstalled before equipment is placed back in service.
3) Ladders and scaffolds shall be made safe and properly secured before they are used.
4) Doors, barriers, covers, and panels protecting live electrical equipment shall not be disturbed, except by authorized employees.
5) Use properly rated lifting tools/equipment when moving heavy equipment.
6) Before performing maintenance/repair on any equipment operated by steam, compressed gas, or hydraulic fluid insure that the electrical supply and supply/discharge valves have been secured, locked & tagged out. Also insure that any stored energy has been safely released.
7) Specific safety procedures for specific operations shall be followed, at all times.
8) Machinery or equipment shall not be started until a check has been made that all is clear and permission has been granted from the control room operator.

3.17 **Work Practices**
The following general safe work practices shall be adhered to in the Central Plant:
1) Caution tape, barriers, guards, warning lights, “Men at Work” signs, “Wet Floor” signs, etc., shall be installed wherever temporary or permanent hazards exist.
2) Climbing on piping, boxes, equipment, and structures not designated as a work area or without a safe means of access is prohibited.
3) Safety guards and devices are installed for your protection. Keep them in place.
4) Machines must be shut off before cleaning, or before making adjustments.
5) Machine repair and adjustments are to be made only by qualified and authorized personnel.
6) Always get permission and release of the equipment, from the control room operator, prior to commencing repair or maintenance on any piece of equipment.
7) Employees will operate only those machines, forklifts, scissor lifts, or other equipment for which they have been trained, and that they are authorized to operate.
8) Observe all safety signs, and act accordingly.
9) Aisles, corridors, and walkways shall be kept clear at all times.
10) Unsafe practices or conditions shall be corrected at once. If it is not possible to immediately correct an unsafe condition, then the problem shall be communicated to all personnel and temporary corrective measures taken to prevent injury.

11) Any injury, no matter how slight, shall be reported as soon as possible, to your supervisor. In any event, the injury must be reported before going off shift.

3.18  **Evacuation**

In the event of an emergency requiring the building to be evacuated (fire, major ammonia spill, earthquake, etc.) all personnel including contractors shall evacuate the building at the nearest exit and assemble on the lawn, to the west of the building’s main entrance, so that all personnel can be accounted for. The control room operator shall take the contractor’s and visitor’s log books with him when evacuating.

**END OF POLICY & PROCEDURE**

**Revisions:**

| Rev. #1: | Added items #5 and 6 to paragraph 3.16. Added item #6 to paragraph 3.17. | Dated: 9/7/06 |
| Rev. #2 | Revised paragraph 3.15 to reference the new UCDHS No Smoking Policy, UCDHS P&P #1628. | Dated: 10/8/08 |
| Rev. #3 | Revised paragraph 3.04 to remove “in vicinity of cooling towers” and added “in vicinity of centrifugal and ABS chillers”. Revised paragraph 3.08 to replace Nalco Chemical Co. with Garratt-Callahan Co. Revised paragraph 3.12 to include the five stand alone eyewash stations. | Dated: 7/12/11 |
| Rev. #4 | Revised paragraph 3.08 to replace Garratt-Callahan Co. with Economic Alternatives Inc. (EAI), as our water treatment company. | Dated: 7/12/12 |