

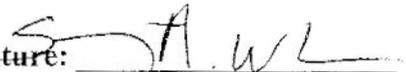
**Evaluation of Position Description**

**Labor Category/FLSA:** Nonexempt

         **Current Position Description**  
  X   **Proposed Position Description**

**Date Prepared:**   07/08/03  

**Approving Official: Name:** Sheryl A. Wheeler  
**Title:** HR Specialist

**Signature:** 

**Position Title/Series/Grade:** Maintenance Mechanic, WG-4749-10

**ORGANIZATION:** NIA

This position has been reviewed using the following Federal Wage System, Job Grading Standards: Maintenance Mechanic Series, WG-4749, 5/74; Pipefitter Series, WG-4204, 3/69; Air Conditioning Equipment Mechanic Series, WG-5306, 6/71; Heating and Boiler Plant Equipment Mechanic Series, WG-5309, 11/92; Electrician Series, WG-2805, 6/89; Electrical Equipment Repairer Series, WG-2854, 4/94; Industrial Equipment Mechanic, WG-5352, 11/80; Definition of Trades and Labor Job Families and Occupations for the Kitchen/Bakery Equipment Repairing, WG-5310; Plumber Series, WG-4206, 3/69; Motor Vehicle Operator Series, WG-5703, 4/91.

**TITLE AND SERIES DETERMINATION:** This position requires skills and knowledge of various blue collar trades utilized in performing maintenance, repair and operation of a large volume of difference equipment, materials, and maintenance items requiring separate trades knowledge. Job is included in the WG occupational family, coded and titled as Maintenance Mechanic WG-4749 in accordance with standard application principles. This position is established to perform a variety of nonsupervisory maintenance work at the DHHS, NIH. Based on this requirement, the Maintenance Mechanic standard was used. This standard is used to grade non-supervisory work involved in the maintenance repair of grounds, exterior structures, buildings, and related fixtures and utilities, requiring the use of a variety of trade practices associated with occupations such as HVAC, carpentry, pipefitting, painting, plumbing, electrical, etc meets the specific needs of this position. Based on this standard it shows that when there are more than one occupation being performed at the same grade level, then the 4749 series and title are to be used, however, if one of the occupations is graded higher than the other occupations then the higher graded occupation would determine the title and series of the position. Based on this review, the title and series, Maintenance Mechanic, WG-4749 is the appropriate title and series for this position.

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GRADE DETERMINATION: Work requirements entails a number of trades applications, of which the predominant work is several series at journeyman grade level WG-10 explained in job description. Remaining trades are predominantly at other levels and not above WG-10. In application of grading criteria for Maintenance Mechanic positions; WG-4749, job is graded at WG-10 based on the performance of journeyman level.

CONCLUSION: Work depicted in the duties are properly considered in accordance with the WG-4749, Maintenance Mechanic series. Duties are described at the WG-10, none being above WG-10. In accordance with the classification practices and titling prescribed in the WG-4749 Series standard. The proper classification for subject job is therefore determined to be Maintenance Mechanic, WG-4749-10.

**Installation:** National Institutes of Health,  
**Title:** MAINTENANCE MECHANIC  
**Occ Series:** 4749  
**Pay Plan:** WG  
**Grade:** 10

### **INTRODUCTION**

This position is located in the Office of the Scientific Director, National Institute on Aging (NIA), which has overall responsibility for managing the research activities of the Intramural Research Program (IRP). The NIA IRP conducts research into the fundamental biological, biochemical, physiological, medical, psychological and social aspects of the aging process in living organisms, including humans.

Approximately 600 Federal employees, postdoctoral fellows, contractor staff, guest researchers, and visiting scientists conduct or support aging research. The IRP has an \$85 million annual budget. More than 90 percent of the employees work in Baltimore at the Gerontology Research Center (GRC) and in space that is leased on the Johns Hopkins Bayview Medical Center (JHBMC) campus. The GRC is a Federally owned facility consisting of laboratory, animal, clinical and office space, which is adjacent to the JHBMC campus. The remaining NIA employees and guest scientists work in NIH's Bethesda campus or at the NIH's animal facilities in Poolesville, MD.

The IRP Administrative Management Branch (AMB) has responsibility for 1) serving as the coordinating point in handling all administrative or management problems; 2) advising the Scientific Director and his staff, as well as other key Institute officials, of administrative policies and practices; and 3) providing overall administrative support services to the IRP including budget, management and program analysis, financial management, space management, procurement and contract management, safety and security, and facilities management and operations.

The incumbent serves as the supervisor of the Facilities Management and Maintenance Unit within the AMB. The unit is responsible for maintaining and improving the IRP facilities in Baltimore and for coordinating planning, acquiring and renovating IRP facilities located in Bethesda as well as maintaining the physical structure, energy management and security of the GRC building.

**Duties:**

## MAJOR DUTIES

Maintains, operates troubleshoots and repairs all building facility related equipment in the general trade areas of mechanical, structural, electrical and grounds maintenance.

Responds to service order calls and preventive maintenance inspections orally or in writing through the computerized maintenance management system (CMMS) regarding malfunctioning/ inoperable industrial and domestic equipment and systems including but not limited to: HVAC/R equipment, kitchen and domestic equipment (e.g., dishwashers, electric ranges, washers, dryers); shop and laboratory equipment (e.g., vacuum pumps, air compressors, piping systems); and plumbing, utility, supply, and disposal systems (e.g., steam, chilled water, domestic water, sanitary sewer, natural gas, etc.) .

Operates a van type truck (weighing up to and including one ton load capacity) to transport tools, materials, equipment and self to work site. Utilizes knowledge and skills of several trades/crafts in accomplishing the following typical duties:

1. Pipefitting: Following work orders, written or oral instructions, incumbent works from building plans, blue prints, and sketches in planning and laying out the routing, placement, pitch, elevation, pressure reduction, expansion, and operation of various piping systems and equipment. Installs, modifies, and repairs systems by setting up routes; placing and cutting openings; placing hangers for proper pitch and elevation; determining need for and installing such things as risers, flexible branches, expansion joints, pumps, gauges, and pressure regulators as needed to ensure proper operation of the system. Tests systems and equipment for proper pressures, leak free joints, and operation.
2. Control Work: Makes repairs on large and small systems where any numbers and types of pneumatic and electrical controls and relays are required to make the system operate at peak efficiency. Typical system where these controls would be used are heating, cooling, humidifying, dehumidifying, single phase and dual phase heat pumps, and various types of refrigeration systems. Incumbent makes frequent inspections of equipment and controls, making all necessary adjustments to valves, relays, thermostats, and other controls to alter or change conditions to prescribed test temperatures and/or chamber pressures. Adjusts various pressure, pneumatic, and electric valves to control the flow of coolant, such as refrigerant and water. Stops and starts compressors, fans, and other equipment at specific stages of the test when temperature and pressure changes are needed. Performs operator maintenance as scheduled or as periodically determined to be necessary - this includes adding refrigerant; changing filters; cleaning strainers; replacing drive belts; and lubricating compressors, fans, shafts, pumps, and moving parts of other operating and standby equipment. Maintains, troubleshoot, operates and repairs various building automation systems.
3. HVAC Equipment: Makes repairs to a variety HVAC equipment, both industrial and residential. These include oil and gas burning units, chilled water and steam units

operating with centrally supplied utilities, low pressure hot water and steam boilers and coils, air-handing units and ducting of various size and design and other equipment of similar complexity. Observes and tests heating and cooling units and systems in cases of malfunction to trace and locate defects to determine the extent and type of repairs necessary. Replaces fixtures such as safety devices, thermostats, heating elements, overload switches, heater strips, valves, and magnetic coils. Services units by cleaning heat exchanges, filters, strainers, ignition, electrodes, and adjusting dampers. Performs air balancing, adjustment, calibration and checking operations to assure proper operation of HVAC systems

4. Electrical: Diagnoses trouble and makes repairs that can be accomplished by removing, replacing, tightening, splicing, soldering, and insulating defective wiring, controls, equipment, and fixtures such as broken and bare wiring, burned out switches and relays, loose connections and fittings, damaged light fixtures, and poorly operating thermostats. Tests equipment by use of voltmeters, ammeters, wattmeters.

5. Special Equipment: Visually inspects and from results of diagnostic tests and general mechanical knowledge, locates the cause of malfunction and makes necessary adjustments or repairs to restore to working order various types of industrial, commercial and residential equipment and systems. Repairs, adjusts, or replaces worn or broken parts, and restores to operating condition. Test runs to be sure equipment will function properly.

6. Refrigeration: Repairs a variety of industrial, commercial and residential refrigeration equipment such as walk in constant temperature rooms, ice machines, chillers and DX units. . Diagnoses trouble, repairs and replaces parts of the mechanisms such as compressor parts, evaporator parts, condensers, and controls such as thermostats, pressure-stats, humidistats, relays and switches. Observes and tests for correct operation of all parts of the refrigeration cycle. Tests for refrigerant leaks and evacuates moisture from refrigeration systems and components. Adds refrigerants to obtain normal operating levels.

7. Plumbing: Performs a variety of plumbing maintenance and repair work such as that which involves removing, cleaning, replacing, packing, and sealing defective parts of utility, supply, and disposal systems such as dirty traps, sections of broken pipe and tile, clogged pipe and fixtures, and leaky faucets and drains. Repairs sprinkler systems. Hooks up to installed systems such devices as water heaters, disposal units, and faucets. Installs/repairs pressure producing valves, hot water heaters and/or storage tanks, circulating pumps, drinking fountains, laundry tubs, urinals, dishwashers, sump pumps, and water closets.

8. Miscellaneous: Performs a variety of minor maintenance/repair tasks involved in the upkeep of installation buildings, structures, fixtures, and utilities. In this regard, tightens or replaces loose floor boards or steps; repairs broken wood railings; frees sticking doors and windows; repairs or replaces cracked/broken sheet rock; tacks loose wood/aluminum siding removes and replaces window panes; repairs/replaces door latches and locks;

replaces broken floor and ceiling tiles; replaces/caulks wall tiles; points up loose brick and stone work; reattaches loose metal gutters/downspouts; paints.

9. Masonry: The incumbent has a broad knowledge of the masonry field in planning and performing the work as well as determining the proper methods, techniques and materials to be used. Constructs, repairs, alters exterior and interior surfaces and structures. Lays common face brick, firebrick, cinder and cement block, glass block or terra cotta block in constructing and/or repairing walls, walks, chimneys or fireplaces. Cuts, shapes and finishes stone in constructing and or repairing windows and door openings and corners. Lays whole brick in straight and horizontal rows. The incumbent shall review work to be performed, interpret blueprints or sketches and decide work methods, processes and materials to complete the work. The incumbent shall be able to cut, finish and place stone and tile of standard or varying sizes and shapes in a manner to yield an attractive, functional and sound end product. Work may include complex masonry and or tile work including circular and decorative work with varying colors and placement patterns.

10. Motor Vehicle Operation: Drives trucks capable of carrying loads weighing up to and including one ton to transport material and equipment to work site. Loads and unloads materials and equipment. Completes trip tickets and preventive maintenance service records; fills out driver's accident report, in case of accident. Performs driver's maintenance in accordance with established rules and regulations.

Performs other duties as assigned.

#### Skill and Knowledge:

Must have a broad knowledge of the various high pressure piping systems and equipment are installed and operate. Must know how devices such as relief valves, check valves, pressure regulators, and expansion joints are installed and operate. Must have the ability to plan, layout, and install equipment and systems. Must be able to read, understand and apply plans and blueprints, and utilize shop mathematics in laying out arcs and circles. Must be skilled in the application of accepted trade methods and techniques, e.g., figuring pipe and valve sizes needed and to allow for contraction and expansion. Utilizes skill in using tools and equipment common to the trade, such as chalk lines, plumb bobs, Grinders, power pipe traders, cutters, and sliding squares.

Job requires a working knowledge of the location, purpose, and functioning of all executing the extreme temperature and stratosphere chambers. Incumbent must also have knowledge of the theory and principles by which refrigeration and air conditioning equipment and component systems function, as well as ability to use this knowledge to operate and perform operator maintenance on this equipment. The operator must be able to perform normal operations without causing damage to the equipment and must be able to apply knowledge and exercise judgment in determining when and how to take compressors, pumps, fans, etc., off line or to place additional equipment on line in order to meet load requirements. For example, a test underway may require changing the temperature of a chamber from high to a much lower temperature without passing

through the dew point. To do this, the operator must be thoroughly familiar with the capabilities of available equipment including the multistage compressors; in some cases must be able to operate equipment in series or in parallel to provide the greater range of conditions desired. Must be able to use various power and hand tools and testing equipment associated with the trade, measuring instruments, such as flow meters, micrometers, recording meters, and electronic leak detectors. Must be able to apply this knowledge of equipment to detect malfunctions and locate and diagnose trouble, performing minor repairs when possible to permit continued operation in support of the test in progress.

Duties require a knowledge of the basic principles of various standard methods of fuel combustion, ratios and arrangements of heating surfaces, various methods of distribution, and the construction and operating characteristics of a variety of heating units and systems. Must be able from experience to tell when parts should be cleaned and reinstalled, be repaired, or replaced with new components. Incumbent must be skilled in tracing malfunctions, making necessary repairs, and restoring to normal operation. Must be able to mount, connect, and adjust components such as rotors, transformers, electrodes, solenoids, relays, switches, aquastats, thermostats, and the like. A limited knowledge of basic electronics is required to trace malfunctions in the electronic controls found on some heating equipment. Is knowledgeable in the use of hand tools and testing devices common to the trade.

Electrical work requires the skill to remove and replace fixtures and controls, and to make repairs such as tightening connections, wrapping exposed wiring with insulating tape, and soldering loose wire leads to contact points. Must have the ability to read and follow wiring diagrams. Must have the skill to install new outlets, relays, switches, and light fixtures in existing systems and to test circuits to see if they are complete after making repairs. Must have the skill needed to measure, cut, and bend such things as wire and conduit to specified lengths and angles, and to use hand tools and some test equipment, such as screwdrivers, pliers, wirecutters, soldering irons, test lamps, and ammeters.

Applies established work methods and procedures to locate malfunctions on electrical equipment and small appliances involving repetitive operations in prescribed sequences. Uses manual skill, dexterity, and basic knowledge of electrical principles in completing repairs.

-Refrigeration and air conditioning work requires knowledge of principles and theories of refrigeration cycle, temperature measurement, properties of common refrigerants, and construction and operation of a variety of domestic units and systems. Must have skill to make visual, audible, and mechanical checks for proper temperature of conditioned spaces, proper operation of different parts of refrigeration cycle, proper oil levels, unusual noises, overheated bearing, loose connections, faulty insulation, frayed or loose belts, gaskets, pulleys, etc. Must have skill and knowledge to repair and adjust air conditioning and heating controls such as pressure and vacuum regulating controls, time delay relays, gauges, temperature controls, and grid bias circuits in control panels. Must

be skilled in servicing power sources, e.g., tightens connections, makes splices, insulates exposed wires, cleans and lubricates moving parts, replaces items such as belts, fans, and fuses. Must have the skill to replace portions of cooling units such as condensers, hermostats, coils, and drive assemblies.

-Plumbing repair work requires a knowledge of various supply, disposal, and utility systems and equipment, such as water and gas systems, fire sprinkler equipment, and water closets, are installed and operate. Must know plumbing methods and techniques including how to measure, cut, bend, and thread pipe and tile; and how to caulk and seal such elements as elbows, union joints, tile pipe, faucets, and shower drains. Must have the skill to remove, clean, reinstall or replace joints and fixtures, e.g., traps, faucets and unions; to hook up equipment, e.g., water heaters and disposal units; to install systems; and to replace sections of pipe and tile by following previously used routes, hangers, and levels. Must have the ability to add, subtract, multiply, divide, and work with simple fractions. Must have skill in the use of tools and equipment such as tapes, rules, hacksaws, hand and power pipe threaders and cutters, packing and caulking irons, and pipe wrenches.

Applies a basic knowledge of the techniques and procedures associated with carpentry, tile setting, and masonry work. Applies skill in the use of common power and hand tools of the trade.

Must be skilled in handling the controls for starting, stopping, backing, and driving the vehicle. Must know the height, width, length, and weight of vehicles driven to judge overhead and side clearances, turning radius, braking distance, and the safest distance to be maintained from a preceding vehicle. Must know safety rules and regulations and other posted rules for moving vehicles, and how to load cargo onto the vehicle, arranging it in such a way as to provide the best support and to prevent its shifting or falling.

#### Responsibility:

Receives assignments from supervisor or work leader orally or in the form of written or electronic service orders. Generally receives radio dispatched trouble calls while on call and makes emergency repairs. Incumbent determines the type and extent of repairs needed, methods and techniques to use, parts or components required, and completes work typically with no check in progress. Ensures the end product meets all specified requirements.

-Incumbent is responsible for the safe operation of the vehicle following all safety rules, regulations, and traffic signs. Assures that cargo is arranged properly for best support. Incumbent's ability is regularly observed and evaluated, and trip tickets are checked for compliance with regulations and completeness.

#### Physical Effort:

Work requires walking, standing, stooping, bending, kneeling, climbing, and working in tiring and uncomfortable positions. Frequently lifts and carries parts and equipment weighing up to 40 pounds; occasionally handles items weighing up to 100 pounds.

**Working Conditions:**

Position may be subject to shift or irregular work hours.

Works inside and outside, exposed to dirt, sewage, dust, grease, fumes, and refrigerant gases. Is subject to injury from use of hand and power tools, and to burns, cuts, bruises, and electrical shock. May be required to wear and/or use protective clothing and equipment in accordance with established health and safety regulations and SOP s.

Works outside and is occasionally exposed to bad weather while loading and unloading vehicle. Is subject to cuts, bruises, and broken bones as a result of accidents while driving or when loading and unloading vehicles. Is exposed to the possibility of serious accidents while driving in all types of traffic and weather