Pay Category and Job Grading Appeal Decision
Under sections 5103 and 5346 of title 5, United States Code

Appellant: [Appellant]

Agency classification: Electronics Mechanic
WG-2604-12

Organization: [Organization]
[Organization]
[Organization]
United States Coast Guard
Department of Homeland Security
[Location]

OPM decision: Electronics Mechanic
WG-2604-11

OPM decision number: C-2604-11-08

/s/

Jeffrey E. Sumberg
Deputy Associate Director,
Center for Merit System Accountability

January 16, 2009

Date

As provided in section S7-8 of the Operating Manual: Federal Wage System (FWS), and title 5 Code of Federal Regulations (CFR) section 532.707, this decision constitutes a certificate that is mandatory and binding on all administrative, certifying, payroll, disbursing, and accounting officials of the Government. There is no right of further appeal. This decision is subject to discretionary review only under conditions specified in 5 CFR 532.705(f). Mailing addresses are provided in the *Introduction to the Position Classification Standards (Introduction)*, appendix 4, section H.

Since this decision lowers the grade of the appealed position, it is to be effective no later than the beginning of the sixth pay period after the date of this decision, as permitted by 5 CFR 532.705(d). The applicable provisions of parts 351, 432, 536, and 752 of title 5, Code of Federal Regulations, must be followed in implementing the decision. If the appellant is entitled to grade retention, the two-year retention period begins on the date this decision is implemented. The servicing human resources office must submit a compliance report containing the corrected job description reflecting the actual work performed by the appellant as described in this certificate and a Standard Form 50 showing the personnel action taken. The report must be submitted within 30 days from the effective date of the personnel action.

Decision sent to:

[Appellant]
[Address]

[Name]
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U.S. Coast Guard
2100 2nd Street, SW
Washington, DC 20593-0001

Human Resources Officer
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Introduction

On March 28, 2007, the Philadelphia Oversight and Accountability Group, formerly the Philadelphia Field Services Group, of the Office of Personnel Management (OPM) accepted a pay category appeal from [Appellant]. His job is currently graded as Electronics Mechanic, WG-2604-12. He believes his job should be in the general schedule (GS) and classified in the Electronics Technician, GS-856, series (now the Electronics Technical series). The appellant works in the [Organization], [Organization], [Organization], United States Coast Guard (CG), Department of Homeland Security (DHS), in [Location]. We received the complete agency administrative report on July 17, 2007. We have accepted and decided this appeal under section 5103 and 5346 of title 5, United States Code (U.S.C.).

To help us decide the appeal, we conducted an on-site audit with the appellant and interview with his supervisor on October 4, 2007. Additional information was requested during the audit and later provided by the appellant information regarding his project-oriented work. In deciding this appeal, we carefully considered the audit and interview findings and all other information of record furnished by the appellant and the agency.

Background information

In January 2006, at the appellant's request, the CG human resources (HR) specialist providing direct support to [organization] conducted an on-site audit of the appellant's job. The review resulted in a tentative classification of Electronics Technician, GS-856-11; however, this classification was never implemented.

The CG HQ HR staff subsequently conducted a second on-site audit to ensure consistent application of available classification guidance. They issued their decision as the final DHS decision on January 23, 2007, finding the appellant's job properly classified as Electronics Mechanic, WG-2604-12. The appellant then filed this appeal with OPM.

General issues

The appellant and his supervisor agree job description (JD) number [#job description number] accurately describes his work.

The appellant states the nature of his work evolved as the field of electronics has changed over time and the work he now performs should be classified in the GS-856 series. He further states:

> The same electronics equipment is used throughout the Coast Guard as well as the same general practices and every day processes. I can cite specific cases where people who share the same duties as I do are classified as GS. As it currently stands there is little consistency in how the Coast Guard classifies their civilian electronics positions.

The appellant makes various other statements about the agency and its evaluation of his job. Implicit in the appellant's rationale is a concern his job is graded inconsistently with jobs at other

CG facilities performing similar work. By law, a pay category decision must be based solely by comparing current duties and responsibilities to OPM standards and guidelines (5 U.S.C. 5106, 5107, and 5112) pertinent to making a pay category determination. Similarly, job grading decisions must be based solely upon a comparison between the actual duties and responsibilities of the job and the appropriate job grading standards (JGS) (5 U.S.C. 5346). Since comparison to OPM standards and guidelines is the exclusive method for grading jobs, we cannot compare the appellant's job to others which may or may not be graded properly as a basis for deciding this appeal. Therefore, we have considered the appellant's statements only insofar as they are relevant to making that comparison. Because our decision sets aside all previous agency decisions, the appellant's concerns regarding his agency's job grading review process are not germane to this decision.

Like OPM, the appellant's agency must classify positions based on comparison to OPM standards and guidelines. However, the agency also has primary responsibility for ensuring its positions are classified consistently with OPM appeal decisions (see 5 CFR 511.612 and *Introduction*, appendix 4, I.). If the appellant considers his position so similar to others that they all warrant the same classification, he may pursue the matter by writing to his agency HQ HR office. In doing so, he should specify the precise organizational location, classification, duties, and responsibilities of the positions in question. If the positions are found to be basically the same as his, the agency must correct their classification to be consistent with this appeal decision. Otherwise, the agency should explain to him the differences between his position and the others.

In adjudicating this appeal, our responsibility is to make our own independent decision based on the proper grading of the appellant's job. A job consists of the duties and responsibilities that make up the work performed by an employee. Appeal regulations permit OPM to investigate or audit a job, and decide an appeal on the basis of the actual duties and responsibilities currently assigned by management and performed by the employee. An OPM appeal decision grades a real operating job, and not simply the JD. Therefore, this decision is based on the work currently assigned to and performed by the appellant.

Job information

The record shows almost all CG electronics systems and equipment are standardized, for particular applications/uses on common types of vessels, at land-based sites and/or on water-based aids to navigation. Therefore, within the CG, there are a number of higher level program offices, HQ, and parent organizations with electronics engineers and technicians whose primary missions are to plan, design, and develop equipment; develop and maintain equipment standards; and/or oversee the installation and testing of complex electronic systems, e.g. the CG-6, Assistant Commandant for Command, Control, Communications, Computers and Information Technology; C2CEN, Command and Control Engineering Center; TISCOM, CG Telecommunications and Information Systems; NAVCEN,HQ Navigation Center; and [organization's] parent command.

[Organization] consists of the Resources Branch, Equipment Branch, Platform Branch, Systems Branch and six [organization] including [organization], [location] and its subordinate

[organization]. Electronic computer and telecommunications projects are planned, budgeted, and executed by the Division or by one of the[organization] and coordinated with the [organization], HQ units of other major CG Atlantic electronics units, and/or CG HQ as appropriate.

The appellant works in a field-level [organization]. The detachment performs systems corrective and preventive maintenance, responds to and resolves casualties (equipment failures, outages and/or breakdowns), installs equipment per field change orders, provides quality oversight on maintenance contracts, monitors and manages electronics systems related projects, consults with and provides assistance to customer units concerning electronic equipment issues, performs inspections and tests equipment performance, and maintains telecommunications and computer systems. The primary products and services of [organization] involve the installation, repair, maintenance, and ensuring the operability of electronic equipment and systems developed and produced by others. [Organization] do not install all electronic equipment or systems, but they are responsible for maintaining them. Installations may occasionally involve entirely new equipment, but most are replacements-in-kind or upgrades to existing equipment or systems.

[Organization] is responsible for supporting the electronic, telecommunications, and computer systems at CG Group [location]. This includes: three boat search and rescue stations, two 110-foot Island Class Patrol Boats (WPB), a 175-foot buoy tender, an aids to navigation team, an industrial support detachment, a marine safety office, a marine safety field office, three very high frequency (VHF) National Distress System (NDS) sites, one HF site, one Long Range Aids to Navigation (LORAN) monitor site, and two Differential Global Positioning Systems (DGPS). ESD-P also supports all the station's small boats including: 47-foot Motor Life Boats (MLB), 44-foot MLBs, 41-foot Utility Boats (UTB), and 21-foot Rigid Hull Inflatables (RHI). Contractors perform most significant installations of new equipment. The appellant checks their work to ensure it meets specifications and signs off on the work. Occasionally a contractor will complete work in accordance with specifications, but the work will cause problems with other related systems or other equipment located nearby. In such cases, the appellant diagnoses the nature of the problem using available technical information, blueprints/schematics, and test equipment, and coordinates with his superiors and/or other specialists/engineers to identify a solution and correct the problem.

The appellant is primarily responsible for maintaining, repairing, installing, or replacing and testing numerous electronic, computer and networked equipment and systems, and training enlisted CG personnel to perform the work. In addition, he performs quality checks on work done by the contractor. The equipment includes: small boats and cutter Surface Search Radar, HR/VHF/UHF Radio Communications Systems, NDGPS Beacons, Marine Radio Direction Finding (RDF) Systems, HF Data Link (HFDL) Systems, Advanced Narrow Band Digital Voice Terminal (ANDVT) Systems, Long and Short Range Aids to Navigation and other Electronic Systems required in the safe operations of CG Cutters and small boats. The appellant's supervisor, the Detachment Supervisor, assigns complete projects and tasks. The appellant frequently works with his supervisor and other [organization] technicians and engineers to identify the impact and scope of the project along with any unusual considerations.

The appellant spends 30 percent of his time providing formal and on-the-job (OJT) training to [organization] enlisted personnel (currently six full-time enlisted, grades E-4, E-5 and E-6).

Enlisted personnel are supposed to be assigned on a rotational basis for approximately three to four years to receive hands-on training and experience. However, because of a critical need for CG shipboard personnel, they typically stay only one or two years. As a result, much of the appellant's work is focused on OJT for the enlisted personnel and providing continuity of operations. The appellant prepares and presents one hour of classroom training a week, requiring about two hours of preparatory time each week. The appellant has mock-ups or models of four pieces of actual equipment to aid in the training. The mock-ups include: short-range aids to navigation (SRAN), which includes all aids which do not rely on satellite or long-range radio communications such as lighthouses, buoys, radar beacons, fog detectors and signals, range lights, radio beacons and markers; the Shipboard Command and Control System (SCCS), which is used for navigation in CG cutters above 65-feet in length; an HF Radio; and the Scalable Integrated Navigation System (SINS), which is similar to the SCCS but for small boats, less than 65-feet in length. The appellant also provides trainees approximately eight hours of OJT per week. OJT may involve working side-by-side in the office to go over the work to be performed and talk through any issues, questions, or anticipated problems. Other OJT includes the appellant going on-site with the trainee to perform the work. This on-site OJT includes responding to casualties. The appellant also edits and maintains "Tech Tips," a publication which captures in-house solutions and trouble-shooting techniques to share knowledge gained in working common problems on standard CG equipment. Although this is a local, [organization] publication, it is shared throughout the CG.

The appellant spends 30 percent of his time performing systems calibration, reviews and validation. This includes monthly reviews of all preventative maintenance system documentation. During these reviews, which usually take three or more days per month, the appellant reviews logs of daily/weekly maintenance and findings from tests. Based on this information, he directs other electronics mechanics to adjust, replace, or fix the equipment to achieve systems operation accuracy. The appellant also verifies the most current operating system for SINS is loaded. This review and calibration work includes checking the work of contractors to ensure it meets specifications. All boats have standardized configurations per CG HQ for the placement of equipment. If non-standard modifications are needed, the appellant will coordinate with the [organization] for temporary approval to change the equipment. He also researches, performs tests, collects measurements, and checks specifications in an attempt to try to isolate and correct the problem. Usually, CG HQ brings the contractors back to fix the problem or reconfigure the equipment. When new equipment is installed on the boats, the appellant is responsible for conducting beta tests on the equipment. These tests occur once or twice each year and last for approximately two months. The appellant runs two hours of tests every two weeks.

The appellant spends 25 percent of his time working on larger and/or longer term projects. These projects are within the context of and overlay the previously described major groupings of the appellant's work. For example, in January 2001, the appellant spent two days working with other CG personnel, including a Commanding Officer, and Executive Officer, and Operations Officer, a [organization] representative and two enlisted personnel, to conduct a site survey of USCGC Eagle. This site survey involved taking digital pictures and measurements of current HF equipment and drafting a parts list to be ordered and installed prior to the installation of new HF equipment in February 2001. The team mocked-up and powered-up all new equipment to

verify proper operation prior to installation and used the installation as a learning opportunity for newer electronics technicians.

In May 2003, the appellant spent two days working with other CG personnel, including a Chief Warrant Officer, another [organization] electronic mechanic, and three enlisted [organization] [location] electronics technicians, to improve HF communications at Group Long Island Sound. This work involved conducting a site survey and taking measurements of the installed HF equipment. When measurements revealed the equipment to be out of specifications, the team installed a new ground rod. This brought the measurements into specifications. The team also worked with the antenna manufacturer to develop a solution to the propagation problem. Working with the manufacturer, they were able to greatly improve the propagation within the Group's area of responsibility, but still recommended a new HF antenna be installed. The electronics mechanics also used this opportunity to provide training to the electronics technicians. The training included performing an initial site survey, taking measurements and gathering data to analyze and determine if the equipment met/exceeded specifications.

On December 30, 2004, the appellant worked with two enlisted CG personnel to repair the INTRAC controlled Main Sound at Whaleback Light. INTRAC is an electronic unit used in remote control systems to provide relay closures at remote locations. The team followed standard procedures in performing functional checks and visual inspections of the INTRAC equipment. These reviews revealed all standard wiring had been cut. The team temporarily repaired the Main Sound by installing a cable from the INTRAC equipment to the Main Sound and recommended all new control cables be installed.

On September 20, 2007, the appellant worked with and two enlisted CG personnel to troubleshoot the Main Horn at Whaleback Light, Station Portsmouth. The team followed standard procedures to troubleshoot the Main Horn and the INTRAC system that controlled it. Troubleshooting revealed multiple points of incorrect wiring. Due to this fact and their lack of spare parts, the team ceased troubleshooting and recommended the wiring of the entire system be verified for accuracy by the Aids to Navigation Team (ANT) electricians.

The appellant spends 10 percent of his time purchasing and tracking needed maintenance supplies, parts and equipment from available sources using a Government credit card and budgeting for such materials. He places orders, tracks delivery, ensures items received are the ones ordered, coordinates and resolves issues concerning payments, returns and credits as needed, and documents transactions following well-established specific practices and procedures. The appellant tracks supplies in CM-PLUS, a database which tracks all supplies and purchases. The appellant makes daily updates in CM-PLUS regarding purchase entries and weekly supply updates. On a quarterly basis, the appellant completes a full supply report and requests random counts of supplies. He has two CG enlisted personnel who aid in this process by performing the actual counts in the warehouses. Annually, he ensures that a full "wall-to-wall" inventory of all five storage sites is completed.

The appellant spends five percent of his time responding to casualties. Casualties consist of equipment failures, outages, and/or breakdowns and are commonly caused by such things as harsh weather conditions, strong winter winds, general equipment failures and power outages.

Approximately three to four times per month, the appellant responds to casualties on-site and uses these opportunities to provide hands-on training to enlisted personnel, although enlisted personnel respond to most casualties by themselves based on past experience or previously having discussed the requirements with the appellant. The appellant is available to answer trainee questions while they are on-site.

The primary reason for the existence of this civilian CG position is to accomplish mission-oriented electronic installation, maintenance and repair work, and to provide hands-on work experience and skills development for CG enlisted personnel to prepare them to perform the work. The position also provides continuity of operations for an organization where enlisted personnel rotate in and out of particular developmental work assignments to expand their overall occupational knowledge, skills and abilities.

Occupation, title, and standard determination

The agency assigned the appellant's job to the 2604 Electronics Mechanic occupation which covers nonsupervisory work involved in fabricating, overhauling, modifying, installing, troubleshooting, repairing, and maintaining ground and marine electronic equipment, such as: radio; radar; sonar; cryptographic; satellite; microwave; micro computers and peripherals; laser; infrared; industrial x-ray; marine, aeronautical, and space navigation aid; TV receiver; and surveillance and similar devices. Such work requires knowledge of electronic principles; the ability to recognize improper operation, locate the cause, and determine the best method to correct the defect and the skill to disassemble, assemble, and adjust electronic equipment. The work includes using both manual and automated test equipment and may require the use of a personal computer and various software packages to program or realign components or systems, download information and detect equipment deficiencies.

The appellant believes his work is properly classified to the GS-856 series which covers technical positions supervising, leading, or performing work involving applying: knowledge of the techniques and theories characteristic of electronics, such as a knowledge of basic electricity and electronic theory, algebra and elementary physics; knowledge of electronic equipment design, development, evaluation, testing, installation and maintenance; and knowledge of the capabilities, limitations, operations, design, characteristics and functional use of a variety of types and models of electronic equipment and systems related to, but less than, a full professional knowledge of electronic engineering.

Under the provisions of title 5, U.S.C. 5102, the first step in the position classification process is to determine whether the position is covered by the GS. The decision as to the pay category in which a position belongs in turn determines the skills, knowledges, abilities, and responsibilities which determine the grade-level worth of the work. Section 5102(c)(7) exempts from coverage under the GS employees in recognized trades or crafts, or other skilled mechanical crafts, or unskilled, semi-skilled, or skilled manual-labor occupations, and other employees including supervisors in positions having trade, craft, or laboring experience and knowledge as the paramount requirement.
The *Introduction* states the "paramount requirement" of a position refers to the essential, prerequisite knowledge, skills, and abilities needed to perform the primary duty or responsibility for which the position has been established. Whether particular types of positions are trades, crafts, or

manual-labor occupations within the meaning of title 5 depends primarily on the duties, responsibilities, and qualification requirements; i.e., the most important, or chief, requirement for the performance of a primary duty or responsibility for which the position exists. If a position clearly requires trade, craft, or laboring experience and knowledge as a requirement for the performance of its primary duty, the position is under the FWS regardless of its organizational location or the nature of the activity in which it exists.

The *Introduction* states a position is exempt from the GS if its primary duty involves the performance of physical work which requires knowledge or experience of a trade, craft or manual labor nature. However, a position is subject to the GS, even if it requires physical work, if its primary duty requires knowledge or experience of an administrative, clerical, scientific, artistic or technical nature not related to trade, craft, or manual-labor work.

The Introduction to the Electronic Equipment Installation and Maintenance Family, 2600 provides additional guidance on differentiating between FWS and GS work. This guidance indicates in distinguishing between electronics mechanic (FWS) and electronics technician (GS) work, the differences between the electronics mechanics and technicians are not so much in the types of skills, knowledge, and abilities possessed but in the degree to which they are possessed and the manner in which they are used.

In evaluating repair work, performing repairs is considered trades work, while performing similar work in conjunction with such engineering functions as developing and designing test and repair equipment, analyzing present repair practices, and developing procedural instructions for use by others on the methods and steps of equipment repair, or conducting engineering evaluations of the adequacy of such things as test and evaluation equipment used in making repairs is GS technician work. In assessing maintenance work, performing preventative and corrective maintenance is considered trades work, while performing similar work in conjunction with such engineering functions as the development of maintenance standards and procedures for use by others, the engineering test and evaluation of new or modified electronic systems, or analyzing the compatibility of interlocking components, systems, and equipment for the purpose of redesign of the equipment to increase compatibility is GS technician work. In evaluating installation work, performing installation and reinstallation is considered trades work, while responsibility for planning and directing the installation of complex electronic systems and associated facilities, particularly where there are problems of site selection and construction, dealing with contractors and public utilities, and modifying the equipment to adapt to novel site characteristics, frequently require engineering competence. In such cases, the nonprofessional employees who perform this coordinative work, with or in lieu of an engineer, are in GS positions. In assessing testing work, performing testing is an inherent part of a trades function such as repair, maintenance, installation, and fabrication. Such trades work includes making measurements to diagnose malfunctions, to align and calibrate equipment, and to assure that equipment operates within prescribed standards and tolerances. Positions for which the performance of such testing work is the paramount requirement are trades positions. Performing similar testing work is GS technician work when it is part of engineering functions concerning projects such as developing or evaluating new or modified electronic systems or monitoring of frequency emissions by licensed stations. In these cases, they are not only doing the testing but they are also evaluating the data and forming engineering

conclusions as to the acceptability of equipment modifications validity of testing procedures and data, or legality of operations.

Although work performed may, on the surface, appear similar, a basic difference between the technician and the mechanic is in the mental approach to the problem faced. The technician uses electronic theory, mathematical knowledge, etc., as the basis for "new thought" to solve engineering problems in conventional areas of endeavor, e.g., design and construction of amplifier circuits, pulse forming networks, etc. In contrast, the FWS mechanic uses a similar background of electronic theory, mathematics, and experience as the basis for "second thought," i.e., to follow and understand the design concepts of others, to understand the purpose and operation of parts and circuits, to follow signal flow through assemblies and components and recognize proper wave forms and signal values in order to tune equipment for optimum performance and to locate and correct malfunctions.

This guidance indicates the distinction between FWS and GS work is blurred somewhat by the innovative ability of many experienced electronic mechanics as exhibited in the development of shortcut procedures, the recognition and recommendation of correction of errors in documentation; or recommendations of methods, design changes, etc., to remedy a deficiency. This guidance, however, cautions it is significant to note that while the mechanic's performance tends toward that of a technician, it is in response to a random condition or need. It is often valuable to and recognized by the activity, but it is not an ongoing need of the activity; i.e., is not required by management, and its absence is not cause for negative action by the supervisor against the employee. It is a requirement, however, that the electronics mechanic exercise journey-level competence in testing, repair, or other assigned work.

Thus, while installation, maintenance, repair, and testing are mentioned in GS position classification standards, e.g., Engineering Technical, GS-802. and Electronics Technical, GS-856, it is the design, development, planning, and acquisition work discussed in these standards which is considered paramount and determines the pay category. Installation, maintenance, and other hands-on work covered by these standards is secondary and usually involves an oversight role rather than performing the work.

The record shows the primary and paramount purpose of the appellant’s position and the ESD in which it is located, is to install, maintain, and repair electronic equipment in a production-oriented environment. The appellant’s work, whether he is engaged in hands-on equipment repair or overseeing systems calibration, reviews, and validation, requires the application of hands-on trades skill and knowledge, e.g., determining whether equipment is within pre-determined specifications. The appellant’s project functions include troubleshooting, repair, and design support work which is ancillary to the FWS work forming the core and purpose of the position's existence and requires the application of journey-level electronic mechanic skills and knowledge. Most of the appellant’s project functions resulted in repair work or suggestions for equipment upgrades/replacements or design improvement. These suggestions for “design” improvement never constituted fabrication as would be expected of the 856 series. Furthermore, the amount of "design" and other related work also does not control the pay category determination for the appellant’s position. This determination must rest on the primary and paramount experience and knowledge requirement as defined in the Classification Law (5 U.S.C. 5102(c)(7)).

It is not unusual for engineering organizations which develop and design systems, or which develop maintenance, test, repair, calibration, and other procedures, to ask for trades input. Mechanics and other trades employees are often primary users of electronics equipment and their corresponding published blueprints, schematics, maintenance manuals, and test procedures and can provide valuable input on the design or use of the equipment and the impact of the effectiveness of the engineering products within the shop environment. Such input is valuable to and recognized by cognizant CG engineering organizations, but it is not the fundamental underlying reason for the existence of the [organization] and does not constitute the primary work of the appellant's position or the reason for its existence. Furthermore, the trades theory and hands-on OJT training the appellant provides for CG enlisted personnel is an inherent part of journey-level trades work; i.e., providing guidance to lower-graded employees and/or to employees less familiar with a particular piece of equipment, including contractor personnel.

In his correspondence, the appellant emphasized his work on larger or longer term "special projects". As discussed previously, most of these projects involved troubleshooting and repairing existing equipment or installing new equipment. In performing this work, the appellant followed standard guidelines in the form of drawings, schematics, diagrams, blueprints and manuals. The *Job Family Standard for Technical Work in the Engineering and Architect Group* states technical work involves planning and directing the installation of complex systems and associated facilities, particularly where there are problems of site selection and construction, while trade, craft, or labor work involves installing equipment in accordance with plans, specifications, and detailed instructions, or reinstalling repaired or modified systems. The appellant's "special project" work clearly falls into under the umbrella of trade, craft, or labor work and does not constitute 856 series technical work.

The *Introduction* recognizes borderline positions exist where a pay category determination is difficult to make. In such situations, it is necessary to evaluate such factors as: (1) the nature of the work processes or services of the organization; (2) working relationships with other positions in the organization; (3) normal lines of career progression; (4) equitable pay relationships with other positions in the immediate organization; and, (5) management's intent, or purpose, in creating the position. Because this position is not borderline in nature, there is no need to apply the borderline criteria in order to corroborate our findings.

Grade determination

The JGS for the 2604 occupation describes work in terms of four factors: *Skill and Knowledge, Responsibility, Physical Effort* and *Working Conditions*.

Skill and Knowledge

This factor covers the nature and level of skill, knowledge, and mental application required in performing assigned work. Positions vary in such ways as the kind, amount, and depth of skill and knowledge needed, as well as in the manner, frequency, and extent to which they are used.

Grade 11 electronics mechanics apply a comprehensive knowledge of operating electronic principles such as circuit elements, digital logic, microprocessors, core memory, interface circuits, digital data transmission, microwave, antennas, signal behavior, amplification, and

display. They apply this knowledge to troubleshoot, install, repair, and maintain complex electronic systems where circuit theory must be used to understand the operation of individual circuits and the possible interaction of other circuits which create a malfunction. For example, they have skill to diagnose problems and determine corrective action for complex electronic cryptographic encoder/decoder units and complete systems. They are able to understand the interaction of a number of complex, interrelated circuits such as timing circuits, pulse forming networks, etc., to determine the cause of a malfunction and the interaction of factors such as ambient temperature and the power and duration of the signal input, which together cause it to fail. They use this skill and knowledge to install, modify, overhaul, maintain, troubleshoot, and repair complex electronics equipment and complete operational systems consisting of numerous complex integral components which require knowledge of a wide range of electronics principles and practices.

At this level, electronics mechanics have skill in interpreting complex drawings, specifications, and schematics of complete systems to recognize the function and interconnections of the various assemblies and troubleshoot the system from the schematic, following signal paths through a complex path of interconnections of components, assemblies, subassemblies, and connecting cable harnesses. They have skill to modify systems by adding, altering, or removing components in order to standardize or alter the purpose of the equipment or to incorporate new features developed since the equipment was manufactured. Some grade 11 electronics mechanics may apply an extensive knowledge of electromechanical servo systems, pneumatics, hydraulics, and mechanical and electric motor systems for antenna control. In some work situations, they apply a thorough working knowledge of satellite power, frequency and bandwidth utilization and the power sharing properties of a satellite transponder. They may have extensive knowledge of cryptographic equipment and security COMSEC systems.

In contrast, grade 12 electronics mechanics apply an expert knowledge of operation, capabilities and limitations of electronic equipment and systems. They have skill in applying this knowledge to understand new systems or complex systems which have frequent engineering changes to improvise alignment, repair, and operating procedures which will be efficient, complete, and compatible with available resources. They use ingenuity in the application of shop and trade practices to solve operating and repair problems, for example, to improvise alignment procedures for a redesigned radar system in which a number of subsystems have been modified with the introduction of integrated circuits. Mechanics at this level have a practical knowledge of electronic theory and design. They are able to use theoretical concepts to devise solutions for operating or repair problems on systems in which novel engineering approaches have created unforeseen problems. Grade 12 electronics mechanics have skill to interpret electronics drawings, specifications and schematics of complex operational systems such as a new data transmission system with analog-to-digital converters, pulse generators, multiplexers, timing circuits, microwave transmitters and receivers, and similar involved subunits which create and use many interlocking signals. They have skill in troubleshooting complex electronic systems which lack documentation and assisting engineers in the development of technical orders using reverse engineering procedures. In some work situations, they may be required to interact with engineers, manufacturer's representatives, engineering personnel and field unit personnel in troubleshooting and developing modifications, substitutions or, corrections to equipment to reduce breakdowns and/or simplify repairs, servicing or operation.

Grade 12 electronic mechanics apply a full knowledge of complex automated test equipment (ATE), the unit under test (UUT), and the related computer programs in order to recognize deficiencies in the ATE, programming, or UUT. If malfunction is determined to be in the ATE assemblies or UUT, they isolate same to a specific part and perform the necessary repairs and retest. If malfunction is in the test program, they serve as subject-matter experts in providing technical assistance to engineering personnel in resolving the problem. Additionally, they are often requested to conduct formal training regarding the proper use of a component or system, and continually provide advice and assistance to users.

Grade 12 electronics mechanics apply advanced electronic theory to maintain ongoing prototype systems; implement maintenance and repair procedures on major modifications of systems previously assigned to the activity; and maintain unusually complex systems which have frequent engineering changes such as in design, construction, operating, and servicing procedures. They have skill troubleshooting complex electronic systems which lack documentation and assisting engineers in the development of technical orders using reverse engineering procedures. They may be required to interact with engineers, manufacturers' representatives, engineering personnel and field unit personnel in troubleshooting and developing modifications, substitutions, or corrections to equipment to reduce breakdowns and/or simplify repairs, servicing, or operation.

The agency credited the grade 12 level predicated on interpreting "maintain ongoing prototype systems" discussed in the JGS as:

> …referring to the continuing deployment, replacement and incorporation of updated electronic components and systems onto Coast Guard communication, navigation and electronics systems and platforms as the state-of-the-electronic art as technology advances, such would be the state of the subject positions

The agency cited the appellant's maintaining unusually complex systems which have frequent engineering changes such as in design, construction, operating and servicing procedures as reflected in the upgrading of seagoing navigation systems equivalent to the TACAN systems discussed at the grade 11 level to the more complex and sophisticated GPS systems. The agency decision pointed to the presence of vague and incomplete specification and procedures to do the work, serving as a senior mechanic who provides technical assistance to lower-level electronic mechanics, and functioning as the shop technical authority on one or more of the newest and most technologically complex electronic systems. The evaluation statement points to pulse generator equipment at the [organization] having been upgraded with laptop computers containing special test equipment software which generates data strings allowing the appellant to test various complex systems such as DGPS, GPS, RADARs Depth Sounders, Sperry Speed Doppler Speed Logs and NMEA receivers and transmitters of all types within the area of responsibility for proper operation, and the troubleshooting, installation and repair of a number of systems which use analog to digital converters.
We note, however, the agency evaluation statement recognizes if "ongoing prototype systems" is to be interpreted in the engineering sense of a created experimental systems model, it would be inaccurate if applied to the relatively standardized electronic systems deployed by CG and

maintained by the appellant. Within the CG environment, such work would be "found in a research and development environment, CG-6, C2CEN or TISCOM." This statement reflects the intended meaning of "prototype systems" in the JGS. The appellant's work involving the installation and maintenance of system upgrades reflects the skill and knowledge described at the grade 11 level where electronics mechanics modify systems by adding, altering, or removing components in order to standardize or alter the purpose of the equipment or incorporate new features developed since the equipment was manufactured. As discussed previously, the appellant's regular and recurring work relates to adaptations and/or practical modifications of existing equipment or equipment configurations in response to basic operational requirements, environmental concerns, or to improve their performance. They do not represent or result from groundbreaking, new and unique developmental research or experimental/initial test equipment. Unlike the grade 12 level, the appellant's regular and recurring work within the meaning of the FWS does not involve assisting engineers in developing technical orders using reverse engineering procedures; and he does not develop modifications, substitutions, or corrections to equipment/system electronic characteristics, including circuitry.

The JGS recognizes both grade 11 and grade 12 electronics mechanics may provide technical guidance and assistance to lower-grade employees. However, grade 12 electronics mechanic duties include providing guidance and assistance to fully qualified and skilled grade 11 electronics mechanics who work on the types of systems found at the grade 11 level. In the appellant's case, most guidance is provided to CG enlisted personnel who are in an advanced trainee status in order to assist them in acquiring grade 11 level skills and knowledge. Therefore, this factor is properly evaluated at grade 11.

Responsibility

This factor covers the nature and degree of responsibility involved in performing work. Positions vary in responsibility in such ways as the complexity and scope of work assigned, the difficulty and frequency of judgments and decisions made, the kind of supervisory controls, and the nature of work instructions and technical guides used.

Grade 11 electronics mechanics receive work assignments from the supervisor in the form of work orders and inspection reports or oral instructions. Since the repair work is performed on operational systems and components, guidelines such as drawings, technical orders, manufacturers' specifications, schematics, and block diagrams are usually available. However, they are often vague or incomplete, and the mechanics may be required to identify and calculate the missing information. The supervisor spot-checks work for compliance with accepted trade practices and specifications and is available to provide advice and assistance on unusual or very difficult problems. Grade 11 mechanics also must keep abreast of technological changes in the occupation, and may provide technical guidance and assistance to lower-graded employees.

In contrast, grade 12 electronics mechanics exercise significant judgment and independence in determining the methods and techniques required to solve unusually complex maintenance and repair problems. They often coordinate with technical and professional personnel on matters affecting the operation specifications or modifications to equipment or systems. The supervisor seldom reviews work in progress and relies on grade 12 electronics mechanics to take

independent action in solving unusual maintenance and repair problems. Grade 12 mechanics are expected to not only maintain knowledge of state of the art technologies but also to stay abreast of new and emerging state of the market technologies.

Similar to the grade 12 level, the appellant's supervisor seldom reviews work in progress and relies on the appellant to take action to resolve problems. Unlike the grade 12 level, the appellant does not regularly work on prototype equipment as discussed previously or develop modifications, substitutions, or corrections to equipment/system electronic characteristics, including circuitry to equipment requiring the application of grade 12 knowledge and skill. Much of the appellant's work with professional and project personnel are on-site repair functions covered at or below the grade 10 levels in other FWS JGSs, e.g. installing telecommunications lines and wiring rebuilt CG facilities. While the appellant may stay abreast of new and emerging state of the art technologies, this is not required by the regular and recurring work he performs since he does not routinely work on such systems. Therefore, this factor is evaluated as grade 11.

Physical Effort and *Working Conditions* are the same at all grade levels. Because they do not have grade-level impact, and the appellant's work meets the levels described in the JGS, we will credit both factors as being met and will not address them further.

Decision

The appellant's job is properly graded as Electronics Mechanics, WG-2604-11.