U.S. Office of Personnel Management
Office of Merit Systems Oversight and Effectiveness
Classification Appeals and FLSA Programs

Philadelphia Oversight Division
600 Arch Street, Room 3400
Philadelphia, PA 19106-1596

Classification Appeal Decision
Under Section 5346 of Title 5, United States Code

Appellants: [appellant's name]

Agency classification: Machinist
WG-3414-10

Organization: Administration, Planning and
Support Division
Directorate of Ammunition Operations
[name] Army Depot
U.S. Department of the Army
[location]

OPM decision: Industrial Equipment Mechanic
WG-5352-10

OPM Decision Number: C-5352-10-01

Robert D. Hendler
Classification Appeals Officer
/s/ 6-9-98
Date

As provided in section S7-8 of the Operating Manual, Federal Wage System, 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 section 532.705(f) of tile 5, Code of Federal Regulations (address provided in appendix 4, section H).

Since this decision changes the classification of the appealed position, it is to be effective no later than the beginning of the first pay period that begins after the 60th day from the date the appellant filed an appeal with the agency [5 CFR 532.705(d)]. The servicing personnel office must submit a compliance report containing the corrected position description and a Standard Form 50 showing the personnel action taken. The report must be submitted within 30 days from the date of this decision.

Decision sent to:

PERSONAL
[appellant's name]
[name] Army Depot
[location]

Chief, Civilian Personnel
Advisory Center
[name] Army Depot
[location]

Director, U.S. Army Civilian Personnel
Evaluation Agency
Crystal Mall 4, Suite 918
1941 Jefferson Davis Highway
Arlington, VA 22202-4508

Chief, Position Management and
Classification Branch
Office of the Assistant Secretary
Manpower and Reserve Affairs
200 Stovall Street, Suite 5N35
Alexandria, VA 22332-0340

Chief, Classification Branch
Field Advisory Services Division
Defense Civilian Personnel Mgmt. Service
1400 Key Boulevard, Suite B-200
Arlington, VA 22209-5144

Chief, Classification Division
Northeast Civilian Personnel
Operations Center
314 Exchange Road, P.O. Box 6000
Aberdeen Proving Ground, MD 21005

Introduction

On November March 23, 1998, the Philadelphia Oversight Division of the U.S. Office of Personnel (OPM) received a job grading appeal from [appellants' names]. Their jobs were changed from Toolmaker, WG-3416-11 to Machinist, WG-3414-10 in the agency level appeal decision issued by the Defense Civilian Personnel Management Service (CPMS) on March 2, 1998. [appellant's name] left the job effective May 24, 1998. [appellant's name] continues to occupy the job and, therefore, retains standing in this action. The appellant,[appellanrt's name], believes his job should be evaluated as Model Maker, WG-4714-14. He works in the Administration, Planning and Support Division, Directorate of Ammunition Operations, [name] Army Depot, [location]. We have accepted and decided his appeal under section 5346 of title 5, United States Code (U.S.C.).

General issues

In the appeal letter of March 19, 1998, the appellant maintains that his job was downgraded improperly. The record shows the appellant does not disagree with the accuracy of the JD of record (Job Number 20884), but claims that the duties and responsibilities he performs have not been evaluated correctly. In particular, he stressed his responsibility for:

> completed end items, from design and fabrication, through installation, test, and customer acceptance. Items are one-of-a-kind and are designed for use in an explosive operating environment. Items are conceptualized, after determining operational requirements from technical operating personnel, designed and fabricated by the appellants (based on each unique set of requirements) utilizing whatever extended or modified trade practices are required, and improvising trade practices in whatever way is necessary to fabricate the needed item.

He described his contacts with technical personnel for the purpose of designing and fabricating "prototype models" that are "used to accomplish a wide variety of conventional ammunition and maintenance/demil operations." The appellant claimed he designs and fabricates "exactly the same kinds of models described in the Model Maker JGS [job grading standard], but they are used in the functional area of missile maintenance and testing instead of in a research laboratory." As also provided for in the Model Maker, WG-4714 JGS, he performs the work in a manufacturing and maintenance environment, using the full range of materials in his functional environment. The appellant stated his machinist skills were "incidental to their review/understanding of the conceptual requirements, and their development of the design of the item." He disagreed with the CPMS's application of the Machinist, WG-3414 JGS to his work, claiming that also exceeded the WG-11 level based on his "precision alignment of test equipment."

The memorandum expands upon the reasoning in the agency level appeal justification. In that rationale, the appellant claimed his work exceeded that of the Toolmaker, WG-3614 trade because: (1) no higher graded trades personnel are present to guide the work; (2) materials are not designated, blue prints or drawings are not provided, and instructions are limited to a request to "design and manufacture specialized tools, equipment, fixtures, apparatus"; and, (3) the work requires applying the knowledge and skill obtained from "years of experience and schools attended relative to munition/missile maintenance and demil operations." He claims that he was advised that "an

individual need not be involved in ALL areas of model making (i.e., scientific, engineering, developmental experimental AND test work, but rather that involvement in ONE OR MORE of these areas is qualifying for inclusion" in the Model Maker, WG-4714 trade.

The appellant also claimed that: (1) the "equipment/apparatus designed, fabricated, and tested by the incumbents of these positions" is not supplied with the missile system because Letterkenny typically is the first installation to perform the demilitarization of maintenance work; and, (2) the work has "evolved from maintaining and repairing existing equipment to designing and fabricating new equipment." He stressed that "design" work was not considered properly in the local evaluation of the job, and that repair and modification were secondary to "the initial design and manufacture of new equipment." The "design" work; site visits to study requirements, the intended use of the item, and specific space and load requirements and limitations; and choosing the correct materials to perform the work is not covered under the Toolmaker, WG-3416 occupation, but are functions covered by the Model Maker, WG-4714 occupation.

Underlying the appellant's rationale is that he is performing work previously assigned to higher graded jobs in his unit that have been abolished. By law, we must grade jobs solely by comparing their current duties and responsibilities to OPM job grading standards (JGS's) and guidelines (5 U.S.C. 5346). Other methods of evaluation, such as comparison to other jobs that may or may not have been graded correctly, are not authorized for use in grading a job. We have evaluated the work assigned by management and performed by the appellant according to these job grading requirements. In reaching our decision, we carefully reviewed the information provided by both the appellant and his agency, including the appellant's JD of record, which he and his supervisor agree is accurate. In addition, we conducted an on-site audit with the appellant and his immediate supervisor, [superevisor's name], on May 27, 1998. Our audits found the JD contains the major duties and responsibilities assigned by management and performed by the appellant and is hereby incorporated by reference into this decision. As discussed in the Grade determination section of this decision, the JD overstates the difficulty and complexity of some aspects of the job and requires correction.

Job information

The appellant's JD states he spends 50 percent of his time designing, fabricating, testing, installing, and modifying specialized tools, fixtures and equipment for ammunition and/or missile related operations. He receives requests either directly from operating personnel or through the supervisor concerning the need for these items, confers with operating personnel, headquarters support personnel, and/or vendor representatives to obtain specification pertaining to the assignment. The JD states the appellant considers such factors as the availability of machine tool equipment, fabrication time required, and the availability of materials, and work with a variety of materials in developing and fabricating detailed tools, fixtures and equipment.

The JD states the appellant spends 20 percent of his time operating machine tools such as lathes, grinders, milling machines, drill presses, and power saws. He applies advanced shop mathematics and handbook formulas to calculate sizes and dimensions, working with an average tolerance allowance of +/- .0005 inches. The appellant spends 20 percent of his time installing, assembling,

troubleshooting, modifying, repairing, adjusting, aligning, dismantling, decontaminating, and performing preventive maintenance on equipment used in missile maintenance and ammunition operations. Representative equipment includes delinking, depriming, pull-apart machines, pneumatic vises, load/reload fixtures, blasting equipment, hoists, conveyors, and spray painting equipment. The remaining 10 percent of his time is spent on welding duties using electric, acetylene and/or inert gas shielding welding. The JD states that he makes a variety of welds, from simple to precision, on light to heavy gage metals. The work processes include preheating, brazing, bead welding, tack welding, and flame cutting. Our audit found the appellant typically welds aluminum, mild steel, hard steel, and brass. MIG helium welding is used for aluminum; heliarc welding is used for stainless steel, with argon for finer welds; and an argon/carbon dioxide mixture is used for mild steel. The JD states that the incumbent "Must demonstrate a sufficient level of skill to pass welding performance/qualification tests as prescribed in applicable military standards." Our audit found that the aluminum welding certification was added recently as a job requirement.

The JD reflects the need to apply "advanced shop mathematics and handbook formulas," knowledge of ammunition and mechanical equipment enabling the incumbent "to fabricate, assemble, and modify parts, jigs, and special fixtures for related equipment," and skill in operating:

> machine tools, test equipment, and measuring devices such as Theodolites, transits, vernier calipers, height gages, dial indicators, Johanssen and similar gage blocks, various types of micrometers and super micrometers. Ability to use other types of measuring devises such as scales, dividers, surface gages, dial indicators, sine bars, protractors, steel squares, optical flats and straight edges.

Our fact-finding revealed the appellant uses standard shop mathematics and formulas to perform his work, e.g., calculating the span and weight of steel posts and beams to carry a half-ton bridge crane on a monorail, and calculating the thickness of sheet metal for equipment holding carts to carry the missile load. Theodolites and transits are used to level and place equipment, e.g., ATACMS missile table, bridge crane set-up, and heavy equipment installation. The record does not show that the appellant regularly performs extensive or involved mathematical calculations representative of advanced shop mathematics, e.g., machining at unusual or compound angles.

Occupation, title, and standards determination

The employing activity allocated the appellant's job as Toolmaker, WG-3416 because the job "previously performed a mix of production machinery tasks and welding duties" but, over time, had "evolved to include designing, modifying and installing specialized tools and equipment." The agency appeal decision, however, concluded that the "equipment handling devices such as carts and stands, lifting devices, and ramps, and unique tools such as special wrenches, sockets, and pullers" did not include "the kinds of precision machine tools, jigs, and gages manufactured by Toolmakers." That decision found the job involved Production Machinery Mechanic, WG-5350 and Machinist, WG-3414 work at the same grade level, but was allocated properly as Machinist, WG-3414 because that work was most important for recruitment and selection.

The appellant claims the Model Maker, WG-4714 JGS should be used to evaluate his work. The WG-4714 JGS is used to grade jobs involved in planning and fabricating complex research and prototype models which are made from a variety of materials and are used in scientific, engineering, developmental, experimental, and test work. His rationale references selected portions of the WG-4714 JGS, including the fact that some model makers service manufacturing or maintenance operations, not just research and development activities. The appellant also quoted sections distinguishing between model makers and "premium journeyman" jobs as discussed previously in this decision.

The job grading process requires that the full intent of JGS's be applied correctly. The WG-4714 JGS covers work requiring considerable initiative and imagination in extending and modifying trade work processes and improvising with them in various combinations to manufacture unique and one-of-a-kind items. For example, WG-14 model makers, the lowest level described in the JGS, apply a knowledge of a variety of manufacturing processes and methods during the planning stages of a project. They discuss the general idea of a desired item with the work-order initiator (engineer, doctor, or scientist) in terms of the intended use, operational characteristics, approximate configuration, size, weight, dimensions, tolerances, and the number and kind of assemblies and subassemblies. They make calculations such as loads, sizes, dimensional fits and weights, using shop algebraic and trigonometric formulas and tables. They recommend alternative methods when design characteristics cannot be met by proposed fabrication processes and suggests changes because of unsuitable or unavailable material, unrealistic component alignment or other fabrication requirements in the original design. From the nature of the test, experiment, or intended use of the model, they determine what materials and work methods are best to use and the operational and fabrication processes to follow by considering such factors as strength, desired life, location of component members, surface finish, atmospheric, oceanographic or biological environment, pressure, heat, pitch, yaw, stress, and strain.

WG-14 model makers know how to plan and lay out complete models, assemblies, and subassemblies; to reproduce scale designs; and to plan work requirements so that other employees assigned to the project can easily follow instructions. For example, specialists in making metal models must be familiar with the latest production processes to select, cut, fit, and achieve trueness and to fasten and hold several metals together with allowances for desired moving, bending, and oscillating according to design and operational requirements. They must be skilled in using tools such as soldering irons, welding equipment, bonding and brazing equipment, and the full variety of metal working machines including the latest machines such as numerically controlled and electrical discharge machines.

The appellant's work does not involve fabricating models within the meaning of the WG-4714 JGS, e.g., the scale model of a missile, complete with moving parts, used to test aerodynamics, material performance, and similar weapons system operating characteristics. That is, the items he fabricates do not require making "allowances for desired moving, bending, and oscillating according to design and operational requirements" as envisioned in the JGS. The items fabricated by the appellant present more limited characteristics. For example, the Hellfire paint stand involved measuring the missile, and fabricating a cart able to hold the missile by its "feet" and able to swing the missile 360 degrees so that the entire surface could be painted. The 105mm thread mutilator involved fabricating a shell

head casing cradle attached to a pneumatic drive similar to a log splitter. The drive is used to demilitarize the casing by boring out the screw in primer shell hole. Another project entailed fabricating a fixture to hold a phosphorous warhead. Measuring an inert round, the appellant fabricated a small holder with rollers pitched at an angle so that the shell would roll into a tray of vermiculite. Measuring the surfaces of the Sidewinder guidance and control section gas generator, the appellant fabricated a "tool" out of tubing that could be used to extract the generator. A similar wrench was fabricated to remove the Sparrow accumulator, and another wrench with prongs fitting into pin holes was fabricated to remove a ring from the Shrike missile guidance and control system. Based on measurements, rotating stands were fabricated to hold the guidance and control sections of the Shrike and Harm missiles for demilitarization. Other items routinely fabricated by the appellant include carts, dollies, and other moving and holding devices for missiles based on readily observable and available missile characteristics, e.g., shape, and weight.

The items fabricated by the appellant also do require extending and modifying trade work processes and improvising with them in various combinations typical of WG-4714 work, e.g., using the full variety of metal working machines including the latest machines such as numerically controlled and electrical discharge machines. These machines are used to perform complex machining operations requiring extended trade practices, e.g., machining items simultaneously in several planes to achieve precise fit and close tolerances. In contrast, the appellant uses standard, manually controlled machining and related equipment including lathes, boring mills, milling machines, radial drills, power saws, drill presses and grinders that can be used to perform standard machining operations, e.g., machining holding collets for the ATACMS missile to a smaller size. The equipment fabricated by the appellant, including simple "tools" to remove assemblies and major components, does not present the highly complex design and fabrication demands envisioned for coverage by the WG-4714 JGS.

Handling devices, test standards, and lifting devices are not models within the meaning of the FWS. Similarly, they are not prototype devices. Both these terms apply to the fabrication of complex equipment and components as discussed previously. All skilled trades at the journey level assume substantial employee input and planning on how to accomplish the work assignment. For example, journey level electricians are expected to lay out wiring system that meet user needs. Higher graded wood workers must plan and construct custom containers, including developing bracing points based on item weight and center of gravity determined by reading specifications and other available information, including item measurements. The fact that the appellant works directly with users in fabricating test stands and other devices, including designing these items based on equipment measurements, does not move his job into the WG-4714 occupation. The primary and paramount trade knowledge and skill used in fabricating these types of devices is covered by the Welding, WG-3703 JGS. The actual cutting of selected stock is covered by the Power Saw Operating, WG-3422 occupation and is evaluable at a substantially lower grade level.

For similar reasons, we find the Toolmaker, WG-3416 JGS also does not provide appropriate criteria for grading the appellants' work. This JGS covers nonsupervisory work involved in the fabrication, manufacture, calibration, reconditioning, and repair of machine tools, jigs, fixtures, dies, punches, and gages used in the manufacture, overhaul, and repair of equipment. At the WG-11 grade level, the lowest grade described in the JGS, toolmakers fabricate, overhaul, and repairs standard types of

cutting tools such as drills, reamers, milling cutters, and carbide tools; jigs and fixtures; drilling templates; punching, forming, and blanking dies; and gages such as plug, ring, snap, and caliper gages in accordance with general instructions from his supervisor which normally include detailed blueprints or drawings, and specifications as to the material to be used and design of the end item. In performing the work, the toolmaker must apply a comprehensive knowledge of and be skilled in using a variety of machine shop practices and techniques. They must be skilled in planning and laying out work from blueprints, sketches, or other work specifications; applying advanced shop mathematics and handbook formulas to compute dimensions and plan and layout work; setting up and operating all conventional machine tools and attachments; selecting proper tools and machine operations to be used; and performing necessary handwork such as filing, scraping, grinding, and lapping to finish and assemble items. The toolmaker must have a knowledge of standard cutting tools such as drills, reamers, taps, different kinds of milling cutters, form tools, and various carbide tools; the proper clearance and relief angles required on such tools based on the material to be machined; and the type of grit and bond, and size of grinding wheels needed to form and sharpen such tools. They must have a knowledge of the construction of standard types of jigs and fixtures and their uses in the machine shop; be sufficiently familiar with punches and dies and their principles of operation to fabricate and assemble such types as are used for straight punching, forming, and blanking operations; and, have sufficient knowledge of commonly used plug, ring, snap, and caliper gages and their critical dimensions to enable him to fabricate these less complex types of gages to close tolerances.

As discussed previously, the appellant's work involves fabricating simple tools using conventional machine tools. The go-no go gages, tube-based wrenches, lengthening wrench shafts, and similar items fabricated by the appellant fall short of the variety, criticality, and complexity of tools, dies, and gages fabricated in the toolmaker occupation. The jigs fabricated to machine collet rings and similar items are typical of Machinist, WG-3414 work; i.e., determining the proper equipment and attachments to use in machining operations, including the best and safest methods to employ in securing and holding. The appellant also does not operate the full range of machining equipment required to produce the more complex items covered by the toolmaker occupation.

We find the appellant's fabrication work does involve aspects of multiple trades. Application of related trade practices, however, is typical of many trades and craft occupations. Some trades and craft occupations are inherently multi-disciplined. For example, the Materials Handler, WG-6907 JGS recognizes that most work requires the incidental or regular use of fork lifts and motor vehicles, and Gardener, WG-5003 jobs typically include pest control and equipment operating duties.

The appellant's job is a mixed job. The Job Grading System for Trades and Labor Occupations states that a mixed job involves performance on a regular and recurring basis of duties in two or more occupations at the same or different grade levels. Such a job should be graded in keeping with the duties that (1) involve the highest skill and qualification requirements of the job, *and* (2) are a regular and recurring part of the job, even if the duties involved are not performed for a majority of the time. The Digest of Significant Classification Decisions and Opinions, No. 4, January 1984, provides guidance on what should be considered in determining whether a job is "mixed." The Digest cautions that if a small percentage, e.g., 15 percent of time is devoted to duties identified to another

occupation or the highest grade duties within an occupation, care must be exercised because there is a tendency to:

> make the following errors: (1) crediting duties which are not repetitively performed on a continuing basis and, therefore, should not be credited in any way; (2) incorrectly assuming that the duties require the full range of work and qualifications necessary to warrant the grade being considered; and (3) incorrectly assuming that the duties are performed under normal supervision for the grade being considered when they are performed under closer supervision and, therefore, overgrading the job.

We must look at the underlying functions of the appellant's job to identify its primary and paramount purpose. The appellant's job is located in a support organization that provides a variety of equipment maintenance and other support services to ammunition and missile renovation, modification, demilitarization, and disposal; and missile testing, assembling, diassembling, and screening. The equipment installation, maintenance and repair; machining; and welding work performed by the appellant are to support these ammunition and missile production functions. The appellant's installation, maintenance and repair of bridge cranes, ammunition/missile conveyors and handling equipment, paint spraying booths, sandblasting and fire control deluge systems are functions covered by the Industrial Equipment Mechanic, WG-5352 JGS. That JGS states it is to be used to grade work:

> involving the dismantling, repairing, relocating, modifying, maintaining, aligning, and installing of general nonproduction industrial plant machinery, equipment, and systems such as bridge cranes, towveyor/conveyor and pneumatic tube systems, sandblasting machines, and other industrial plant support machinery and equipment; service, industrial waste and flood control equipment such as compressors, pumps, and valves; and engraving machines, aircraft test block equipment, and fire extinguishing systems.

In contrast, the appellant's production equipment work is covered by the Production Machinery Mechanic, WG-5350 JGS. That JGS covers nonsupervisory work involving the dismantling, repairing, relocating, modifying, maintaining, aligning, and installing of fixed and semi-fixed production machinery, equipment, and systems such as various standard and numerically controlled (N/C) machine tools, woodworking and metalworking machines used in the production of goods.

Both the WG-5350 and WG-5352 occupations require the application of similar knowledge and skills; i.e., a practical knowledge of the mechanical, hydraulic, and pneumatic systems and components of the diverse machinery, equipment, systems and their attachments, their functional relationships, and the applicable installation and repair procedures, methods, and trade practices. It is in this work that we may consider the appellant's claims regarding precision alignment of test equipment, and not the WG-3414 occupation as he suggests. At the WG-10 grade level, the WG-5352 JGS states that work may include setting up and operating machine tools such as small lathes, milling machines, drill presses, and precision grinders to manufacture component parts or remachine existing parts such as bushings, bearings, seals, couplings, and pistons. The work requires the skill to independently use machine tools for onsite milling, grinding, boring, facing, and drilling, and various other portable

machine tools to accomplish repairs. The appellant's machining and other fabricating functions are performed in a similar manner, as part of industrial and production machinery program support. Because the basis of the appellant's rationale focuses on his design and fabrication work, we also will apply the WG-3414 for grade level analysis purposes.

As discussed in the grade level analysis that follows, a significant portion of the appellant's machining and related work is evaluated properly at grade levels below that of his mechanical work. Therefore, the percentage of time spent on what the appellant has described as his design and fabrication work may not control the occupation allocation of his job. Based on our on-site review of the facilities serviced by the appellant, the machining functions integral to his work, and established FWS mixed job grading principles, we find the appellant's job is allocated properly as Industrial Equipment Mechanic, WG-5352.

Grade determination

In FWS, if a job involves regular and recurring duties at the same level in two or more occupations, such a mixed job is graded at the same level. For example, the appellant's fabrication work would only affect the grade determination of his job if it were at a higher grade than his equipment installation, maintenance and repair. Grade levels of jobs are not determined by accumulation of grade levels of work performed, but by the highest grade of work that is regular and recurring as defined by established OPM job grading guidance. The requirement that an employee be licensed or certified to perform work, or that they certify with their signatures that standards of quality and safety have been met in performing work, do not in and of themselves affect the grade of a job.

Evaluation using the WG-5352 JGS

The WG-5352 JGS uses four factors for grade determination: *Skill and Knowledge*, *Responsibility*, *Physical Effort,* and *Working Conditions.* These factors are definitive for the grade evaluation of motor vehicle operator work. They serve to provide both the framework within which the occupation is structured and specifically applicable criteria for the appraisal of levels of work. Typical of many trades and crafts jobs at higher grade levels in the FWS, *Physical Effort* and *Working Conditions* are the same at all levels defined in the JGS. These two factors have grade level significance only in lower graded jobs. For example, heavier physical demands help to distinguish between Laborer, WG-3502-2 and WG-3502-3 work. They are not grade determining for WG-5352 or other skilled trades and crafts work. Therefore, we will not address them in detail.

Skill and Knowledge

At the WG-10 level, the highest level described in the JGS, industrial equipment mechanics apply a variety of methods, procedures, and techniques to layout, install, align, repair, overhaul, and maintain various types of nonproduction industrial plant machinery, equipment, and systems such as towveyor and conveyor systems, bridge cranes, air compressors, engine and hydromatic dynamometers, and aircraft test blocks. They examine and troubleshoot to determine the extent of repairs required, materials or parts needed, and to estimate the time required to complete repairs. They disassemble,

repair, and rebuild component parts of general industrial plant machinery and equipment such as towveyor and conveyor systems, cable drums and pulleys, reduction gears, monorails, pumps, and sluice gates. They also install, replace, adjust, and set various regulating or safety devices such as meters, gauges, governors, and automatic alarms.

WG-10 mechanics independently dismantle, move, and relocate various types of industrial plant machinery and equipment or install new machinery and equipment. They anchor machinery to foundations, assemble, and connect accessory or auxiliary components including steel ladders, platforms, and guard rails; make precision alignment and adjustments for balance; and conduct operational tests of the entire system. The work requires the ability to interpret and apply the requirements contained in technical manuals, shop directives, multiview blueprints, and other documents in determining critical dimensions and key reference points. WG-10 mechanics apply standard formulas, shop mathematics, trade theories, and industry practices in calculating needed materials and problem solving; and in the use of various test equipment and measuring devices such as alignment scopes, verniers, micrometers, precision levels, transits, strobe tachometers, bearing bridge gauges, flow meters, hydrostatic testers, and vibration analyzers. They make the necessary templates, jigs, and other fixtures required for repair or installation utilizing a knowledge of materials and their versatility.

As discussed previously, incidental work may entail setting up and operating machine tools such as small lathes, milling machines, drill presses, and precision grinders to manufacture component parts or remachine existing parts such as bushings, bearings, seals, couplings, and pistons. They are also skilled in the independent use of machine tools for onsite milling, grinding, boring, facing, and drilling, and the use of various other portable machine tools to accomplish repairs. They determine the nature and extent of repairs necessary and make needed repairs by replacing, reworking, or refinishing worn or damaged parts and components. Other incidental work typically includes applying sufficient knowledge of electrical and electronic mechanisms and devices to distinguish mechanical, hydraulic or pneumatic failures from those that are electrical or electronic, check and replace electrical wiring, and weld. They reassemble and install the equipment, connect the power sources. WG-10 mechanics perform operational and functional tests and make required adjustments in order to ensure proper operation of the entire system.

We find the appellant's work does not exceed the WG-10 grade level. Indicative of this work was moving and reinstalling a two ton bridge crane, including determining proper steel member size; bolting, welding, and bracing the steel monorail structure; and leveling the structure using a theodolite (i.e., precision leveling); installing a ½-ton monorail; and, moving and reinstalling the Penguin test cell system from Yorktown, VA. Although the appellant also services equipment typical of the WG-8 grade level; i.e., sand blasting machines and fire fighting equipment, the conveyor, fire deluge systems connected to production machinery, and other systems and equipment addressed previously closely match work found at the WG-10 grade level and the knowledge and skill typical of that level, e.g., installing a microfilter to resolve a nitrogen valve seating problem.

Responsibility

At the WG-10 grade level, the highest level described in the JGS, industrial equipment mechanics work alone or as part of a team under general supervision of the immediate supervisor, who makes assignments orally or in writing. They troubleshoot equipment to determine the area of difficulty; what parts or materials are required; and the methods, techniques, and procedures to use in completing repairs. They plan and layout their work using blueprints, sketches, work orders, and other specifications. The supervisor reviews work for adherence to specifications and accepted trade practices. The mechanic independently diagnoses, plans, and completes projects or work orders involving major systems in their entirety. The record shows the appellant functions with a similar freedom from supervision on equipment and systems typical of WG-10 grade level difficulty and complexity, resulting in evaluation of this factor at the WG-10 grade level.

Physical Effort and *Working Conditions* described in the WG-5352 JGS are the same at all defined grade levels.

Based on the preceding analysis, and applying the whole job grade criteria of the FWS, we find the appellant's industrial equipment mechanic work is graded properly at the WG-10 grade level.

Evaluation using the WG-5350 JGS

The WG-5350 JGS covers nonsupervisory work involving the dismantling, repairing, relocating, modifying, maintaining, aligning, and installing of fixed and semi-fixed production machinery, equipment, and systems such as various standard and numerically controlled (N/C) machine tools, woodworking and metalworking machines used in the production of goods. The work requires a practical knowledge of the mechanical, hydraulic, and pneumatic systems and components of diverse industrial production machinery and their attachments. This includes detailed knowledge of the operating characteristics of the involved machinery, equipment, and systems, their functional relationships, and the applicable installation and repair procedures, methods, and trade practices. The WG-5350 JGS uses the four standard FWS factors for grade determination.

Skill and Knowledge

At the WG-10 grade level, production machinery mechanics disassemble and repair standard and numerically controlled machinery with point-to-point or positioning control units that usually are single or dual axis and have limited functional capability such as drilling, turning, boring, milling, or grinding. Each function is performed separately and manually with the operator changing the tools and making other adjustments prior to the next function. The mechanical, hydraulic, pneumatic, electrical, and electronic devices interact independently to the degree that a defect in one does not immediately affect any of the others. The equipment serviced includes automatic screw machines, routers, precision grinders, hydraulic pipe benders, and multistation cartridge loading machines and other equipment of similar complexity used in ammunition maintenance operations; equipment used for metal forming, pipe, forge and foundry work; machining, welding and burning, and woodworking

operations. They disassemble, repair, and rebuild component parts of production machinery and equipment such as turret lathes, boring mills, planers, radial drill presses, and multiple burning units.

The work requires the ability to interpret and apply the requirements contained in technical manuals, shop directives, multiview blueprints, and other documents in determining critical dimensions and key reference points. They perform precision handwork such as scraping, lapping, and honing to attain the proper finishes and alignment of machined parts to tolerances as close as .0002 of an inch. WG-10 mechanics independently dismantle, move, and relocate various types of machine tools and their attachments or install new machinery. They anchor machinery to foundations, assemble, and connect accessory or auxiliary component including steel ladders, platforms, and guard rails; make precision alignment and fine adjustments for balance and for achieving proper operating characteristics; and conduct operational tests of the machinery and its auxiliary equipment for proper operation throughout the entire range. In performing their work, they apply standard formulas, shop mathematics, trade theories, and industry practices in calculating needed materials and problem solving; and in the use of various test equipment and measuring devices such as alignment scopes, verniers, micrometers, precision levels, transits, strobe tachometers, bearing bridge gauges, flowmeters, hydrostatic testers, and vibration analyzers. They make the necessary templates, jigs, and other fixtures required for repair or installation utilizing a knowledge of materials and their versatility. The WG-10 mechanic determines the nature and extent of repairs necessary and make needed repairs by replacing, reworking, or refinishing worn or damaged parts and components. They reassemble and install the equipment, connect the power sources, perform operational and functional tests, and make required adjustments in order to ensure proper operation of the machine and its attachments. They also install, replace, adjust, and set various regulating or safety devices such as meters, gages, governors, and automatic alarms. Incidental to their work, they may be skilled in setting up and operating machine tools such as small lathes, milling machines, drill presses, and precision grinders to manufacture component parts or remachine existing parts such as bushings, bearings, seals, couplings, and pistons. They are also skilled in the independent use of machine tools for onsite milling, grinding, boring, facing, and drilling, and the use of various other portable machine tools to accomplish repairs.

In contrast, WG-11 mechanics work on a range of complex multi-axis, multi-function fixed and semifixed production machinery and equipment such as numerically controlled machine tools and other similar complex and sophisticated equipment. The numerically controlled machinery is capable of performing a broad range of programmed machining functions such as multi-plane boring, drilling, milling, tapping, facing, planing, and other related operations. The unusually complex equipment and machinery serviced is typified by numerically controlled machining centers, e.g., centers electronically controlled with five hydraulically driven machining axes and incremental closed loop positioning, has multi-plane contouring capability, an automatic tools indexer and changer, a hydraulic counterbalance, pneumatic oil mist lubrication, and is capable of being operated in a manual, semi-or fully automatic mode. The work requires a knowledge of equipment such as taped program readers, closed loop servo assemblies position detection and velocity measurement devices, and machine control bodes in sufficient depth to trace symptoms of equipment malfunction and distinguish mechanical, pneumatic, and hydraulic failures from those which are electrical or electronic. Defects in the electrical system or an electronic device, requiring in depth knowledge of electricity or electronic

principles, are referred to other personnel, e.g., electricians and electronic industrial controls mechanics. They have the ability to make precise adjustments for alignment, parallelism, and concentricity due to the continuing effects of malfunctions throughout the entire machine or equipment. For example, they make accurate and precise repair and alignment such as are required to set displacement outputs for electromechanical position and velocity detectors; or to rework gear train assemblies, antibacklash devices, and axis drives. In performing precise alignment and adjustments, they are skilled in the use of a variety of complex optical and laser light measuring devices where performance specification's are met only by simultaneous adjustments, e.g., mechanical and electronic; or mechanical, hydraulic, and electronic balancing of the machine. Under these circumstances, the mechanic works as a member of a team usually consisting of other production machinery mechanics and an electronic industrial controls mechanic. Also characteristic of skills required at this level is the ability to perform precise measurements of air and fluid pressure and flow, and knowledge of the mechanisms used to convert such readings into measurable units.

WG-11 mechanics are required to have the ability to interpret complex multiview drawings, sketches, wiring diagrams, manufacturers' specifications, and other technical material to isolate malfunctions in such devices as hydraulic pumps and motors, mechanical clamping devices, and electric or hydraulic axis drive and positioning systems. They also have a knowledge of construction and assembly techniques and the ability to manufacture replacement parts with complex configurations or assemble unique devices with unusual angular relationships. Sometimes repairs or modifications are performed when blueprints and manufacturers' specifications are unavailable or incomplete. They use geometry, shop mathematics, and handbook formulas to provide for surfaces with interrelated dimensions and to calculate angles, clearances, fits, pressure, flow, and other parameters of interest.

The equipment serviced by the appellant meets the WG-10 grade level; it directly covers multistation cartridge loading machines and other equipment of similar complexity used in ammunition maintenance operations. His installation of this equipment using theodolites, as discussed previously in our application of the WG-5352 JGS, is covered fully at the WG-10 grade level. The record shows that the appellant does not work on equipment of WG-11 grade level difficulty and complexity, precluding evaluation of this factor above the WG-10 grade level.

Responsibility

At the WG-10 grade level, mechanics work alone or as part of a team under general supervision of the immediate supervisor, who makes assignments orally or in writing. They troubleshoot equipment to determine the area of difficulty; what parts or materials are required; and the methods, techniques, and procedures to use in completing repairs. They plan and lay out their work using blueprints, sketches, work orders, and other specifications. The supervisor reviews work for adherence to specifications and accepted trade practices. They independently diagnose, plan, and complete projects or work orders involving major machine tools in their entirety such as turret lathes. Work at this level is performed with a minimum of guidance or established procedures.

In contrast, WG-11 mechanics independently determine the nature of the trouble and extent of repairs required on equipment that is usually complicated by more variables. They are expected to recognize

the evidence of electrical or electronic malfunctions from indications in the mechanical, hydraulic, or pneumatic portions of the equipment, requiring knowledge of the functional relationships among the different portions of the equipment and an understanding of the progressive effects of electrical or electronic malfunctions on the total system. In addition to locating the trouble and judging the impact of the repairs, they independently plan the work sequence, complete the project, and make further tests, adjustments, and alignments to insure that the equipment and all its integral devices are functioning properly. The supervisor spot checks work for compliance with acceptable trade practices, directives, and operating specifications; and provides technical advice on unusual or very difficult problems.

The level of responsibility described at each level in the WG-5350 JGS is directly related to the scope of work functions performed at that same defined grade level. That is, WG-10 grade level responsibility is predicated on doing the full range of WG-10 level work on equipment with WG-10 grade level characteristics. The appellant's ongoing responsibilities in doing WG-10 grade level work a significant portion of his work time fully reflects the freedom from supervision found at the WG-10 grade level in the WG-5350 JGS. As at the WG-10 grade level, he performs his work assignments independently, using sound judgment in applying established trade practices. Because he does not routinely work on WG-11 grade level equipment, the crediting of that level for this factor is precluded. Therefore, this factor is credited properly at the WG-10 grade level.

Physical Effort and *Working Conditions* described in the WG-5350 JGS are the same at all defined grade levels.

Based on the preceding analysis, and applying the whole job grade criteria of the FWS, we find the appellant's production equipment mechanic work is graded properly at the WG-10 grade level.

Evaluation using the WG-3414 JGS

The WG-3414 JGS covers nonsupervisory work involved in the manufacture and repair of parts and items of equipment which require the use of various types of standard and special machine tools and their attachments to machine metals, metal alloys, and other materials. The work requires skill in the initial-planning of necessary work sequences, laying out reference points and lines to be followed in the machining processes, planning for and setting up the work in the machine, selecting and shaping metal cutting tools, operating all types of machine tools, and performing precision handwork to fit, finish, and assemble machined parts and equipment; a knowledge of the makeup of blueprints and drawings and the skill necessary to interpret them; and skill in working from other types of specifications such as sketches, models of parts to be manufactured, or work orders. That is, work in this occupation does not, as the appellant opines, mean that full documentation, such as plans and blueprints, is supplied to the employee.

Skill and Knowledge

At the WG-10 grade level, machinists apply skill in performing the full range of operations on most types of conventional machine tools and their various attachments such as lathes, vertical and

horizontal boring mills; bench, plain, or universal milling machines; shapers; planers; internal and external grinders; thread grinders; and radial drills, frequently using a variety of auxiliary machine tool attachments such as rotary vises, dividing heads, taper attachments, magnetic chucks, vertical milling heads, tapping attachments, rotary tables and others. They use a knowledge of the machinability of numerous metals and other materials, and the proper tools required to produce the desired cuts and surfaces on each material. WG-10 machinists exercise skill in planning and laying out work from work sheets, blueprints, sketches, or other work specifications; determine work procedures, machines, tool, equipment, and attachments to be used; proper type and size of raw stock needed; sequence of machining operations on each machine tool, and the speeds and feeds necessary to attain the required finishes and tolerances based on the type of tools to be used and the material to be machined. They apply shop mathematics and handbook formulas in establishing needed dimensions, such as those required for chasing threads or machining angular surfaces; locating and marking surfaces and angles to be machined, locating reference points, or performing other layout work necessary to facilitate accurate job setups on a variety of machine tools. They often manufacture an entire item, carrying out all the machining operations necessary for completion, and performing precision handwork such as filing, scraping and lapping to fit, assemble, and finish machined parts. The WG-10 machinist is skilled in using many types of precision measuring instruments and equipment, frequently using such measuring devices as vernier calipers, height gages, squares, protractors, inside, outside and depth micrometers, surface gages, vee blocks, parallels, gage blocks, dial indicators, optical and mechanical comparators, and "go" and "no-go" thread, ring, and plug gages to attain accurate dimensions and maintain tolerances. The work requires mental application and concentration in reading and interpreting complex, multiview blueprints; locating and extracting critical dimensions and key reference points; and making the mathematical computations involved in transferring them from blueprint or drawing to the casting or raw stock during the job layout process or perform similar work from sketches, work orders, model of part to be made, or other specifications using shop mathematics and handbook formulas. WG-10 machinists manufacture parts and items of equipment from raw stock of different kinds of metals and metal alloys and other materials; or perform work involved in the manufacture of castings, forgings, weldments, and other fabrications, through the use of machine tools and precision handwork.

In contrast, WG-11 machinists also receive assignments usually requiring special adaption or extension of the use of conventional machine tools or the use of specialized or nonconventional machine tools such as jig borers, jig grinders, hobbing machines, hob grinders, gear generators, or numerically controlled machine tools normally requiring extensive or involved mathematical computations in their setup or operating procedures. They apply a comprehensive knowledge of and skill in using any of the accepted trade methods and techniques, and all conventional types of machine tools. In addition, they exercise skill and ingenuity in using conventional machine tools and their attachments to perform machining processes requiring special adaption of the equipment or processes for which they were not specifically designed, for example, through the use of special or improvised tools, fixtures, and setups to machine unusual surface configurations such as curved surfaces requiring machine feeds in two different planes simultaneously; surfaces having closely interrelated dimensions, or surfaces having unusual or compound angular relationships. They use advanced shop mathematics, including geometric and trigonometric formulas, to make com-putations necessary to perform such tasks as laying out his work; setting up machines to machine pieces at unusual or compound angles;

determining change gear ratios, pitch, lead, and pitch diameters for various standard and nonstandard screw threads, worms, and gear wheels; determining exact angles and dimensions necessary to locate and bore or grind precision holes; or determining plates and gearing to be used and pin locations for differential, compound, or angular indexing.

WG-11 machinists are skilled in performing work assignments which require accomplishing untried tasks or procedures such as those required in machining a rare metal, new metal alloy, or other new material for which they determine the best tooling material, tool types, coolants, and machine feeds and speeds to use in performing a particular machining operation; or independent interpretation and translation of work orders, drawings and specifications frequently requiring computing and establishing missing tolerances, dimensions, and types of fits or finishes. Work assignments are usually more general, and the performance of related work processes necessary to complete an entire job are not specifically provided for in work specifications. Therefore, the WG-11 machinist applies a knowledge of the effect and relationship of heat treating, annealing, plating, welding, and other related work processes on various machining operations in order to efficiently plan and coordinate these operations in completing an assignment. Based on an extensive overall knowledge of the trade, they plan sequences of operations which involve innovations in setups, attachments, techniques, and tooling. They set up and operate machine tools such as electrical displacement or numerically controlled machine tools, using his trade knowledge and machining skills to contribute to the efficient use of these machines by suggesting and developing new setups and attempting new types of machining operations.

The appellant does not operate the range of conventional or numerically controlled equipment required to perform the complex machining functions found at the WG-11 grade level. This type of equipment is not located in the small machine shop operated by the appellant and, therefore, are not available for regular and recurring use by him. That the appellant frequently does not receive blueprints or other design material for his assignments does not change the fact that the fabrication needs can be determined from readily available information, e.g., inert rounds of the missile to be demilitarized. The items fabricated do not regularly entail machine feeds in two different planes simultaneously or present the other complex surface and configuration demands found at the WG-11 grade level. The range of metals and materials machined by the appellant is limited as discussed previously in this decision and does not include rare metals, new metal alloys, or other new materials; i.e., materials new to the broad machinist trade for which technical machining information is scarce or of limited value in determining its application to the project at hand. As discussed previously, these assignments do not involve the application of advanced shop mathematics with sufficient frequency to permit crediting of that job aspect under established FWS principles and practices. Using other trade techniques, e.g., welding, does not change the fact that the items fabricated do not present WG-11 grade level machining characteristics. We also find the appellant's less complex machining work, e.g., the repetitive machining of parts previously developed through the full machinist planning process, is evaluated properly by application of the Machine Tool Operator, WG-3431 JGS, and falls short of the WG-10 grade level. Therefore, this factor may not be evaluated above the WG-10 grade level.

Responsibility

WG-10 machinists receive work assignments in the form of work orders or oral instructions accompanied by blueprints, sketches, drawings, model of part, or other work specifications; determine the most efficient work procedures; machine tools and attachments to be used; and proper sequence of machining operations. They lay out their own work, accurately computing and checking dimensions and tolerances, setting up the job in the machine, and selecting the proper tools to achieve the desired dimensions, tolerances, and surface finishes. WG-10 machinists make independent judgments and decisions within the framework of oral and written instructions and accepted trade practices, processes, and procedures while accomplishing his assignments, e.g., decisions on the most efficient and economical machine to use for a machining process that could be performed on any of several machines; the best and safest methods to employ in securing and holding a part to be machined; the maximum depth of a particular cut considering the composition of the material to be cut and the stress the cutting tool will withstand; and the amount of metal which must be left on a part for grinding purposes, considering possible shrinkage or warpage during the heat treating or hardening process. The supervisor is usually available for consultation on unique problems or in progress design changes. The work is reviewed by the supervisor only to insure that it meets specifications and accepted trade practices. We find the appellant operates with comparable freedom from supervision on his most demanding machining assignments.

The level of responsibility described at each level in the WG-3414 JGS is directly related to the scope of work functions performed at that same defined grade level discussed previously in this decision. That is, WG-11 grade level responsibility is predicated on doing the full range of WG-10 grade level machining on items with WG-11 grade level characteristics. Because the appellant performs his work on equipment that does not exceed the WG-10 grade level in difficulty and complexity, on items that do not exceed the WG-10 grade level in fabrication complexity, this factor may not be credited above the WG-10 grade level.

Physical Effort and *Working Conditions* are the same at the WG-10 and WG-11 grade levels in the WG-3414 JGS. As discussed previously in this decision, these factors do not control the grading of skilled trades and craft work and, thus, do not affect application of the WG-3414 JGS, as a whole, to the appellant's work.

The amount of time spent by the appellant on welding work does not meet the FWS definition of regular and recurring work as discussed previously in this decision. Furthermore, the grade level worth of that work does not exceed that credited to the appellant's job by application of the JGS's referenced in this decision. The recently added requirement for aluminum welding certification does not increase the technical difficulty and complexity of the welding functions themselves.

Summary

Applying FWS mixed occupation and grading principles, we find the appellant's job is graded properly as Industrial Equipment Mechanic, WG-5352-10.