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**Federal Wage System
Job Grading Standards**



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**FEDERAL WAGE SYSTEM
JOB GRADING
STANDARD
FOR
EXPLOSIVES TEST
OPERATING,
6517**



**Workforce Compensation
and Performance Service**



EXPLOSIVES TEST OPERATING, 6517

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WORK COVERED

This standard covers nonsupervisory work involved in the functional testing of explosives, pyrotechnics, propellant grains, and ammunition to discover characteristics such as dispersion patterns, velocity, and range. This requires knowledge of explosives, explosive devices, and environmental conditioning and functional testing practices.

WORK NOT COVERED

Work that primarily involves:

- Assembly, disassembly, processing, repair, and testing of small arms, artillery, and other ordnance mechanical and electrical assemblies and equipment where the paramount knowledge and skill are concerned with mechanical components (see [Artillery Repairing Series, 6605](#); [Small Arms Repairing Series, 6610](#); [Ordnance Equipment Mechanic Series, 6641](#); or other series in the [Armament Work Family, 6600](#));
- Manufacture of powder, propellant grains, solid or liquid explosives, and mixtures for flares or signals; or manufacture, assembly, disassembly, renovation, modification, and deactivation of ammunition and explosives (see [Explosives Operating Series, 6502](#));
- Erection of test structures, placing of large explosives or propellant grains in test stands, etc., where the paramount skills and knowledge concern the use of overhead trolleys, hydraulic jacks, cranes, and other weight handling equipment (see [Rigging Series, 5210](#)).

TITLES

Jobs below grade 8 are to be titled *Explosives Test Worker*.

Jobs covered by this standard at the grade 8 level and above are to be titled *Explosives Test Operator*.

GRADE LEVELS

This standard does not describe all possible grade levels for this occupation. If jobs differ substantially from the skill, knowledge, and other work requirements described in the grade levels of the standard, they may be graded at levels other than those described, based on the application of sound job grading methods.



6517-8 EXPLOSIVES TEST OPERATOR, GRADE 8 6517-8

General: Grade 8 explosives test operators perform a variety of frequently used, directly applicable environmental/functional test procedures to measure physical characteristics such as burning time, delay time, sensitivity to friction, and force of functioning of powder charges or explosive devices. They assist higher grade employees in more complex operations. Repetitive assignments are spot checked and test results are closely reviewed.

Skill and Knowledge: The grade 8 explosives test operators follow procedures, solve typical operating problems, and make usual adjustments required for a variety of frequently repeated testing assignments. They apply skill in setting up testing jigs and environmental simulation machines, adjusting them to the size and type of test item. Commonly used machines are centrifuges, shock machines, mechanical and electromagnetic vibrators, and temperature controlled cabinets. They use a knowledge of explosives to prepare test items, for example, using laboratory scales and calibrated presses to prepare samples of explosive to exact weight and density. They use a basic knowledge of electrical circuits when they attach and adjust recording instruments. They diagnose the probable cause of test item malfunctions, relying heavily on precedent cases as well as on basic knowledge of equipment and explosives. They fully understand the hazards involved in handling and processing explosives. They know and apply all safety practices and procedures which pertain to their assignments.

Responsibility: Grade 8 explosives test operators receive oral or written assignments from supervisors, with sketches, blueprints, or specifications as necessary. In repetitive work, brief discussions emphasize the differences between this and earlier assignments. When assigned to new or nonroutine operations, the grade 8 explosives test operators receive detailed explanations and technical guidance from supervisors or other higher grade personnel. On both repetitive and nonroutine assignments, supervisors make frequent in-progress checks to assure strict compliance with all safety procedures. Reports of test results are closely reviewed for agreement with predicted results.

Physical Effort: Grade 8 explosives test operators frequently lift test items or testing devices that weigh 14 kilograms to 18 kilograms (30 to 40 pounds). They occasionally lift and carry items of about 27 kilograms (60 pounds). The work requires long periods of standing and walking. They are occasionally required to stoop, bend, kneel, and work in tiring and uncomfortable positions.

Working Conditions: Work is performed both indoors and outdoors. The grade 8 explosives test operators are subject to noise and fumes from test operations. They are exposed to the possibility of explosion or burning of items which are experimental, defective, or operating at the limits of their capability. They wear protective clothing such as specially treated coveralls and safety shoes. There is a possibility of injuries such as cuts, bruises, sprains, bums, and loss of limbs.

6517-10 EXPLOSIVES TEST OPERATOR, GRADE-10 6517-10

General: Grade 10 explosives test operators perform unusual environmental and functional tests, such as testing one-of-a-kind research and development products, where no previous tests have been performed and no test procedures have been established for the item. They modify existing test methods and procedures to produce the desired data. Their methods and operating procedures are reviewed before the test is run.

In comparison with the grade 8 explosives test operators who use set methods to perform repetitive tests which are directly applicable to the test item and desired information, the grade 10 explosives test operators adapt procedures and equipment to tasks for which they were not intended.

Skill and Knowledge: Grade 10 explosives test operators use a broad knowledge of environmental conditioning and functional testing procedures and practices, and of the capabilities of available conditioning, testing, and recording equipment, to develop new procedures or modifications which will produce the test results needed. They use a practical knowledge of mechanical and electrical equipment to devise or modify test stands, jigs, and auxiliary equipment such as electrical switches and connections. They use their experience with previous test operations to interpret work orders, blueprints, and other specifications and lay out, time, and coordinate test operations.

They detect and analyze improper operation of explosive devices such as failure to fire, preexplosion, failure of a part under stress, etc., and use their knowledge of similar items and materials to determine probable causes of failure and possible changes to the device or material to prevent recurrence. They position, synchronize, and operate measuring and recording devices such as high speed cameras, volt meters, oscilloscopes, chronographs, and other similar equipment to record test results.

In comparison with grade 8 explosives test operators, who rely on precedent cases to diagnose malfunctions of test setups or test items, grade 10 explosives test operators use a thorough knowledge of explosives, testing, and environmental conditioning as well as knowledge of mechanics and electricity to resolve problems and suggest new or alternate methods where needed, where more economic, or more efficient.

Responsibility: Grade 10 explosives test operators receive work assignments from supervisors in the form of work orders and brief oral outlines of objectives. They plan the test methods and procedures, determine the type of equipment needed, and set up the test equipment. They work directly with engineering personnel to assure that all technical requirements are met. Test methods and operating procedures are reviewed and approved prior to carrying out the firing sequence to make sure that safety procedures are properly used. Tabulated test data is reviewed for consistency with predicted results. In comparison to the detailed explanations and technical

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guidance received at the grade 8 level, grade 10 explosives test operators have considerable leeway as to methods and procedures to accomplish the assignment. They exercise initiative and judgment in improvising special set ups and procedures on test equipment to perform operations on a one-time or infrequent basis.

Physical Effort: The physical effort required at the grade 10 level is similar to that described at the [grade 8 level](#).

Working Conditions: The working conditions experienced at the grade 10 level are similar to those described at the [grade 8 level](#).