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# **Production Control Series**

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## NOTE

This standard has been converted from the original paper format to electronic format without substantive change in series coverage or grading criteria. The standard was reviewed to correct errors that may have been introduced during the conversion process. In some standards minor corrections were made such as updating references to other documents that may have become obsolete, or correcting minor typographical errors in the original standard. Any errors that remain due to conversion to electronic format should be minor and are not intended to change the meaning of the original standard. If you find an error in any document on this CD, please send a FAX to HRCD - Perfection, 202-606-4891, or send a note to HRCD - Perfection, Office of Classification, U.S. Office of Personnel Management, 1900 E Street, NW, Washington, DC. Identify the document, page, and error. Thank you for bringing any errors to our attention.

If you find page references near the right hand margin of this standard they indicate the pagination of the official, printed version of this standard. For example, a notation "PAGE 2, 4/88, TS-87" would mean that (1) page two of the printed version begins here, (2) the date of issuance was 4/88, and (3) the Transmittal Sheet number was TS-87.

# Production Control Series

## GS-1152

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## SERIES DEFINITION

This series includes positions involved in the supervision or performance of planning, estimating, scheduling, and expediting the use of labor, machines, and materials in specific manufacturing or remanufacturing operations that employ mechanical or automated production systems and methods in the fabrication, rebuilding, overhaul, refurbishing, or repair of any type of Government-owned, controlled, or operated equipment, systems, facilities, and supplies. Some positions are involved in the preparation of contract bids that include the preproduction analysis of specific proposed work packages to determine workload capacity, labor, material, services, and machine requirements, etc., to arrive at the most competitive bid. These positions are also covered by this series as they perform the same type of work as positions that are responsible for the preproduction planning for any assigned projects, since the source data used and knowledge applied are the same.

Positions that include only some of the duties and responsibilities of the Production Control Series should not be classified mechanically in this series. In order to include a position in this series, the production control work being performed must reflect the occupational definition as a whole and not just selected or fragmented portions of the duties and responsibilities of the occupation. That is, between the trainee and journey levels, developmental positions must be involved, in varying degrees, with all aspects of the production control program.

## EXCLUSIONS

1. Classify positions responsible for the development, analysis, and evaluation of management information systems reports, charts, and graphs from production data that do not have any significant duties or responsibilities for planning all aspects of an integrated system of production control in the [Management and Program Analysis Series, GS-343](#).
2. Classify positions responsible for planning, coordinating, or evaluating logistical action required to support missions, weapon systems, or other programs, where the paramount requirement is the ability to integrate the separate functions in planning or implementing a logistics management program in the [Logistics Management Series, GS-346](#). This includes positions that provide logistical program support to the production effort but are not directly responsible for controlling the production process itself.
3. Classify positions responsible for the analysis and improvement of manufacturing processes, methods, procedures, layouts, equipment, and standards that primarily require technical engineering knowledge in the [Engineering Technician Series, GS- 802](#).
4. Classify positions responsible for planning, designing, analyzing, improving, and installing integrated work systems in order to produce products, render services, repair equipment, etc., that require knowledge of the principles and techniques of industrial engineering and pertinent

industrial work processes, facilities, methods, and equipment in the [Industrial Engineering Technician Series, GS-895](#).

5. Classify positions responsible for planning, evaluating, and maintaining technical surveillance over Government production operations, either in contractor or Government-operated facilities in the [Industrial Specialist Series, GS-1150](#). Positions that have significant production control responsibilities for contractor operations for analyzing, planning, and scheduling specific production operations or workload are included in the GS-1152 series.
6. Classify positions that primarily require a professional knowledge of printing processes and equipment to plan, administer, supervise, review, evaluate, or perform work in connection with the management of a printing program in the [Printing Management Series, GS-1654](#).
7. Classify positions responsible for identifying parts, assemblies, and equipment; determining sources of supply and feasibility of local manufacture; determining availability, interchangeability, and substitution; preparing specifications for procurement and expediting material deliveries; locating alternate sources; or functioning as an equipment technical information resource and providing guidance for the activation or deactivation of equipment in a system in the [Equipment Specialist Series, GS- 1670](#).

## DEFINITIONS

**Agency:** As used in this standard, means Army, Air Force, Navy, DLA, NASA, etc.

**"Complex" Product or Project:** A complex product or production project is one that requires complex manufacturing or overhaul processes or techniques when:

1. it has component parts, subassemblies, or major assemblies, or undergoes many manufacturing processes and has a great number of characteristics to be controlled or checked;
2. it has envelope or performance-type specifications, a complex design, or a new design subject to engineering changes and modifications concurrent with production;
3. inspection of the item requires complicated setups, involving interrelated dimensions and concentricity requirements, and extremely close tolerances; or
4. inspection of the item requires the use of specially designed intricate calibration and measurement equipment, a practical knowledge of advanced industrial material treatment processes, or intricate or specially designed preservation and packaging techniques.

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Some examples of complex items are aircraft, aircraft engines, fire control systems, sophisticated navigation systems, guided missiles, or any items characterized by many

individual components and subassemblies involving a variety of manufacturing or control operations or processes.

"Less Complex" Product or Project: A less complex product or project is defined as a type:

1. that has definite specifications and a range of manufacturing processes or commodity characteristics, but relatively few interrelated parts or combinations of factors to be considered;
2. that can be inspected by using a variety of standard precision measuring devices or a somewhat restricted number of sensory determinations; or
3. that is covered by standardized, or less complicated contract clauses; or that requires the use of standard industrial material treatment processes or standard preservation and packaging techniques.

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A few examples of less complex products or projects are field or ship gun-type ammunition; some aircraft wheel assemblies; aircraft control surfaces; pumps (feed water/hydraulic/oil); or any items characterized by a limited number of components or subassemblies that require a few different but standardized operations or processes.

**Specialized Machines (production):** Machines that have been designed for a specific purpose and cannot be used for other purposes without major modification. For example, ammunition depots use a variety of such equipment such as cartridge/shell extractors, and cavity drillers (explosive).

**Standard or General Purpose Machines (production):** Machines that have not been designed for one particular process or operation, but can be utilized, sometimes with only minor modifications, in a number of different operations. Shipyards and aircraft overhaul and repair activities typically utilize large numbers of general purpose machines. Some examples are drill presses, lathes, turret lathes, milling machines, boring mills, shapers, slotting machines, metal breaks, shears, and balancing machines.

**Worker-hours or Worker-days or Worker-years:** These terms represent a specific unit of measure for determining the amount of labor required or expended. For example, 560 worker-hours may represent one worker required to do 8 hours of labor every day for 70 days or; it could also represent a different requirement for a variety of trades in two groups of 35 workers each working in two 8-hour shifts for just 1 day (totaling the same 560 hours) to complete the same or different work, but in a shorter period of time.

## **OCCUPATIONAL INFORMATION**

For the purpose of this standard, the word "product" or "project" is used to identify an item that has been either manufactured, constructed, overhauled, or repaired. When it is completed, it

represents an asset that is typically identified with the mission and purpose of the industrial activity. The product or project can be any one of a wide variety of items, of any size, cost, or degree of complexity, ranging from small arms ammunition to a large nuclear powered aircraft carrier.

Production control is the planning of production in advance of actual operations; establishing the exact route of each individual item, part, or assembly; setting the start and completion dates for each important item and assembly, as well as the finished product; determining the specific type of labor and number of hours required for each phase of the operation; and calculating all the materials, services, and the production schedule lead time required. Many positions that are concerned with current or immediate production are responsible for the preparation and release of necessary work packages and job orders, as well as initiating any appropriate follow up action.

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Many large industrial organizations are responsible for highly specialized products with a long production cycle and a lengthy preproduction or advance planning phase (that part of production control work that is done many months to a year or more in advance of the actual production operations). One or more of the production controllers may be responsible for the advance planning phase for production of a very difficult product such as a major overhaul of a large and complex ship, while the current or immediate production control phase is performed by other controllers.

In smaller facilities providing less complex products, the controller may be responsible for the work in both phases. Some activities divide a very large and complex production effort into several major production operations, using different controllers for each major operation who manage both the planning phase and the immediate production phase. Due to the close dependence and vital interaction of both preproduction planning and the immediate production operations, more activities are combining these planning functions. In an overall sense, control over most manufacturing, construction, overhaul, or repair operations is exercised by and through a number of departments or offices. The production control office presupposes that other offices (such as those in engineering, accounting, and procurement) will accomplish their respective daily functions as required and provide information to the control process. The controller may often orchestrate an ongoing team effort of planning, scheduling, procurement coordination, and problem resolution across all the organizations as time and changing priorities dictate.

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There are different degrees of difficulty and complexity in production control at Government and contractor industrial activities. Production may range from several worker-hours for a basic product to a complex process that requires several years. An example of a very difficult and complex process is an aircraft carrier overhaul. A major overhaul program to extend its service life usually requires several years of difficult and intense work in both the preproduction and the immediate production planning phases.

The full performance level for production controllers will vary from one activity to another depending on the difficulty and the complexity of the product, production methods, and

procedures. That level may range from GS-7 up through GS-12. All positions, however, have the same basic duties in common as they all are required to perform almost all of the following functions:

1. prepare production plans for specific projects and operations through the compilation of customer requirements, engineering designs, specifications, and machining process data;
2. compile estimates for different types of skilled labor and the number of worker-hours required for production operations;
3. advise procurement or supply activities on a variety of material requirements and production schedule due dates;
4. schedule and control primary work assignments to manufacturing activities based upon production line or shop capacity, priority, and due date;
5. determine the status of work in progress, time required to complete the job, the availability of materials, tools required, and reassess priorities;
6. expedite jobs in progress by any appropriate means;
7. monitor, record, and report the status of production funding.

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Many positions covered by this series are concerned with the construction, overhaul, or repair of relatively large and complex systems or facilities (e.g., aircraft, ships, large ordnance, dry docks, or public works projects) that do not use a production line system. Production shop or contractor personnel normally go to the product to disassemble, overhaul, repair, modify, and provide service and specialized trade operations on-site. They may remove many of the larger assemblies and various components and send them to a variety of different machine shops or other facilities for more specific and sometimes very complex and difficult disassembly, overhaul, and remanufacturing functions.

Many products may appear to be similar because of their class, type, or model, but the overhaul or repair seldom is the same for each product. They often have different wear and usage conditions or operational problems that are identified in their work packages. Thus, modifications and engineering changes made during and after manufacture are seldom alike. Periodically, due to rapid changes in technology or other requirements, some equipment or systems require unexpected modifications, alterations, or improvements. This in turn may cause significant changes in the controller's planning and funding to allow for the additional or changed production procedures, operations, and materials needed to implement and coordinate all the work.

An increasing number of production controllers are responsible for the preparation of bids for new work since agencies are required to operate their industrial activities in full and direct competition with both private industry and other Government facilities. Many activities must actively solicit

new Government business through the formal competitive bid process to provide quality products at the most economical cost.

Some controllers work in industrial activities concerned with products that are produced or overhauled in high volume or have a relatively short production cycle, for example: basic munitions; some types of small arms; electronic and mechanical components of limited complexity; printed matter; or, a wide variety of expendable products. These items usually have a traditional production line operation. The planning and control systems are usually specific, regular, and recurring for the manufacture, modification, or repair of the complete product including any packaging, distribution, or storage. While production complexity of any individual item may be limited, the management of high volume production for a variety of products for numerous customers with different preservation, special packing and shipping requirements, and a variety of conflicting due dates, presents another type of production complexity.

As part of their regular work, some production controllers are required to make unexpected arrangements to transport skilled laborers, machines, and equipment to any site in the world for emergency repairs, or for mission related modifications. The controller must then realign resources and priorities in order to maintain current production schedules to compensate for the loss of these vital production resources.

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A few industrial activities have highly complex end products that are one of a kind or research and development prototype products with very limited quantities. Production control at these activities may involve work in which there are limited or no precedents, frequent changes in methods and procedures, few guidelines, requirements for special tools or jigs, or other unique requirements for various materials or services. The controller must closely coordinate production efforts with the designers, make frequent changes in schedules and priorities, and make every effort to control costs.

## TITLES

### Authorized Titles

The authorized titles established for nonsupervisory positions in this series are:

1. GS-4 ----- Production Control Aide
2. GS-5 and GS-6 --- Production Controller
3. GS-7 and above -- Production Controller (specialty)

Supervisory Production Controller is the title for positions that meet the criteria in the appropriate [supervisory guide](#).

### Specializations

Agencies may use parenthetical titles in accordance with guidance in the "[Introduction to the Position Classification Standards](#)." We recommend avoiding specializations that are too broad or too narrow. Use of one specialization is more appropriate than use of three or more specializations together, as substantial depth of knowledge in any area is required to warrant use of a specialization in the title. Also, it would not be appropriate to define a specialization in terms of specific product; e.g., (aircraft, C-5). Usually, the required skills and knowledges can be applied to a range of aircraft. The following is a list of suggested parenthetical titles.

Some suggested specializations are:

1. Aerospace - Aerospace systems and subsystems; primary components; and integrated equipment in the areas of fluid and flight mechanics, propulsion and power, materials and structures, including ground support, launch, and aerospace vehicles.
2. Aircraft - Fixed and rotary wing aircraft systems including engines and structural components of the total system such as airframes, wings, rotor heads, stabilizers, and control surfaces; landing and arresting gear; bomb, missile, and torpedo racks, etc.
3. Ammunition - Conventional ammunition and special weapons (e.g., chemical and biological), their components, propellants, and explosive devices and the maintenance of munitions.
4. Automotive - Equipment and components such as cars, trucks, tanks, buses, and special purpose vehicles including track or crawler vehicles, maintenance and material handling equipment, and all component parts and assemblies.
5. Construction - Numerous and complex or long-term Government public works and controlled contractor projects such as airfields, buildings, roads, bridges, ship docks, and flood control projects.
6. Electrical - Electrical machinery, equipment, apparatus, and instruments, including motors, generators, transformers, switches, and controls.
7. Electronics - Electronic equipment and instruments, including radio and television equipment, radar, sonar, navigational computers, external missile guidance equipment, and electro-optical equipment.
8. Mechanical - Machinery, other than electrical, such as engines and turbines; machines and instruments powered by heat or mechanical energy, including steam and internal combustion power plants; industrial equipment; heating and air-conditioning systems; pumps, pipes, and valves; machine tools, and mechanical or marine equipment not included under other specializations.

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9. Missiles - Guided and ballistic missiles, their major components and subsystems including fuel and propulsion systems, boosters, guidance and instrumentation systems, structural components, airframe, and launchers.
10. Nuclear - Reactor cores, pressure vessels and closures, control systems and mechanisms, reactor fuel materials, and all basic systems that are an integral part of a reactor.
11. Ordnance - Mechanical ordnance and accessories, azimuth and elevation mechanisms and motors, sighting and range finding equipment, field and deck guns, machine guns, mortars, and all small arms.
12. Precision Instruments - A wide variety of electronic, electrical, radiological, mechanical, and optical; laboratory, scientific, and engineering instruments; measuring and controlling instruments and timing devices; and range finders not attached to ordnance.
13. Ships - All types of ships, vessels, barges, related marine equipment, and ship systems that are not correctly identified with one of the above specializations.

## EVALUATING POSITIONS

### Organizational Structure

The organizational placement of production control functions varies considerably among and within most Federal agencies. Generally, larger agencies have highly structured production control organizations, while smaller agencies have less formalized structures. Many production control offices are decentralized and are located at a field installation; some are in or near a contractor's facility; some are at regional facilities; while only a few are part of the agency's headquarters organization. Some production operations are for mission support, while others are for new product manufacturing, or for the purpose of providing specialized product services for a geographical area or for other Government organizations.

There is considerable difference in the degree of difficulty and complexity connected with production operations and procedures from one product and facility to another. Because of this, the organizational location of the production control program, the type or the variety of items being produced or repaired, and the separate or combined functional areas of assignment of preproduction planning and immediate production control should not be assumed to have any automatic grade or factor level implications.

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### Length of Production Cycle

The number of worker-hours or worker-days required to complete a full production cycle is used by some Government agencies to denote differences between the various levels and types of

funded work (e.g., minor versus major overhaul). The length of the production cycle, in itself, does not equate to a particular grade level. The length of the production cycle must be considered in conjunction with the number and variety of processes, procedures, skilled trade personnel, parts, components and materials, and the degree of complexity and difficulty of assembly.

## Dollar Value

The total production cost of a product work package or project, by itself, may have little relationship to the difficulty or complexity of the work of the position. Very high dollar production costs could, in some cases, actually represent mostly high cost purchased equipment, components, and materials with only limited plant production activity or assembly costs. In another activity, the same high costs may represent very difficult and complex production processes utilizing considerable skilled labor with a limited amount of purchased equipment. Consequently, dollar value is not considered a valid indicator of project complexity or level of difficulty.

In many Government industrial organizations, the unit of measure for the labor portion of the fund or budget is not in dollars. It is measured or calculated, budgeted, apportioned, and reconciled in worker-hours and worker-days. In many activities, the workers and shops clock or record the exact amount of time spent on each operation they perform against a specific job order. Each shop has its own predetermined labor rate that includes its hourly labor mix plus the shop overhead. The controller utilizes such data for tracking work in progress and when budgeting and allotting those hours and days for new work. The employee must exercise just as much control and responsibility as with any monetary fund. Production controllers may be responsible for managing either type of fund; however, the degree of difficulty and responsibility is usually the same, for the same work, whichever unit of measure is used. The size of the fund, in itself, has no direct grade or factor level impact.

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## General

Evaluate positions on a factor-by-factor basis, using the factor level descriptions in this standard. Only designated point values may be used. The absence of a factor level description at any particular level does not preclude evaluation of positions at that level. If the work being evaluated exceeds or is lower than any factor level description in this standard, the [FES Primary Standard](#) may be used in conjunction with a related FES standard.

Evaluate supervisory positions using the appropriate [supervisory evaluation guide](#).

Various factor levels provide a few examples of products that might be under the responsibility of a production controller. The examples are not meant to be all inclusive, they are only meant to establish a general frame of reference for establishing the degree of product/production difficulty and complexity at that level.

## GRADE CONVERSION TABLE

Total points on all evaluation factors are converted to GS grade as follows:

GS Grade	Point Range
4	655-850
5	855-1100
6	1105-1350
7	1355-1600
8	1605-1850
9	1855-2100
10	2105-2350
11	2355-2750
12	2755-3150

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## FACTOR LEVEL DESCRIPTIONS

### FACTOR 1, KNOWLEDGE REQUIRED BY THE POSITION

#### Level 1-4 -- 550 Points

At this trainee level, the position requires a practical knowledge of the product and the activity's routine industrial production or civil construction procedures and operations that is sufficient to enable the employee to collect, compile, correlate, and maintain production data from shop records, personnel, and computer sources.

#### Level 1-5 -- 750 Points

Employees use knowledge of the production organization and established production methods and procedures, labor, and material requirements in order to carry out established production control assignments that range from providing assistance to higher graded production controllers to independent performance of repetitive and uncomplicated production control tasks or projects, e.g., conventional electronic surface and airborne communications systems; mobile field ordnance; or a limited variety of products such as numerous ammunition and explosive devices. These tasks or projects require general knowledge of the product or the project to correlate and analyze a variety of routine production data and processes, prepare outlines for basic production schedules, and effectively communicate with and obtain the cooperation and assistance of personnel in other parts of the industrial organization.

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#### Level 1-6 -- 950 Points

Employees use knowledge and experience in the recurring manufacture, overhaul, or repair of products or projects using multiple process production methods and procedures to develop information necessary for the control of a complex product, e.g., numerous skilled trades utilizing a variety of general purpose and specialized machines, tools, equipment, and material to manufacture, remanufacture, or overhaul and assemble products such as large self-propelled ordnance; a complex missile/launcher system; major systems and airframes of fixed and rotary wing aircraft; or a variety of complex and long-term facility repair and construction projects. The employee utilizes a practical knowledge of the industrial activity, its staff and support operations, the purpose and capacities of the machines and equipment, the type and kind of labor required, a variety of material resources and their cost, to plan for and control the production cycle.

The work requires extensive knowledge, understanding, and use of product and manufacturing terminology, data, and standards and how to relate them properly to new projects. The controller utilizes considerable knowledge and experience to observe and analyze production operations to determine if schedules are being followed, if they can be improved, and to determine the causes of production delays.

### Level 1-7 -- 1250 Points

Positions at this level require, in addition to the above, a comprehensive and intensive practical knowledge of all the production methods and procedures, machines, and materials; and considerable skill and experience to plan for the future or immediate production control for the manufacture, overhaul, or repair of prototype or very complex products; e.g., spacecraft; combat or strategic fixed wing aircraft; large and very complex weapon systems like a warship or submarine; or responsibility for a number of complex "compartmented zones" of a very large ship (the complete propulsion system is one such zone).

The controller must have knowledge, skill, and experience to prevent or alleviate production delays, scheduling conflicts, the lack of sufficient materials, faulty processes, labor shortages, or skilled trade imbalances. This requires a good working knowledge of the basic requirements and procedures of all departments being coordinated both in and outside of the production area.

The employee must apply a variety of methods to investigate, analyze, plan, and implement corrective action as well as establish effective cost controls for difficult and complex production problems that may occur during the preplanning or the work-in-progress phase. Some production controllers, because of their advanced knowledge and experience, may function as the principle employee responsible for the production control planning for a particular type of product.

## **FACTOR 2, SUPERVISORY CONTROLS**

### Level 2-1 -- 25 Points

The supervisor and senior production controllers provide clear, detailed, and specific instructions for all phases of the assignment.

The employee requests information on all situations that are not covered by existing instructions or by guidelines.

Supervisory controls are close for all ongoing and completed work. Work is checked in process and upon completion for accuracy, adequacy, and adherence to instructions and established procedures. Work is reviewed with less frequency as demonstrated proficiency is achieved.

### Level 2-2 -- 125 Points

The supervisor makes specific assignments by providing an outline of what is to be done, the degree of quality and accuracy that is expected, and information on deadlines and priorities. The supervisor and senior controller(s) provide additional instructions for new, difficult, or unusual tasks that may include suggested work methods or advice on resources and materials.

The employee uses initiative in carrying out recurring or continuous assignments without assistance but may request help with any deviations, problems, or unusual situations.

Completed work, reports, and procedures are reviewed for technical accuracy and compliance with instructions.

### Level 2-3 -- 275 Points

The supervisor assigns responsibility for providing continuous control of production in a specific department or large shop. The supervisor defines the general objectives, priorities, and any changes to project-driven deadlines. The supervisor is available to assist the employee with unusual situations which do not have guidelines or clear precedents.

The controller is expected to analyze the production requirements; plan for the various phases of production and labor requirements; coordinate the job scheduling, materials, and funding; and handle problems and deviations in accordance with instructions, policies, previous training, or accepted practices.

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Completed work is usually evaluated for technical soundness, efficient use of resources, resolution of normal production scheduling problems, and efforts made to expedite product completion deadlines.

### Level 2-4 -- 450 Points

The supervisor and the controller confer to set the overall objectives and adjust any conflicting priorities. The controller receives minimal guidance and is expected to analyze, plan, and carry

out complex production control tasks independently and resolve most production, labor, machine, and material conflicts or shortages which arise.

The controller plans and coordinates most of the timing and integrated production efforts of many different departments or shops that are responsible for work on various segments of the product. The supervisor is informed of any situations that could impact on long-term production requirements.

The controller may consult with the supervisor to provide information needed by management, to report potentially troublesome situations, or to recommend corrective action in areas that extend beyond the area of the controller's authority. Completed work is reviewed only in terms of effectiveness in meeting and coordinating production requirements and deadlines.

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### **FACTOR 3, GUIDELINES**

#### **Level 3-1 -- 25 Points**

The employee is provided with specific and detailed guidelines, instructions, and forms for all important aspects of the assignment.

The employee works in strict adherence to the guidelines. Changes or deviations must be approved by the supervisor or a higher level production controller.

#### **Level 3-2 -- 125 Points**

The employee uses a variety of detailed guidelines in the form of production control data, worker and machine capabilities, material specifications, technical bulletins, user equipment logs, modification data, drawings, material orders, and historical manufacturing data.

The controller uses judgment to select and apply the available guidelines and all technical data to provide effective production control for the product(s). The controller makes only minor deviations to suit work situations that may arise. When significant deviations from the guidelines are required, the employee seeks guidance from the supervisor or a higher level controller.

#### **Level 3-3 -- 275 Points**

Guidelines are available for most assignments but they are not always specific or are not completely applicable to some products, processes, materials, or production operations.

The controller must use experience and judgment to interpret, adapt, or extend policies, guides, procedures, regulations, and precedents to new or different products and production operations. Since some guides may not be applicable, the employee analyzes the results and makes

recommendations for necessary changes. At this level, some positions have responsibility for preparing and testing new product assembly methods, procedures, and guidelines.

### Level 3-4 -- 450 Points

At this level, there is a significant lack of definitive or directly applicable guidelines and standard data. The controller usually refers to previous methods, procedural guides, and instructions which cover major production functional areas which are of limited use or application.

The employee exercises a high degree of initiative in searching out sources of information, much of it indirect or obscure, to develop project estimates and plans for control of complex production projects. The controller may depart from traditional criteria, methods, and procedures to develop new ones which may also require proposing new policies to obtain effective results, overcome unusual problems, and meet the individual program and customer requirements.

## **FACTOR 4, COMPLEXITY**

### Level 4-1 -- 25 Points

This is a trainee level where most of the assignments are in direct support of the work done by other production controllers.

Most of the tasks are clear-cut and directly related to the production control functions of the organization with few alternatives as to what needs to be done.

The results are monitored by others who use the employee's work products. Assistance is readily available and proficiency is readily achieved in a few months.

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### Level 4-2 -- 75 Points

At this level, the controller is rotated through a variety of tasks of a developmental nature for the purpose of providing knowledge of, and experience in, a range of standard functions, methods, and procedures for the proper control of material, labor, and funding for production.

As proficiency in basic production control is achieved, the employee is given responsibility for control of the manufacture or repair of a limited variety of items that essentially use the same processes and materials. The production machinery and equipment have been designed to carry

out the required production processes, and the workload and labor have been programmed well in advance of the immediate production phase.

Production control decisions are based upon objective evaluations using current and precedent data for the preparation of work orders, and the sequencing of machine processes, labor, and material allowances that present few problems for products of limited complexity.

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### Level 4-3 -- 150 Points

At this level, the employee is responsible for the advance planning or the immediate production control for the manufacture, construction, overhaul, or repair of a variety of types of products, of one or more complex products that have numerous components or subassemblies. The product may be a new type of equipment or system, made up of different complex components that require a large portion of the facility's general purpose machines which are adaptable to a variety of operations and processes. The work is programmed on a long-term basis (many months) and production control data are available.

Controllers who are primarily concerned with preliminary or advance planning of production operations make decisions about:

1. the broad span of actions involved (obtaining the materials, engineering data, skilled labor, test, and support equipment; controlling the funding, handling, and storage support; as well as programming the project into the facility workload);
2. selecting the methods which will make the most efficient and economical use of facilities and skilled labor; and
3. time-phasing these actions to obtain optimum efficiency. The controller observes manufacturing operations, monitors applicable reports, determines if production is proceeding according to schedule, analyzes causes for delay, takes corrective action, and makes adjustments to production schedules.

### Level 4-4 -- 225 Points

Production controllers at this level are assigned products or projects that are difficult and complex and require the application of a complete range of production control principles, techniques, and methodology to plan and accomplish control over their construction, manufacture, overhaul, or repair. Typical assignments at this level are prototype or developmental equipment, or equipment systems that are composed of a large number of different components and subassemblies, or products that represent long-term depot level major overhaul or repair. Examples include responsibility for a major segment, system, or compartmented zone of a spacecraft or a complex combat or strategic aircraft or ship, or comparable products (e.g., the propulsion system of a large

ship or nuclear submarine, the complex fire control and launching systems for sophisticated missiles, or other products of similar difficulty and complexity).

Controllers develop plans prior to the immediate production or availability phase and are faced with difficult problems due to the lack of standard data and guidelines for the equipment or project. Some controllers have to make difficult production planning decisions where there is a large amount of technical data and specifications. They exercise considerable judgment in identifying areas that are similar to previous production tasks to establish a framework for initial planning. They conduct research for pertinent information and consult directly with responsible officials to obtain missing technical data, specifications, and design information.

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The complexity and individual nature of each product or project and its own special requirements prevent the use of routine established production plans, methods, and procedures. Long-term overhaul work involves replanning production schedules and preparing justifications for additional funding for unplanned work discovered during the disassembly or tear-down of the product.

#### Level 4-5 -- 325 Points

Production control assignments at this level include a broad range of duties involving substantial breadth and depth of analysis, and consideration of numerous interrelationships and variables to develop production control plans and programs for very difficult and complex products or projects. Typically, they require multi-year funding and more than a year of preproduction planning and immediate production. The production process requires a wide variety of skilled trades for hundreds of thousands of worker-days to accomplish the project.

The most important function of controllers at this level is the complex coordination of the timing and sequence of: large amounts and wide varieties of materials; hundreds of work orders for the overhaul, modification, removal, repair, and replacement work by many skilled trade shops scattered about the facility and at various contractor locations across the country; and a multitude of requirements for new equipment and materials. Controllers make frequent adjustments to production schedules and prepare justification for additional funding for unplanned work discovered during the disassembly or overhaul of the product.

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Examples of this level of complexity are assignments which require the responsibility for both the preproduction planning phase as well as the immediate production control for the major overhaul and repair of a number of large strategic multiengine aircraft or several destroyers; the responsibility for construction of a large ship; the major overhaul of a nuclear powered submarine; or, the responsibility for the complex long-term major overhaul of any other weapon systems typically requiring 24-36 months of work to complete.

### **FACTOR 5, SCOPE AND EFFECT**

### Level 5-1 -- 25 Points

Assignments and tasks are specific, routine, and designed primarily to acquaint the employee with production control work processes and techniques, pertinent product characteristics, and applicable manufacturing, construction, and major overhaul or repair processes.

While assignments are primarily for training, the accuracy of computations and information given and received are used by others in the work unit. There is little impact or effect beyond the unit.

### Level 5-2 -- 75 Points

Assignments are designed to further increase and refine the controller's job-related knowledge and skills, and to provide assistance to higher graded controllers.

They have a direct affect on the planning, estimating, and scheduling of work, materials, and the effective use of labor and machines for the routine production operations of an uncomplicated product or for basic components of a complex product.

### Level 5-3 -- 150 Points

The work involves resolving a variety of conventional production problems and situations by the selection or adaptation of formal work methods and procedures, utilizing established or precedent criteria, and production plans.

Results of the work impact the effectiveness of operations of the activity. The goal is to achieve and maintain desired production levels for products that meet or exceed the original specifications and terms of acceptability established by the customer, and are consistent with efficient and economic operations.

## Level 5-4 -- 225 Points

At this level, the purpose of the work is to plan, develop, and implement production control programs of considerable breadth and complexity. The work involves establishing criteria, formulating effective production control programs, assessing the effectiveness of production programs, and investigating or analyzing a variety of unusual production problems and conditions.

The work affects a wide range of organizations within the industrial activity, and typically has application to other agency activities that are performing similar work at other locations. Completed assignments have a direct impact on the industrial mission of the agency and the safety and security of personnel in the organization to which the product must be shipped in full operational condition.

### **FACTOR 6, PERSONAL CONTACTS AND FACTOR 7, PURPOSE OF CONTACTS**

Match the level of regular and recurring personal contacts with the purpose of contact and credit the appropriate point value using the chart below.

#### Persons Contacted

1. Personal contacts are with other employees within the immediate organization or office, and in related production or support units. These include personnel in various occupations such as production foremen, general foremen, engineers, and supply and procurement personnel. Contacts are at work sites and by telephone.
2. Contacts are with other employees in the same agency but beyond the immediate organization. People contacted are generally engaged in different functions, missions, and kinds of work other than immediate production. They may be in a supporting role such as procurement, supply, budget, etc. Contacts occur within the same agency at regional, district, or field locations. Contacts are made by telephone, through correspondence, and in meetings.
3. Contacts at this level are with individuals from outside the employing agency as well as with agency program heads. They normally take place on the telephone and in person in a moderately unstructured setting. They are significant to the production control effort, and are normally established on a nonroutine basis. Such contacts may include contractors or personnel from other Government agencies who may provide work projects, funding, support services, equipment, machinery, labor, transportation, etc.

**Purpose of Contacts**

- a. The primary purpose is to obtain, clarify, or give facts, status, or technical information about labor, machines, materials, or specific operations concerning the production, overhaul, or repair of a product.
- b. Contacts are for the purpose of planning, coordinating, or advising on production efforts, or to resolve production problems by influencing or motivating production or support personnel. They are normally cooperative and have mutual production interests and goals.
- c. The purpose at this level is to influence, motivate, and persuade production shop and department supervisory personnel and others in positions of decision making authority to follow a different course of action. Such contacts often arise due to unexpected production material delays, or changes in production methods, procedures, requirements, priorities, etc. The controller must overcome objections of skeptical or uncooperative personnel and may have to negotiate on significant and/or controversial issues to achieve compromise or an alternative solution.

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**P U R P O S E**

	a	b	c
1	30	60	130*
2	45	75	145
3	80	110	180

\* This combination is probably unrealistic.

**FACTOR 8, PHYSICAL DEMANDS**

**Level 8-1 -- 5 Points**

Work for the most part is sedentary with no special physical demands. It may involve some walking, standing, bending, or carrying of light items.

**Level 8-2 -- 20 Points**

In the course of carrying out production controller duties, the controller is frequently required to stand, walk, and climb in industrial facilities where it is necessary to bend, crouch, stoop, reach, and lift moderately heavy items. The employee may also be required to perform these and other

functions in obstructed areas (e.g., in confining or potentially dangerous spaces in or around a ship, aircraft, or submarine under construction, overhaul, or repair).

## **FACTOR 9, WORK ENVIRONMENT**

### **Level 9-1 -- 5 Points**

The employee normally works in an office that involves everyday risks or discomforts which require the normal safety precautions. The area is adequately lighted, heated, and ventilated. Visits to production areas are infrequent and relatively free of hazards to the employee.

### **Level 9-2 -- 20 Points**

The employee works in an office part of the time, but production control duties necessitate regular visits to production areas which involve moderate risks and discomfort and require safety precautions (e.g., working near shielded or contained radiation sources, operating machinery, moving vehicles, and cranes; down in dry docks; on and around scaffolding; or in areas of high noise levels from engine test facilities). Visits take place in all weather conditions. The employee may be exposed to strong odors or fumes from paint, fuels, or chemicals used in the work processes. Regular use of safety equipment is an occupational requirement (e.g., hard hat, safety glasses, ear plugs, steel toe safety shoes and other kinds of protective devices).