

Position Classification Standard for Telecommunications Series, GS-0391

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SERIES DEFINITION

This occupation includes positions that involve 1) technical and analytical work pertaining to the planning, development, acquisition, testing, integration, installation, utilization, or modification of telecommunications systems, facilities, services, and procedures; 2) managerial and staff work in the planning, implementation, or program management of telecommunications programs, systems, and services or, 3) line supervision over communications operations, when such work includes responsibility for management functions such as planning, recommending changes and determining organizational structure, staffing, training, and budgetary requirements.

This standard supersedes and is to be substituted for the standards for the Communications Management Series, GS-0391, and the Communications Specialist Series, GS-0393, both issued in June 1969.

EXCLUSIONS

1. Positions concerned primarily with the use of digital computers and associated automatic data processing equipment when the paramount requirement is specialized knowledge of the equipment, operating systems, software development, and the operating methods and techniques necessary for planning and programming the automation of subject-matter work processes, rather than technical knowledges of communications requirements, processes, and techniques. Such positions are classified in the [Job Family Standard for Administrative Work in the Information Technology Group, GS-2200](#).
2. Positions that primarily involve performing or supervising communications equipment operation or closely related tasks which require knowledges of established operating practices and procedures such as tracing messages, compiling specified traffic and operational reports, and advising users of established message preparation and processing procedures, are classified in the appropriate communications operation series, such as the [Telephone Operating Series, GS-0382](#), [Telecommunications Processing Series, GS-0390](#), or the [General Communications Series, GS-0392](#).
3. Positions that involve the performance of management analysis, program analysis, budgeting, training, logistics, or similar functions pertaining to communications programs, but that do not require specialized knowledges of communications systems, concepts, techniques, and practices as the paramount qualification requirements, are classified in the occupation appropriate for the function performed, such as the [Management and Program Analysis Series, GS-0343](#), [Budget Analysis Series, GS-0560](#), or others.
4. Positions that require the application of professional engineering and scientific knowledges, or those that primarily require knowledge of the principles, methods, and techniques of a restricted range of engineering in the design, modification, or maintenance of communications equipment and facilities are classified in the appropriate occupation in the [Engineering and Architecture Group, GS-0800](#).

5. Professional engineering positions primarily concerned with applications of fundamentals and principles of professional engineering to computer hardware, systems software, and computer system architecture and integration. Such positions are classified to the [Computer Engineering Series, GS-0854](#).
6. Positions concerned primarily with performing work involving maintenance, installation, calibration, and troubleshooting of communications equipment when this requires a practical knowledge of electronics. Such positions are classified to the [Electronics Technician Series, GS-0856](#).
7. Positions primarily concerned with the business practices, rate structures, and operations of the communications industry and performing such functions as analyzing tariffs for the reasonableness and applicability of rate schedules, or conducting investigations in conjunction with regulatory and licensing functions are classified in the [Public Utilities Specialist Series, GS-1130](#).
8. Professional positions primarily concerned with applying the theoretical foundations of computer science, including system architecture and system software organization, the representation and transformation of information structures, and the theoretical models for such representations and transformations. Such positions are classified to the [Computer Science Series, GS-1550](#).

[NOTE: Some telecommunications specialists apply an understanding of basic electronics theory, concepts, and principles similar to those applied by engineers, although they apply less than a full professional knowledge of engineering and related scientific theory and principles. As an essential requirement in accomplishing the work, the telecommunications specialist applies knowledges of the communications needs of users, operational practices and procedures, message handling techniques, and similar specialized communications knowledges in addition to the quasi-engineering knowledges required.

Similarly, telecommunications specialists use knowledge of data processing equipment and communications related applications programs. The knowledge of automation/ADP equipment and processes applied by telecommunications specialists involves a practical understanding of automation concepts and communications interfaces and compatibilities for receiving, storing, processing, and/or transmitting of digital information within a system. This limited practical automation interface and compatibility knowledge is secondary to the primary knowledge requirement for communications theories, principles, concepts, and practices and does not involve or require specific or indepth knowledge of how computers work internally and/or how programs are developed. They define operating criteria, monitor installation, and perform testing to determine the quality and efficiency of automated equipment and software. They critique such performance so that computer specialists (Federal or vendor) may make corrections or adjustments in software or operating systems to provide the kinds and levels of service specified in telecommunications system requirements.]

OCCUPATIONAL INFORMATION

Telecommunications specialists are primarily concerned with the movement of information between locations. Information may be moved in the form of voice communications such as with radio or telephone (including cellular), data communications involving digital transmission between computers, computer terminals, facsimile stations, or video communications such as that used in teleconferencing.

They use knowledge of performance characteristics of communications equipment, systems, services, and transmission media. They must have some understanding of basic electronics theory and operating principles, the applications of existing and planned technology to communications requirements, equipment interoperability and compatibility, and the methods and techniques for acquiring equipment, systems, and services to accomplish information transfer.

Some specialists require knowledge of public utility and customer responsibilities involving customer premise equipment (telephone exchanges, switches, etc.), copper cable connectivity, cabling used inside and outside buildings, PBX (Private Branch Exchange) software, underground conduits, and microwave radio systems used for bypassing obstacles. Some need to use knowledge of building codes and standards in planning installations and connections.

Telecommunications work requires: (1) an understanding of electronic communications concepts, principles, practices, procedures, policies, standards, and operational requirements; (2) a technical knowledge of the operational and performance characteristics of communications equipment, automated control and network management systems, transmission media, and the relationships among component parts of telecommunications systems; and (3) the ability to apply specialized communications methods and analytical techniques. Some telecommunications work requires administrative and managerial skills and abilities.

To perform this work employees must possess the ability to:

- understand, evaluate, and translate the needs of communications users into requirements.
 - relate user requirements to existing technology, policies and priorities, systems capabilities, available technology and services, operating practices and procedures, terms/conditions of systems and service contracts, equipment and staffing requirements, costs and funding, and other supporting services required.
 - identify and direct, or coordinate the actions required to provide needed services.
- Employees in this occupation perform a variety of functions, including:

Developing plans, policies, and procedures

Some telecommunications employees perform staff level functions involved in long- and short-range planning. Some participate in planning for future systems and capabilities, for the short

(2/3 year) term, and/or for long-term (5+ years) projections of requirements and technology needed to satisfy them. They develop planning documentation to translate approved communications requirements into funded programs and projects. They review requests for communication services to develop detailed plans, set priorities for projects, prepare budgetary justifications, and coordinate the allocation of resources to implement plans and projects. They design networks and/or systems to meet planning concepts and objectives and to provide operating capabilities to accomplish mission requirements. They prepare or review equipment and facility specifications, monitor and resolve technical communications problems in the preparation of facilities and the procurement and installation of equipment, and develop and/or conduct operational acceptance tests. Some specialists are engaged in staff coordination for changes to plans and programs necessitated by technological developments, changed requirements or threat scenarios, or priority and funding changes.

Some employees develop and refine general systems planning and policy direction in providing direct support to requesters. They correlate technical conclusions concerning methods for meeting requirements, relative costs and advantages of alternate approaches, lead times, and supporting requirements. They negotiate with users concerning modifications of requirements to reduce anticipated technical problems or excess costs, and work out funding arrangements and schedules for providing required services. Some employees provide liaison between technical personnel developing the detailed design specifications and the using activities on problems or delays.

Procedures development and related aspects of the work involve various functions such as developing equipment operating, traffic handling, or work control and reporting procedures; devising numbering or routing identifier plans; allocating and controlling frequency usage; developing training programs; and similar functions concerned with the standardization, control, or guidance of communications programs. Assignments within this area may involve adapting guides to meet local operating situations; developing guides and controls for a network, system, or total communications program; or participating in interagency or international committees to establish standard methods and procedures. Some employees prepare test plans, procedures, and reports for system evaluations.

Defining and implementing requirements

Employees in this series provide technical assistance and guidance to communication system users, program managers, contracting personnel, and personnel in other lines of work and disciplines. This kind of work involves assisting using activities in defining their basic and contingent communications needs. It also involves establishing or advising on the interpretation and application of policies, standards, and procedures for evaluating current and future telecommunications requirements. Employees performing this work evaluate the validity of assumptions and the adequacy of analytical data provided by others. Projected needs are analyzed in terms of: policies and objectives for acquiring, expanding, improving, or integrating telecommunications systems; the degree to which requirements can be met within existing or planned systems; and the urgency and essentiality of requirements for nonstandard equipment, services, methods, or techniques.

During the implementation phases of installing or modifying systems, telecommunications specialists coordinate the actions required for carrying out the projects. They review plans and specifications for adequate analysis and justification of requirements, realistic cost estimates and implementation dates, and consideration of supporting requirements such as scheduling deliveries, availability of installation and test personnel, site preparation, and similar concerns. They develop or review the programming and funding documents to support the proposal. They resolve questionable aspects of vendor proposals with originating offices and technical and support personnel.

Some employees serve as telecommunications program managers or assistants, determining the actions required of various units in one or more agencies that must contribute to the project (e.g., systems design, construction, engineering, contracting, logistics, staffing, and procedures development) and establish coordinated schedules and milestones for these functions. They resolve problems or delays, adjust schedules, or divert personnel or equipment from lower priority work to meet critical milestones, and they determine the necessity and feasibility of providing temporary services from other facilities or mobile communications units if required implementation dates cannot be met or if implementation fails.

Conducting traffic analysis

Traffic analysis is conducted by some employees to measure traffic characteristics, quality of service, and how much equipment or service is actually used or needed for communications systems or segments of systems. They also develop or refine manual and automated traffic sampling techniques and reporting procedures. They develop methods or formulas for relating traffic loads to service quality and user needs for equipment and circuitry. The analyses may encompass all traffic of a system, traffic generated by specific users, traffic through one station or over specific access lines or trunks, or other combinations as required by the nature and purpose of the assignment. Traffic analysts compile and analyze data concerning the types and volume of messages or calls, holding or handling times, patterns and fluctuations in traffic flow, peak loads, busy periods, etc. They prepare reports reflecting trends, deficiencies in speed or quality of service, over- or under-utilization, or similar matters requiring further study or corrective action. Analyses of this nature are used as a basis for adding, deleting, or relocating circuits for efficient utilization. They support equipment and staffing allocations, provide historical data and trends for use in forecasting future needs, or isolate trouble spots which may require changes in operating procedures.

Directing operations

Some telecommunications managers provide direct line supervision over individual communications operating units, centers, or network control facilities. In addition to supervising operating staff, they evaluate the levels and quality of operations and take corrective actions to resolve problems such as excessive failures or delays, or high operating costs. They analyze trends in the nature and level of demands for services and balance user requests against available capabilities and costs. They analyze the feasibility of meeting additional requirements within existing capabilities or justify required changes in staffing, equipment, services, or operational procedures to maintain adequate levels of service at minimum cost. They provide for operational

continuity, analyze and develop costs for life cycle management of telecommunications assets, including maintenance criteria, policies, and quality control considerations relative to specific operating units. Telecommunications managers determine requirements for and evaluate the results of test programs to measure the effectiveness of the communications system and services under various contingencies, and they evaluate and recommend appropriate actions to improve operational effectiveness and efficiency.

Managing telecommunications programs

Some employees perform as managers or staff specialists working on a variety of major telecommunications programs, requirements, or projects. Some are involved in forecasting requirements for an organization and reviewing technology to identify potential applications for future communications systems. Some work within current technology to develop detailed lists of equipment and capabilities to satisfy current requirements, generally for large systems or segments of large systems such as those for a major military command, a large geographic area, multiple agencies, or a major nationwide and/or international network within a single agency. Some review, refine, and translate requirements into language that can be used in contracting processes. Some work on the implementation of approved projects and contracts by planning the installation and acceptance phases in terms of timing, statements of work, staff levels, test and evaluation criteria, and the acceptance and turnover to users of systems. Some develop personnel staffing levels for current and long-term requirements, or for emergency networks. Others review for and recommend specific kinds of communications security systems according to operating requirements, classification or sensitivity of planned traffic, and locations of stations.

Managing the radio frequency spectrum

Operation of radios requires frequency assignment and control of operating frequencies. Employees involved in management of the radio frequency spectrum must know radio frequency propagation as related to atmospheric characteristics and potential for interference. Frequency assignments are designed for compatible use with other users of the radio frequency spectrum such as fixed station and mobile radio (including sea and airborne), radar, navigational aids, satellite links, and other systems operated by the military, other government and civil agencies, and by private citizens. They must know the operational and technical characteristics of the communications-electronic equipment which provide these services and know the national and international rules and regulations pertaining to use of the spectrum. Specialists involved in radio frequency management control frequency allocations to ensure compatible operation. Some negotiate for operational authority among Federal agencies and with foreign governments for domestic and international operations.

Providing for data transmission

Modern communications systems commonly include the capability for data transmission (i.e., digital electronic text, voice, or video signals that are processed by automated transmission, switching, and receiving devices). Telecommunications employees must know, therefore, about the kinds of transmission media available and planned within the Government and by commercial vendors including both terminal and intermediate processes for moving signals from point to point. This includes knowledge of signal speeds (usually expressed in bit rates) on a variety of military systems and/or commercial trunk and circuit arrangements; local and intermediate switching devices; the kinds of automated electronic switching, control/management systems, transmission systems, and terminal equipment planned for the new systems; compatibility of operating protocols between automated systems within the network and at the user destinations; and compatibility of terminal instruments among users. These knowledges allow the employees to define technical specifications for systems and obtain for the user exactly the kinds of service required. Often this background becomes the basis from which employees develop plans, functional descriptions, concepts of operation, specifications, statements of work, and clauses for contracts.

Performing test and evaluation

Some employees are primarily engaged in test and evaluation functions. They design, develop, monitor, coordinate, and conduct a variety of technical and operational tests and evaluations of a wide range of communications equipment, systems, networks, and facilities. They review and analyze test data, make technical judgments, and prepare decisions and recommendations concerning quality, acceptability, and need for changes and improvements.

Telecommunications deployment planning

Some employees within the military services formulate and develop telecommunications concepts, organizations, documentation, software studies and analyses, and appropriate test and evaluation documentation for deployed, reserve, and contingent military units. This work is distinguished from the development efforts of other telecommunications specialists in dealing with battlefield communications requirements for mobility, survivability, security, reconstitutability, redundancy, and responsiveness to rapidly changing communications requirements. Work of this kind requires a fundamental understanding of deployment and organizational concepts of the supported battlefield units in addition to technical equipment or systems. Employees performing this work must be knowledgeable about the kinds of communications equipment deployed among units, planned replacements, order of deployment, logistical support such as spare parts and maintenance availability, numbers and kinds of personnel required to support each kind of system, and the operating characteristics of various kinds of communications equipment, services, and systems. They must also consider staff turnover and training lead times, test and evaluation criteria, and interoperability among U.S. units and between U.S. and foreign allies.

Acquiring communications

Some employees focus on the acquisition aspects of telecommunications and related services, equipment, and/or facilities by lease or purchase directly from vendors/carriers or through separate governmental procuring activities, such as the Defense Communications Agency or the General Services Administration. Acquisition of dedicated services, equipment, and/or facilities involves: analyzing the service requested in consideration of operational need and economy; estimating the operating costs to include availability of funding and billing to appropriate sources; monitoring and managing the requested service throughout the service life which includes coordination with users, procuring offices, and vendors/carriers; and serving as contact point to resolve problems associated with the services acquired.

Employees performing this work must know the kinds, levels, and quality of services provided by a variety of vendors and contractors. They assure that requirements are stated clearly and completely, that terminology and conditions are understandable by both users and suppliers of equipment and services, and that performance criteria are clearly defined. They must also assure that telecommunications requirements for commercial telecommunications equipment, services, and facilities are properly stated to allow for open and fair competition among potential providers.

TITLES

Telecommunications Specialist is the title for all positions in this series involved in the technical work of developing specifications and planning telecommunications programs and projects involving the gathering of materials, coordinating schedules, testing equipment, services, and software for performance acceptability, and related work connected with the acquisition, technical acceptance, installation, testing, modification, and replacement of telecommunications equipment, services, and systems.

Telecommunications Manager is the title for all supervisory and managerial positions in this series responsible for program planning and development, directing operations, and/or administering the overall telecommunications programs of an organization. Agencies are authorized to supplement these titles with parenthetical suffixes to identify specialties within the Telecommunications Series.

GRADING POSITIONS

Full performance level positions should be evaluated on a factor-by-factor basis, using the factor level descriptions provided in this standard. Only the designated point values may be used. Trainee and developmental positions may be evaluated by using the [primary standard](#) for the Factor Evaluation System to apply factor levels lower than those reflected in the standard. The primary standard and related FES standards may be used to evaluate factors of positions that significantly exceed the highest factor levels described in this standard. More complete

instructions for factor levels, the concepts underlying each level, and for evaluating positions are in the [Introduction to the Position Classification Standards](#).

Positions which meet the criteria of the [General Schedule Supervisory Guide](#) for evaluation as supervisors should be evaluated by the criteria in that standard. Positions which include performing both supervisory and line work may be evaluated both by the criteria in this standard and by the Supervisory Grade-Evaluation Guide. If a position is evaluated at a higher level by means of the standard or the supervisory guide, it should be graded at that level if the higher level work meets the criteria for mixed positions in the [Introduction to the Position Classification Standards](#).

GRADE CONVERSION TABLE

Total points on all evaluation factors are converted to General Schedule grades as follows:

GS Grade	Point Range
5	855-1100
6	1105-1350
7	1355-1600
8	1605-1850
9	1855-2100
10	2105-2350
11	2355-2750
12	2755-3150
13	3155-3600
14	3605-4050
15	4055-up

FACTOR LEVEL DESCRIPTIONS

FACTOR 1, KNOWLEDGE REQUIRED BY THE POSITION

Level 1-6 -- 950 Points

Employees at this level apply practical knowledge of commonly applied telecommunications principles, concepts, and methodologies in performing independent work involving specified segments of large projects or taking full responsibility for well-defined projects requiring knowledge of standardized telecommunications approaches, methods, and techniques.

Skill in weighing the impact of variables such as cost, variations in electronic and other equipment characteristics, equipment availability, and the kinds of communications required such as voice, text, and/or data.

Employees use knowledge of standards, criteria, equipment, or techniques to resolve well-defined questions or conditions. Knowledge of standardized telecommunications equipment, services, and processes or established variations is used to review existing contractual relationships for equipment and services, network requirements, compatibility with established long distance commercial telephone systems, protocol requirements, and on-line security protection.

For some employees, this includes knowledge of operating characteristics and interoperability requirements for a variety of specialized communications systems such as office automation networks, satellite and video telecommunications, and digital networks.

Illustrations:

Employees use this level of knowledge to perform work such as:

- serving as a team member conducting telecommunications surveys, and/or in planning and implementing specific assignments that comprise part of an overall telecommunications system plan and the installation of new systems or services.
- coordinating with members of the team and with subject-matter specialists to resolve basic compatibility issues concerning other, related telecommunications systems which may impact on the plans and recommendations of the team.
- monitoring administrative processes such as the status of funds for a project; the schedule and rate of progress in construction efforts; overlapping requirements of the organization; and adjusting current requirements to provide compatibility with planning efforts for system changes.
- directing the operations and planning for a local communications center when such work includes evaluating the efficiency of operations and making recommendations involving equipment and system efficiency and the need for replacement, adequacy of services and equipment provided by the organization and by vendors, staffing levels and hours of operations, and similar responsibilities concerned with the technical adequacy of operations and the staffing required to maintain required levels of service.

Level 1-7 -- 1250 Points

Employees at this level use knowledge of a wide range of communications concepts, principles, and practices or indepth knowledge in a particular functional area of telecommunications (transmission media, data transfer, ground to ground radio, switching systems, or other very specific aspects of telecommunications) to accomplish work processes through the use of telecommunications devices, methods, services, and facilities. It is also used to review, analyze, and resolve difficult and complex telecommunications problems.

Knowledge of either a broad range or indepth specialized knowledge of some or all of telecommunications operating techniques, digital and analog communications requirements (sometimes including video), local and wide area networking, and procedures used by Federal and industry organizations. Also required is knowledge of agency policy and, in some cases, policies and practices of other agencies, and knowledge of sources of technical data necessary to evaluate alternative approaches for satisfying communications requirements. This knowledge is used to define, coordinate, plan, and satisfy user requirements for telecommunications equipment, systems, or services, or is used in reviewing, developing, or interpreting communications policies and procedures.

Some employees use an indepth knowledge of contracting procedures and legal requirements to develop wording for proposals and contracts, review proposals for technical adequacy and vendor ability to perform, and/or to monitor vendor performance in fulfilling contractual requirements for equipment and services.

Illustrations:

Employees use this level of knowledge in a variety of technical and staff functions to perform work such as:

- interpreting policy originating from higher organizational levels, developing local policy and implementing instructions, providing authoritative interpretations and guidance to management officials and other telecommunications specialists, and resolving issues involving conflicting telecommunications requirements.
- relating specific elements of telecommunications systems to a general set of requirements. This includes evaluating the interrelationships between telecommunications equipment, circuits, automated switches, operating protocols and characteristics, control/network management systems, interconnectability and interoperability of equipment, switches, and circuits, and software requirements that differ in kind from those presently used. Or it may involve, for example, knowledge of radio, control facilities, and satellite linkages with ground communications systems and the required hardware, frequency, software compatibilities and interconnections necessary for such systems.
- coordinating the objectives and plans of one of more specialized communications programs, by making accommodations in study or survey recommendations to allow for conflicting program requirements, developing and/or implementing procedures and practices to cover multiple communications objectives, serving as technical or management specialist on committees and work groups to identify and resolve or to assign responsibilities for resolving communications issues, or performing similar work.
- planning and implementing telecommunications installation procedures involving a variety of available communications equipment, services, security methods and procedures, and operating techniques. These include automated switches, control

devices, and transmission media to link a number of different kinds of voice and/or data requirements through automated processors and modems, communications security systems linking terminal equipment passing highly classified or sensitive information, telephone equipment with multiple operating capabilities (e.g., voice, data, video), operating characteristics and advantages of using fiber optic cables, packet switching systems, ways to link together previously noncompatible equipment and systems, and computer software packages for direct application in communications switches and terminals.

- planning for telecommunications programs as a staff specialist at a major organizational level (agency, bureau, major military command) when such work involves applying policy direction to specific operating requirements and developing guidance for applying communications policy, procedures, techniques, equipment, and methods to a variety of work situations and various degrees or levels of telecommunications controls.
- responding to problems or questions involving implementation of communications guidelines at lower levels and when inspecting operating communications systems for adequacy, efficiency, and need for improvement.
- considering and applying several alternative approaches to problem solving according to the communications requirements for highly specific situations such as availability of materials, relationships with other communications programs, and cost/benefit considerations.
- maintaining awareness of military communications equipment developments and planning for deployment of equipment, staff, logistical support, and movement of strategic and tactical systems for active duty military units and for a variety of units which may be activated in emergencies.
- controlling and coordinating a segment of the electromagnetic frequency spectrum, allocating frequencies for major organizational elements (bureaus, major military commands) and assigning specific frequencies for long- and short-term uses for a department or agency.

Level 1-8 -- 1550 Points

(See [Digest 17](#) for interpretation of the "mastery" requirement, below.)

Employees at this level are expert in a major area of telecommunications specialization (e.g., data communications, frequency management, deployment planning, and network switching) or have demonstrated mastery of general telecommunications policy, technology, and programs. They use comprehensive knowledge of communications policy requirements to function as technical authorities in assignments requiring the application of new theories, concepts, and developments to communications problems not susceptible to treatment by accepted methods, technology, or procedures. In addition to mastery of the specialty area, employees at this level use knowledge of their own and other telecommunications specialties to make decisions or

recommendations to significantly change, interpret, or develop policies or programs. For program planning functions, employees use knowledge of scientific and technological advances in related fields of electronics and automation.

Illustrations:

Employees use this level of knowledge to perform such duties as:

- making decisions and developing policies in very difficult assignments such as planning for significantly new or far-reaching telecommunications program requirements, or leading or participating as a technical expert in interagency groups for resolving problems in existing telecommunications systems and programs requiring innovative solutions.
- planning, organizing, and directing studies to develop long-range (e.g., 5+ years) studies and forecasts and advising top level agency telecommunications and subject-matter managers on applying new developments and advances in telecommunications techniques in the specialty area.
- recommending methods for enhancing efficiency of telecommunications systems through modifications and applications of evolving technology.
- evaluating and making recommendations concerning overall plans and proposals for major agency and interagency telecommunications programs.
- implementing national level guidance in agency standards, guidelines, or policies for major telecommunications programs.

FACTOR 2, SUPERVISORY CONTROLS

Level 2-3 -- 275 Points

The supervisor defines the employee's scope of responsibilities and the objectives, priorities, and deadlines. The employee is provided assistance with unusual situations which do not have clear precedents.

The employee plans and carries out the successive steps involved and handles problems and deviations in accordance with agency standards, previous training, established practices, or system controls as appropriate in the assignment or specialty area. Assignments typically require the employee to do some preliminary investigation to ascertain interrelationships that affect the plan of attack.

Work is reviewed for technical aspects such as efficiency of equipment compatibility, network specifications, whether documentation complies with agency guidelines, or whether the equipment or service specifications adequately set forth technical telecommunications and

acquisition requirements. Techniques used by the employee during the course of the assignment usually are not reviewed in detail.

Level 2-4 -- 450 Points

The supervisor sets the overall objectives and, in consultation with the employee, determines timeframes and possible shifts in staff or other resources required.

The employee, having developed expertise in a particular telecommunications specialty area (e.g., transmission media, and terminal equipment compatibility or in general telecommunications requirements, is responsible for planning and carrying out the work, resolving most of the conflicts that arise, integrating and coordinating the work of others as necessary, and interpreting policy on own initiative in terms of established objectives. The supervisor is kept informed of progress, potentially controversial matters or unusual conditions with far-reaching implications.

Completed work is reviewed from an overall standpoint in terms of feasibility, compatibility with other work, or effectiveness in meeting requirements or achieving expected results.

Level 2-5 -- 650 Points

The supervisor provides administrative direction with assignments in terms of broadly defined missions or objectives.

Within these broad areas of direction the employee has responsibility for planning, designing, and carrying out major studies or projects, and for coordinating with experts both within and outside the organization.

Results of the work are considered technically authoritative and are normally accepted without change. If work is reviewed, the review is concerned with matters such as fulfillment of objectives, effect of advice on the overall requirements, or precedents which might apply to other programs. Recommendations for new projects and alteration of objectives are usually evaluated for such considerations as availability of resources, broad goals, or national priorities.

FACTOR 3, GUIDELINES

Level 3-3 -- 275 Points

Guidelines available and regularly used in the work are in the form of agency policies and implementing directives, manuals, handbooks, and locally developed supplements to such guides, such as site plans, equipment specifications, software characteristics, and detailed work procedures and directives that supplement agency directions. The guidelines are not always applicable to specific conditions or there are gaps in specificity in application to specific telecommunications requirements. This level also includes work situations in which the employee must interpret and apply a number of subject-matter policies and regulations such as those that apply to access to and protection of LAN terminals and data bases.

The employee uses judgment in interpreting, adapting, and applying guidelines, such as instructions for using particular versions of software, security requirements, or variations in available hardware. The employee independently resolves gaps or conflicts in guidelines according to project requirements, consistent with telecommunications program objectives.

Level 3-4 -- 450 Points

Guidelines provide a general outline of the concepts, methods, and goals of telecommunications programs. Those regularly applied at this level are not specific in how they are to be defined, applied, and monitored. In some cases available guidelines have been purposely left open to local interpretation in order to allow for variations in local and remote environmental conditions that affect the nature of communications systems designed to satisfy overall policy direction. Also included at this level are broad guidelines issued by other agencies such as the Federal Communications Commission. Due to the lack of specificity, the guidelines are often insufficient to accomplish particular objectives.

The employee uses initiative and resourcefulness in researching trends and patterns, to deviate from traditional methods, and to implement new and improved communications methods and procedures. The employee establishes criteria for identifying and analyzing developments in telecommunications technologies, and for measuring organizational effectiveness in achieving telecommunications objectives and goals. Assignments at this level may also include responsibility or developing guides for use by telecommunications specialists at the same and lower levels in the organization.

Level 3-5 -- 650 Points

Guidelines are nonspecific and stated in terms of broad national or departmental policies and goals, often in obscure technical terminology which necessitates extensive interpretation to define the extent and intent of the coverage.

At this level, the employee is a recognized technical authority on the development and interpretation of communications guidelines, policies, legislation, and regulations covering one or more substantive communications programs and the organizations which administer them.

At this level, employees must use initiative, judgment, and originality in researching and interpreting existing national policies and legislation, in determining when new or revised legislation is needed, and in researching and preparing recommendations for the content of such legislation. Employees, as recognized technical authorities in one or more communications specializations, develop regulations and communications policies. They take into account the effects of conflicting laws, policies, and regulations, and they develop or recommend communications policies and regulations which are flexible enough, despite changes in technology, to remain current in meeting program objectives. Some employees interpret national and departmental policies, goals, and legislation in developing telecommunications guidance and regulations which apply to the conduct of diverse telecommunications and subject-matter program operations, governmentwide. Some employees at this level represent their organizations as technical experts on interagency committees and task forces formulating general program guidance for implementation in a variety of different operating environments where variations in methods and techniques may be needed in order to meet particular communications program objectives.

FACTOR 4, COMPLEXITY

Level 4-3 -- 150 Points

Employees perform various duties requiring the application of different and unrelated processes, methods, practices, techniques, or criteria. Assignments characteristic of this level include: developing alternate telecommunications plans for a facility by describing options in levels of available services, equipment operating features, and the costs involved. They develop recommendations for mixed data and voice systems using standardized technology or define local telecommunications requirements where there is concern about linkages with other existing systems. Employees compile, analyze, and summarize information relating to the designated telecommunications requirements; develop plans for approaches that may be undertaken; define the level of risk involved for each plan; develop the costs for implementing each of several options; and recommend a course of action to meet assignment objectives.

The work requires consideration of program plans, applicable policies, regulations, and procedures, and alternative methods of implementing and monitoring telecommunications requirements. Employees make decisions about how to do the work based on relationships among organizational needs and objectives, costs, requirements defined by telecommunications guides, and related information such as mission statements, levels and kinds of service requested, lead times required, and supplemental equipment needed to tie in to Government and/or commercial services and facilities.

Recommendations or actions taken by the employee concern implementation of specific telecommunications systems. Alternatives are based on factual information such as funding

available, minimum regulatory requirements, delegated authorities to local managers to accept different levels of risk, and others that define the range of acceptable telecommunications decisions, programs, or systems related to the assignment.

Level 4-4 -- 225 Points

Employees perform assignments consisting of a variety of telecommunications duties involving many different and unrelated processes and methods applicable to well-established areas of telecommunications installation, operations, planning, and administration. Typically, such assignments involve broad telecommunications program requirements or a specialized area, requiring analysis and testing a variety of established techniques and methods to evaluate alternatives and arrive at decisions, conclusions, or recommendations. Programs and projects may be funded by or under the cognizance of organizations with differing telecommunications requirements or variations in ability to fund system implementation. Established telecommunications policies, practices, procedures, and techniques may have to be varied for a number of locations or situations which differ in kind and level of telecommunications, complexity, and local conditions or circumstances. The results of analysis may have to be coordinated with other organizations and telecommunications systems to assure compatibility with existing and planned systems and demands on available resources.

In deciding what is to be done, the employee typically assesses situations complicated by conflicting or insufficient data which must be analyzed to determine the applicability of established methods, the need to digress from normal methods and techniques, the need to waive particular standards, or whether specific kinds of operating waivers can be justified.

Employees take actions based on their interpretation of considerable data and the application of established telecommunications methods, equipment, techniques, and objectives.

Level 4-5 -- 325 Points

Employees perform assignments involving various projects, studies, or evaluations requiring the application of many different and unrelated processes, differing regulatory criteria and procedures, and significant departures from established practices. Typically, there are conflicting requirements, the problems are poorly defined or require projections based on variable information or technological development, or some degree of change must be anticipated in mission requirements, related telecommunications systems, or funding requirements. The work typically involves evaluating and introducing advanced equipment and techniques for which new criteria and guides must be developed.

Employees reach decisions and plan actions to develop and implement new methods and techniques that satisfy policy and operational requirements. At this level, the employee makes recommendations for changes in basic policy issuances and for implementing instructions covering established communications techniques, practices, and methods based on personal analysis of very general policy directives and objectives. Decisions regarding what needs to be done are complicated by the number and nature of existing security controls, regulatory

guidance, overlapping requirements, or organizational, environmental, or similar considerations that have an impact on the ability to apply established methods.

Many other factors may require extensive analysis and coordination to implement telecommunications plans and programs, such as conflicting requirements or objectives that may be imposed by other agencies. Some employees must consider probable areas of future change in system designs, equipment developments, or comparable aspects of projects in order to prepare for later changes.

Technical difficulty is exceptional, such as in developing new communications techniques, establishing criteria, or developing new information and approaches to solving problems. Employees who develop and interpret broad communications policies and regulations must consider the total range of existing policies, procedures, laws, and regulations in relation to telecommunications program goals and objectives.

Level 4-6 -- 450 Points

Employees at this level perform work which involves analyzing, planning, scheduling, and coordinating the development of legislation or telecommunications policy issuances that direct the course of telecommunications programs across organizational lines within Federal agencies or other organizations involved in providing telecommunications equipment and services for the Federal Government. Typically, assignments having such characteristics involve participation, as an expert authority, or resolving problems or issues concerning several phases of telecommunications policy development and implementation for a variety of programs in one or more fields of telecommunications. Such work often involves overlapping, conflicting, or difficult to resolve telecommunications objectives and requirements. Work at this level may also include problem-solving efforts as a member on interagency committees or in national telecommunications organizations involved in reviewing, analyzing, developing, and issuing national policy directives affecting telecommunications policies and programs throughout the Government.

Decisions and recommendations made by the employee require extensive consideration and analysis of very broadly defined, or undefined, issues and problems, often exploratory in nature, in areas where useful precedents do not exist and establishment of new concepts and approaches is required. Difficulty is also encountered in identifying and recommending alternate ways to resolve conflicting objectives which result from important national programs (e.g., National Communications System, and Federal Telecommunications System) that may overlap or conflict with other equally important telecommunications system priorities.

The employee's actions require continuing efforts to establish concepts or programs, or to resolve previously unyielding problems in establishing and administering telecommunications programs. The work requires extensive coordination and support of other experts both within and outside the organization.

FACTOR 5, SCOPE AND EFFECT

Level 5-3 -- 150 Points

The work involves resolving a variety of conventional telecommunications problems, questions, or situations, such as those where the employee is responsible for monitoring established communications systems and programs, or performing independent reviews and recommending actions involving well-established criteria, methods, techniques, and procedures.

The employee's work products, advice, and assistance affect the efficiency and operational effectiveness of established telecommunications systems, and contribute to the effectiveness of newly introduced programs and facilities requiring telecommunications support. The effect of the work is primarily local in nature, although some systems may be part of multifacility or nationwide/international networks with interlocking telecommunications requirements.

Level 5-4 -- 225 Points

The work involves investigating and analyzing a variety of unusual telecommunications problems, questions, or conditions associated with formulating projects or studies to substantially alter major telecommunications systems, or establishing criteria in an assigned area of specialization (e.g., establishing telecommunications operating instructions for wide area computer networks in a number of different locations), or evaluating the effectiveness of existing voice, data, and/or video systems.

The work affects telecommunications operations, installation, and maintenance practices in a number of different functional operations within the organization and, to a lesser extent, in vendor operations. It contributes to developing solutions to telecommunications problems and questions, and in developing alternatives and options to meet requirements in a variety of physical and environmental circumstances. Recommendations and technical interpretations affect the level of telecommunications funding required to meet program objectives in subject matter or administrative programs or services. Program and project proposals frequently cut across component or geographic lines within the agency (e.g., across bureaus, commands, regions) and may also affect the budgets, programs, and interests of other Federal agencies or private industrial firms.

Level 5-5 -- 325 Points

Work at this level involves such things as: isolating and defining issues or conditions where a number of project efforts or studies must be coordinated and integrated; resolving critical problems in agencywide systems; or developing new approaches and techniques for use by others. Typically, employees at this level serve as expert consultants in telecommunications policy for a broad area of communications requirements, in an area of specialization, or as project coordinators in carrying out one-of-a-kind projects.

The employee's advice, guidance, or work results affect developmental aspects of major telecommunications program definition and administration throughout the agency. Such work significantly affects the work methods to be applied by other telecommunications specialists throughout the agency and sometimes in other agencies or vendor operations.

Level 5-6 -- 450 Points

The work involves planning, developing, and carrying out vital telecommunications projects and programs which are central to the mission of the agency and, in some positions, of national or international impact. The work is oriented to long-term efforts on new, significantly enhanced, or significantly changed telecommunications systems and programs that will establish precedents in the affected areas and often influence major functions of other agencies. The work at this level includes looking beyond current technology, reviewing state-of-the-art and planned advances for potential solutions to user requirements.

This work often involves policy matters either establishing the agency's position on broad national issues; or developing telecommunications policies and programs of importance to national security, economic, political, or emergency preparedness programs. Typically, work at this level is accomplished as a project leader on committees and working groups which include key program or policy representatives from within the agency or from other agencies or departments and the results affect operational requirement and funding levels across agency lines.

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

Match the level of recurring personal contacts with their directly related purpose and credit the appropriate point value using the chart below. The contacts may be face-to-face or by telephone, radio, or similar audiovisual means.

Persons Contacted

1. Employees within the immediate organization, office, project, or work unit, and in related or support units.

AND/OR

Members of the general public in very highly structured situations (e.g., the purpose of the contact and the question of with whom to deal are relatively clear).

2. Employees in the same agency, but outside the immediate organization. Persons contacted generally are engaged in different functions, missions, and kinds of work (e.g., representatives from various levels within the agency such as headquarters, regional, district, or field offices, or other operating offices in the immediate installations).

AND/OR

With the general public, as individuals or groups, in a moderately structured setting. The contacts are generally established on a routine basis, usually at the employee's work place; the exact purpose of the contact may be unclear at first to one or more of the parties; and one or more of the parties may be uninformed concerning the role and authority of other participants.

3. Individuals or groups from outside the employing agency in a moderately unstructured setting (e.g., the contacts are not established on a routine basis, the purpose and extent of each contact is different, and the role of each party is identified and developed during the contact). Typical contacts are with telecommunications specialists and managers from other agencies, contractors, or technical level representatives of foreign governments, or members of professional organizations, the news media, or public action groups. This level may also include contacts with the head of the employing agency or program officials several managerial levels removed from the employee when such contacts occur on an ad hoc or other irregular basis.
4. High-ranking officials from outside the employing agency at national or international levels in highly unstructured settings. This includes high ranking officials of Federal, State, major municipal, or foreign governments or of comparable private sector organizations.

Purpose

- a. To obtain, clarify, or give facts or information regardless of the nature of those facts (i.e., the facts or information may range from easily understood to highly technical).
- b. To plan, coordinate work, or advise on efforts and resolve operating problems by influencing or motivating individuals or groups who are working toward mutual goals and who have basically cooperative attitudes.
- c. To influence, motivate, interrogate, or control persons or groups. At this level the persons contacted may be fearful, skeptical, uncooperative, or dangerous. Therefore, the employee must be skillful in approaching the individual or group in order to obtain the desired effect, such as gaining compliance with established policies and regulations by persuasion or negotiation, or gaining information by establishing rapport.
- d. To justify, defend, negotiate, or settle matters involving significant or controversial issues. Work at this level usually involves active participation in conferences, meetings, hearings, or presentations involving problems or issues of considerable consequence or importance. The persons contacted typically have diverse viewpoints, goals, or objectives, requiring the employee to achieve a common understanding of the problem and a satisfactory solution by convincing them, arriving at a compromise, or developing suitable alternatives.

P U R P O S E

C
O
N
T
A
C
T
S

	a	b	c	d
1	30	60	130*	230*
2	45	75	145	245
3	80	110	180	280
4	130*	160	230	330

*These combinations are probably unrealistic.

**FACTOR 8, PHYSICAL DEMANDS
AND
FACTOR 9, WORK ENVIRONMENT**

Match the level of physical demands with the work environment and credit the appropriate value using the chart below.

Physical Demands

1. The work requires no special physical demands. It is sedentary, performed in a comfortable posture. It may involve some walking, standing, bending, or carrying of light items.
2. The work requires some physical exertion such as long periods of standing, walking over rough or uneven surfaces, recurring bending, crouching, stooping, stretching, reaching, and recurring lifting of moderately heavy items.

Work Environment

- a. Work is performed in an office or similar setting involving everyday risks or discomforts which require normal safety precautions. The work area is adequately lighted, heated, and ventilated.
- b. The work is performed around moving parts, carts, or machines; at construction or other work sites where equipment is being installed and/or removed requiring the wearing of hardhats, safety shoes, or similar situations involving moderate risks or discomforts which require special safety precautions such as wearing protective clothing or gear such as masks, boots, goggles, gloves, or shields.

WORK ENVIRONMENT

P
H D
Y E
S M
I A
C N
A D
L S

	a	b
1	10	25
2	25	40