# CLASSIFICATION SYSTEM

# FOR SCIENTISTS AND ENGINEERS

# UNDER THE PROPOSED DEMONSTRATION PROJECT*

NAVAL WEAPONS CENTER

18 July 1980

*Authorized by Title VI of the Civil Service Reform Act of 1978.

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# INTRODUCTION

A new position classification system for all scientists and engineers at the Naval Weapons Center (NWC) has been developed according to the guidelines set forth in the "Proposed Demonstration Project"* and incorporating inputs made by the technical community. The new position classification system utilizes four classification levels for all scientists and engineers as outlined in the "Proposed Demonstration Project". Level I encompasses the previous grades of GS-5 through GS-8, Level II encompasses GS-9 through GS-11, Level III encompasses GS-12 and GS-13, and Level IV encompasses GS-14 and GS-15.

The guidelines in the "Proposed Demonstration Project" mandated designing a position classification system that would be flexible, manageable and understandable. The system was to incorporate the rank-in-person concept while retaining the rank-in-job distinctions through classification into four broad classification levels.

The inputs from the NWC technical community confirmed the need to recognize the rank-in-person concept. Also, the technical community considered the existing standards as too complex, rigid and not representative of the work performed at NWC with its mixture of matrix and line management, and the heavy interaction with sponsors.

There was almost universal suggestion that the traditional position descriptions (PD's) be made more simple and standardized and yet retain the option of making them more specific as needed to provide for unique qualifications, tasks or types of work. There were also strong desires expressed to more actively involve line managers in the classification process.

Past procedures placed the classification responsibility almost entirely in the Personnel Department and diminished the responsibility of supervisors in this process. One major goal of the Demonstration Project is to now get the first-line supervisor more involved in classifying positions to enhance the equity and utility of the classification process. However, to obtain a high level of supervisor cooperation in position classification, a new classification system must be designed and presented in a manner that makes it readily accepted by supervisors. This acceptance is realizable if it is simple to use, and involves less work and less writing than now.

The approach that appears to uniquely meet the above criteria is to simplify the position classification system by writing one standard for each of the four levels outlined in the "Proposed Demonstration Project". These new standards clearly delineate those factors critical in classifying positions and are written in a format similar to the traditional "PD" format. A comprehensive compilation of typical duties, responsibilities, and level of difficulty of work at each classification level is listed in a "menu" format under each relevant classification factor area. An individual description of work is then determined by making a specific "menu" selection from the classification standard for a given level. The new classification standards are computerized to allow for an automatic listing of selected "menu" items from the standard for a print-out of a specific description of work.

*"Proposed Demonstration Project; an Integrated Approach to Pay, Performance Appraisal, and Position Classification for More Effective Operation of Governmental Operations" as authorized by Title VI of the Civil Service Reform Act of 1978.

The new standards are intended to be a living document which will be flexible and adaptable as the complexion of major work at the Center changes. Procedures are described in the section "User Instructions" for recommending changes to the standards and other classification system components as the need arises.

As described above, the new classification system has been designed to recognize the personal contributions and capabilities of individual employees as well as the duties and responsibilities of the position. To emphasize this new approach in classification, the name of the document describing duties and responsibilities is now changed from the traditional "PD" (Position Description) to "PAC" (Personal Activities and Capabilities). The acronym emphasizes the commitment to the rank-in-person concept as well as the rank-in-job distinctions.

With this new classification system, standardized PAC's will be written for all positions covered by the Demonstration Project at Levels I, II, III and IV. Since all the new classification standards are computerized, each specific PAC will be identified uniquely by a special code and stored for record purposes. Therefore, the new classification system lends itself readily to PAC analysis. For instance, it would be very easy to ascertain from the computer PAC data bank how often individual "menu" items appear. The relative complexion of an organizational unit on Center could be evaluated by computer analyses of the respective PAC "menu" selections. Position and personnel mobility should be increased with the new classification system because similar work is easier to recognize, and PAC's are more quickly prepared and approved in personnel rotations and reassignments.

The classification standards for each level will be readily available to all personnel at the Center. These standards will make clear distinctions between Levels I, II, III and IV work and can serve as a career planning guide for Center personnel. This guide can be useful in setting both near-term and long-range individual career development plans.

A new position classification system has been introduced here that appears to inherently satisfy the guidelines set by the Demonstration Project and the needs of the NWC technical community. It is simple, flexible, understandable, standardized yet specific, and more meaningful and less time consuming than before.

## USER INSTRUCTIONS

All the information necessary for preparing and classifying "PAC's" is included in this notebook. The preparation of a "PAC" simply involves filling out a "PAC" Coding Sheet according to the instructions in this section and turning in the PAC Coding Sheet to get the computer print-out of the specific PAC. The computer printed PAC is then submitted through management channels according to the instructions in this section.

## FORMAT OF CLASSIFICATION STANDARDS AND "PAC" SYSTEM

The format for the new classification standards/"PAC" system is best understood by referring to the classification standard for Level III positions which is included in the section "Classification Level Standards," page 27. The factors which are critical to classifying a position are included. The standard begins with items A1 and A2 which are a listing of a variety (menu) of duties and responsibilities typical to this level of difficulty. The next major factor area in the standard is the impact of the position, items B1 and B2, where several measures of the impact of judgments, decisions and originality are listed. Item C1 gives a "menu" section for the scope of the supervision given commensurate to this level. The nature of contacts required of the positions is included in "menu" format, as item D1, to be more specific in the requirements for persons contacted and reasons for contacts for the position in the organization. The next two major position classification factors are controls over the position and qualifications, items E and F, which are standard to all positions at this level and are written in narrative format with no specific variation. The next factor, item G, is an EEO responsibility for supervisors and automatically prints out on the "PAC" when the "PAC" Coding Sheet is checked "supervisory." The last factor, item H, is inserted as a concluding heading within the standard to allow for additional specific information to be separately attached to the "PAC," if deemed necessary, to adequately describe the work being classified.

To prepare a specific "PAC" based on this standard merely means to make a selection from the "menu" for each of the six classification factors for the level. Therefore, each position being classified would be a specific selection from a fixed standard.

## PREPARING THE "PAC" CODING SHEET

The preparation of a PAC under this sytem simply involves filling out a PAC Coding Sheet (see page 1).

PAC Number: The supervisor first writes in the PAC number as provided by the Department Staff Office. PAC numbers are assigned as follows:

| Sample: | 80 | 39 | 001 |
|---|---|---|---|
| | Year | Code | Sequential #'s Within Year |

Employee's Name: The supervisor inserts the employee's name to ensure correlation with the computer printed PAC.

Series and Title: The supervisor selects one of the series and titles currently authorized by the Office of Personnel Management (OPM), such as "Electronics Engineer" or "Physicist." The list of approved series and titles is on page 2.

Level: Next, the tentative determination as to classification level (e.g., III) would be inserted. The supervisor should verify this tentative classification level determination after completing the PAC Coding Sheet by checking the classification standard for the next level above and the next level below the tentative selected level. The classification standards are correlated from level to level to make it easier for the supervisor to make this determination.

A sufficient criterion for a position to be classified at a given level is the existence of at least one check from that level standard under each of the six classification factors (A1, A2, B1, B2, C1, and D1).

The "menu" items checked on the "PAC" Coding Sheet must be selected from only one classification level.

NWC Code: Insert the NWC organization code, e.g., 3311.

Supervisory Position: Check "Yes" or "No" to indicate whether the position is supervisory. Check "Yes" only if the position involves full supervisory responsibilities and includes duties, such as:

- planning work to be done
- assigning work to subordinates
- evaluating their performance
- advising and guiding employees on technical work and administrative matters
- recommending personnel actions, resolving complaints and handling disciplinary actions.

Do not check "Yes" if the position is for a project leader, a project engineer or other positions requiring supervision of less than three employees on a full-time basis or having less than the full range of supervisory duties and responsibilities.

Functional Code: The functional code is checked as to whether the position is "Research," "Development" or "Test." The functional codes are described on page 3. Choose the code which represents the paramount or predominant requirement for the current position. For example, "Development" work typically involves test work which is incidental to the development process. Therefore, if the test and evaluation work performed by an employee is incidental to the emloyee's development work, the proper functional code to check is "Development."

Specialty Area Codes: Enter the two digit code numbers, selected from the descriptions starting on page 6, for the primary specialty area, such as "27" for "Fuzing Systems," and for as many as two additional specialty areas, such as "13" for "Electro-Optics" and "17" for "Signal Processing." The specialty area code descriptions are intended to be "representative" of NWC areas of work performed by scientists and engineers. An employee does not have to perform every item

mentioned in the description to warrant selecting a given specialty area code. Specialty area codes should be selected which reflect current job requirements and are not intended to be used to reflect an employee's total qualifications' background.

Primary Specialty Area Code: The primary specialty area code should be selected which most nearly describes an employee's paramount or predominant job requirements. For example, a program manager who is primarily responsible for program management duties and secondarily must be an expert in fuzing systems should be coded "49" for "Technical Manager" as the Primary Specialty Area Code and "27" for "Fuzing Systems" as a secondary specialty area code. In another example, a program manager who must first and foremost be an expert in fuzing systems, and that expertise is more important to getting the job done than the program manager skills, should be coded "27" for "Fuzing Systems" for the Primary Specialty Area Code and secondarily "49" for "Technical Manager."

Employees designated as "Deputy" or "Assosciate" who serve as full deputies or associates to the head of an organization should be coded to the same specialty area code as the organizational head.

Selection of "Menu" Items (Classification Factors A1 through D1): The supervisor reads progressively through the classification standard for the given level (e.g., the Level III classification standard which starts on page 27) and selects and checks only those "menu" items that apply to the position being classified. As stated earlier, a sufficient criterion for a position to be classified at a given level is the existence of at least one check from that level standard under each of the six classification factors (A1, A2, B1, B2, C1, and D1). There is no "menu" selection for classification factor E, Controls Over the Position, and factor F, Qualifications, since these factors are standard to all positions in a given level and will automatically print out on a PAC for that level. The next factor, G, is an EEO responsibility for supervisors and automatically prints out on a PAC when the PAC Coding Sheet is checked "Supervisory."

The "menu" items written for each factor in the classification standards are intended to be "representative" of duties, responsibilities, impact of position, supervision given and nature of contacts of NWC scientists and engineers at a given level. An employee does not have to perform every thing in a "menu" item for that "menu" item to be selected and checked on the PAC Coding Sheet.

"Menu" items are not intended to be mutually exclusive so there is some overlap from item to item within a given level. Items should be checked which are most nearly "representative" of an employee's predominant duties. For example, design and development duties usually include preparation of design documentation. The "menu" item describing the preparation of design documentation would normally be checked only if design documentation is an employee's paramount or predominant duty.

A primary use of the PAC is as a "building block" in the performance planning process. The criterion for selecting an appropriate number of "menu" items is the essentiality of an item in describing an employee's work and whether that item will be used in the performance planning process. Accordingly, the PAC should "track" with the performance plan. The number of "menu" items selected is

not additive. The selection of several menu items under each classification factor does not necessarily enhance the worth of an employee's position. The resulting PAC is a standardized description of current work performed by an employee. It is not intended to describe in fine detail everything that an employee does, has done or can do.

The last factor, H, is included on the PAC Coding Sheet to allow for optional specific information to be separately attached to the PAC, if deemed necessary, to adequately describe the work performed. The supervisor checks "Yes" or "No" on factor H to indicate whether additional information will be attached. Information attached to the PAC under factor H will become a part of the official PAC but will not be stored in the computer nor will it appear on the computer printed PAC. The PAC is intended to be a standardized description of work performed by an employee and as such will normally be an adequate description for most personnel actions. Some positions may require unique skills or knowledges that the supervisor would like to record. Additionally, some employees may perform some "menu" items at a higher classification level but not sufficient to warrant the higher classification. In such instances, the supervisor could check "Yes" and attach additional specific information to the PAC.

## SAMPLE STANDARD "PAC'S"

Using the classification standards and the "PAC" Coding Sheet, four descriptions were prepared as sample "PAC's" for study. Those included are for an Electronics Engineer, Level I, Junior Professional (JP); Physicist, Level II; Operations Research Analyst, Level III; and Supervisory Mechanical Engineer, Level IV. These sample standard "PAC's" are computer print-outs of the information indicated on the "PAC" Coding Sheet and of a corresponding "menu" selection from the classification standard for the specific position being described. Note that the position Title, Level, NWC Code, Supervisory Code, Functional Code, Specialty Area Codes and "menu" items are shown.

By referring to the sample "PAC" for a Physicist at Level II for a closer review, it is seen that this position is in "NWC Code 3311" and in the "Development" of "27" "Fuzing Systems" as a primary specialty area. Two secondary specialty areas of "13" "Electro-Optics" and "17" "Signal Processing" are indicated to be more specific of work area. The "PAC" follows with those items selected from the "menu" for the Level II classification standard. The "menu" selection is illustrated by the non-consecutive sub-letters under each classification factor in the sample "PAC."

## ADDITIONAL ATTRIBUTES OF CLASSIFICATION SYSTEM

There are several additional attributes of the new classification system. One desirable feature is the "PAC" can be prepared without a requirement for writing. In classifying a position, a supervisor will only be allowed to make a "menu" selection without written modifications. Changes to the standards can be recommended by submittal of the "Change Recommendation Form" (see last page) to the Classification Review Panel for consideration of incorporation into the official classification standard for a given level. Since "PAC" writing is not

required in the new system, it eliminates supervisory writing style and ability as a hidden consideration in position classification. Also, the new classification standards are written in an itemized style which allows the supervisor to quickly learn and scan the standards for a level to make specific "menu" selection for a position.

## CLASSIFICATION EQUITY

The new classification standard/PAC system has some built-in checks and balances in assuring position classification equity. First, all position classifications are determined, reviewed, studied and approved from a common set of standards. The first-line supervisor prepares the "PAC" and submits it to the second level supervisor (e.g., Division Head) fors approval. The second level supervisor can check the specific selection of "menu" items with a minimum of effort, return to the originator for suggested changes, or forward on to the Personnel Department via the Department Head. Department Heads can override a subordinate's approval and return the "PAC" to the originator with suggested changes. The "PAC" will be forwarded to the Personnel Department for classification action by a Personnel Management Advisor (PMA) and for implementation of the official personnel action. To provide more equity throughout the Center, the Personnel Department (through the PMA's) is authorized to audit positions.

## CHANGE RECOMMENDATIONS

Supervisors are not allowed to change specific "menu" items in the classification standards. However, if there is no item in the standards to cover work performed, the supervisor should then submit the "Change Recommendation Form" with a recommended "menu" item to the Classification Review Panel. The Classification Review Panel will consider the recommendation and either incorporate the recommended item into the standards or return it to the originator with the reasons for not adopting the recommnendation.

The specialty area codes have been written to describe virtually all of the technical work done on the Center. Work performed by some employees may be so unique as to not be covered by an existing specialty area code. The supervisor should then submit the "Change Recommendation Form" with a recommended rewrite of an existing specialty area code or a recommended new specialty area code to the Classification Review Panel. The recommendation will be considered and either adopted as a re-written or new specialty area code or termed "Unique" and incorporated into the "PAC." This "Unique" specialty area code will be adopted only for the primary specialty area code. The determination of "Unique" will be made principally when there are insufficient numbers of employees to warrant writing another specialty area code.

## ORGANIZATIONAL PAC'S

This is intended to be a supervisor's classification notebook so a section titled "Organizational PAC's" has been provided to store all the individual PAC's for your organizational group. A supervisor can retain in this section copies of individual PAC's for review, update and recordkeeping purposes.

If you experience difficulty in preparing PAC's or are uncertain as to the procedures and instructions, please call your Department Personnel Management Advisor (PMA) for assistance. The PMA will be happy to provide the help you need.

## TERMS DEFINED

### Supervisor/Supervises:

When the terms "supervisor" or "supervises" are used in the classification standards, they are intended to apply to persons having full supervisory responsibilities for at least three employees with supervisory duties, such as

- planning work to be done
- assigning work to subordinates
- evaluating their performance
- advising and guiding employees on technical work and administrative matters
- recommending personnel actions, resolving complaints, and handling disciplinary actions

This definition does not include project engineers or project leaders who supervise less than three employees on a full-time basis or have less than the full range of supervisory duties and responsibilities.

### Organizational Group:

The term "organizational group" is intended to be the formally designated organization of which the employee is an immediate member. For example, "Supervises an organizational group . . ." means the employee is a first line supervisor with full supervisory duties and responsibilities for a section, branch, program office or equivalent group. In another example, for an employee who "Serves as technical staff specialist and consultant for an organizational group . . ." who reports directly to a Division Head, the organizational group is the division. For an employee who "Serves as technical staff specialist and consultant for an organizational group . . . " who reports directly to a Program Manager, the organizational group is the program office. In another example, for an employee whose "Judgments impact organizational decisions . . . " who reports directly to a Division Head, the organizational group is the division.

### Major Program:

A Center program, generally a line item in the Department of Defense (DoD) budget, requiring regular contact with DoD and/or Navy sponsors and coordination across Center organizational lines and usually with other services.

### Major Proposal:

A Center technical proposal that solicits work in an existing or new specialty area which is being emphasized, closely reviewed and monitored by top Center management.

Major Impact:

The results of the incumbent's work, tasks, responsibilities, and use of his expertise guide and influence technical and management decisions relative to allocation of resources and emphasis of work at the Center.

Major Scope:

The complexity and difficulty of the incumbent's work, tasks or responsibilities require interfacing and coordination across organizational lines and a thorough understanding and recognition in a specialty area(s).

Moderate Scope:

The complexity and difficulty of the incumbent's work, tasks and responsibilities require proven expertise in a specialty area, but this work is usually performed within an organizational group with limited interfacing across organizational lines.

More Than Average Difficulty and Complexity:

The nature of the incumbent's work, tasks or responsibilities require an in-depth understanding of a specialty area and ability to make innovative contributions in this specialty.

# PAC CODING SHEET

PAC NO. _____

EMPLOYEE'S NAME: _____

SERIES: _____ TITLE: _____

LEVEL: _____

NWC CODE: _____

SUPERVISORY POSITION: YES _____, NO _____

FUNCTIONAL CODE: (1) RESEARCH _____, (2) DEVELOPMENT _____, (3) TEST _____

SPECIALTY AREA CODES: (1) PRIMARY _____, (2) OTHERS _____, _____

A. a_____
b_____
c_____
d_____
e_____
f_____
g_____
h_____
i_____
j_____
k_____
l_____
m_____

A2. a_____
b_____
c_____
d_____
e_____
f_____
g_____
h_____

B1. a_____
b_____
c_____
d_____
e_____
f_____
g_____

B2. a_____
b_____
c_____
d_____
e_____
f_____
g_____

C1. a_____
b_____
c_____
d_____
e_____
f_____
g_____

D1. a_____
b_____
c_____
d_____

H. Yes _____
No _____

## TITLES*

| SERIES | TITLE |
|---|---|
| 28 | Environmental Protection Specialist |
| 150 | Geographer |
| 180 | Engineering Psychologist |
| 340 | Program Manager |
| 401 | Biological Scientist |
| 801 | General Engineer |
| 806 | Materials Engineer |
| 808 | Architect |
| 810 | Civil Engineer/Structural Engineer |
| 830 | Mechanical Engineer |
| 850 | Electrical Engineer |
| 855 | Electronics Engineer |
| 861 | Aerospace Engineer |
| 893 | Chemical Engineer |
| 896 | Industrial Engineer |
| 1301 | Physical Scientist |
| 1310 | Physicist |
| 1310R | Research Physicist |
| 1320 | Chemist |
| 1320R | Research Chemist |
| 1321 | Metallurgist |
| 1350 | Geologist |
| 1515 | Operations Research Analyst |
| 1520 | Mathematician |
| 1529 | Mathematical Statistician |
| 1550 | Computer Scientist |

*These titles and series are authorized by the Office of Personnel Management (OPM).

# FUNCTIONAL CODES

**R**
**Research**

All positions responsible for either theoretical or experimental investigations in science with the objectives of increasing knowledge through the discovery of new facts and advancing the state-of-the-art. Examples include: the discovery of new physical phenomena or the application of known phenomena in new ways, the development of new materials and the characterization of the properties of materials.

**D**
**Development**

The performance of exploratory, advanced and engineering development of components, subsystems and systems. This includes the utilization of state-of-the-art technologies, origination of new concepts and inventions and the application of mathematical, scientific, engineering, and practical knowledge to the process of conceptualization and detailed designing. Those positions which provide technical and managerial analysis and support are included (e.g., production support, fleet introduction, fleet support, logistics support, operational/intelligence analysis and the associated administration of such efforts). Positions responsible for facilities and utility systems are also included.

**T**
**Test and Evaluation**

All positions responsible for the performance of test programs and evaluation programs during all phases of a system development and life cycle. Includes performances of laboratory environmental tests and studies, field tests, design and development of instrumentation and test facilities.

# SPECIALTY AREA CODE TITLES

Specialty Area Codes

(01) Inorganic Chemistry
(02) Organic Chemistry
(03) Physical Chemistry
(04) Analytical Chemistry
(05) Applied Mechanics
(06) Thermodynamics and Statistical Mechanics
(07) Detonation Physics
(08) Geophysics
(09) Metallurgy
(10) Non-Metallic Materials
(11) Solid State
(12) Optics
(13) Electro-Optics
(14) Microwave
(15) Ordnance Components and Devices
(16) Instrumentation/Telemetry
(17) Signal Processing
(18) Electronic Components Design
(19) Electronic System Engineering
(20) Electro-Mechanical Engineering
(21) Structural Design
(22) Mechanical Design
(23) Radar Systems
(24) Navigation Systems
(25) Propulsion and Power Systems
(26) Weapons Control Systems
(27) Fuzing Systems
(28) Guidance and Control
(29) Avionics
(30) Aerodynamics and Exterior Ballistics
(31) Stores Management Systems
(32) Aircraft Integration and Support
(33) Aerodynamic Decelerator Technology
(34) Electronic Warfare
(35) Military Operations Analysis
(36) Systems Analysis
(37) Mathematical Modeling and Simulation
(38) Data Assessment
(39) Software Engineering
(40) Computer Hardware and Digital Systems
(41) Environmental Test and Evaluation
(42) Reliability/Maintainability Engineering
(43) Quality Engineering
(44) Technical Documentation
(45) Production, Deployment and Fleet Support
(46) Contract Monitoring
(47) Facilities Engineering
(48) Safety
(49) Technical Manager
(50) Technical Management Staff

Specialty Area Codes (Cont.)

(51) Technical Supervisor
(52) Administrative Supervisor
(53) Project Engineer
(54) Electromagnetic Compatibility Engineering (EMC)
(99) Unique

# SPECIALTY AREA CODES

## 01
## Inorganic Chemistry

Conducts syntheses, prepares and manufactures new or known inert or explosive inorganic compounds and inorganic polymers. Studies, designs, improves and develops reactions, procedures and processes for the synthesis of inorganic compounds and polymeric materials.

## 02
## Organic Chemistry

Conducts syntheses, prepares and manufactures new or known inert or explosive organic compounds, including monomers and polymers thereof. Studies, designs, improves and develops reactions, procedures and processes for the synthesis of organic compounds. Studies the chemical behavior of organic compounds and polymeric materials.

## 03
## Physical Chemistry

Investigates, determines, correlates and predicts physical and chemical properties of compounds, polymers and mixtures thereof. Studies behavior of compounds and mixtures under the influence of external variables. Studies kinetics and mechanisms of chemical reactions. Includes studies in specialties such as electrochemistry, photo-chemistry, quantum chemistry, polymer chemistry and the characterization and analysis of high energy materials.

## 04
## Analytical Chemistry

Analyzes and identifies chemical compounds and mixtures. Work often involves the isolation and identification of processing variations or chemical contaminants that affect the physical or chemical characteristics of chemical compounds. May utilize a wide variety of tests, analytical procedures and instrumentation or may design and develop new analytical methods and instrumentation to accomplish these objectives.

## 05
## Applied Mechanics

Covers the investigation and theoretical explanation of continuum mechanics, kinematics, dynamics, elastic and plastic behavior, wave motion, fracture mechanics, and thermal-mechanical phenomena. Work often requires extensive mathematical analysis and analogies using digital computing with finite-element or finite-difference mathematical methods.

## 06
## Thermodynamics and Statistical Mechanics

Investigates, determines, correlates, and predicts relationships among properties of matter, especially those which are affected by changes in temperature, for example the conversion of energy from one state to another. These investigations of relationships among macroscopic properties can be based on the macroscopic postulates of thermodynamics or on the known characteristics and interactions of the microscopic constituents of the system.

07
Detonation Physics

Measures, models and utilizes the properties of explosive materials and their mechanical effects including interactions with solids, liquids and gases. Experiments concerned with detonating high explosives require an understanding of the detonation and combustion processes, the equation of state of shocked materials, fracture and failure processes, and the elements of hydrodynamic flow.

08
Geophysics

A wide externalization of physics, chemistry and mathematics that includes subtopics such as geodesy, oceanography, meteorology, seismology, aeronomy, terrestrial magnetism, electricity, etc. It draws heavily on physics of continua, thermodynamics, mechanics, chemistry, geology, etc.

09
Metallurgy

Covers work in the area of the structure, properties, processing, testing and application of metals and metallic alloys. Work is concerned with the chemical, mechanical, and physical properties of metallic materials in engineering design and/or production, and the application of such technologies as casting, welding, brazing, soldering, forging, finishing, plating, heat treatment, alloying and metallurgical processing. Requires a substantial knowledge of metallurgical testing, processing, failure analysis and fatigue studies, environmental corrosion and mechanical property determination. Persons in this category often act as advisors or consultants to design engineers throughout the Center, and may frequently be involved in the investigation or development of new materials and manufacturing processes.

10
Non-Metallic Materials

Studies the mechanical and physical properties of non-metallic materials employed in advanced aircraft, missiles, weapons and engineering test equipment. Work includes studies of the behavior of such materials in design applications, during processing and under environmental conditions. Materials include plastics, adhesives, paints, coatings, encapsulants, polymeric binders, insulators, ablators, ceramics, grease, lubricants, sealants, composite materials, glasses, high temperature materials, rubber, solvents, organic and non-organic fibers, paper, etc. Studies of physical properties include such specialized areas as viscoelastic testing of materials, flow characteristics of liquids, evaluation of protective coatings, environmental corrosion, studies of phase changes as a function of temperature (liquid-solid, crystal-crystal, glass transition, etc.), high temperature response of the material's chemical structure. Persons in this category are often involved in specialized testing or in conducting failure analyses of these materials, and frequently provide advice and assistance to design engineers throughout the Center and to outside commercial contractors.

11
Solid State

Includes those physical sciences devoted to the understanding of the structure, properties and behavior of materials. Includes the study of electrical, electronic, magnetic, thermal, optical, mechanical and other properties of materials such as metals, dielectrics and semiconductors to better understand basic physical mechanisms and how they influence the properties of technologically important materials and their eventual application. Research includes efforts to achieve an improved understanding of the interaction of radiant energy with materials, which requires working knowledge and utilization of, for example, quantum mechanics, electromagnetic theory, scattering theory, band structure and electronic processes. The above research effort relates to key problems in solid state detectors, critical optical components, and integrated optics. Other research topics in solid state physics include ferromagnetism, ferroelectrics, piezoelectrics, crystal structure, semiconductors, superconductivity and cryogenics, luminescence, photoconductivity, surface physics, electron diffraction processes, electroreflectance, and electron transport and conductivity phenomena.

12
Optics

Concerned with the generation, transmission and interaction with matter of electromagnetic radiation in the ultraviolet, visible and infrared spectral regions. Includes, but is not limited to the following areas: physical optics, geometrical optics, integrated optics, holography, photometry, spectroscopy, atmospherics, calorimetry, lasers, detectors and photo-sensitive materials. Investigations range from analysis of the transmission and absorption properties of the atmosphere to the design, evaluation and test of instruments, devices, detectors and lasers for Center programs.

13
Electro-Optics

Specializes in the use and design of equipment for the generation, propagation, detection and processing of electromagnetic energy in the frequency band from infrared through ultraviolet. Typical work consists of the integration of optical sensor and signal processing technologies in the design, development and test of instrumentation, guidance, fuzing and sensor devices for weapons systems. Examples of special knowledge requirements include optical propagation theory, properties of optical and electro-optical materials and equipment, optical signal processing techniques, microprocessors, lasers, and detector technology.

14
Microwave

Concerned with the theory, analysis and design of various microwave components and devices including detectors, antennas, radomes, oscillators, amplifiers, filters, mixers, couplers, transmission lines (waveguides, coax, stripline, microstrip, surface acoustic wave, etc.). Additional areas of endeavor are concerned with the analysis of the propagation medium and environment such as scattering, multipaths, propagation loss, etc., and investigations of nonlinear interaction of microwaves with plasma, as well as various materials.

15
Ordnance Components and Devices

Covers the design and production support of mechanical, chemical, electrical, and electromechanical ordnance components and devices. Examples are guns, bombs, rocket motors, fuze trains, detonators, and other pyrotechnics and explosive type devices. Work in this speciality requires not only a high degree of competance in normal mechanical and/or chemical design methods but the application of specialized fields of knowledge such as ballistics, detonation physics, explosive propagation theory, thermohydrodynamics, rocket motor internal ballistics, and applied explosive, pyrotechnic and propellant chemistry. The work may involve specialized testing of ordnance devices and/or the analysis of ballistic, fragment, blast or internal rocket motor ballistic data gathered in such tests.

16
Instrumentation/Telemetry

Includes the design and development of specialized electronic devices and equipment, and the integration of these with commercial or other components and instruments to provide capability for performing measurements on other devices, sub-assemblies, or systems, and for exposing electronic systems to simulated environments for the purposes of design optimization and/or performance evaluation. This includes the specification, calibration and maintenance, and operation of such instrumentation and facilities. This area also includes all telemetry work, both range and aircraft.

17
Signal Processing

Concerned with the design and analysis of circuits for the manipulation of signals, or their representation, as derived from various transducers in order to obtain estimates of certain parameters or characteristics of the signal which convey information. Manipulations are carried out in both the time and frequency domain and include operations such as spectrum analysis, correlation, adaptive filtering, signal integration and similar techniques.

18
Electronic Components Design

Involves the design, development and testing of analog or digital electronic components and/or circuits for potential use in a wide variety of electronic systems. Examples of special knowledge requirements include solid state physics and chemistry, integrated circuit design, computer-aided design, digital and analog circuit design, etc.

19
Electronic System Engineering

Concerned with the application of electronic design principles to meet specified functional performance requirements of electronic systems. Examples of specialized knowledge requirements include electronic systems, military electronic environmental constraints, computer technology, etc.

20
Electro-Mechanical Engineering

Concerned with the application of electro-mechanical design principles and analysis to meet specified functional performance requirements of electro-mechanical systems and packaging. Examples of specialized knowledge requirements include military electro-mechanical environmental constraints, servo-mechanisms, electro-mechanical manufacturing techniques, etc.

21
Structural Design

Concerned with the application of engineering and structural mechanics to the design of military hardware, test equipment and other machinery. This includes conducting stress analyses to determine the effects of materials, applied loads and operating environments as related to functional and structural design or operational useage. Covers both theoretical and/or experimental work to determine the effects of static and dynamic loads. Tasks include the formulation of theoretical models, the performance of structural, dynamic and vibration tests, and the correlation and analysis of experimental data. This often requires the use of computers and advanced mathematical methods to perform complex analyses.

22
Mechanical Design

Concerned with mechanical design of parts/components, and the mechanical integration of weapon systems, military hardware, equipment and test apparatus. Includes the layout and design of mechanical mechanisms, the selection of standard components for use in such mechanisms, and the design of parts for use in them. Work often involves structural analysis of members of mechanical assemblies, the properties of materials to be used in components, effects of temperature and heat transfer on the performance of the device and its components, the physical integration and packaging of electrical devices, and the mechanical operating characteristics of devices.

23
Radar Systems

Concerned with the theory, analysis, design, development, and/or test of radar transmitting and/or receiving systems for application throughout the microwave frequency spectrum. Examples of applications include communication, surveillance, homing, navigation, identification, etc. This area also includes processing of radar signals.

24
Navigation Systems

Involves research, development, test and engineering of navigation systems and subsystems and the integration of those systems and subsystems into command and control ($C^2$) systems. Specialty is highly interdisciplinary requiring knowledge in various fields including, but not limited to, control systems engineering, estimation theory, communication theory, oceanography, cartography, celestial mechanics, geodesy, computer science, mathematics, physics, especially electromagnetic propagation, etc. $C^2$ specialty includes knowledge of environmental effects and operational requirements imposed on navigation systems such as responsiveness, accuracy, blunders and ambiguities, and geometric factors affecting accuracy.

25
Propulsion and Power Systems

Concerned with vehicle propulsion systems (solid, liquid, and airbreathing) and associated auxiliary power generation and conversion systems and associated technology. Typical duties include assisting with feasibility studies of new weapon systems, generating new concepts, designing devices such as rocket motors, performing interior or exterior ballistic calculations, conducting trade-off studies, conducting tests and evaluation, and providing guidance to system developers.

26
Weapons Control Systems

Includes research, development, design, production, test, evaluation and life cycle maintenance of analog and digital systems and components for use in weapon control or fire control systems. Weapon control systems include the launcher, payload, delivery, fire control, guidance and control systems, as well as functions which control, set, display, test or evaluate the weapon or sensor system. Included also are necessary supporting documented computer programs and technical documentation.

27
Fuzing Systems

Definition, integration, design, development and test of electromagnetic, mechanical and contact fuzing systems, firing and initiation systems and subsystems for warheads and rocket motors. Requires knowledge of electro-optical, infrared, radar, active and passive proximity sensing and/or safety and arming devices, acoustics and pyrotechnics of related components as they apply to ordnance applications.

28
Guidance and Control

Concerned with the application of the principles of control theory to the analysis and design of guidance systems for aerospace (aircraft, missiles, projectiles, etc.) vehicles or devices. Classical and modern control theory techniques can be applied to the analysis and synthesis of open loop and/or closed loop systems intended for control, regulation or adjustment of electrodynamic, electromechanical or mechanical apparatus. The methodology may employ the formulation of system models and subsequent application of transform and/or state variable theory, digital or analog computer simulation and statistical techniques to predict response, stability and design adequacy. Within this specialty are included both theoretical studies of guidance concepts for application to specific problems, and the design, fabrication, and evaluation of hardware guidance components and systems.

29
Avionics

Concerned with the overall avionics system aspects of providing aircraft weapon system capabilities. Includes definition of overall system and subsystem requirements and constraints, translation of these into hardware, software and interface requirements for individual system elements, and providing for integration, subsystem test, and system qualification. May involve emphasis on analytic, hardware, or software system elements, such as weapon delivery mechanizations, real-time computer programs or radar systems.

30
Aerodynamics and Exterior Ballistics

Concerned with aerodynamics, thermal analysis and ballistic performance of aircraft, missiles, projectiles, rockets, bombs, parachutes, balloons, and other aerospace vehicles. Analysis and design of aerovehicle systems is often concerned with the integration of other system components such as propulsion, structure and control that affect performance and/or trajectories. Typical investigations involve development and employment of analytical and experimental methods to determine and/or analyze static and dynamic stability, vehicle handling and control characteristics, performance, surface pressure distribution, aerodynamic forces and structural loading, boundary-layer growth, heat transfer, high speed flows including real gas effects, flight dynamics, trajectories, chemical reactions and surface interaction from high-speed flows, and ballistic performance prediction. Modern computational techniques including digital and analogue computers are often used to calculate trajectories and performance of various types of Naval ordnance and aircraft mentioned above.

31
Stores Management Systems

Includes interface design and systems integration between external stores and the launch aircraft or platform. Involves design, development, test and evaluation of stores management systems, launchers, launcher adaptors, etc. Specific disciplines which relate to this area are digital circuit design, switching and control circuit design, multiplex (MUX) bus design, information and switching theories, techniques for selection, routing, time sharing, mechanical systems integration, electro-mechanical design, etc.

32
Aircraft Integration and Support

Concerned with the overall electrical and mechanical integration of existing and planned weapons, stores, weapons control and survivability equipment into existing and planned aircraft. The integration includes defining interfaces with core and mission avionics, mechanical integration, writing development specifications for the aircraft armament interface, technical support of aircraft developments and evaluating total system impact of proposed changes. Standardization of the aircraft armament interface is included in this area. Survivability includes development, test and analysis for reduction of combat attrition.

33
Aerodynamic Decelerator Technology

Includes the utilization of aerodynamic, structural, mechanical, textiles and related materials, and human factor interest as related to the analysis, design, development and experimental investigation associated with parachute systems, components, applications and associated equipment.

34
Electronic Warfare

Involves the integrated use of a wide variety of systems, equipment and techniques to degrade the performance of enemy systems and to enhance the performance of our systems in the face of enemy countermeasures. Techniques and systems used may be electromagnetic, optical, acoustic, etc. Examples of special knowledge requirements include a broad understanding of electronic warfare principles and practices, performance and design characteristics of own and foreign surveillance, communications, command control and weapons systems, system modeling and simulation, jamming techniques and equipment, overall systems engineering, etc.

35
Military Operations Analysis

Requires broadbased technical knowledge of weapon systems, military operations and mathematical analysis techniques for investigating and evaluating all facets of modern warfare. Analyses of operational and tactical situations are performed using data from military operations, intelligence, technical developers and industry to establish requirements and to provide advice and insight about probable effects of alternative solutions to military problems. Analysis results are expressed as quantitative and qualitative measures of system performance, kill capability, vulnerability, cost, etc. Studies range from technical examinations of the effects of alternative weapon system components to the operational examination of the interaction of land, air and Naval forces in global conflict. This diversity of study types requires the application of a wide variety of analysis techniques including manual simulations, computer modeling, probability and statistical methods, and war gaming.

36
Systems Analysis

Covers that area where various disciplines, specializations, methods, techniques and tactics are applied to conceive, analyze, design, evaluate and test weapons and other systems. A variety of physical and analytical disciplines such as mechanics, ballistics, aerodynamics, control, electronics, computer technology, mathematics, probability, statistics and engineering are applied. Mathematical modeling and simulation (digital, hybrid, analog) are important tools. Analyses of operational and tactical situations are performed. Data and information from multiple sources (military operations, intelligence, industry, technology, management, etc.) must be correlated, analyzed, evaluated and applied.

37
Mathematical Modeling and Simulation

Covers the development of mathematical models to describe a complex physical system and the varying of parameters in a simulation to study and optimize critical features of the system. Typical models are for components of weapons systems, entry weapons systems, operational environments, weapon kill probability studies, control studies, control theory, etc. These systems or subsystems may be simulated utilizing analog, digital or hybrid models as pure simulation or in conjunction with portions (hardware and/or software) of the total system. The models may or may not be required to operate in real time and could be written in any programming language.

38
Data Assessment

Covers data engineering, i.e., the areas of engineering and scientific data acquisition, processing, assessment, interpretation and analysis. This could include development of new and modification of existing mathematical models for reducing data, generation of computer codes for handling, processing, and displaying data, and the formulation of methods and techniques for analyzing and interpreting data.

39
Software Engineering

Covers any portion of the designing, developing, programming, debugging, documenting, maintenance, management and security of a software program where the software is the required end product. Ideally, the software produced would be used by many people over a long period of time as an aid to solving many scientific and engineering problems and/or as part of an ongoing system. This could include tactical software, operating system software, compilers, assemblers, file managers, graphics, simulations, structural analysis, data reduction, information retrieval, network analysis, cross compiling, etc. The software could be implemented on large scale computers or minicomputers and could be written in any programming language or machine dependent code.

40
Computer Hardware and Digital Systems

Concerned with the design and development of digital systems which include computers, particularly mini- and micro-computers. Included is the design of external digital hardware, development of test and operational programs, and hardware-software tradeoff studies. Requires knowledge of state-of-the-art hardware and the techniques of logic design, as well as the most basic kinds of computer programming at the assembly language and binary levels.

41
Environmental Test and Evaluation

Concerned with the measurement, analysis, prediction, and simulation of the environments to which weapons are exposed. Includes the development of plans, methods, techniques and specifications related to these factors, the review, evaluation and interpretation of environmental data, and the simulation of environmental models.

42
Reliability/Maintainability Engineering

Concerns the application and implementation of reliability principles and disciplines during the planning, design, acquisition, test and evaluation, and production of weapons systems and support equipment. Tasks include parts stress analysis, parts de-rating, failure modes and effects analysis, reliability and maintainability allocations and predictions, reliability and maintainability test planning and data reduction, statistical analysis, failure recurrence control, and other aspects of reliability and maintainability.

43
Quality Engineering

Concerns the application and implementation of quality assurance, quality control and quality engineering techniques, principles and disciplines during planning, design, fabrication, and test and evaluation of weapon and support systems. Types of efforts include quality assurance program planning, test and inspection plans, production process review, corrective action on deficiencies identified, quality procurement requirements, etc.

44
Technical Documentation

Provides engineering services to prepare design disclosure drawings from technical information supplied by design engineers. Reviews drawings for clarity and completeness of requirements, proper use of specifications, standards and drafting symbols, fits, tolerances and interface compatibility and producibility. Provides engineering services to determine specification requirements relating to program phase contracting philosophy. Provides engineering services for the application of configuration accounting and data management systems for all types of data.

45
Production, Deployment and Fleet Support

Concerned with management, control and engineering support of the initial procurements of newly developed equipment, systems or components thereof. This includes the engineering support and monitoring of changes to such equipment or systems being produced either in government or contractor facilities, technical efforts in support of the deployment of such new equipment into the Fleet, the investigation of deficiencies in newly deployed Fleet equipment, and the technical and procurement support of modifications to such equipment by product improvement, production design changes, retrofit or change in operational procedures, so as to eliminate system/equipment deficiencies.

46
Contract Monitoring

Monitors contractor research, analysis, design, development, test or manufacturing operations for the government. Furnishes technical advice and assistance to contractor. Reviews contractor data, reports, studies, designs, design documentation, tests or equipment to determine conformance with contract technical requirements. Conducts technical reviews to determine acceptability of changes to contract required services or equipment and/or determines the useability of items not meeting the requirements of the contract. Furnishes advice to government contracting officers on technical matters. Serves on government pre-award, source selection, post-award, plant survey, first article evaluation, design review, inspection, test review and performance evaluation teams.

47
Facilities Engineering

Responsible for the planning, design, layout and maintenance of real property (buildings, structures, utility systems, and associated plant and technical equipment). The facilities may be test facilities, industrial facilities, laboratories, or other specialized or general purpose facilities. Responsible for overseeing the construction of facilities as well as being responsible for land-use planning.

48
Safety

Covers positions involved with the safety aspects of the development of complex modern weapons systems and ordnance devices, or the management of risks involved in the testing and handling of new experimental ordnance devices or explosive materials. Includes the following specific types of efforts: (a) Systems safety work involving the engineering analysis of weapons systems to identify and eliminate safety hazards inherent in the design. This involves the systematic application of Navy safety policies to the design of military hardware, definition of system safety requirements, performance of various specialized types of hazard analysis, preparation of system safety plans, and assistance in the overall implementation of safety practices for modern complex weapons systems. (b) Work involving the management and control of risk in testing or industrial processing involving ordnance items or high energy materials. (c) Membership on Center level committees responsible for the establishment of safety operating and test policies, enforcement of Center-wide operating policy with regard to safety, granting specialized extensions to such policies, or overseeing broad areas of risk management involving highly hazardous ordnance operations for the Center. (d) Individuals that have direct delegated authority or responsibility for the management and assumption of risks on behalf of the Center involved in tests, transportation and handling of new experimental ordnance devices and materials.

49
Technical Manager

Provides overall direction, coordination and management of all facets and functions of a major technical program or several closely related programs. The incumbent serves as the single point of contact for all Center interfacing with headquarters, contractors, and other government activities involved in his program. Supervises a staff of assistant managers, project engineers, business managers and functional specialists (who may or may not be under his administrative control) for overall technical direction of his program. Is responsible for preparation of all planning documents associated with program organization, product development, material acquisition, program budgets, schedules, reports, and documentation. Implements national, headquarter, and local policies as they apply to his program.

50
Technical Management Staff

Assists Technical Manager in providing overall direction, coordination and management of all facets and functions of a major technical program or several closely related programs. Duties include planning, directing, scheduling, establishing priorities and monitoring expenditures on those technical efforts under his jurisdiction. Duties may also include arrangement for support of the program by other Center administrative units, managing controversial issues and furnishing policy guidance to other personnel or outside organizations. Extensive continuing contacts may be required with outside organizations including headquarters, sponsors and government contracting officers.

51
Technical Supervisor

Supervises an organizational element or function which is predominantly technical in nature. The primary focus of the time is devoted to directing and actively participating in the technical tasks of the personnel being supervised. The remaining time is devoted to purely administrative matters, such as hiring and rating personnel, generating minor budget elements, assuring implementation of local policy and procedures, attending meetings and writing non-technical memorandums.

52
Administrative Supervisor

Responsible for administrative management in supervisory positions at the Branch, Division or Department level. Responsibilities include organizing, staffing, budgeting and providing facilities and equipment required to carry out assigned tasks. Deals with day-to-day personnel problems. Interfaces and communicates both up and down the organizational chain to provide assignments, continuously review and report technical progress toward goals and objectives. Represents his organization at local and off-Center meetings and is generally empowered to make tentative or binding decisions and commitments pertaining to the work of his organization.

53
Project Engineer

Provides overall direction, management and coordination of a significant technical effort. Efforts are of such a size and scope as to require the work of a team to accomplish. Serves as leader or principal investigator of a team ranging from the assists of a junior professional and a few part time specialists to full multiple discipline teams involving more than a score of people. Responsible for determining the technical direction or approach, planning and scheduling work, monitoring budget expenditures, reporting of results, progress and overall accomplishments of the work. This effort, while significant, is limited in scope to a single area of study, investigation, or test of subsystem, system, or equipment.

54
Electromagnetic Compatibility Engineering (EMC)

Concerns the application and implementation of EMC principles during the planning, design, acquisition, test and evaluation, and production of weapon systems and support equipment. EMC encompasses Electromagnetic Interference (EMI), Electromagnetic Vulnerability (EMV), Electromagnetic Pulse (EMP) and Radiation Hazards (RADHAZ). Tasks include preparing EMC program plans, EMC design requirements and EMC test and evaluation of components, subsystems and complete weapon systems.

99
Unique

See attached Addendum

## LEVEL I

## CLASSIFICATION STANDARDS

### A. MAJOR DUTIES AND RESPONSIBILITIES

1. The incumbent's position involves one or more of the following duties:

   a. Receives training relative to Center policies and rotating working tour procedures and performs a minimum of three, usually four, working tours of approximately three months duration where at least two tours are outside the home code with at least one tour being outside the home code Department.

   b. Assists senior professional associates in the performance of detailed and routine work.

   c. Correlates data, recognizes discrepancies in results and performs specific operations relative to an experiment, study, design or research project.

   d. Performs specific and limited portions of a study, design, research project, experiment, test and/or other specific technical or scientific tasks.

2. The incumbent's responsibilities include one or more of the following:

   a. Responsible for the performance of specific tasks in rotating working tour assignments, including formal classwork and orientation training.

   b. Responsible for supporting a limited portion of a specific project, program, analysis, design, concept, technique, test and/or evaluation and assisting senior associates.

   c. Responsible for the work of non-professionals in special cases.

### B. IMPACT OF POSITION

1. The incumbent's judgments and decisions impact the position in one or more of the following ways:

   a. Limited exercise of judgments and decisions is required on detailed work, and in making preliminary selection and adaptation of technical alternatives.

2. Considering the impact of originality on the position, the incumbent does one or more of the following:

a. Uses standard professional techniques, methods or procedures requiring limited originality, but may contribute innovative analysis, concepts, designs, techniques or tests in tour assignments.

C. SUPERVISION GIVEN

1. The nature of the position requires the direction and guidance of the work of others. The supervision given by the incumbent is one or more of the following:

a. May give supervision to non-professionals, but this is not normally a requirement of the position.

D. NATURE OF CONTACTS

1. The position requires regular contact with the incumbent's immediate supervisor, and technical and administrative associates. It may involve contacts with other Center managers, sponsors, contractors, and associates. The position requires one or more of the following persons contacted and reasons for these contacts by the incumbent:

| PERSONS CONTACTED | REASONS FOR CONTACTS |
|---|---|
| a. Higher Management (Division Head, Department Head) | Limited contact usually in company with Senior S&E's to report results or as part of orientation program. |
| b. Technicians, Aides and Clericals | Seek assistance (may direct). |
| c. Project Manager | Receive technical direction. |

E. CONTROLS OVER POSITION

1. The incumbent is assigned to a specific Center organization and is under the supervision of the Head of that unit for administrative matters and tour assignments, and is also counseled by the Department's junior professional coordinator. The incumbent receives close supervision in tour assignments by a senior professional or Head of tour assignment organization. Work is reviewed frequently with primary emphasis placed on the incumbent's training development and placement as a professional at the Center. The incumbent's home code supervisor is kept informed and must approve changes in tour assignments or special problems encountered. The tour supervisor is kept informed of all phases of work performed. The incumbent may participate in formal class work offered by the Center with supervisory approval.

LEVEL I

F. QUALIFICATIONS

1. The incumbent must have a Bachelor's degree, or equivalent training and experience, in an appropriate technical field and otherwise meet all qualification requirements at the GS-5 level of the applicable standard in the Office of Personnel Management Handbook X-118.

G. EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITY (A Supervisory Requirement)

H. OPTIONAL SPECIFIC INFORMATION

# LEVEL II

## CLASSIFICATION STANDARDS

### A. MAJOR DUTIES AND RESPONSIBILITIES

1. The incumbent's position involves one or more of the following duties:

   a. Assists in preparing plans, schedules and the conduct of detailed phases of technical work as part of a major project.

   b. Invents, conceives, plans and/or conducts research, design, development, and/or test and evaluation in problem areas of moderate scope and complexity, or of average difficulty, using standard practices.

   c. Functions as an associate to an engineer or scientist who formulates, analyzes, models, evaluates and/or advises on the feasibility, suitability, adaptability and operational utility of systems and system concepts.

   d. Plans, arranges, schedules, conducts, collects data and/or analyzes results of subsystem tests and evaluations, or laboratory experiments which are part of a project, test or range instrumentation.

   e. Directs a small group of non-professionals, Level I professionals or specialists.

   f. Develops, modifies and/or tests equipment or subsystems that significantly adds to its operability and usefulness.

   g. Performs some state-of-the-art designs, however, generally takes advantage of conventional concepts in the development of new or improved systems, subsystems, equipment or tests.

   h. Prepares data packages for design documentation of new or improved equipment using applicable Navy documentation standards.

   i. Receives training relative to Center policies and rotating working tour procedures and performs a minimum of three, usually four, working tours of approximately three months duration where at least two tours are outside the home code with at least one tour being outside the home code Department.

2. The incumbent's responsibilities include one or more of the following:

a. Responsible for plans, coordination and/or evaluation for a specific technical area, or for application of conventional concepts or theories as applied to research, development, or test and evaluation projects.

b. Responsible for supporting a specific project and/or program assignment and assisting senior associates.

c. Responsible for the work of one or more junior professionals or non-professionals.

d. Responsible for supporting major analyses, system studies or research project involving major systems and concepts.

e. Responsible for the performance of specific tasks in rotating working tour assignments, including formal classwork and orientation training.

B. IMPACT OF POSITION

1. The incumbent's judgments and decisions impact the position in one or more of the following ways:

a. Work is expected to contribute to the development of new and/or improved techniques and procedures, equipment, materials, products, processes, tests and evaluations, or scientific methods.

b. Results of research, analysis, coordination, development, or test and evaluation effort contribute toward meeting project or program goals.

c. Judgments impact the objectives and progress relative to project or program goals, contractor operations, delivery of hardware to the Fleet, or respective verification tests and evaluations.

d. Professional judgments and decisions are relied on to such an extent that recommendations affect technical approachs to a problem's solution, development, or test and evaluation.

e. Efforts affect the technical approaches used in a specialty area.

2. Considering the impact of originality on the position, the incumbent does one or more of the following:

   a. Originates plans, techniques and/or procedures to apply existing knowledge to ideas, analyses, projects, or tests and evaluations.

   b. Applies new advances in techniques and methods to the solution of project problems.

   c. Invents, conceives and/or develops new or improved hardware, software, techniques and subsystems in a technical specialty area using primarily conventional techniques, methods or scientific approaches.

   d. Uses ingenuity to isolate, define and/or characterize critical features of problems and solutions, and performs verification tests or evaluations for these problems.

   e. Coordinates resources in test and evaluation facilities to accomplish successful and timely completion of critical tests, evaluations or tasks for Center programs.

C. SUPERVISION GIVEN

1. The nature of the position requires the direction and guidance of the work of others. The supervision given by the incumbent is one or more of the following:

   a. May coordinate, monitor and/or supervise the work of non-professionals or junior professional associates who require assistance and guidance in specific assignments.

D. NATURE OF CONTACTS

1. The position requires regular contact with the incumbent's immediate supervisor, and technical and administrative associates. It may involve contacts with other Center managers, sponsors, contractors and associates. The position requires one or more of the following persons contacted and reasons for these contacts by the incumbent.

| PERSONS CONTACTED | REASONS FOR CONTACTS |
|---|---|
| a. Higher Management (Division Head, Department Head, Program Manager) | Report progresss, seek guidance on technical problems and directions. |
| b. Sponsors | Report progress, help promote new projects. |
| c. Technicians, Aides and Clericals | Supervise, train or assign and review work. |
| d. Contractors | Monitor progress. |

E. CONTROLS OVER POSITION

1. The incumbent works with fairly close supervision and performs most assignments with instructions as to the results expected. Direction is received relative to objectives, critical issues, new concepts and policy matters. Supervisor approval is obtained on proposed work efforts, but the incumbent is allowed some latitude for exercise of independent judgment. Guidance is given on unusual or complex problems and procedures on a regular basis. The incumbent's work is reviewed regularly by a superviser, technical manager or project manager.

F. QUALIFICATIONS

1. The incumbent must have a Bachelor's degree, or equivalent, in an appropriate technical field and additional advanced education or experience in the technical field or specialty area(s), and otherwise meet all qualification requirements at the GS-9 level of the applicable standard in the Office of Personnel Management Handbook X-118. The position requires that the incumbent have demonstrated the capacity for sound independent work in conventional aspects of the specialty area(s).

## LEVEL II

**G.** EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITY (A Supervisory Requirement)

**H.** OPTIONAL SPECIFIC INFORMATION

## LEVEL III

## CLASSIFICATION STANDARDS

### A. MAJOR DUTIES AND RESPONSIBILITIES

1. The incumbent's position involves one or more of the following duties:

   a. Plans, schedules, coordinates and/or conducts detailed phases of technical work in part of a major project or in a total project of moderate scope.

   b. Invents, conceives, plans and/or conducts research, design, development, and/or test and evaluation in problem areas of more than average difficulty and complexity.

   c. Formulates, analyzes, models, evaluates, advises or performs design studies on the feasibility, suitability, adaptability and/or operational utility of systems and system concepts.

   d. Plans, arranges, schedules, conducts, collects data and/or analyzes results of tests of major technical and organizational impact.

   e. Supervises an organizational group responsible for a specific program assignment.

   f. Supervises an organizational group having one or more subordinate team leaders.

   g. Serves as technical staff specialist and consultant for an organizational group responsible for the application of advanced concepts, techniques or evaluations.

   h. Serves as a technical manager in part of a major program or of a smaller total program, requiring substantial interfacing, controlling, directing, coordinating, planning and scheduling across broad organizational lines and interaction with top Center management, sponsors, other agencies and/or private industry.

   i. Develops or tests new or improved equipment or subsystems that significantly adds to its operability and usefulness.

   j. Performs state of the art designs to take advantage of new concepts, techniques or principles in the research, development, or test and evaluation of new and advanced systems.

   k. Plans, schedules, coordinates and conducts the preparation of design documentation for newly configured equipment using applicable Navy documentation standards.

   l. Performs work involving test, reliability, quality, maintainability, evaluation or product improvement of equipment, subsystems and/or systems for development, production, test and evaluation, or Fleet support.

   m. Prepares and writes proposals to sponsors, soliciting support for Center activities.

2. The incumbent's responsibilities include one or more of the following:

a. Responsible for plans, coordination, test and evaluation, support and/or direction for a specific technical area, for program office, or for application of advanced concepts or theories.

b. Responsible for a specific project and/or program assignment which may require the services of Level I, II and III associates, non-professionals and/or contractors.

c. Responsible for theoretical or experimental studies, inventions, new or improved concepts, techniques or implementations requiring an understanding of the specialty area and in addition the fundamentals of a broad technical field.

d. Responsible for formulating and conducting a systematic research effort on a problem of more than average difficulty and complexity.

e. Responsible for analyses and system studies involving operational systems, subsystems and/or concepts.

f. Responsible for the administration and technical management of a small workforce, such as a branch or section, of no less than three (3) subordinates.

B. IMPACT OF POSITION

1. The incumbent's judgments and decisions impact the position in one or more of the following ways:

a. Work is expected to result in development of new and/or improved techniques and procedures, equipment, materials, products, processes, tests and evaluations, or scientific methods.

b. Results of research, analysis, development, or test and evaluation effort have major impact on the conduct of work on a project(s) or program.

c. Judgments impact the organizational decisions and progress relative to a major program(s), contractor operations, delivery of hardware to the Fleet or respective verification tests.

d. Professional judgments and decisions are relied on to such an extent that his recommendations are ordinarily followed and accepted by Center managers and sponsors with minimal technical review.

e. Technical contributions are recognized by management and peers as having major impact on new ideas or on-going Center projects.

f. Efforts have major impact on the advancement of scientific knowledge in a specialty area.

g. Efforts have major impact on technical direction, accomplishments of goals, and schedules of a project and/or program.

## LEVEL III

2. Considering the impact of originality on the position, the incumbent does one or more of the following:

a. Originates new plans, techniques and/or procedures to extend existing knowledge to account for newly emerging ideas, projects, tests and evaluations, or requirements.

b. Develops, defines and/or applies new and improved techniques and original methods to the solution of important problems with unprecedented or novel aspects.

c. Invents, conceives or develops new state-of-the-art hardware, software, techniques, subsystems or systems in a technical specialty area.

d. Uses ingenuity to isolate, define and characterize critical features of problems and synthesizes innovative solutions and/or verfication tests to characterize these problems.

e. Directs, leads, assigns, organizes, sets objectives and plans the conduct of work of an organizational group which requires considerable original thought and foresight from both technical and managerial viewpoints.

f. Uses ingenuity in directing the program effort and funding to accomplish assigned tasks within specific schedule and funding constraints.

g. Coordinates resources in major test and evaluation facilities to accomplish successful and timely completion of sophisticated tests, evaluations or tasks of major Center importance.

## LEVEL III

C. SUPERVISION GIVEN

1. The nature of the position requires the direction and guidance of the work of others. The supervision given by the incumbent is one or more of the following:

   a. Coordinates and monitors, or supervises and reviews the work of a small staff of professional associates and non-professionals.

   b. Evaluates progress and results, and formulates major project objectives for project staff.

   c. Estimates manpower needs and schedules, and assigns work to meet milestones.

   d. Directs and coordinates efforts of associates across organizational lines.

   e. Gives assignments as a technical or staff specialist to one or more professionals or non-professionals in a specialty area.

   f. Supervises and directs both administratively and technically an organizational group (no less than three (3) subordinates) or program of moderate scope or a substantial portion of a major program.

   g. Guides the work of others, either directly or indirectly, through keen insight offered in highly specialized technical areas of major impact on the Center mission.

D. NATURE OF CONTACTS

1. The position requires regular contact with the incumbent's immediate supervisor, and technical and administrative associates. It may involve contacts with other Center managers, sponsors, contractors and associates. The position requires one or more of the following persons contacted and reasons for these contacts by the incumbent:

| PERSONS CONTACTED | REASON FOR CONTACTS |
|---|---|
| a. Higher Management (TD/CO, Department Head) | Report progress, submit proposals, review plans and goals, seek guidance on technical decisions & allocation of resources, help plan Center goals and programs. |
| b. Sponsors | Report progress, sell new projects, provide consulting services. |
| c. Contractors | Monitor progress, negotiate technical matters and verify end product. |
| d. National Associates | Report progress, collaborate with. |

E. CONTROLS OVER POSITION

1. The incumbent works independently without close supervision and performs most assignments with instructions as to the general results expected. Direction is received relative to overall objectives, critical issues, new concepts and policy matters. Supervisor approval is obtained on proposed work efforts, but the incumbent is allowed wide latitude for exercise of independent judgment. Guidance is given on unusual or complex problems and procedures. The incumbent's supervisor is kept informed of general plans and progress of work.

## LEVEL III

F. QUALIFICATIONS

1. The incumbent must have a Bachelor's degree, or equivalent, in an appropriate technical field and extensive advanced education and/or experience in the specialty areas (s), and otherwise meet all qualification requirements at the GS-12 level of the applicable standard in the Office of Personnel Management Handbook X-118. The position requires that the incumbent have demonstrated full competence in all conventional aspects of the specialty area(s) and ability to handle problems or assignments of marked difficulty. The ability to think through a problem and approach to its solution is crucial to performance at this level.

G. EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITY (A Supervisory Requirement)

1. It is the responsibility of the incumbent to perform all of the following:

   a. Carry out EEO policies, participate in required training, communicate support of these policies to subordinates and support the development of an Affirmative Action Plan.

   b. Assure equality for minorities and women in determining qualifications, selections, assignments, training, promotions, details, discipline and awards to subordinates, as well as, nomination/appointment to boards and committees.

   c. Consult with the Deputy Equal Employment Opportunity Officer in the development of personnel policies.

H. OPTIONAL SPECIFIC INFORMATION

# CLASSIFICATION STANDARDS

## A. MAJOR DUTIES AND RESPONSIBILITIES

1. The incumbent's position involves one or more of the following duties:

   a. Plans, schedules, budgets, coordinates and directs detailed phases of a number of large projects or a project of major impact at the Center.

   b. Conceives, organizes, plans and guides investigations emphasized by top levels of Center management which result in inventions, new and improved concepts, designs, systems or techniques that are regarded as state of the art advances in a specialty field.

   c. Formulates, guides, monitors and directs analytical studies of systems and system concepts of major impact on the Center's programs and operations.

   d. Serves as a first line supervisor of a medium-to-large workforce of a Center organizational group or program (usually involving 8-14 or more professional and non-professional employees) whose work has major impact on one or more Center efforts involving critical technical issues.

   e. Serves as a second level or higher supervisor who supervises, through subordinate supervisors or team leaders, a sizeable number of employees (usually 15 or more) with a substantial number of employees supervised at Levels III and IV.

   f. Serves as a technical manager of a major program requiring substantial interfacing, controlling, directing, coordinating, staffing, planning and scheduling across broad organizational lines and interaction with top Center management, sponsors, other agencies and/or private industry.

   g. Serves the Center as a technical specialist and recognized authority in the application of advanced concepts, principles, applications, equipment, and/or test and evaluation techniques in diversified Center program areas or in an intensely specialized area and, as such, represents the Center at various symposia, meetings or conferences at both National and International levels.

   h. Conceives, develops, submits, presents and solicits sponsor support for major proposals addressing Navy-wide needs.

   i. Serves as a technical assistant, associate or consultant to second and third level supervisors in the conduct of the work of an organizational group (usually 15 or more employees) requiring high level interactions across organizational lines and with top Center management, sponsors, other services, National committees and/or industry.

   j. Serves as principal investigator for one or more research or experimental development programs involving senior associates throughout the Center in a technical area having major impact on the Center mission.

## LEVEL IV

2. The incumbent's responsibilities include one or more of the following:

a. Responsible for planning, organizing, executing, evaluating and coordinating the work of a technical specialty area, major program or other important Center efforts.

b. Responsible for a Center organizational group, facility or major program which has considerable interaction with other Center organizations, sponsors and contractors and requires the services of a substantial number of Level II, III and IV associates, and subordinate Level III or above supervisors.

c. Responsible for theoretical and experimental studies, contributing inventions, formulating new and improved concepts, techniques, theories, implementations, or tests and evaluations of major impact and of considerable sophistication, requiring a thorough understanding of a specialty area and the fundamentals of a broad technical field.

d. Responsible for formulating and guiding a research effort on a problem which is recognized as a critical obstacle to the progress, development, or test and evaluation in a specialty area of top level Center management interest.

e. Responsible for the technical and administrative supervision of a medium-to-large workforce of a Center organizational group or program office (usually involving 8-14 or more professional and non-professional employees) whose work has major impact on one or more Center efforts involving critical technical issues.

f. Responsible for system developments or the direction of technology based research, development or techniques which have major impact on the Center's mission.

g. Responsible for identifying the need for comprehensive analyses, formulation of proposals for original studies, directing analysis of existing and new systems of major impact to the Navy, and justifying and presenting proposals and results to appropriate authorities at the Center and external to the Center.

B. IMPACT OF POSITION

1. The incumbent's judgments and decisions impact the position in one or more of the following ways:

a. Work is expected to result in inventions, new and improved concept designs, systems and/or techniques which are regarded as advances in the state-of-the-art in a specialty area.

b. Results of research, analysis, development, or test and evaluation efforts have major impact on activities at the Center, allocation of Center resources and/or concentration of resources in Center work areas.

c. Judgments have major impact on Center decisions and conduct of programs, agency planning and resources, contractor operations, systems procurement, Fleet operations, or verification tests and evaluations under top level management and focus by the Center for Navy operations.

d. Technical judgments and decisions in highly controversial areas of work are recognized and usually accepted as final by Center management or sponsors.

e. Technical leadership in a frontier or specialty area is widely recognized and has considerable influence on Center projects, programs, proposals or technical direction.

f. As a recognized authority in a specialty area, work is highly regarded by professionals in the field, carefully studied, and solicited for presentation at technical meetings, conferences, symposia, professional societies or in scientific journals.

2. Considering the impact of originality on the position, the incumbent does one or more of the following:

   a. Demonstrates considerable creativity, foresight, and technical and administrative knowledge in solving unprecedented problems, determining program objectives and requirements, organizing projects, developing standards, and guiding the work of others for a Center organization group, effort or program.

   b. Uses a high degree of imagination and creativity to solve complex technical problems which are characterized by almost complete absence of applicable guidelines, past solutions or methodology and which advance the state of the art.

   c. Develops original policy and corresponding administrative procedures to handle unique and unprecedented problems of major impact at the Center.

   d. Offers a high degree of inventiveness and originality in investigations, studies, designs, experiments or tests, and devises completely new and original approaches, theories or techniques through an in depth familiarity with literature and technology in a specialty area.

   e. Directs, leads, assigns, organizes, set objectives and plans the work of a major program or organizational group which requires substantial creativity and foresight from both administrative and technical viewpoints.

C. SUPERVISION GIVEN

1. The nature of the position requires the direction and guidance of the work of others. The supervision given by the incumbent is one or more of the following:

   a. Supervises as a first-line supervisor the work of an organizational group, with a substantial number of Level II and III employees (usually 8-14), and whose work has major impact on one or more Center efforts involving critical technical issues.

   b. Supervises, as a second level or higher supervisor, the work of a large organizational group (usually 15 or more) through subordinate supervisors or team leaders.

   c. Directs, monitors and approves the work of a major program requiring interfacing with associates across organizational lines, sponsors and contractors.

   d. Supervises a team of project managers and directs a supporting staff from other Center organizational groups on a major program.

   e. Reviews, guides and/or directs the work of associates, either directly or indirectly, as by providing coordination and critical insight in highly specialized area of importance to the top level Center management.

## LEVEL IV

### D. NATURE OF CONTACTS

1. The position requires regular contact with the incumbent's immediate supervisor, and technical and administrative associates. It may involve contacts with other Center managers, sponsors, contractors and associates. The position requires one or more of the following persons contacted and reasons for these contacts by the incumbent:

| PERSONS CONTACTED | | REASON FOR CONTACTS |
|---|---|---|
| a. | Higher Management (TD/CO, Department Head) | Report progress, discuss work and proposals, review program plans and progress, receive higher level policy guidance, help plan Center goals and programs. |
| b. | Sponsors, PMAs | Report progress, market new projects, provide consulting services, receive higher level policy guidance. |
| c. | Contractors | Monitor progress, negotiate technical matters, verify end product. |
| d. | National or International | Report progress, collaborate with Associates |

### E. CONTROLS OVER POSITION

1. The incumbent works with wide latitude of technical and managerial independence and is delegated major responsibilities. Assignments are received in terms of broad general guidelines, objectives and limits. Program ojectives and overall resource requirements, allocation and priorities are discussed jointly with his supervisor to assure mutual understanding. Supervision is largely administrative and incumbent is evaluated in terms of the degree to which results meet objectives. Incumbent is responsible for his own work and that of his staff or assigned associates. The incumbent's supervisor is kept informed of general plans, resources and progress of work.

## LEVEL IV

**F.** QUALIFICATIONS

**1.** The incumbent must have a Bachelor's degreee, or equivalent, in an appropriate technical field and extensive advanced education and/or experience in the specialty area(s), and otherwise meet all qualification requirements at the GS-14 level of the applicable standard in the Office of Personnel Management Handbook X-118. The position requires that the incumbent have demonstrated full competence and marked attainments in advanced technical and administrative aspects of the specialty area(s). The ability to plan and direct, execute or provide expert consultation on major technical programs or the important Center efforts, requiring innovative solutions to critical problems, is essential to performance at this level.

**G.** EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITY (A Supervisory Requirement)

**1.** It is the responsibility of the incumbent to perform all of the following:

**a.** Carry out EEO policies, participate in required training, communicate support of these policies to subordinates and support the development of an Affirmative Action Plan.

**b.** Assure equality for minorities and women in determining qualifications, selections, assignments, training, promotions, details, discipline and awards to subordinates, as well as, nomination/appointment to boards and committees.

**c.** Consult with the Deputy Equal Employment Opportunity Officer in the development of personnel policies.

**H.** OPTIONAL SPECIFIC INFORMATION

PAC #8062032

P A C
(Personal Activities and Capabilities)

TITLE: ELECTRONICS ENGINEER
SERIES: 855

LEVEL: I

NWC CODE: 6242

FUNCTIONAL CODE: TEST

SPECIALTY AREA CODES:

PRIMARY- (26)WEAPONS CONTROL SYSTEMS

Includes research, development, design, production, test, evaluation and life cycle maintenance of analog and digital systems and components for use in weapon control or fire control systems. Weapon control systems include the launcher, payload, delivery, fire control, guidance and control systems, as well as functions which control, set, display, test or evaluate the weapon or sensor system. Included also are necessary supporting documented computer programs and documentation and technical documentation.

OTHER--- (18)ELECTRONIC COMPONENTS DESIGN

A. MAJOR DUTIES AND RESPONSIBILITIES

1. The incumbent's position includes the following duties:

   a. Receives training relative to Center policies and rotating working tour procedures and performs a minimum of three, usually four, working tours of approximately three months duration where at least two tours are outside the home code with at least one tour being outside the home code Department.
   b. Assists senior professional associates in the performance of detailed and routine work.

2. The incumbent's responsibilities include the following:

   a. Responsible for the performance of specific tasks in rotating working tour assignments, including formal classwork and orientation training.
   b. Responsible for supporting a limited portion of a specific project, program, analysis, design, concept, technique, test and/or evaluation and assisting senior associates.

B. IMPACT OF POSITION

1. The incumbent's judgments and decisions impact the position in the following ways:

   a. Limited exercise of judgments and decisions is required on detailed work, and in making preliminary selection and adaptation of technical alternatives.

2. Considering the impact of originality on the position, the incumbent does the following:

   a. Uses standard professional techniques, methods or procedures requiring limited originality, but may contribute innovative analysis, concepts, designs, techniques or tests in tour assignments.

C. SUPERVISION GIVEN

1. The nature of the position requires the direction and guidance of the work of others. The supervision given by the incumbent is the following:

   a. May give supervision to non-professionals, but this is not normally a requirement of the position.

D. NATURE OF CONTACTS

1. The position requires regular contact with the incumbent's immediate supervisor, and technical and administrative associates. It may involve contacts with other Center managers, sponsors, contractors and associates. The position requires the following persons contacted and reasons for these contacts by the incumbent:

| Persons Contacted | Reasons for Contacts |
|---|---|
| a. Higher Management..... (Div Hd, Dept Hd) | Limited contact usually in company with senior S&E's to report results or as part of orientation program. |

E. CONTROLS OVER POSITION

The incumbent is assigned to a specific Center organization and is under the supervision of the Head of that unit for administrative matters and tour assignments, and is also counseled by the Department's Junior Professional coordinator. The incumbent receives close supervision in tour assignments by a senior professional or Head of tour assignment organization. Work reviewed frequently with primary emphasis placed on the incumbent's training development and placement as a professional at the Center. The incumbent's home code supervisor is kept informed and must approve changes in tour assignments or special problems encountered. The tour supervisor is kept informed of all phases of work performed. The incumbent may participate in formal class work offered by the Center with supervisory approval.

F. QUALIFICATIONS

The incumbent must have a Bachelor's degree or equivalent training and experience, in an appropriate technical field and otherwise meet all qualification requirements at the GS-5 level of the applicable standard in the Office of Personnel Management Handbook X-118.

G. EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITY
(A Supervisory Requirement)

H. OPTIONAL SPECIFIC INFORMATION

1. Other specialty area descriptions:

(18)ELECTRONIC COMPONENTS DESIGN

Involves the design, development and testing of analog or digital electronic components and/or circuits for potential use in a wide variety of electronic systems. Examples of special knowledge requirements include solid state physics and chemistry, integrated circuit design, computer-aided design, digital and analog circuit design, etc..

PAC #8033017

P A C
(Personal Activities and Capabilities)

TITLE: PHYSICIST
SERIES: 1310

LEVEL: II

NWC CODE: 3311

FUNCTIONAL CODE: DEVELOPMENT

SPECIALTY AREA CODES:

PRIMARY- (27)FUZING SYSTEMS

Definition, integration, design, development and test of electromagnetic, mechanical and contact fuzing systems, firing and initiation systems and subsystems for warheads and rocket motors. Requires knowledge of electro-optical, infrared, radar, active and passive proximity sensing, safing and arming devices, acoustics and pyrotechnics of related components as they apply to ordnance applications.

OTHER--- (13)ELECTRO-OPTICS
(17)SIGNAL PROCESSING

A. MAJOR DUTIES AND RESPONSIBILITIES

1. The incumbent's position includes the following duties:

   a. Assists in preparing plans, schedules and the conduct of detailed phases of technical work as part of a major project.
   b. Invents, conceives, plans and/or conducts research, design, development, and/or test and evaluation in problem areas of moderate scope and complexity, or of average difficulty, using standard practices.
   c. Performs some state-of-the-art designs, however, generally takes advantage of conventional concepts in the development of new or improved systems, subsystems, equipment or tests.

2. The incumbent's responsibilities include the following:

   a. Responsible for plans, coordination and/or evaluation for a specific technical area, or for application of conventional concepts or theories as applied to research, development, or test and evaluation projects.
   b. Responsible for supporting a specific project and/or program assignment and assisting senior associates.

B. IMPACT OF POSITION

1. The incumbent's judgments and decisions impact the position in the following ways:

   a. Work is expectd to contribute to the development of new and/or improved techniques and procedures, equipment, materials, products, processes, tests and evaluations, or scientific methods.
   b. Results of research, analysis, coordination, development, or test and evaluation effort contribute toward meeting project or program goals.

2. Considering the impact of originality on the position, the incumbent does the following:

   b. Applies new advances in techniques and methods to the solution of project problems.
   c. Invents, conceives and/or develops new or improved hardware, software, techniques and subsystems in a technical specialty area using primarily conventional techniques, methods or scientific approaches.

C. SUPERVISION GIVEN

1. The nature of the position requires the direction and guidance of the work of others. The supervision given by the incumbent is the following:

   a. May coordinate, monitor and/or supervise the work of non-professionals or junior professional associates who require assistance and guidance in specific assignments.

D. NATURE OF CONTACTS

1. The position requires regular contact with the incumbent's immediate supervisor, and technical and administrative associates. It may involve contacts with other Center managers, sponsors, contractors and associates. The position requires the following persons contacted and reasons for these contacts by the incumbent:

| Persons Contacted | Reasons for Contacts |
|---|---|
| a. Higher Management (Div Hd, Dept Hd, Proj Mgr) | Report progress, seek guidance on technical problems and directions. |
| c. Technicians, Aides and Clericals | Supervise, train or assign and review work. |

E. CONTROLS OVER POSITION

The incumbent works with fairly close supervision and performs most assignments with instructions as to the results expected. Direction is received relative to objectives, critical issues, new concepts and policy matters. Supervisor approval is obtained on proposed work efforts, but the incumbent is allowed some latitude for exercise of independent judgment. Guidance is given on unusual or complex problems and procedures on a regular basis. The incumbent's work is reviewed regularly by a superviser, technical manager or project manager.

F. QUALIFICATIONS

The incumbent must have a Bachelor's degree, or equivalent, in an appropriate technical field and additional advanced education or experience in the technical field or specialty area(s), and otherwise meet all qualification requirements at the GS-9 level of the applicable standard in the Office of Personnel Management Handbook X-118. The position requires that the incumbent have demonstrated the capacity for sound independent work in conventional aspects of the specialty area(s).

G. EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITY
(A Supervisory Requirement)

.. OPTIONAL SPECIFIC INFORMATION

1. Other specialty area descriptions:

(13)ELECTRO-OPTICS

Specializes in the use and design of equipment for the generation, propagation, detection and processing of electromagnetic energy in the frequency band from infrared through ultraviolet. Typical work consists of the integration of optical sensor and signal processing technologies in the design, development and test of instrumentation, guidance, fuzing and sensor devices for weapons systems. Examples of special knowledge requirements include optical propagation theory, properties of optical and electro-optical materials and equipment, optical signal processing techniques, microprocessors, lasers, and detector technology.

(17)SIGNAL PROCESSING

Concerned with the design and analysis of circuits for the manipulation of signals, or their representation, as derived from various transducers in order to obtain estimates of certain parameters or characteristics of the signal which convey information. Manipulations are carried out in both the time and frequency domain and include operations such as spectrum analysis, correlation, adaptive filtering, signal integration and similar techniques.

PAC #8012021

P A C
(Personal Activities and Capabilities)

TITLE: OPERATIONS RESEARCH ANALYST
SERIES: 1515

LEVEL: III

NWC CODE: 12

FUNCTIONAL CODE: DEVELOPMENT

SPECIALTY AREA CODES:

PRIMARY- (35)MILITARY OPERATIONS ANALYSIS

Requires broadbased technical knowledge of weapon systems, military operations and mathematical analysis techniques for investigating and evaluating all facets of modern warfare. Analyses of operational and tactical situations are performed using data from military operations, intelligence, technical developers and industry to establish requirements and to provide advice and insight about probable effects of alternative solutions to military problems. Analysis results are expressed as quantitative and qualitative measures of system performance, kill capability, vulnerability, cost, etc.. Studies range from technical examinations of the effects of alternative weapon system components to the operational examination of the interaction of land, air and Naval forces in global conflict. This diversity of study types requires the application of a wide variety of analysis techniques including manual simulations, computer modeling, probability and statistical methods and war gaming.

OTHER--- (36)SYSTEMS ANALYSIS

A. MAJOR DUTIES AND RESPONSIBILITIES

1. The incumbent's position includes the following duties:

   a. Plans, schedules, coordinates and/or conducts detailed phases of technical work in part of major project or in a total project of moderate scope.
   c. Formulates, analyzes, models, evaluates, advises or performs design studies on the feasibility, suitability, adaptability and/or operational utility of systems and system concepts.
   g. Serves as technical staff specialist and consultant for an organizational group responsible for the application of advanced concepts, techniques or evaluations.

2. The incumbent's responsibilities include the following:

   a. Responsible for plans, coordination, test and evaluation, support and/or direction for a specific technical area, for program office, or for application of advanced concepts or theories.
   d. Responsible for formulating and conducting a systematic research effort on a problem of more than average difficulty and complexity.
   e. Responsible for analyses and system studies involving operational systems, subsystems and/or concepts.

B. IMPACT OF POSITION

1. The incumbent's judgments and decisions impact the position in the following ways:

   a. Work is expected to result in development of new and/or improved techniques and procedures, equipment, materials, products, processes, tests and evaluations, or scientific methods.
   d. Professional judgments and decisions are relied on to such an extent that his recommendations are ordinarily followed and accepted by Center managers and sponsors with minimal technical review.
   e. Technical contributions are recognized by management and peers as having major impact on new ideas or on-going Center projects.

2. Considering the impact of originality on the position, the incumbent does the following:

   d. Uses ingenuity to isolate, define and characterize critical features of problems and synthesizes innovative solutions and/or verification tests to characterize these problems.
   f. Uses ingenuity in directing the program effort and funding to accomplish assigned tasks within specific schedule and funding constraints.

C. SUPERVISION GIVEN

1. The nature of the position requires the direction and guidance of the work of others. The supervision given by the incumbent is the following:

   b. Evaluates progress and results, and formulates major project objectives for project staff.
   g. Guides the work of others, either directly or indirectly, through keen insight offered in highly specialized technical areas of major impact on Center mission.

D. NATURE OF CONTACTS

1. The position requires regular contact with the incumbent's immediate supervisor, and technical and administrative associates. It may involve contacts with other Center managers, sponsors, contractors and associates. The position requires the following persons contacted and reasons for these contacts by the incumbent:

| Persons Contacted | Reasons for Contacts |
|---|---|
| a. Higher Management (TD/CO, Dept Hd) | Report progress, submit proposals, review plans and goals, seek guidance on technical decisions and allocation of resources, help plan Center goals and programs. |
| b. Sponsors | Report progress, sell new projects, provide consulting services. |

E. CONTROLS OVER POSITION

The incumbent works independently without close supervision and performs most assignments with instructions as to the general results expected. Direction is received relative to overall objectives, critical issues, new concepts and policy matters. Supervisor approval is obtained on proposed work efforts, but the incumbent is allowed wide latitude for exercise of independent judgment. Guidance is given on unusual or complex problems and procedures. The incumbent's supervisor is kept informed of general plans and progress of work.

F. QUALIFICATIONS

The incumbent must have a Bachelor's degree, or equivalent, in a appropriate technical field and extensive advanced education and/or experience in the specialty area(s), and otherwise meet all qualification requirements at the GS-12 level of the applicable standard in the Office of Personnel Management Handbook X-118. The position requires that the incumbent have demonstrated full competence in all conventional aspects of the specialty area(s) and ability to handle problems or assignments of marked difficulty. The ability to think through a problem and approach to its solution is crucial to performance at this level.

G. EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITY
(A Supervisory Requirement)

H. OPTIONAL SPECIFIC INFORMATION

1. Other specialty area descriptions:

(36)SYSTEMS ANALYSIS

Covers that area where various disciplines, specializations, methods, techniques and tactics are applied to conceive, analyze, design, evaluate and test weapons and other systems. A variety of physical and analytical disciplines such as mechanics, ballistics, aerodynamics, control, electronics, computer technology, mathematics, probability, statistics and engineering are applied. Mathematical modeling and simulation (digital, hybrid, analog) are important tools. Analyses of operational and tactical situations are performed. Data and information from multiple sources (military operations, intelligence, industry, technology, management, etc.) must be correlated, analyzed, evaluated and applied.

2. See attatched addendum

PAC #8036015

P A C
(Personal Activities and Capabilities)

TITLE: SUPERVISORY MECHANICAL ENGINEER
SERIES: 830

LEVEL: IV

NWC CODE: 36

FUNCTIONAL CODE: DEVELOPMENT

SPECIALTY AREA CODES:

PRIMARY- (45)PRODUCTION, DEPLOYMENT AND FLEET SUPPORT

Concerned with management, control and engineering support of the initial procurements of newly developed equipment, systems or components thereof. This includes the engineering support and monitoring of changes to such equipment or systems being produced either in government or contractor facilities, technical efforts in support of the deployment of such new equipment into the Fleet, the investigation of deficiencies in newly deployed Fleet equipment, and the technical and procurement support of modifications to such equipment by product improvement, production design changes, retrofit or change in operational procedures, so as to eliminate system/equipment deficiencies.

OTHER--- (22)MECHANICAL DESIGN
(41)ENVIRONMENTAL TEST AND EVALUATION

A. MAJOR DUTIES AND RESPONSIBILITIES

1. The incumbent's position includes the following duties:

a. Plans, schedules, budgets, coordinates and directs detailed phases of a number of large projects or a project of major impact at the Center.

e. Serves as a second level or higher supervisor who supervises, through subordinate supervisors or team leaders, a sizeable number of employees usually 15 or more) with a substantial number of employees supervised at levels III and IV.

2. The incumbent's responsibilities include the following:

a. Responsible for planning, organizing, executing, evaluating and coordinating the work of a major technical specialty area, major program or other important Center efforts.

e. Responsible for the technical and administrative supervision of a medium to large workforce of a Center organizational group or program office (usually involving 8-14 or more professional and non-professional employees) whose work has major impact on one or more major Center efforts involving critical technical issues.

B. IMPACT OF POSITION

1. The incumbent's judgments and decisions impact the position in the following ways:

c. Judgments have major impact on Center decisions and conduct of major programs, agency planning and resources, contractor operations, major systems procurement, Fleet operations, or verification tests and evaluations under top level management and focus by the Center for Navy operations.

d. Technical judgments and decisions in highly controversial areas of work are recognized and usually accepted as final by Center management and sponsors.

2. Considering the impact of originality on the position, the incumbent does the following:

a. Demonstrates considerable creativity, foresight, and technical and administrative knowledge in solving unprecedented problems, determining program objectives and requirements, organizing projects, developing standards, and guiding the work of others for Center organizational group effort or programs.

c. Develops original policy and corresponding administrative procedures to handle unique and unprecedented problems of major scope for the Center.

C. SUPERVISION GIVEN

1. The nature of the position requires the direction and guidance of the work of others. The supervision given by the incumbent is the following:

b. Supervises, as a second level or higher supervisor, the work of a large organizational group (usually 15 or more) through subordinate supervisors or team leaders.

D. NATURE OF CONTACTS

1. The position requires regular contact with the incumbent's immediate supervisor, and technical and administrative associates. It may involve contacts with other Center managers, sponsors, contractors and associates. The position requires the following persons contacted and reasons for these contacts by the incumbent:

| Persons Contacted | Reasons for Contacts |
|---|---|
| a. Higher Management..... (TD/CO, Dept Hd) | Report progress, discuss work and proposals, review program plans and progress, receive higher level policy guidance, help plan Center goals and programs. |
| b. Sponsors, PMAs..... | Report progress, market new projects, provide consulting services, receive higher level policy guidance. |
| c. Contractors..... | Monitor progress, negotiate technical matters, verify end product. |

E. CONTROLS OVER POSITION

The incumbent works with wide latitude of technical and managerial independence and is delegated major responsibilities. Assignments are received in terms of broad general guidelines, objectives and limits. Program objectives and overall resource requirements, allocation and priorities are discussed jointly with supervisor to assure mutual understanding. Supervision is largely administrative and incumbent is evaluated in terms of the degree to which results meet objectives. Incumbent is responsible for his own work and that of his staff or assigned associates. The incumbent's supervisor is kept informed of general plans, resources and progress of work.

F. QUALIFICATIONS

The incumbent must have a Bachelor's degree, or equivalent, in an appropriate technical field and extensive advanced education and/or experience in the specialty area(s), and otherwise meet all qualification requirements at the GS-14 level of the applicable standard in the Office of Personnel Management Handbook X-118. The position requires that the incumbent have demonstrated full competence and marked attainments in advanced technical and administrative aspects of the specialty area(s). The ability to plan and direct, execute or provide expert consultation on major technical programs or the important Center efforts, requiring innovative solutions to critical problems, is essential to performance at this level.

G. EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITY
(A Supervisory Requirement)

1. It is the responsibility of the incumbent to perform all of the following:

a. Carry out EEO policies, participate in required trainings, communicate support of these policies to subordinates and support the development of an Affirmative Action Plan.
b. Assure equality for minorities and women in determining qualifications, selections, assignments, trainings, promotions, details, discipline and awards to subordinates, as well as nomination/appointment to boards and committees.
c. Consult with the Deputy Equal Employment Opportunity Officer in the development of personnel policies.

H. OPTIONAL SPECIFIC INFORMATION

1. Other specialty area descriptions:

(22)MECHANICAL DESIGN

Concerned with mechanical design of parts/components, and the mechanical integration of weapon systems, military hardware, equipment and test apparatus. Includes the layout and design of mechanical mechanisms, the selection of standard components for use in such mechanisms, and the design of parts for use in them. Work often involves structural analysis of members of mechanical assemblies, the properties of materials to be used in components, effects of temperature and heat transfer on the performance of the device and its components, the physical

integration and packaging of electrical devices and the mechanical operating characteristics of devices.

(41)ENVIRONMENTAL TEST AND EVALUATION

Concerned with the measurement, analysis, prediction, and simulation of the environments to which weapons are exposed. Includes the development of plans, methods, techniques and specifications related to these factors, the review, evaluation and interpretation of environmental data, and the simulation of environmental models.

CHANGE RECOMMENDATION FORM

**To:** Classification Review Panel (Code 092)

**From:** Code Recommending Change

**1st. Level Supervisor** _____

**Code** _____

**Via:** 2nd. Level Supervisor _____

**Code** _____

Recommended Change to:

- **Classification Standards** ☐
- **Specialty Area Codes** ☐
- **Functional Codes** ☐
- **PAC Format** ☐
- **Other** _____

How many employees would be covered by this recommended change? _____

Recommended Change: (Please write your recommendation completely as you would like to see it appear in the classification notebook.)

Endorsement by:

Department Head _____ Code _____

# Gist of China Lakes Project

-- Attempt to integrate, in a rigid OPM environment, the separate personnel programs of position classification, pay administration and performance appraisal.

  -- Classification of jobs (GS 1-15) is divided into five broad bands.

    -- Level I -- GS-5/8
    -- Level II -- GS-9/11
    -- Level III -- GS-12/13
    -- Level IV -- GS-14/15
    -- Level V -- GS-16/18 (non SGs)

  -- Performance Appraisal -- Performance by objectives (MBO) -- negotiated contracts with employee (AWP) essentially what the Agency has had for many years -- establishment of five performance categories

    -- Outstanding
    -- Exceeded objectives
    -- Met objectives
    -- Below objectives
    -- Needs improvement

  -- Pay Administration

    -- Migration of outstanding performance to top end of Pay band, old poor performance to bottom end of band.

    -- Merit feature -- abolishment of semi-automatic step increases.

    -- More flexibility on hiring -- tied to budget rather than grade target.

-- Conditions Leading up to Development of Project

  -- Current classification system is confusing and complex (managers and employees do not understand).

  -- Manager has too small a role in setting pay.

  -- Personnel classifiers have an inordinate amount of responsibility in pay setting.

  -- System delays recruitment actions until positions are classified.

  -- System limits manager's ability to transfer personnel from one functional area to another.

  -- Classification consumes time and energy of personnel staff.

-- Classification system causes some professionals to leave federal service.

-- Problems with System -- PMCD/Agency

-- No additional classification flexibility is provided.

-- Broadest band - Level I allows an array of four grades. Present Agency PRA System allows for five grade spread.

-- Control aspect of PMCD would be jeopardized (OMB constraints) - implementation of system requires suspension of grade and ceiling levels.

-- Underlying concept of entire system is to place almost complete control in hands of manager - completely contrary to career Agency panel approach to promotions and reassignments.

-- Adequate flexibility now exists in recruiting both as to grade and step.

-- Performance Appraisal approach, in effect, is an attempt to "catch up" with Agency system.

-- Rigid Structured classification environment which exists in a covered agency is not institutionalized in Agency.

-- Additional flexibility in pay administration (merit feature) can presumably be done in terms of present system.

-- Attempt to integrate classification of jobs (what is done) with performance appraisal (how well it is done) would be even more confusing and argumentative than present system.

-- Grievance potential as a result of moving employees between pay bands is substantial

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Book Cable

On 14 March 1980, President issued directive requiring partial freeze on hiring full time, permanent people. (Agency) now has exhausted exempt (in-process before 1 March) category and is now controlled by non-exempt category (filling one out of two vacancies). Hqs. must therefore monitor personnel strength figures closely. Until further notice, prior Hqs. approval required before EODing any U.S. citizen for full time employment in excess of one year, extending FULL TIME contracts of less than one year to a term of more than one year, or conversion from part-time to full time (i.e., requiring count against ceiling).

DDA _____

NFAC _____

DDS&T _____

DDO _____

O/DCI _____

McMahon

Fitzwater