

| POSITION DESCRIPTION | | | | | | |
|---|--|---|---|---|---|-------------------|
| 1. Position Number | | | 2. Explanation (show any positions replaced) | | | |
| 3. Reason for Submission <input type="checkbox"/> New <input type="checkbox"/> Redescription <input type="checkbox"/> Reestablishment <input type="checkbox"/> Standardized PD <input type="checkbox"/> Other | | | | | | |
| 4. Service <input type="checkbox"/> HQ <input type="checkbox"/> Field | 5. Subject to Identical Addition (IA) Action <input type="checkbox"/> Yes (multiple use) <input type="checkbox"/> No (single incumbent) | | | | | |
| 6. Position Specifications Subject to Random Drug Testing <input type="checkbox"/> Yes <input type="checkbox"/> No Subject to Medical Standards/Surveillance <input type="checkbox"/> Yes <input type="checkbox"/> No Telework Suitable <input type="checkbox"/> Yes <input type="checkbox"/> No Fire Position <input type="checkbox"/> Yes <input type="checkbox"/> No Law Enforcement Position <input type="checkbox"/> Yes <input type="checkbox"/> No | | | 7. Financial Statement Required <input type="checkbox"/> Executive Personnel-OGE-278 <input type="checkbox"/> Employment and Financial Interest-OGE-450 <input type="checkbox"/> None required | | 10. Position Sensitivity and Risk Designation <u>Non-Sensitive</u> <input type="checkbox"/> Non-Sensitive: Low-Risk <u>Public Trust</u> <input type="checkbox"/> Non-Sensitive: Moderate-Risk <input type="checkbox"/> Non-Sensitive: High-Risk <u>National Security</u> <input type="checkbox"/> Noncritical-Sensitive: Moderate-Risk <input type="checkbox"/> Noncritical-Sensitive: High-Risk <input type="checkbox"/> Critical-Sensitive: High-Risk <input type="checkbox"/> Special Sensitive: High-Risk | |
| | | 8. Miscellaneous Functional Code: -- BUS: -- | 9. Full Performance Level Pay Plan: Grade: | | | |
| 11. Position is <input type="checkbox"/> 2-Supervisory <input type="checkbox"/> 4-Supervisor (CSRA) <input type="checkbox"/> 5-Management Official <input type="checkbox"/> 6-Leader: Type I <input type="checkbox"/> 7-Leader: Type II <input type="checkbox"/> 8-Non-Supervisory | | 12. Position Status <input type="checkbox"/> Competitive <input type="checkbox"/> SES <input type="checkbox"/> Excepted (specify in remarks) <input type="checkbox"/> SL/ST | | | 15. Fair Labor Standards Act <input type="checkbox"/> Exempt <input type="checkbox"/> Nonexempt | |
| | 13. Duty Station | 14. Employing Office Location | 16. Cybersecurity Code #1: #2: -- #3: -- | 17. Competitive Area Code: Competitive Level Code: | | |
| 18. Classified/Graded by | Official Title of Position | | Pay Plan | Occupational Code | Grade | Initial Date |
| a. Department, Bureau, or Office | | | | | | |
| b. Second Level Review | | | -- | | -- | |
| 19. Organizational Title of Position (if different from, or in addition to, official title) | | | 20. Name of Employee (if vacant, specify) | | | |
| 21. Department, Agency, or Establishment U.S. Department of the Interior | | | c. Third Subdivision | | | |
| a. Bureau/First Subdivision | | | d. Fourth Subdivision | | | |
| b. Second Subdivision | | | e. Fifth Subdivision | | | |
| 22. Supervisory Certification. I certify that this is an accurate statement of the major duties and responsibilities of this position and its organizational relationships and that the position is necessary to carry out Government functions for which I am responsible. This certification is made with the knowledge that this information is to be used for statutory purposes relating to, but not limited to: FLSA determinations; position sensitivity and requirements; and appointment/payment of public funds. False or misleading statements may constitute violations of such statutes or their implementing regulations. | | | | | | |
| a. Typed Name and Title of Immediate Supervisor | | | b. Typed Name and Title of Higher-Level Supervisor or Manager (optional) | | | |
| Signature | | Date | Signature | | Date | |
| 23. Classification/Job Grading Certification. I certify that this position has been classified/graded as required by Title 5, U.S. Code, in conformance with standards published by the U.S. Office of Personnel Management or, if no published standards apply directly, consistently with the most applicable published standards. | | | 24. Position Classification Standards Used in Classifying/Grading Position | | | |
| Typed Name and Title of Official Taking Action | | | | | | |
| Signature | | Date | | | | |
| 25. Position Review | Initials | Date | Initials | Date | | |
| a. Supervisor | | | | | | |
| b. Classifier | | | | | | |
| 26. Remarks | | | | | | |

DOI Standard PD
PD# DN00100

Classification: Geophysicist, GS-1313-13

INTRODUCTION

Position performs scientific work of unusual difficulty, exercising independent judgment. Typically represents the Agency, a Bureau, or Program as a subject matter expert in the field of geophysics. Position serves an authoritative source to other scientists or program specialists, playing a key role in resolving issues that significantly impact scientific programs. The purpose of this position is to provide broad expertise and coordination in one or more subdisciplines of geophysics, e.g. seismology, seismic network operations, engineering geophysics, earthquake hazards and strong motion studies. The position performs a broad range of geophysical studies and provides technical review and oversight of tasks or programs.

MAJOR DUTIES (include percentages of time equal to 100)

Plans, organizes and leads preparation of requirements and specifications for new and expanding monitoring systems. Oversees geophysical instrumentation, data acquisition, processing, archiving and retrieval activities for a complex, multi-station monitoring network with hundreds of channels of continuous seismic, geodetic or other geophysical data. Coordinates activities with other monitoring networks, evaluates and interprets nature of potential activities and resultant potential hazards. Plans priorities for monitoring station locations, installation, and repairs to be conducted by field staff. Negotiates permits and navigates environmental and cultural compliance requirements for geophysical monitoring stations and networks. Ensures efficient operation of real-time and near real-time data acquisition, processing, reporting and post-reporting activities. _____%

Subject matter expert and primary point of contact for the supported network, facility or geographic area during eruptive and/or seismic crises. Provides sound scientific evaluation of activities and the evaluates the likelihood and nature of potential hazards to organizational leadership, the scientific community, disaster relief agencies, the media and the general public. Oversees response to eruptive and/or seismic crises to include prioritization of monitoring activities and prioritization of data collection and archiving activities. _____%

Designs and implements geologic, geophysical, and/or geochemical studies. Develops projects internal to the bureau or through partnerships with other agencies utilizing and synthesizing geophysical data to effectively respond to land and resource management and to societal issues. Studies include the integration of different methods and techniques and the application of state-of-the-art techniques. Defends findings to the scientific community, senior DOI and US Government officials. _____%

Analyzes seismic, geodetic or other geophysical data in context of other data streams to infer geophysical processes; leads teams across the bureau, department or international scientific teams in geophysical data analysis to improve forecasting strategies. During periods of eruption/earthquake activity may work with domestic and foreign counterparts to collect and interpret data and provide information on forecasting and hazard potential. Develops new geophysical approaches to visualizing, reporting, and understanding volcanic, geodetic or seismic processes in a broad, active, geographic area. Adapts seismic methods to the needs of the assigned network(s) to improve monitoring and understanding of processes. In areas of varying seismic velocity, works with depth migrated data or seeks to correct time data to derive a more accurate depth model. Develops comprehensive geophysical models from available data in complex geophysical domains. Using specialized interpretive software tools, generates sophisticated geophysical models and associated data products over specific geographic areas of such geologic complexity where advanced techniques are necessary. _____%

Designs and applies processing algorithms for analysis of multichannel, high resolution reflection and refraction data. Directs and designs all phases and applications of signal processing techniques, data acquisition methods and interpretation in marine, continental margin, and/or terrestrial systems. Develops computational tools and creates automated alarms to provide notification when seismic activities exceed determined thresholds. Uses interactive processing software to analyze data and determine parameters to be used in processing flow; uses amplitude versus offset analysis to infer rock and fluid properties and develop new tools to enhance geologic interpretations. _____%

Processes and interprets large sets of multispectral and hyperspectral remotely sensed data using computer and manual techniques for terrestrial or planetary systems. Develops new methods and techniques for analysis of immense data sets. Uses commercial and in-house remote sensing analysis software to process and interpret highly complex data sets. _____%

Provides ground motion estimates, foundation performance, seismic source characterization, earthquake spectra time histories and soil liquefaction assessments for use in engineering analysis of existing or proposed structures. Conducts and provides guidance on investigations involving the use of strong ground motion information to define appropriate ground motions for use in the analysis of design of engineered structures. Appraises data pertaining to seismic hazard characterization, including recurrence information, zonation source characteristics, wave propagation, site attenuation and response. _____%

Conducts detailed subsurface analyses and studies to determine the resource and reserve potential using geophysical interpretation of seismic and well data. Provides advice to staff regarding the effects of acquisition and processing parameters on in-house data being interpreted. Activities include the identification of lands subject to drainage; the determination of the areal extent-and characteristics of potential geological plays; reservoirs resources (discovered or undiscovered); and/or reserves underlying leased and unleased lands. Interpretations are typically computer based using a broad range of existing software applications. _____%

Senior advisor and troubleshooter on particularly complex geophysical problems such as conflicting staff recommendations, adequacy of consultant's reports, or integrating geophysical data in a broad geographic area characterized by complex geology and/or poor data quality. Conducts difficult, complex, and novel geophysical investigations incorporating information and data from lease, field, and other studies in conjunction with geological data to produce geophysical and geological maps for resource evaluation. Represents the organization in technical discussions regarding geophysical data problems where opinions and interests conflict. _____%

Directs or oversees major data collection activities used in earthquake hazards, coastal change, engineering projects, environmental hazards studies, and assessments. Directs interpretation of data, fault geometry of active zones and other important geologic features. Coordinates the organization's geophysical program, planning and advising on geotechnical programs of broad scope. Subject matter expert both within the organization and to cooperating organizations in data management and interpretation tools, geophysical models, a broad range of state-of-the-art technologies and geophysical applications. Interprets policy and regulations concerning the acquisition, disposition and interpretation of geophysical data for the supported geographic region(s). _____%

Develops, performs, and evaluates studies involving surface and borehole geophysics to evaluate foundation conditions, materials engineering properties, stratigraphic correlations, including the identification and orientation of open partings, joints, clay seams, fractures, cavities, top of rock, seismic and electric properties. Results of studies inform the evaluation of existing structures and design and construction of planned structures. Primary technical authority on surface and borehole geophysics,

including stratigraphic correlation, in situ elastic moduli, materials properties determination, electrical soundings, cross-borehole shear wave surveys, seepage measurement, seismic refraction, seismic reflection, ground penetrating radar, and spectral analysis of surface waves (SASW and MASW), and EM methods. _____%

Reviews seismological and geophysical investigations and reports of geotechnical engineering applications at various sites. Works with staff geophysicists, geologists, and engineers to correlate geophysical data with geologic data and engineering materials properties. _____%

Provides training, makes presentations, and participates in communications and coordination activities with scientists, engineers, decision makers, the media, disaster relief organizations, and the general public. Reads and analyzes a wide variety of technical information. Publishes results in peer reviewed journals, open file reports, and other media. Publishes curated datasets to interactive web platforms or data repositories. Presents at professional meetings. _____%

FACTOR STATEMENTS

FACTORS 1 - KNOWLEDGE REQUIRED BY THE POSITION FL 1-8 1550 points

Position requires full professional knowledge of geophysics and related physical sciences such as geology, oceanography, or physics to design, conduct, and interpret multi-scale and multi-disciplinary investigations. Areas of specialization may include seismology, active source seismic methods, strong motion instrumentation and analysis, electromagnetism, potential fields, radiometrics, electrical methods, spectroscopy, physics of the earth, geodesy, and resources assessments for petroleum, geothermal, and mineral exploration.

Advanced knowledge of data collection methods, data base management and computer sciences and programming language(s) as they relate to the field of geophysics. Knowledge of advanced mathematics, statistical sampling and statistical modeling techniques applied to geophysical, physical, and/or geochemical processes. Expert knowledge of probability and statistical theory in the application of probabilistic geophysical hazard analysis, source characterization, site response, and spatial variability of ground motions. Knowledge of advanced risk assessments techniques applied to one or more areas of geophysics, which may include methods of assessing economic risk.

Expert knowledge of a broad range of data analysis methods applied to geosciences, including such techniques as velocity analysis and modeling, coherence filtering and depth migration. Extensive knowledge of principles and techniques of real-time data telemetry and state-of-the-art signal processing. Mastery of computer operating systems and hardware platforms, with a strong background in experiment design, to interface field and laboratory geophysical instrumentation with computers for data acquisition and processing is required.

Expert knowledge of geophysical instrumentation, electronics, and communications as related to the acquisition, recording, transmission, storage and analysis of geophysical data. Expert knowledge of specialized areas of geophysical studies such as those involving seismic reflection and refraction, tomography, electrical, electromagnetic, and borehole geophysics.

Ability to plan, organize, and independently execute long term projects involving geophysical interpretation, mapping, hazard prediction, seismic source theory analysis, and other complex projects within the area of geoscience.

Knowledge of and skill in using a broad range of techniques to collect, store, retrieve, and analyze diverse geophysical data, including non-seismic data such as gravity, magnetics and electromagnetics. Familiarity

with the full range of state-of-the-art equipment used in geophysics and seismology to visualize movement of the earth. Knowledge of current practices in geophysical studies and current literature and sources to maintain state-of-the-art practices as related to geophysics.

FACTOR 2 - SUPERVISORY CONTROLS

FL 2-4 450 points

The supervisor sets overall objectives, priorities, and deadlines for the work of the position in accordance with bureau and agency objectives. The employee independently plans the work, coordinating with other scientists, either within or outside the organization, to resolve problems. The employee plays a key role in resolving significant issues and keeps the supervisor informed of any unusual situations or potential adverse publicity. The scientist's responsibilities at this level typically include management authority over planning, funding, scheduling and staffing multi-year projects.

The scientist's analysis, recommendations, and conclusions are relied upon on at technically accurate and authoritative. Completed work is reviewed for overall adherence to policy, compatibility with other studies, and attainment of study objectives.

FACTOR 3 – GUIDELINES

FL 3-4 450 points

Guidelines consist of bureau, agency, and government-wide policy, regulations and operating procedures; technical reports, and published and unpublished scientific reports. Guidelines also include a broad range of technical documentation related to mapping and visualization systems, statistical modeling software, and mainframe and desktop computers. Most available guidelines are not directly applicable to the work and require significant adaptation or modification.

The employee must use extensive judgment and creativity in interpreting and applying guidelines and proposing changes to policies and regulations. While equipment and software are generally commercially produced, such equipment and software frequently require extensive adaptation to suit the needs of the work. The scientist must apply experienced judgment in adapting equipment, devising new techniques and developing methods that significantly depart from established practices.

FACTOR 4 – COMPLEXITY

FL 4-5 325 points

Work consists of wide range of duties requiring the employee to apply different, unrelated processes, methods, technologies, and analytical techniques. Work is sometimes further complicated by the sheer volume of data and may include the need to react almost instantaneously to changing conditions that may represent serious threats to life and property. The scientist is often faced with serious conflicts between different requirements or problems and situations for which no precedent exists. Problems studied are often highly visible, politically charged, and at the forefront of technology.

The scientist must often devise techniques to resolve discrepancies between data systems and interpret multi-parametric data requiring unique approaches and extension of existing analytic methods, often in limited timeframes or with few resources. Problems are frequently difficult to define due to scope of the project, the novelty of techniques, or the lack of available data and previous research in the given geographic or topical area.

The employee must exercise judgment and resourcefulness to provide expert advice on changing systems and technologies, improvements to techniques and abilities in the field of geophysics and provide advice on how these changes can impact policy, regulation, and bureau or agency priorities.

FACTOR 5 - SCOPE AND EFFECT

FL 5-4 225 points

Work of the position is critical to several bureau and/or agency priorities such as protection of life and property, planning, design and construction of engineering projects, exploration and management of

valuable petroleum and mineral resources, and provision of science information tools and technologies to inform decisions of the Federal government, State and local governments, and all manner of resource managers and users.

The projects, analyses, maps and other products are used by resources managers, bureau and agency leadership, and the leadership of other Federal, State, and local government entities to inform decision making.

FACTOR 6 & 7 – NATURE AND PURPOSE OF CONTACTS **FL 6-3 & 7-C 180 points**

Contacts are with technical, administrative, and scientific personnel within and outside the immediate organization. Other contacts typically include scientific and technical personnel from other Federal and State Agencies, regulatory bodies, industrial and consulting firms, professional and scientific societies and academic institutions. Positions involved in disaster response may have contact with emergency responders, land managers, and counterparts from foreign governments. Some positions require contact with the media and general public, typically in emergency response situations.

The purpose of contacts is to provide leadership and technical direction to projects, investigations, monitoring networks, and other geosciences investigations. Contacts outside the government may be skeptical about trusting government employees, have competing interests with the bureau or agency, and may be unwilling to cooperate or comply. The scientist must be diplomatic in presenting ideas and employ skill and professionalism to establish rapport with uncooperative contacts.

FACTOR 8 - PHYSICAL DEMANDS **FL 8-1 or 8-2 5 or 20 points**

Some work of the position takes place mostly in an office or laboratory setting. No special physical effort is required.

During emergency response periods, training of personnel on new equipment, or field work, the scientist may be expected to hike distances of several kilometers over uneven terrain while carrying equipment.

Field work may require the use of proper personal protective gear, working in dusty, hot, humid, and extreme cold environments, occasional off-road driving of 4-wheel drive vehicles, traveling to remote field sites in helicopters or small fixed wing planes, and/or boats. Lifting of equipment and objects weighing up to 20 kilograms may be necessary.

FACTOR 9 - WORK ENVIRONMENT **FL 9-1 or 9-2 5 or 20 points**

Most work takes place in office or laboratory settings with adequate heat, light, and ventilation. Office conditions do not require special safety precautions; field conditions may include extreme heat or cold, rain or snow, and hazardous conditions such as exposure to extreme temperature, noxious or toxic gasses, ice or flooding. Field work may occasionally also involve encounters with snakes, bears, and other wilderness dangers. International field work may be conducted in culturally hostile areas. Note: Positions involving field work under arduous conditions and those involving on-site emergency response require a pre-employment medical examination to ensure the applicant can perform the essential duties and responsibilities of the position, with or without accommodation.

TOTAL POINTS: 3190-3220

GS-13 = 3155-3600

EVALUATION STATEMENT

STANDARD APPLIED

Job Family Standard (JFS) for Professional Work in the Physical Science Group, GS-1300 December 1997; Introduction to the Position Classification Standards, revised 8/09

SERIES AND TITLE DETERMINATION

The standard defines the Geophysics series as work requiring application of knowledge of the principles and techniques of geophysics and related sciences in the investigation, measurement, analysis, evaluation, and interpretation of geophysical phenomena and artificially applied forces and fields related to the structure, composition, and physical properties of the earth and its atmosphere. Like work described in the standard, positions covered by this standard PD perform a broad range of geophysical studies and provide technical review and oversight of tasks or programs related to geophysics, seismology, geodesy, hazards assessments and other areas related to physical properties of the earth. The title for such positions is Geophysicist.

GRADE LEVEL DETERMINATION

The 1300 JFS is a narrative standard. When applying narrative standards each position is placed at the grade with the descriptive material that best represents the overall work of the position. The standard describes work at the GS-12 as typically involve planning, executing, and reporting on original studies or ongoing studies requiring a fresh approach to resolve new problems. The complexity of assignments requires extensive modification and adaptation of standard procedures, methods, and techniques, and development of totally new methods and techniques to address problems for which guidelines or precedents are not substantially applicable. Work of this position exceeds the GS-12 level.

This position, like descriptions at the GS-13 level, is a senior expert level, involving work for which technical problem definitions, methods, and/or data are highly incomplete, controversial, or uncertain. This level differs significantly from the GS-12 level in that evaluations and recommendations are accepted by others as those of a technical expert. Like descriptions at the GS-13 level, work of the position involves planning, organizing, and leading teams to prepare requirements and specifications for new, large scale systems or to evaluate overall plans and proposals for significant systems developed by contractors. Like the illustrations at GS-13, positions assigned to this PD lead projects covering a wide variety of geologic conditions and problems associated with geotechnical and/or geophysical issues for an extensive geographical area. Develops new methods and techniques and coordinates the findings of multidisciplinary specialists. Handles the interrelated, emerging, complex, and frequently conflicting nature of Federal, state, and local laws and regulations that govern the management of natural resources and the environment.

Work does not rise to the GS-14 level, which the standard describes as involving highly unstructured and interconnected problems involving both difficult technology and complex human relations or programmatic issues. The level differs significantly from the GS-13 level in that the GS-14 scientist is one that other recognized senior technical experts turn to for advice and counsel, not only because of the position, but because of the incumbent's personal reputation in the field. Decisions, commitments, and conclusions reached have considerable influence on the development of the program and establishment of standards and guides for extensive engineering activities at the GS-14 level. At the 14 level, the scientist determines areas for investigation and assigns projects to private laboratories, etc.; advises on new

approaches to scientific problems; and determines the extent to which objectives are accomplished and if changes are necessary. Recommends changes, redirection of effort, and additions to the basic projects to maintain desired objectives. In contrast, the positions covered by this PD are narrower in scope and typically have an impact on broad, complex projects, but not necessarily program establishment or continuation. Work contributes to program success, but the program level authority rests elsewhere.

FINAL CLASSIFICATION

Position classifies as GS-1313-13, Geophysicist