



[Home](#) > [HR Practitioners](#) > [Classification & Position Management](#) > [PD Library](#)

## Hydrologist (Development and Operations) 14

---

### GS-1315-14

#### INTRODUCTION

This position is located in one of thirteen River Forecast Centers (RFC). The RFC provides hydrologic/hydrometeorologic forecast and guidance products along with other forms of support to NWS offices in its area of responsibility, and to non-NWS users concerned with the management and control of water. The RFC serves as a major interface with water management agencies and other interests concerned with hydrologic forecast issues.

The RFC depends on a sophisticated operational forecast system (OFS) to provide the hydrologic modeling support for its forecast and guidance responsibilities. The OFS includes several complex models executed in succession, each which simulates a specific component of the hydrologic cycle such as soil moisture storage, flood wave movement, or reservoir operation. A national framework, known as the NWS River Forecast System (NWSRFS), contains several data management procedures and a variety of models to simulate each hydrologic process. For each process, the RFC must select, calibrate/recalibrate, and in many cases, enhance or derive their own model which most appropriately meets the unique requirements of its area of responsibility.

Because the period of record for hydrologic data is constantly expanding and hydrologic/hydrometeorologic science is in a ongoing process of advancement, RFCs must continually recalibrate and reevaluate the models in their operational forecast system. Oversight of this process requires leadership of an individual with very high technical and scientific abilities and involves three basic levels of responsibility:

1. The RFC staff must fully understand the functions of each model in the OFS and their underlying hydrologic principles, so that output from the system can be properly interpreted and interactively modified when necessary as part of routine forecast operations.
2. The RFC staff must be fully competent with regard to the implementation of new models into an already existing OFS. This involves several activities such as model integration and parameter calibration.
3. In order to meet the unique requirements of the RFC area, key staff members must develop and demonstrate the technical and scientific expertise necessary to implement enhancements to already existing models and to derive new models for the OFS. These activities are performed in close coordination with the Office of Hydrology (OH) and regional headquarters, and results are made available for use and subsequent enhancement by other RFCs.

The complexity of the center's mission and operations, its large area of responsibility covering several states, one or more major river basins, and several WFO areas; along with the need to continuously implement improved hydrologic/hydrometeorologic technologies requires constant attention to the day-to-day technical functions of the RFC by a senior hydrometeorologist who has thorough knowledge of the major components forming the RFC's OFS and associated support systems.

#### DUTIES

The incumbent provides direction for integrated implementation and operational support for the high levels of technology employed in the RFC. RFCs are involved in procedure development, implementation, and maintenance activities, including those for centrally supported software systems such as NWSRFS, Extended Streamflow Prediction (ESP), and Hydrometeorological Automated Data System (HADS). Under the direction of the Hydrologist-In-Charge (HIC), the DOH interacts in a collaborative effort with the Hydrologic Research

Laboratory (HRL) and the Hydrologic Operations Division (HOD) of OH as well as with the regional headquarters to support the movement toward more advanced hydrologic modeling systems and data analysis. The incumbent has overall responsibility for assessment of data and forecast systems deficiencies along with providing direction for system modifications and enhancements. Oversight of the complex details associated with the hydrology/hydrometeorology-specific training for the RFC staff is also an important responsibility.

The HIC sets the overall objectives and policies for the RFC. The DOH oversees implementation of advanced RFC technology to meet these objectives. As the second most senior hydrometeorologist in the RFC, the DOH serves for the HIC in his/her absence.

### **Specific Duties:**

Lead the staff effort to integrate locally and centrally developed applications software into the RFC's operational system. The incumbent is responsible for implementation of technical policies which are based on HRL guidance and serves as the RFC focal point for operational implementation of hydrologic and hydrometeorological technology. The incumbent formulates technical policy for the RFC, including procedure development projects, subject to the approval by the HIC. Specific responsibilities are as follows:

- Lead the implementation, enhancement, and maintenance of the centrally supported NWSRFS operational forecast system and ESP system and other nationally supported software systems such as HADS.
  - Serve as principal interface on a scientific and technical level with managers and key focal points in the HRL with regard to OFS-related issues and problems. Recommend changes in nationally supported models and procedures to increase their operational usefulness at the RFC level.
  - Serve as principal interface on a technical level with managers and key focal points in the HOD to resolve systems and data management-related issues and problems.
  - Lead the development and implementation of local applications techniques including local programs for use with NWSRFS and other centrally supported software systems. Impart knowledge and expertise to RFC personnel working on procedure development projects regarding the capabilities of modernized NWS technologies.
  - Lead the effort to integrate hydrometeorological principles into the day-today functions of the RFC.
  - Assist the HIC in assessing the operational proficiency of the RFC staff, including Hydrologic Forecasters and Hydrometeorological Analysis and Support (HAS) Forecasters at the senior and journeyman levels.
  - Plan, guide, and coordinate efforts to document the operational forecast system and associated tools employed at the RFC, including the data network and locally developed procedures.
2. Provide day-today technical oversight of RFC operations. Work to ensure that the various components of the NWSRFS are effectively implemented and applied to meet the operational goals specified by the HIC. Provide advice and expertise to operational RFC forecasters on technical questions that may arise in real-time forecast situations, during post analysis of data entered into the operational forecast system, and during procedure development activities.
  3. Serve as focal point for assessment of forecast verification, identification of forecast system deficiencies, and recommendation of corrections to deficiencies in order to improve usefulness and accuracy of RFC forecasts.
  4. Oversight of the complex details associated with implementation and ongoing operation of the hydrology-specific training program for the RFC staff. Also serve as a resource to support WFO Science and Operations Officers (SOO) and Service Hydrologists on hydrology-specific, on-the-job training of personnel at WFOs in the RFC area of responsibility.
    - Oversee and/or conduct the hydrology-specific training of hydrologists and hydrometeorologists on the operational forecast system and associated tools employed at the RFC.
    - Interact with SOOs and Service Hydrologists at WFOs to maintain an ongoing cross-training program (as time and staff permit) between the RFC and WFO staffs.
  5. Assist the HIC in coordinating current and future technological capabilities with other NWS personnel, state and/or local governments, and Federal agencies to increase the effective application of hydrologic guidance and forecast procedures.
    - As required by the HIC, represent the NWS as an "expert" hydrologist at meetings, hearings, or inquiries.
  6. Perform operational forecast shifts up to 20 percent of the time.

7. Assume full operational responsibilities of the RFC in the absence of the HIC.

- As part of the RFC management team, promote NWS goals and objectives to other employees.

## **KNOWLEDGE REQUIRED**

Knowledge of theoretical and applied hydrologic/hydraulic sciences, especially as they apply to operational river forecasting. In addition, incumbent has a basic educational background in applied meteorology. A minimal educational background is at the Bachelor of Science level or equivalent with some additional professional education through in-house training or university course work, but graduate work at the Masters of Science level or higher is highly desirable.

A thorough knowledge of RFC mission, operations, and external interfaces. Knowledge of the technical components comprising the operational forecast system is particularly necessary in order to oversee the RFC effort to develop or enhance techniques to improve the quality of hydrologic/hydrometeorologic services.

An expert level of knowledge of the NWSRFS and ESP Systems.

Knowledge of RFC/WFO communication systems, RFC and central computer technology, relational databases, computer-based modeling technology, application of advanced observation systems (e.g., WSR-88D) to hydrologic forecasting, and forecast operations.

Working understanding of current Quantitative Precipitation Forecast (QPF) technology and its associated application to hydrologic forecasting.

Knowledge and experience necessary to perform the real-time operational functions of a Hydrologic or HAS Forecaster.

Understanding of WFO operations and an understanding of the complexity of hydrologic conditions at WFO boundaries, especially as they apply to flash floods.

Knowledge of NWS/NOAA/DOC policy objectives as they apply to hydrologic operations.

Effective communication skills in both writing and public speaking. Initiative, good judgment, creativity, originality, resourcefulness, and personnel interaction skills are also necessary attributes.

Knowledge of sound management principles and practices necessary to supervise the office in the absence of the HIC.

## **SUPERVISORY CONTROLS**

The incumbent's immediate supervisor is the HIC. The DOH receives general policy guidance in the form of discussions and memoranda from higher echelons in the performance of duties and responsibilities, but a high degree of technical policy formulation, originality, and independent thinking is required. The incumbent works in close coordination with all RFC staff and external interfaces, especially managers responsible for technical programs in the OH and regional headquarters. The incumbent's work and accomplishments are reviewed for efficiency and impact on the RFC operations.

## **GUIDELINES**

As the second most senior hydrometeorologist in the RFC, the incumbent has wide latitude in fulfilling responsibilities. Guidelines include appropriate reference materials such as operating manuals, regional, national and agency directives, policies, agreements, plans and other such documents. The incumbent relies on previous technical experience and training as well as general knowledge of WFO/RFC operations, objectives and interface requirements. The incumbent is responsible for outlining scope, limitations, and resources needed to complete work.

## **COMPLEXITY**

The complexity of the NWSRFS operational forecast system, WSR-88D, AWIPS, ESP and other nationally supported software systems such as HADS, as well as locally supported software systems, in combination with the diversity of forecast considerations faced by the RFC, places the DOH in a very demanding position. The incumbent must have a thorough understanding of each of these complex systems and be able to lead and direct their application in resolving major hydrologic and hydrometeorologic problems. The incumbent must also resolve a multitude of system problems and failures in order to minimize the negative impact of these problems on the RFC, other NWS offices, and offices outside the NWS. The incumbent addresses policy requirements and implications associated with procedure development activities needed to correct problems and optimize RFC

operations. In addition, the incumbent is faced with the challenges of interrelating and integrating a multitude of systems and technologies to produce better guidance and forecast products.

### **SCOPE AND EFFECT**

The RFC provides forecasts and guidance products and services for major river basins in a large area of responsibility covering several states and WFO areas. The population densities over these river basins in each respective RFC may range from very low (i.e., wilderness areas) to very high (i.e., dense urban areas). River flows directly affect the nation's well-being and economy in numerous ways. The water supplies for towns and cities as well as agricultural interests are directly affected by river flows. Flooding impacts the lives of millions of Americans each year, and in some cases, results in permanent changes to the landscape. Therefore, RFC forecast efforts directly affect a variety of economic interests and public safety concerns. This highlights the need for accurate and timely production of river and flood forecasts to meet many different purposes.

The completeness of integrated policy, planning, and the effective implementation of locally and centrally provided upgrades to the RFC's technology are directly dependent on the incumbent's performance. The quality of performance by the DOH has a vital effect on the effectiveness of guidance and forecasts for flood, streamflow and water resource management information.

### **PERSONAL CONTACTS**

Contacts are frequently made with focal points in the OH and with Regional Headquarters staff. Contacts regarding hydrology-specific training for the RFC staff are made with staff of the Hydrologic Research Laboratory, the Regional Hydrologists' offices, and the regional Scientific services Divisions; the NWS Training Center; the Operations Training Facility in Norman, Oklahoma; the Cooperative Program for operational Meteorology, Education, and Training (COMET); and WFO SOOs. Contacts also involve operational field personnel such as MICs, service Hydrologists, and meteorological forecasters. Interagency contacts include various Federal water management agencies, Federal Emergency Management Agency, state and local water management agencies, and civil defense interests.

Additional contacts include community and river commission officials, the news media, consulting engineers, the national hydrologic/hydrometeorologic research community, and to a somewhat lesser degree the general public.

### **PURPOSE OF CONTACTS**

Contacts are made with the OH to coordinate development, improvement, and implementation of centrally supported operational forecast systems. Contacts are also made regarding training activities for these systems.

Contacts are made with the Regional Hydrologists and other senior managers and program leaders in Regional Headquarters as required to plan and implement regional and national programs and policies.

Contacts are made with WFOs to coordinate enhancement and development of RFC techniques and procedures designed to support WFO operations.

Contacts are with the applicable university communities to coordinate the transfer of technological information and new capabilities.

Contacts are made with the above, and others, to support hydrologic/hydrometeorologic training requirements.

Contacts with cooperating water agencies concern the coordination of real-time operations; agreements on procedures, schedules, and content of data and information exchanged between the RFC and the cooperating agency, and vice versa; and efforts involved with joint projects.

Press, radio, TV, and other media contacts result from externally generated queries for forecast information or consultation.

### **PHYSICAL DEMANDS**

The work is generally sedentary. However, long arduous work periods may be required when flood conditions threaten or occur. During flood events the duty may result in extended periods of stressful activity.

### **WORK ENVIRONMENT**

The work environment is an office with added specialized computer and communications equipment.

### **FAIR LABOR STANDARDS ACT (FLSA)**

This position is exempt from the Fair Labor Standards Act in that it meets the criteria for professional positions as defined in 5 CFR 551.206.

---

[Website Feedback](#)   [About OHRM](#)   [Contact Us](#)   [DOCHROC](#)   [FOIA](#)   [Site Map](#)  
[Privacy Policy](#)   [Commerce Homepage](#)   [Careers at Commerce](#)  
[Commerce Employees](#)   [HR Practitioners](#)