

# NASA Glenn Safety Manual

## CHAPTER 2 - TRAINING REQUIREMENTS

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### 2.1 SCOPE

This chapter establishes policy and procedures and assigns responsibilities for safety training of Glenn employees. It describes the minimum requirements for the various certification levels for personnel involved in potentially hazardous operations. This chapter is not a direct instruction to contractors, but provides guidance for Glenn officials responsible for ensuring NASA contractor compliance with personnel safety training and certification.

### 2.2 DEFINITIONS

- a. Certified personnel (CP): Those who meet the requirements set forth by the authority responsible for certification. CP's are not associated with Safety Permits, as for the operation of a test rig or facility.
- b. Hazardous material: A substance or material in a quantity and form, which may pose an unreasonable risk to health and safety or property when transported in commerce (49 CFR 171.8). The Secretary of Transportation has developed a list of hazardous materials, which may be found in 49 CFR 172.101.
- c. Potentially hazardous operations: Operations in which hazardous materials are used or handled or in which other materials, phenomena, or elements are used at such abnormal environmental or physical parameters that personnel injury or illness or property damage could result if special precautions are not followed (e.g., high-pressure gas operations in excess of 150 psig; low-pressure, high-volume gas operations; voltages above 110 volts; storage or handling of propellants or explosives; use of heavy lift material-handling equipment; high- or

low-temperature environments; environments with less than 19.5 vol % or more than 25 vol % oxygen at normal atmospheric pressure; forced variations in gravity; excessive radiation; or excessive noise as defined by national consensus standards or Glenn-established standards, whichever is stricter).

## **2.3 APPLICABILITY**

The procedures, responsibilities, and requirements as set forth in this chapter apply to Glenn employees, to all NASA contractors in accordance with the terms of the contract, and to other Government agency employees who support operations at Cleveland, Plum Brook, and other facilities under Glenn Research Center (GRC) cognizance.

This chapter does not apply to personnel who operate a test rig or facilities requiring a safety permit. The certification of qualified facilities operators is specified in Chapter 1a, Section 1.5, Safety Permit System.

This chapter does not apply to personnel engaged in skill operations, such as soldering, brazing, crimping, and potting, already certified by quality assurance organizations or to personnel performing inspections with dye penetrant, magnetic particles, ultrasound, radiography, magnaflux, and such.

Nothing in this chapter shall be used as a justification for allowing hazardous duty payments, environmental differential pay, or premium pay; nor will the fact that a job qualifies for hazardous duty pay imply that this chapter covers it. It has always been NASA policy to make all operations, even potentially hazardous testing, as safe as possible.

## **2.4 AUTHORITY**

The authority for these policies and procedures derives from Executive Order No. 12196; 29 CFR 1960, "Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters," Subpart H; and NPG 8715.5 NASA Safety Manual Procedures and Guidelines.

## **2.5 POLICY**

It is the policy of GRC to administer its operations so as to ensure that personnel at Glenn are trained to perform their work in accordance with applicable safety and health standards and to employ careful and safe methods of operation, thus ensuring high standards of reliability and protecting the Center's mission. People who perform or control hazardous operations or whom use or transport hazardous material must possess the necessary knowledge, skill, judgment, physical ability (if specified in the job classification), and certification to do the job safely and in a healthful manner.

## 2.6 RESPONSIBILITIES

### 2.6.1 Safety Training

Although line management bears the prime responsibility for the safety training of employees and the safe operation of facilities and equipment, employees have a direct responsibility in the proper functioning of the Center safety program; they shall follow safe work practices, properly use protective clothing and equipment, report mishaps in a timely manner, and implement any necessary corrective actions.

In addition, the Office of Safety and Assurance Technologies (OSAT) and the Glenn Safety Office (GSO) (with assistance as needed from the Technical and Administrative Training Office (T&ATO), the Environmental Management Office (EMO), and line management) are responsible for coordinating occupational safety and health training needs and overseeing training efforts. To do this, they must

- a. Identify safety- and health-related training needs
- b. Determine budget requirements for training
- c. Develop safety- and health-related training courses
- d. Ensure that training records reflect employee safety training

### 2.6.2 Certification Program

The responsibility for overall policy development of the certification program rests with OSAT. Other organizations' responsibilities are as follows:

Line management: Each line organization is responsible for managing the certification program for its employees and contractors in accordance with the policies in this chapter. As the certifying authority, line management is responsible for:

- a. Establishing certification requirements for certified personnel (CP) in accordance with minimum standards set forth in this chapter.
- b. Notifying, retraining, and retesting those personnel who fail to meet minimum certification requirements
- c. Ensuring that recertification training is conducted prior to the expiration date of a CP's certification

Medical services: Medical Services is responsible for:

- a. Determining the need for physical examinations that will establish fitness for duty or that assist in establishing a baseline or occupational exposure level
- b. Overseeing or conducting the required medical examinations in support of the certification effort and ensuring compliance with OSHA and other federal, state, and local agency medical monitoring and recordkeeping requirements

- c. Conducting initial, routine, and termination examinations for those personnel in categories of hazardous operations that require a medical examination

Glenn Safety Office (GSO): The GSO is responsible for:

- a. Reviewing certification requirements set forth by the certifying authority, thereby ensuring that the minimum standards are met
- b. Auditing the certifying authority periodically to ensure that documentation of personnel training and certification is proper and consistent with the requirements set forth in this chapter

Technical and Administrative Training Office: This office is responsible for:

- a. Assisting line management and GSO in facilitating safety certification training courses for Center personnel
- b. Maintaining and updating training records as personnel complete training courses, and annotating those records as personnel successfully pass the certification requirements

## **2.7 SAFETY TRAINING**

### **2.7.1 Target Groups**

Appropriate instruction and job-related safety information are required for all employees, with additional emphasis for:

- a. Managers and supervisors
- b. Collateral duty safety personnel and Area Safety Committee members
- c. Employee representatives

### **2.7.2 Training Areas**

The training program will be structured to ensure, at a minimum, that the following information is provided to all Glenn employees and to others as applicable:

- a. Essential features of Public Law 91-596, the "Occupational Safety and Health Act (1970)"
- b. Essential features of Executive Order 12196, "Occupational Safety and Health Programs for Federal Employees"
- c. Requirements of 29 CFR 1960.59, "Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters"
- d. NASA's and Glenn's Occupational Safety and Health Programs and pertinent publications and directives
- e. Individual employee rights and responsibilities
- f. Specific job-related safety and health information such as hazards of the job; safe work practices; hazards of the work environment; use and care of

personal protective equipment; first aid procedures; and reporting of injuries, illnesses, and hazardous conditions

### **2.7.3 Target Group Training Needs**

Managers and supervisors: Occupational safety training for managers and supervisory employees will be provided so that they can identify and report safety hazards in their work environments and identify and strive to eliminate unhealthful and unsafe work methods of their employees. This training will cover Section 19 of Public Law 91-596, Executive Order 12196, the requirements of 29 CFR 1960.59, and program requirements. The instruction will help to develop requisite skills in implementing safety programs within the work units, including training and motivating employees toward safe work practices and making them aware of their specific responsibilities in the programs.

Collateral duty safety personnel and Area Safety Committee members: Upon appointment to a collateral duty safety position or to an Area Safety Committee, an employee will be provided with appropriate training commensurate with the scope of the assigned responsibilities. Such training must include NASA's Occupational Safety Program; Section 19 of Public Law 91-596 (the "Occupational Safety and Health Act"); Chapter 4 of NHB 1700.1(VI-B); Executive Order 12196; the requirements of 29 CFR 1960.59;

NASA procedures for reporting, evaluating, and abating hazards; NASA procedures for reporting and investigating allegations of reprisal; recognition of hazardous conditions and environments; identification and use of occupational safety standards; and other appropriate rules and regulations.

Employee representatives: Training for Glenn personnel who are representatives of employee groups, such as recognized bargaining units, will include information and materials that will enable such groups to ensure safe working conditions and practices in the workplace. Such instruction should enable these groups to effectively assist in conducting workplace safety inspections and monitoring the safety program's effectiveness.

Workplace employees: Managers and supervisors are responsible for recognizing potential hazards in their areas and arranging for special training for workplace employees. Such training must include general information on the NASA safety programs, the Glenn safety programs, and the employees' roles and rights, and specific training relating to hazards in their particular workplace.

Two courses are mandatory for all new employees: "Glenn New Employee Safety Orientation" and "Federal Hazard Communications Training." They are available on videotape in the Learning Center.

#### **2.7.4 Schedule**

The Training Office will publish a comprehensive occupational safety and health training schedule for each new fiscal year with assistance from the GSO, and EMO.

## **2.8 CATEGORIES OF POTENTIALLY HAZARDOUS OPERATIONS**

### **2.8.1 Category I**

Category I hazardous operations are those tasks that potentially have a high degree of immediate hazard to the operator or user, other employees, NASA equipment, facilities, or the public. Additional Category I tasks can be designated by a certifying authority or his/her appointee in a task area. The following personnel are involved in Category I tasks:

- a. Air crew members (FAA licensing may not be sufficient)
- c. Centrifuge subjects and operators
- d. Critical lift crane operators (critical to be determined by the installation in accordance with the replacement value, uniqueness of the material lifted, and the hazards involved)
- e. Propellant or explosives users
- f. Propellant or explosives handlers
- g. Rescue personnel
- h. Self-contained atmospheric protective ensemble (SCAPE) users
- i. Self-contained underwater breathing apparatus (SCUBA) divers and other underwater divers

### **2.8.2 Category II**

Category II operations are those tasks that, if not done correctly, could create a severe hazard to the operator or user, other personnel, and/or property. Category II operations can be designated by each of the certifying authorities; the following personnel are involved in Category II tasks:

- a. Altitude chamber operators
- b. Heavy equipment operators (e.g., forklift)
- c. High-pressure liquid/vapor/gas system operators (above 150 psig)
- d. High-voltage electricians (above 110 V)
- e. Confined space monitors
- f. Hyperbaric chamber operators
- g. Explosive-actuated tool operators
- h. Radiation (ionizing and non-ionizing) workers
- i. Tank farm workers
- j. Wind tunnel operators (if not covered by Safety Permit)
- k. Welders

- l. Hazardous material users (unless covered above in Category I)
- m. Crane operators (other than critical lift)
- n. Riggers for hoisting operations

### **2.8.3 Category III**

Category III hazardous operations pertain strictly to operations of handling, transporting, or packaging hazardous materials without otherwise disturbing the basic, properly packaged shipping container that holds the hazardous material. Operations that involve the reduction of palletized, or otherwise combined, items of packaged hazardous materials qualify as handling.

## **2.9 CERTIFICATION REQUIREMENTS**

All personnel engaged in potentially hazardous operations at the Category I, II, or III level, as determined by line management, the EMO, or GSO, will be certified as capable to operate the equipment or perform their jobs in a safe manner if they meet the standards set forth here.

### **2.9.1 Category I**

For Category I hazardous jobs, the following are minimum requirements for certification:

- a. Physical examination (see Sec. 2.9.4)
- b. On-the-job training
- c. Classroom training (for initial certification and as needed)
- d. Written and/or hands-on examination (as needed)
- e. Annual retraining that will include review of emergency response procedures and first aid procedures
- f. Periodic Category I recertification as determined by the certifying authority and GSO (not to exceed a 4-year interval)

### **2.9.2 Category II**

For Category II hazardous jobs, certification requirements should be similar to those of Category I (Sec. 2.9.1) except for appropriate reductions in the levels of examination, training, and testing, to be consistent with the lower potential hazard levels of Category II jobs. Certification requirements are left to the discretion of each certifying authority, with the approval of the GSO.

### **2.9.3 Category III**

For Category III hazardous jobs, the following are minimum requirements for certification:

- a. Specific training in Federal, NASA, and local rules for preparing, packaging, marking, and transporting hazardous materials associated with the job
- b. Examination by written test to determine the adequacy and retention of the training
- c. Issuance of a card or license (to be carried on person) listing name, date, materials for which certification is valid, signature of certifying official, and date of expiration
- d. Periodic Category III recertification as determined by the EMO and GSO, in the absence of any state or Federal requirements

#### **2.9.4 Need for Physical Examination**

Unless otherwise specified, the need for physical examinations for Category I and II jobs, either as a means to determine fitness for duty or to assist in establishing a baseline for occupational exposure level, will be determined by the Glenn Medical Officer and will be in compliance with the applicable codes, regulations, and standards covering the particular occupation or environment. The need for fitness-for-duty examinations should be based on the hazardous consequences if an employee should be unable to perform the job correctly because of physical or mental deficiencies. Glenn Safety Manual

## **2.10 BIBLIOGRAPHY**

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