

Chapter 10.4

Facility baseline documentation requirements for critical, complex, or hazardous facilities

1. Applicability of this chapter

You are required to follow this chapter if you:

- a. Oversee a facility described below or on the list of facilities requiring Facility Baseline Documentation at the following URL:
http://www6.jsc.nasa.gov/safety/FacMgr/List_of_FBD_Facilities.pdf.
- b. Are the area director at JSC and have facilities described below or on the list at the URL in subparagraph a.

2. What facilities require facility baseline documentation

“Facility,” as used in this chapter, may be a building, a work area in a building such as a laboratory, or an outside work area. A facility shall have facility baseline documentation if it:

- a. Is critical to JSC’s overall mission, such as:
 1. Unique, irreplaceable facilities that support manned space flight activities.
 2. Facilities directly supporting those unique, irreplaceable facilities that provide water, electrical, heating, & cooling, and computer services.
 3. Facilities which contain historically significant national treasures including, film, video, and scientific specimens that are irreplaceable.
- b. Is hazardous, such as:
 1. Facilities, by their standard operation/mission, subject personnel to risks/hazards that are not normally seen in the standard workplace environment. Such as high voltage/current electricity, plasmas, vacuum environments, hypobaric or hyperbaric test chambers, cryogenics, and manned suited operations.
 2. Facilities which house or utilize materials that are explosive, flammable, toxic, caustic, radioactive, or oxidizers.
- c. Has very complex operating systems, such as those that:
 1. Require multiple organizations to conduct operations of the facility or facility mission.
 2. Require extensive employee training to operate.
 3. Have integrated systems internally and externally using specialty and prototype equipment.
 4. Contain equipment that is specifically designed and high value.

Part 10, Safety and health requirements for facilities and facility systems

5. House communications and telemetry systems that interface with other NASA centers, International organizations, and DOD.
- d. Is listed in the table at the following URL:
http://www6.jsc.nasa.gov/safety/FacMgr/List_of_FBD_Facilities.pdf. Organizational directors may propose addition or deletion of facilities subject to these requirements to the Safety and Test Operations Division. The list of applicable facilities is subject to change considering the scope of this chapter and risk to life, safety, mission, property, or the environment. Upon approval, the Safety and Test Operations Division may update the list in Appendix 10 without a revision to this handbook.

Facility baseline documentation

3. Facility baseline documentation

If your facility meets the above criteria or is listed above, you shall develop, validate, and maintain a set of baseline documentation for your facility before beginning operations. Paragraphs 4 through 10 below describe the contents of facility baseline documentation.

4. Configuration control documentation

You shall:

- a. Have a documented system to identify and control your facility's configuration that meets JPD 8820.3, "Facility Configuration Management Program."
- b. Document your configuration control system in your general operating procedures described in paragraph 5 below.
- c. Keep or have access to the following documentation:
 1. Current facility drawings used to construct or modify the facility. Usually these drawings are for the construction of facilities projects and don't include the facility equipment.
 2. Equipment drawings used to install or modify facility equipment such as test instrumentation, test article fixtures, and test equipment. These drawings may include functional schematics, block diagrams, or one-line drawings.
 3. Nonmetallic materials surveys that identify and approve (via a Materials Usage Control Board) all nonmetallic materials used in a test article, facility, or system in a reactive environment.

5. General operating procedures

You shall have a general operating procedures document that contains your basic policies, describes your facility organization and its functions and responsibilities, and describes how

Chapter 10.4, Facility baseline documentation requirements for critical, complex, or hazardous JSC facilities

you collect and control your facility baseline documentation. This may be included in test plans, operating plans, readiness reviews/inspections, work instructions, management system documents, or customer agreements, provided all elements are addressed and revised as appropriate as conditions change. A general operating procedure shall include:

- a. General operating requirements that describe how you implement your policies and fulfill your functions and responsibilities. This includes:
 1. Requirements for test plans, test procedures, and data management.
 2. The organization of test teams and review boards.
- b. Facility operating requirements that describe how you maintain configuration control, cleanliness, environmental impact control, and materials control.
- c. Organization interface agreements that define the responsibilities of organizations that use or operate your facility and how those organizations work together.
- d. Data management requirements that define how you handle, reduce, print, distribute, control, and store data from tests or operations of the facility. You shall include requirements to keep backup copies of critical documentation in a separate location.
- e. Safety requirements and procedures to make sure your facility operations are safe. You shall address these items:
 1. Safety reviews
 2. Emergency planning and fire protection planning, to include access to electronically controlled areas during emergency operations involving loss of power
 3. Certification and recertification of pressure systems and lifting equipment
 4. Equipment calibration
 5. Tests involving human subjects
 6. Operations in vacuum or oxygen-enriched environments
 7. Operations with hazardous materials
- f. A variance process that defines how you evaluate and approve variances from any requirements that you need to follow or from your own policies and procedures. You shall follow Chapter 1.4, "Written safety and health program," of this handbook to request a variance from any JSC or higher requirement.
- g. Methods for accessing any electronic documentation, including center-wide systems.

6. Detailed procedures

You shall have detailed procedures that described how you operate machinery or systems, conduct tests, and control resources and schedules. Limitations, controls, and requirements associated with paragraph 5, above, and paragraph 7, below, must be incorporated as

Part 10, Safety and health requirements for facilities and facility systems

necessary to assure that hazards and key operating conditions are fulfilled. You may develop these procedures yourself or use manufacturers' procedures when available.

7. Safety documentation

You shall keep the following documents:

- a. Hazard analyses that identify hazards and hazard controls in hardware or software systems and their human interfaces. You shall have hazard analyses on the facility, facility systems, and facility equipment approved by the Safety and Test Operations Division. The hazard analysis may also include an environmental impact assessment as described in JPR 8553.1, "JSC Environmental Management System Manual."
- b. Failure mode and effects analyses that analyze the effects of a system, subsystem, or component failure on the safety of people and equipment. You only need to do failure mode and effects analyses on critical systems or as deemed necessary from your hazard analysis.
- c. Safety review records that document inspections by contractor or civil service organizations. These records shall, as a minimum, identify safety discrepancies found and the corrective actions taken. You shall process safety discrepancies open more than 30 days per Chapter 3.5, "Hazard Correction Tracking." Document and track them in the JSC HATS.
- d. Breathing air records that validate the quality of the air used by personnel.

8. Training documentation

You shall have the following training documents:

- a. Training requirements that define the minimum training needed to qualify personnel to operate equipment or systems, or to be a member of a test team. Training may include formal academic training, classroom courses, on-the-job training, and certification. You shall also address recertification if necessary. This includes environmental training per JPR 8550.1, "JSC Environmental Compliance Procedural Requirements."
- b. Training records that show completion of training requirements.

9. Maintenance documentation

You shall have developed and implemented a preventative maintenance plan for all critical systems and equipment. Maintenance documents describe how you maintain the facility, facility systems, and facility equipment in a safe working order and show maintenance history. You may use manufacturers' maintenance manuals. These documents include:

- a. Manuals that describe necessary maintenance and upkeep.
- b. Procedures and programs for routine and unscheduled maintenance, including recertification of hoists, cranes, elevators, and pressure systems.

Chapter 10.4, Facility baseline documentation requirements for critical, complex, or hazardous JSC facilities

- c. Records that document maintenance done on the facility, systems, and equipment.

10. Other documentation

You shall keep the following documents:

- a. Records from a readiness review, such as an operational readiness inspection or a user readiness review that approved your facility if such a review was done.
- b. Test readiness review records that document the actions, recommendations, and approval of a test readiness review board. This applies only to test facilities.
- c. Documentation that shows management approval of any variances granted.
- d. Other records that document such things as pressure system certification, lift hardware certification, and instrument calibration.

Other requirements

11. Maintaining facility baseline documentation

You shall:

- a. Keep facility baseline documentation as centrally located as practical to keep it accessible to personnel responsible for operating, maintaining, and assessing the facility condition.
- b. Keep the documentation updated in a manner that assures accuracy immediately before and during hazardous operations.
- c. Follow JPD 1440.6, “NASA Records Management,” and NPR 1441.1, “NASA Records Retention Schedules” (current version), for keeping, archiving, or destroying records.

12. Responsibilities for facility baseline documentation

- a. As an *organizational director*, you are responsible for:
 - 1. Deciding which of your facilities needs to follow the requirements in this chapter.
 - 2. Making sure each facility or laboratory manager has the required facility baseline documentation.
 - 3. Reviewing the status of your facility baseline documentation during readiness reviews or inspections to make sure it meets this chapter. If your facility is used continuously or frequently, you may define prescribed intervals for review based on maintenance requirements or change milestones.
 - 4. Bringing any discrepancies found during your review to the attention of the responsible facility or laboratory manager for corrective action.

Part 10, Safety and health requirements for facilities and facility systems

5. Providing facility baseline documentation to the Safety and Test Operations Division during its review of facility baseline documentation.
- b. The Safety and Test Operations Division is responsible for auditing facility baseline documentation in each facility annually to make sure that it meets the requirements of this chapter as follows:
 1. Facility baseline documentation is subject to assessment in readiness reviews, audits, and facility inspections.
 2. Consider facility risk, age, and criticality in scheduling inspections and audits.
 3. Address nonconformance with this chapter per Chapter 3.5, “Hazard Correction Tracking.”