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Glenn Safety Manual – Chapter 12

Aviation Safety
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Change Record

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Change 2	9/30/2015	12/19/2017	N/A	Administrative change to remove hyperlinks.

***Include all information for each revision. Do not remove old revision data. Add new rows to table when space runs out by pressing the tab key in the last row, far right column.*

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Chapter 12—Aviation Safety

NOTE: *The current version of this chapter is maintained and approved by the Safety and Health Division (SHeD). The last revision date of this chapter was December 2012. The current version is located on the Glenn Research Center (GRC) intranet within the BMS Library. Approved by Chief of Safety and Health Division.*

1.0 PURPOSE

The Glenn Research Center (GRC) Aviation Safety Program (GLM-FA-7900.4) establishes policy, responsibilities, and guidelines, and sets forth procedures and requirements to ensure the safety of personnel and equipment and the safe conduct of aviation functions and activities. This program is tailored to the flight research mission of the GRC Aircraft Operations Office. The GRC Aviation Safety Program shall follow the requirements set forth in NASA Procedural Requirement (NPR) 8715.5, NASA Safety Manual Procedures and Guidelines, and the NPR and NASA Procedural Document (NPD) 7900 series as well as other documents referenced in Section 8.0, References.

2.0 APPLICABILITY

The provisions of this chapter are applicable to all NASA employees and to all other agencies, organizations, and contractor personnel who perform administrative duties or work in an office setting within the confines of the Center at Lewis Field in Cleveland and at the Plum Brook Station in Sandusky.

3.0 BACKGROUND

This chapter is intended to provide basic information concerning aviation safety and is not comprehensive. The Chief, Aircraft Operations Office, the Aviation Safety Officer (ASO), or the Chair of the Aviation Safety Committee (ASC) should be contacted to provide details and resources concerning the comprehensive Aviation Safety Program.

4.0 POLICY

While safety is a concern of every employee it is line management's responsibility to provide a safe working environment. Therefore, the program is tailored to provide the flight organization the tools necessary for continued safety oversight of the associated flight activities. Aircraft operations shall be conducted under the cognizance of the GRC Safety and Mission Assurance Directorate (SMAD), and no aircraft or experiment shall be committed to flight without a valid safety permit or appropriate safety approval. It is the intent of this program to comply with all applicable NASA directives and other governing instructions when applicable.

5.0 RESPONSIBILITIES

The primary responsibility for aviation safety rests with the Center Director and the Flight Operations Manager.

To ensure effective implementation of the GRC Aviation Safety Program, responsibilities and functions are assigned as follows. It is not the intent of this section to be comprehensive but to point out some of the key personnel that can provide further information concerning the program.

5.1 Center Director

The Center Directors are responsible for the safe operation of all aircraft, including unmanned aircraft systems (UASs), assigned to or operating from their centers (NPR 7900.3C, section 1.2.5, Requirement 14). Center Directors will support and maintain an aviation safety program and organization in accordance with this chapter. Center Directors shall ensure that the Center ASO is granted formal access to senior management when safety issues cannot be resolved at a lower level in the flight organization.

5.2 Chief, Aircraft Operations Office

The Center Chief, Aircraft Operations Office, is the senior line manager with authority and responsibility for all flight operations at the Center and is responsible to the Center Director for the safe and effective operation of all aircraft, including UASs (NPR 7900.3C, section 1.2.3, Requirement 33). This is necessary to ensure that aviation management decisions are made only by designated and qualified individuals and to ensure that management actions

do not create or contribute to unsafe conditions. In particular, he/she will ensure that the following elements and functions are a part of the Aviation Safety Program:

- A flight operations handbook outlining procedures, requirements, and guidelines for conducting safe flight operations (GRC Aircraft Operations Manual, GLM–FA–7900.2)
- An organization that is actively conducting airworthiness reviews for research aircraft or projects, using multidisciplinary, systems-type approach and functioning independent of line management, and that these reviews are documented (NPR 7900.3C, section 2.2.3, Requirement 81). A configuration control system to ensure real-time monitoring and documentation
- Training for initial checkout and currency requirements; the chief of aircraft maintenance, under the cognizance of management authority, is responsible for maintaining all GRC aircraft and for ensuring compliance with the applicable NASA and industry guidance

5.3 Aviation Safety Officer

While safety is a concern and responsibility of the entire staff, the ASO is the key person in the Safety Program. As such, the ASO is the Center's focal point on flight research (NPR 7900.3C, section 1.2.6.1, Requirement 37). The ASO is the Center's focal point for flight experiment airworthiness. In addition, the ASO is responsible for reviewing and evaluating proposed modifications to the aircraft and experiments to be flown thereon. Also, the ASO is responsible for reviewing flight work orders as required per Research Flight Operations and Airworthiness Procedures Manual (GLP–FA–7900.3). The ASO is also the focal point on flight and ground operating procedures and practices for GRC aircraft, and for reviewing and evaluating flight profiles, operating procedures, training and performance requirements, and any aircraft operating limitations. Mishap response and reporting is another responsibility of the ASO, as well as creating, implementing, and managing the Aviation Safety Program (GLM–FA–7900.4). Although the Chief, Aircraft Operations Office, has direct responsibility for flight safety, should the need arise, the ASO has unrestricted access on matters affecting flight safety to the Safety, Health and Environmental Board chairman and if necessary, the Center Director. In this capacity, the ASO has the authority to shut down any operation or activity in question until an appropriate review can be conducted Duties include (NPR 7900.3C, section 6.3.1, Requirement 474).

Managing an Aviation Safety Program

- Providing operational safety awareness by reviewing safety periodicals and reports from the Federal Aviation Administration (FAA), the National Transportation Safety Board, and military and civilian safety organizations
- Maintaining awareness of FAA and Air Traffic Control procedural changes
- Focal point for flight and ground operating procedures and practices
- Reviewing and evaluating flight profiles, operating procedures, training and performance requirements, and any aircraft operating limitations
- Disseminating information to all pilots concerning safety
- Working in concert with the Aircraft Experiment Manager and/or Airworthiness and Configuration Control Manager (ACCM) when research proposals require operational input
- Reviewing operating procedures and training for GRC aircraft and making recommendations to the Chief, Aircraft Operations Office when necessary
- Reporting and investigation of all aircraft incidents and accidents as well as coordinating the GRC mishap response plan

5.4 Ground Safety Officer

The Ground Safety Officer (GSO) shall assist the ASO in execution of the Aviation Safety Program. Duties include

- Assist in managing the Aviation Safety Program

- Ensure safety meetings are conducted for all maintenance personnel at least once a quarter
- Conduct safety inspections of the facility at least once a quarter
- Serve as primary point of contact for safety when ASO is absent

5.5 Pilot in Command

A GRC aircraft Pilot in Command (PIC) has the final responsibility and authority to ensure the safe operation of the aircraft and the safety of passengers or crewmembers who may be involved in research activities onboard the aircraft.

5.6 Airworthiness and Configuration Control Manager

The ACCM is responsible for coordinating and documenting airworthiness reviews and for maintaining documentation necessary to fully define an aircraft's immediate configuration (Research Flight Operations and Airworthiness Procedures, GLP–FA–7900.3, and the Aircraft Operations Manual, GLM-FA-7900.2).

5.7 Aviation Safety Committee

The ASC, as established in Chapter 1 of the Glenn Safety Manual, reviews operations of and research and development modifications to aircraft operated by GRC, as well as experiments placed on these aircraft. The ASC is the sole authority for recommending the issuance of GRC aircraft and flight experiment safety permits.

6.0 REQUIREMENTS

6.1 General Requirements for GRC Activities Involving Aviation Assets

The requirements of this section are governed by NPR 7900.3C and GRC local manuals. These requirements pertain to all flight activity occurring at GRC's Lewis Field and Plum Brook Station. Any proposed flight activity must be routed through the GRC Aircraft Operations Office and may require a review by the ASC and the issuance of a GRC safety permit. Refer to Research Flight Operations and Airworthiness Procedures, GLP–FA–7900.3, for details of the approval process or contact a representative of GRC aircraft operations.

This requirement is intended to be comprehensive and will include the following when any airborne asset is intended for use:

- Flight test activities
- Airborne research
- Contracts requirements
- Space Act Agreements
- Construction and maintenance
- Remotely controlled aircraft
- Joint projects with other centers or other entities
- Memorandums of Understanding
- Aircraft charter or lease
- NASA equipment intended for use on non-NASA aircraft
- NASA or support service contractors serving as observers or crew members on non-NASA aircraft

6.2 Proposed Program Approval

To enhance safety and ensure management awareness at an early stage, any GRC division proposing an airborne project and flight experiment shall prepare a memorandum detailing the principal objectives and specific requirements of the proposed flight program. The program proposal will be reviewed and accepted or rejected by the

flight operations management team. For non-GRC-originated experiments, a Space Act Agreement must be used once the program has been accepted.

6.3 Airworthiness and Flight Experiment Reviews

The purpose of these reviews is to assure management that the risks to persons and property are minimized and that the operational plans for conducting programmatic flights have been approved. Formal review requirements must be commensurate with the significance of the program and the risk involved. The ASC conducts these reviews independent of line management. This review process is a multidisciplinary, system-like approach that includes appropriate safety analysis and risk assessment. Such reviews are formally conducted and fully documented. They are applicable to all aircraft modifications and flight experiments as per GLP–FA–7900.3.

6.4 Aviation Safety Program

The Aviation Safety Program (GLM–FA–7900.4) is designed to ensure a high level of operational safety awareness in day-to-day aircraft operations among flight and ground crews. It is implemented and managed by the ASO and the GSO. The program will include the following elements as a minimum (NPR 7900.3C, section 6.3.1, Requirement 474):

- Risk assessment and hazard analysis
- Mishap and near mid-air collision reporting and investigating
- Process to create project and program safety plans
- Design reviews, aircraft configuration management, and flight and test readiness reviews
- Training, education, and awareness
- Aviation safety inspections and surveys
- Hazard reporting and investigation

6.4 Review of programmatic safety documentation and safety permit documentation.

6.5 Configuration Control Plan

Configuration control is a vital part of any aviation safety program. The ACCM is responsible for coordinating this plan. A very important aspect of this system is the flight work order document. The process and details of this plan, as well as the flight work order procedures, can be found in Research Flight Operations and Airworthiness Procedures, GLP-FA-7900.3 (NPR 7900.3C, section 2.2.2, Requirement 80), and the Aircraft Operations Manual, GLM–FA–7900.2.

6.5 Review airworthiness documentation related to configuration control and weight and balance.

6.6 Medical Clearance and Physiological Requirements

Medical clearance and physiological requirements shall be in accordance with NPR 7900.3C, Chapter 7, and the GRC Aircraft Operations Manual, GLM–FA–7900.2. In general, all GRC pilots are required to obtain FAA first-class medical certificates or military equivalent, annually. Flight crewmembers and research personnel require FAA third-class medical certificates or equivalent medical clearance from the GRC flight examiner. Physiological, egress, and life-support training shall be accomplished as required in the Aircraft Operations Manual. Training and certification records shall be kept in an Aircraft Operations Office file per the GRC Aircraft Operations Manual, GLM–FA 7900.2.

7.0 RECORDS

The Chief, Aircraft Operations Office, will maintain records as per the requirements of NASA Headquarters NPRs, GRC, and organization manuals. Medical clearance records will be maintained by GRC medical staff.

8.0 REFERENCES

Document number	Document name
GLM–FA–7900.2	Aircraft Operations Manual, 1999, NASA Glenn Research Center
GLP–FA–7900.3	Research Flight Operations and Airworthiness Procedures, NASA Glenn Research Center
GLM-FA-7900.4	Aviation Safety Program Manual
NPR 7900.3B	NASA Aircraft Operations Manual
NPR 8715.3B	NASA Safety Manual
NPR 8621.1B	Procedures and Guidelines for Mishap Reporting, Investigating and Record-keeping

APPENDIX A.—DEFINITIONS AND ACRONYMS

Airworthiness and Configuration Control Manager (ACCM)

Aviation Safety Committee (ASC)

Aviation Safety Officer (ASO)

Federal Aviation Administration (FAA)

Glenn Research Center (GRC)

NASA Procedural Document (NPD)

NASA Procedural Requirement (NPR)

Pilot in Command (PIC)

Safety and Health Division (SHeD)

Safety and Mission Assurance Directorate (SMAD)

Unmanned Aircraft System (UAS)