

VOLUME 3 GENERAL TECHNICAL ADMINISTRATION**CHAPTER 57 MAINTENANCE REQUIREMENTS FOR HIGH-PRESSURE CYLINDERS INSTALLED IN U.S.-REGISTERED AIRCRAFT CERTIFICATED IN ANY CATEGORY****Section 1 Safety Assurance System: Maintenance Requirements for High-Pressure Cylinders****3-4544 REPORTING SYSTEM(S).**

A. Program Tracking and Reporting Subsystem (PTRS). For Title 14 of the Code of Federal Regulations (14 CFR) parts 91, 125, 129, 133, and 137, use PTRS activity codes: 3694, 3341, 3351, 5694, 5341, and 5351.

B. Safety Assurance System (SAS). For 14 CFR parts 121 and 135, use SAS Automation. This section relates to SAS Elements 4.4.4 (AW), Aircraft Acceptance Process and 4.2.2 (AW), Maintenance/Inspection Schedule.

3-4545 OBJECTIVE. This section provides guidance for the maintenance requirements of high-pressure cylinders installed in all U.S.-registered aircraft regardless of how the aircraft is operated.

3-4546 GENERAL. The regulatory requirements to maintain, store, and handle aircraft high-pressure cylinders that contain hazardous materials (hazmat) have been a source of misunderstanding within the Federal Aviation Administration (FAA) community. This section will provide information and guidance for the maintenance requirements of high-pressure cylinders installed in U.S.-registered aircraft. This section will also explain the applicability of cylinder requalification requirements for high-pressure cylinders contained in Title 49 of the Code of Federal Regulations (49 CFR) subtitle B, chapter I, subchapter C, Hazardous Materials Regulations.

A. Requirements. There are unique aspects to consider in the FAA maintenance requirements related to high-pressure cylinders installed in an aircraft and different Department of Transportation (DOT) maintenance requirements when the cylinders are not installed in an aircraft.

1) Each high-pressure cylinder installed on a U.S.-registered aircraft must be a cylinder that was manufactured and approved under the DOT requirements of 49 CFR or under a “special permit” issued by the Pipeline and Hazardous Materials Safety Administration (PHMSA) under 49 CFR part 107. There are no exceptions.

2) Each high-pressure cylinder installed or offered for installation with intent to transport on a U.S.-registered aircraft is considered to be an aircraft part and is regulated under the maintenance requirements of 14 CFR appropriate to the type of aircraft and type of operation. In this case, 14 CFR restricts cylinder maintenance to removal, installation, servicing, and inspections (service life and requalification date checks, pressure and weight checks,

serviceability/damage inspections, etc.). Cylinder repairs and requalifications are accomplished under the requirements of 49 CFR.

3) Each high-pressure cylinder that has been removed from a U.S.-registered aircraft and not otherwise intended to be re-installed is not considered to be an aircraft part. For the purpose of overhaul, repair, and testing of the cylinder, such as hydrostatic testing, Title 29 of the Code of Federal Regulations (29 CFR) and 49 CFR, not 14 CFR, regulate the continued serviceability requirement.

4) Each high-pressure cylinder installed in a U.S.-registered aircraft may remain installed past the time when its 49 CFR-required requalification is due, provided the cylinder is not removed from the aircraft. A cylinder that is past the date when its 49 CFR-required requalification is due may not be installed, serviced, or refilled until it has been requalified by a person authorized under the appropriate provisions of 49 CFR.

5) A high-pressure cylinder installed in a U.S.-registered aircraft may not remain installed past the airframe or cylinder manufacturer's service life limit date.

B. Focus of the HMR. The HMR provides instructions for the safe transportation of hazmat in all modes of transportation, not aircraft maintenance. The HMR does not have provisions for maintenance of aircraft parts.

C. Hazmat Table. Title 49 CFR part 172, § 172.101 contains descriptions of the hazmat's proper shipping names and other references for the safe transportation of hazmat.

3-4547 BACKGROUND.

A. Previous Events. There have been events involving high-pressure oxygen cylinders. Most of these events have not involved the structural integrity of the cylinders, but have involved fires attributed to servicing the pressure cylinder while the cylinder was still installed aboard the aircraft. There have also been instances where cylinders that have not been properly approved under 49 CFR have been installed in U.S.-registered aircraft. Many of these events have been attributed to the absence of scheduled maintenance requirements and adequate maintenance procedures.

B. Regulatory Requirements. High-pressure cylinders containing hazmat and used as aircraft equipment are subject to regulations in four different areas of the CFR that are administered by four separate regulatory agencies. These areas are as follows:

1) As discussed above, the HMR is codified in 49 CFR. The HMR is broad in scope and covers all of the elements related to the safe transport of hazmat by any means, including the qualification, maintenance, and use of hazmat packaging or containers. Hazmat sent using commercial transportation and/or other methods must comply with the HMR. These regulations apply to those who offer, accept, or carry hazmat to, from, within, and across the United States. PHMSA promulgates and administers these regulations.

a) PHMSA has delegated administration, surveillance, and enforcement of those specific parts of the HMR related to the transportation of hazmat by air to the FAA's Office of

Security and Hazardous Materials Safety (ASH). For more information, refer to http://www.faa.gov/about/office_org/headquarters_offices/ash/ash_offices.

b) PHMSA has retained administration, surveillance, and enforcement of those parts of the HMR related to the qualification, requalification, maintenance, and use of high-pressure cylinders.

2) Title 29 CFR codifies other regulations regarding the safe handling of hazmat when it is not being offered, accepted, or carried with the intention of transporting hazmat. The Occupational Safety and Health Administration (OSHA) promulgates and administers these regulations.

3) Title 14 CFR contains regulations specific to hazmat training, which relate to the transportation of hazmat by air. There are no specific 14 CFR regulations that deal with the maintenance of pressure cylinders that contain hazmat.

4) The Environmental Protection Agency (EPA) is another agency that becomes involved if the hazmat receives a waste classification. The EPA promulgates and enforces regulations related to mitigating or eliminating the effects of hazmat on the environment. Title 40 of the Code of Federal Regulations (40 CFR) contains these regulations. A few examples of aircraft hazardous waste are expended or expired chemical oxygen generators, oils, fuels, and/or other fluids.

3-4548 HIGH-PRESSURE CYLINDER MAINTENANCE.

A. Installed Pressure Cylinder Maintenance. Title 14 CFR maintenance requirements appropriate to the type of aircraft and operation regulate pressure cylinders installed on a U.S.-registered aircraft. In any case, the maintenance that a provider may accomplish while the cylinder is installed in the aircraft is restricted to the replacement, servicing, or inspection of those cylinders. This is consistent with the meaning of the term “maintenance” in 14 CFR part 1, § 1.1. This is also consistent with 49 CFR part 175, § 175.8, which states that pressure cylinders installed in a U.S.-registered aircraft are not subject to the HMR. This exception only applies when the aircraft has a cylinder installed.

B. Removed Pressure Cylinder Maintenance.

1) Pressure cylinders removed from U.S.-registered aircraft which are being stored, handled, or otherwise moved without the intention of transport come under the appropriate requirements of 29 CFR, Labor. Refer to 29 CFR Part 1910, Occupational Safety and Health Standards, for additional information.

2) Title 49 CFR regulates pressure cylinders removed from U.S.-registered aircraft and requires testing of the cylinders for requalification under the requirements of 49 CFR. Title 49 CFR requires these cylinders to be requalified on a calendar-time basis. Requirements specific to a cylinder may be found in 49 CFR part 180, §§ 180.3, 180.205, and 180.209, and other CFR parts. The 49 CFR cylinder requalification process contains specific requirements, including a hydrostatic test. However, a hydrostatic test alone does not satisfy the 49 CFR cylinder requalification requirements.

3) Maintenance providers may not install cylinders in a U.S.-registered aircraft certificated in any category if the cylinders are not approved, qualified, and/or requalified under 49 CFR.

3-4549 PROCEDURES.

A. High-Pressure Cylinders Maintenance Program Requirement. Each operator of a U.S.-registered aircraft must have maintenance and recordkeeping procedures consistent with its particular regulatory requirements for each high-pressure cylinder installed on the aircraft.

1) Operators should develop procedures to ensure that maintenance providers do not fill or service these cylinders after they have reached the time when the 49 CFR requalification requirements are due.

2) The maintenance program will include pre-installation instructions to inspect the cylinders prior to aircraft installation for serviceability. Maintenance personnel must reject damaged cylinders for installation per 49 CFR, as this affects cylinder integrity to retain high pressure, which would impose a hazard.

3) Title 49 CFR § 180.205(c) provides that a cylinder may be requalified at any time during or before the month and year that the requalification is due.

4) A cylinder filled and installed in the aircraft before the requalification becomes due may remain in service until the cylinder is removed from the aircraft.

5) A cylinder may not remain in service beyond the life limits established by the airframe or cylinder manufacturer.

6) A cylinder with a specified service life may not be refilled and offered for transportation after its authorized service life has expired.

NOTE: Title 14 CFR provides for the continued airworthiness of the high-pressure cylinders through the maintenance instructions provided by the manufacturer of the aircraft. Those instructions will often refer to an accessory, instrument, or equipment manufacturer as the source of this information if the applicant shows that the item has an exceptionally high degree of complexity requiring specialized maintenance techniques, test equipment, or expertise.

B. High-Pressure Cylinders Not DOT-Qualified Under 49 CFR. All high-pressure cylinders will meet the requirements and certification standards of 49 CFR. Those cylinders not meeting those standards must not be installed on aircraft and must be replaced if installed.

C. High-Pressure Cylinders Not DOT-Qualified Under 49 CFR and Operator Noncompliance.

1) Since Flight Standards Service does not enforce the HMR, contact the enforcement section of the PHMSA Regional Office (RO) that covers the location.

2) For PHMSA ROs, refer to <http://www.phmsa.dot.gov/about-phmsa/offices>.

3-4550 FUTURE ACTIVITIES. None.

RESERVED. Paragraphs 3-4551 through 3-4563.