



U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

March 11, 2022

1200 New Jersey Avenue, SE
Washington, DC 20590

DOT-SP 16320
(SEVENTH REVISION)

EXPIRATION DATE: 2023-06-30

(FOR RENEWAL, SEE 49 CFR 107.109)

1. **GRANTEE:** Hexagon Digital Wave LLC
Centennial, CO
2. **PURPOSE AND LIMITATION:**
 - a. This special permit authorizes the extension of the service life of certain DOT-CFFC cylinders, which are subjected to the requalification and operational controls that are defined in this special permit. This special permit provides no relief from the Hazardous Materials Regulations (HMR) other than as specifically stated herein. The most recent revision supersedes all previous revisions.
 - b. The safety analyses performed in the development of this special permit only considered the hazards and risks associated with the transportation in commerce.
 - c. No party status will be granted to this special permit.
3. **REGULATORY SYSTEM AFFECTED:** 49 CFR Parts 106, 107 and 171-180.
4. **REGULATIONS FROM WHICH EXEMPTED:** 49 CFR § 180.205(g) in that alternative testing is authorized as provided herein.
5. **BASIS:** This special permit is based on the application from Hexagon Digital Wave, LLC dated September 6, 2019, submitted in accordance with § 107.123, and PHMSA's editorial review on May 13, 2020 and modification on March 3, 2022.

6. HAZARDOUS MATERIALS (49 CFR 172.101):

Hazardous Materials Description			
Proper Shipping Name	Hazard Class/ Division	Identification Number	Packing Group
Air, compressed (breathing air containing up to 39% by volume oxygen)	2.2	UN1002	N/A

7. SAFETY CONTROL MEASURES:a. PACKAGING:

(1) Packagings prescribed are limited to certain non-DOT specification composite cylinders made under the DOT-CFFC standard and manufactured under special permits and maintained under the standard operating procedure as described in the Hexagon Digital Wave LLC (HDW) special permit application on file with the Office of Hazardous Materials Safety Approvals and Permits Division (OHMSAPD).

(2) Cylinders may be considered for an extended service life not exceeding 30 years after the original manufacturing date of the cylinder.

(3) Each cylinder considered for extended service life must be requalified by Modal Acoustic Emission (MAE) in accordance with the procedures specified in the HDW application for special permit on file with the OHMSAPD and as prescribed in this special permit.

(4) Cylinders passing the MAE requalification may be marked "DOT-SP 16320" and authorized for an additional 5 years. Cylinders with the DOT-SP 16320 marking must be successfully requalified once every 5 years using MAE in order to remain in service for a maximum service life of 30 years from the date of manufacture.

b. Requalification: Each cylinder must be requalified once every 5 years by using Modal Acoustic Emission (MAE). The MAE testing must in accordance with "**Modal acoustic emission (MAE) Examination Standard for Periodic Inspection and Testing (Requalification) of Composite Overwrapped Pressure Vessels (COPVs)**" posted on PHAMSA website, <https://www.phmsa.dot.gov/technical-resources/hazmat-technical-resources/technical-reports> and the additional procedure provided by Digital Wave Corporation (DWC) on file with the Office of Hazardous Materials Safety Approvals and Permits Division (OHMSAPD).

c. **MARKING:** Each cylinder that has passed the requalification described in this special permit for extended service life must be marked “DOT-SP 16320” in addition to the original cylinder special permit number. All markings, including requalification date (month/year), must be permanently placed on the cylinder as specified in § 180.213. The marking of the RIN symbol on the cylinder certifies compliance with all of the terms and conditions of this special permit.

d. **PERSONNEL QUALIFICATION:** Each person who performs retesting or who evaluates or certifies retest results must meet the following requirements:

(1) **Project Manager:** The senior manager of HDW responsible for compliance with DOT regulations including this special permit. Additionally, the project manager must ensure that each operator and senior review technologist maintains the required certifications described herein.

(2) **MAE Tester:** The personnel responsible for performing cylinder retesting under this special permit must be qualified to an appropriate Level (Level I, II or III) in MAE testing in accordance with the American Society for Nondestructive Testing (ASNT) Recommended Practice SNT-TC-1A-1996 depending upon the assigned responsibility as described below:

(i) As a minimum, a Level II Operator must perform system startup, calibrate the system and review and certify the test results when written acceptance and rejection criteria for cylinders have been provided by a Senior Review Technologist. Based on written criteria, the Level II Operator may authorize cylinders that pass the retest to be marked in accordance with paragraph 7.h. of this special permit. However, a person with Level I certification may perform a system startup, check calibration and perform MAE under the direct guidance and supervision of a Senior Review Technologist or a Level II Operator, either of whom must be physically present at the test site so as to be able to observe examinations conducted under this special permit.

(ii) **Senior Review Technologist (SRT):** A person who provides the written MAE procedure, supervisory training and examinations (Level I and II), technical guidance to operators and reviews and verifies the test results. The SRT must prepare and submit the reports required in paragraph 7.i. and annually verify that the MAE program is being operated in accordance with the requirements of this special permit. An SRT must have a thorough understanding of the DOT Regulations (49 CFR) pertaining to the requalification and reuse of DOT cylinders authorized under this special permit and ASNT Recommended Practice SNT-TC-1A and possess:

- (A) A Level III certificate from ASNT in Acoustic Emission with a documented minimum of 2 years of experience in Non-Destructive Evaluation (NDE) of pressure vessels or pipelines using the Modal Acoustic Emission test method;
- (B) A Professional Engineer (PE) License with a documented minimum of 2 years of experience in Non-Destructive Evaluation (NDE) of pressure vessels or pipelines using the Modal Acoustic Emission test method; or
- (C) A PhD degree in Engineering/Physics with documented evidence of experience in Non-Destructive Evaluation (NDE) of pressure vessels or pipelines, using the Modal Acoustic Emission test method or research/thesis work and authoring/co-authoring of technical papers published, in recognized technical journals, in the field of Modal Acoustic Emission testing methods.

The most recent copies of certification (e.g., ASNT Level III or PE license) must be available for inspection at each requalification facility.

e. OPERATIONAL CONTROLS:

- (1) The cylinders that are requalified for service life extension under this special permit are limited to DOT-CFFC cylinders.
- (2) Each cylinder covered by the terms of this special permit must have a prominent warning label on the external surface of the cylinder that indicates “The Cylinder must be externally inspected per CGA C6.2 prior to every fill”.
- (3) A cylinder that has been dropped in a fire may not be returned to service.
- (4) Each cylinder that is requalified for service life extension under this special permit must be identified by special permit designation, serial number, the cylinder’s owner (e.g., Fire station), and MAE requalification results (fail/pass);
- (5) Record Keeping: Prior to marking a cylinder with “DOT-SP 16320” (designation for extended service life), the identification of each cylinder as described in paragraph 8.c. of this special permit must be submitted to the OHMSAPD.
- (6) Revalidation Plan: All cylinders marked with “DOT-SP 16320” are subject to the in-service life extension (Revalidation Plan). The Revalidation Plan is described in paragraph 8.a. of this special permit.
- (7) Maximum Service Life: Cylinders requalified under this special permit are authorized for an additional 5 year service life extension. The maximum service

life of any cylinder that was qualified under this special permit is 30 years from the date of manufacture.

8. SPECIAL PROVISIONS:

a. SERVICE LIFE EXTENSION REVALIDATION PLAN: HDW must formulate a plan for all the cylinders that are marked "DOT-SP 16320" for the additional service life extension. The plan must be submitted to the OHMSAPD within 12 months of the issuance of this special permit and must include:

- (1) A detailed procedure for obtaining the DOT-CFFC cylinders from the field and design qualification testing of each design type;
- (2) A procedure for the random selection of a minimum of 5 cylinders which have been in service for 18, 21, 24 and 27 years;
- (3) All randomly selected cylinders from the field must be tested in accordance with Sections 8.5.4, 8.5.5, 8.5.7 and 8.5.8 of ISO 11119-2:2002. Acceptance criteria must be as defined in ISO 11119-2; and
- (4) The complete MAE test report, including the original test data, must be submitted to the Associate Administrator for Hazardous Materials Safety for assessment within 30 days of completion of the test. Failure to meet the acceptance criteria specified in this special permit may result in the design being restricted to a maximum life of 15 years.

b. The designated SRT must review the MAE program annually. The designated SRT must submit a letter to the OHMSAPD, on January 7th each year that this special permit is effective, verifying that the MAE program is meeting the terms and requirements of this special permit.

c. The total number of cylinders tested under this special permit must be reported by special permit number, type (e.g., CFFC), serial number and age. These results must be summarized and reported to DOT on an annual basis. A summary of the test results at each facility must be reported (electronic or paper) to the Associate Administrator for Hazardous Materials Safety annually to assess the effectiveness of the test program. The summary must include the total number of cylinders tested under this special permit grouped by type or special permit number, size and age. The summary must include the number of cylinders accepted, rejected or condemned. For any rejected or condemned cylinder, the defect causing the rejection/condemnation must be fully characterized and profiled (i.e., cuts, abrasions, impacts, fiber failures, chemical damage, heat damage, etc.) and the specific size of the defect should be determined (i.e., length, depth, width, etc.). The cylinders that were condemned at visual inspection (prior to MAE) must also be included in the report.

- d. A statement of qualifications and supporting documentation, for each “qualified MAE tester” used under this special permit and information in support thereof, must be maintained by HDW. The location of this statement, for each “qualified MAE tester”, must be identified to the OHMSAPD.
- e. A person who is not a holder of this special permit who receives a package covered by this special permit may reoffer it for transportation provided no modification or change is made to the package and it is reoffered for transportation in conformance with this special permit and the HMR.
- f. A current copy of this special permit must be maintained at each facility where the package is offered or reoffered for transportation.
- g. A current copy of the DOT special permit for the cylinders listed in paragraph 7.a. of this special permit must be maintained at each facility where retesting is performed.
9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, cargo vessel, passenger-carrying aircraft, cargo aircraft and rail freight.
10. MODAL REQUIREMENTS: A current copy of this special permit must be carried aboard each cargo vessel, aircraft, or motor vehicle used to transport packages covered by this special permit. The shipper must furnish a copy of this special permit to the air carrier before or at the time the shipment is tendered.
11. COMPLIANCE: Failure by a person to comply with any of the following may result in suspension or revocation of this special permit and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:
- o All terms and conditions prescribed in this special permit and the Hazardous Materials Regulations, 49 CFR Parts 171-180.
 - o Persons operating under the terms of this special permit must comply with the security plan requirement in Subpart I of Part 172 of the HMR, when applicable.
 - o Registration required by § 107.601 et seq., when applicable.

Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this special permit must receive training on the requirements and conditions of this special permit in addition to the training required by §§ 172.700 through 172.704.

No person may use or apply this special permit, including display of its number, when this special permit has expired or is otherwise no longer in effect.

Under Title VII of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)— “The Hazardous Materials Safety and Security Reauthorization Act of 2005” (Pub. L. 109-59), 119 Stat. 1144 (August 10, 2005),

amended the Federal hazardous materials transportation law by changing the term “exemption” to “special permit” and authorizes a special permit to be granted up to two years for new special permits and up to four years for renewals.

12. **REPORTING REQUIREMENTS:** Shipments or operations conducted under this special permit are subject to the Hazardous Materials Incident Reporting requirements specified in 49 CFR §§ 171.15 Immediate notice of certain hazardous materials incidents, and 171.16 Detailed hazardous materials incident reports. In addition, the grantee(s) of this special permit must notify the Associate Administrator for Hazardous Materials Safety, in writing, of any incident involving a package, shipment or operation conducted under terms of this special permit.

Issued in Washington, D.C.:



for William Schoonover
Associate Administrator for Hazardous Materials Safety

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Pipeline and Hazardous Material Safety Administration, U.S. Department of Transportation, East Building PHH-30, 1200 New Jersey Avenue, Southeast, Washington, D.C. 20590.

Copies of this special permit may be obtained by accessing the Hazardous Materials Safety Homepage at <https://www.phmsa.dot.gov/approvals-and-permits/hazmat/special-permits-search>. Photo reproductions and legible reductions of this special permit are permitted. Any alteration of this special permit is prohibited.

PO: M Toughiry/TG/KAH