



U.S. Department
of Transportation

**Research and
Special Programs
Administration**

FEB 10 2005

400 Seventh St., S.W.
Washington, D.C. 20590

Mr. Andrew N. Romach
Corporate Regulatory Manager
URS Corporation
1600 Perimeter Park Drive
Morrisville, NC 27560

Ref No.: 04-0249

Dear Mr. Romach:

This responds to your October 27, 2004 letter requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) as applicable to jet engines. Specifically, you ask if jet engines may be classed as "Engines, internal combustion." In addition, you state that the exciter box, an integral component of jet engines, contains a component referred to as a "spark gap." You indicate that the "spark gap" contains a limited quantity of Krypton-85 gas, a radioactive material assigned to UN2910. You ask if a cleaned and purged jet engine and securely installed "spark gap" may be shipped as unregulated material in accordance with § 173.220(a)(1) and (d)(1), respectively.

Aircraft engines, whether piston-powered, rotary-powered, or turbine-powered, derive their power by heat and pressure produced by the compression and combustion of a fuel-air mixture. Therefore, aircraft engines including jet engines are properly classified as "Engines, internal combustion, 9, UN3166."

In accordance with § 173.220(a)(1), an engine that is completely drained, sufficiently cleaned of residue, and purged of vapors to remove any potential hazard and that will not release liquid fuel in any orientation is not subject to the HMR. In addition, a limited quantity of radioactive material that is contained in a securely installed engine component that is integral to the operation of the engine is excepted from the requirements of the HMR (see § 173.220(d)(1)). Therefore, a cleaned and purged jet engine with a "spark gap" contained in a securely installed exciter box is excepted from the requirements of the HMR, provided the applicable requirements in § 173.220 are met.

I hope this information is helpful. Please contact us if you require additional assistance.

Sincerely,

Edward T. Mazzullo
Director
Office of Hazardous Materials Standards



040249

173.220



October 27, 2004

Supko
§ 173.220
Engines
04-0249

Mr. Ben Supko
Office of Hazardous Material Standards
Research and Special Programs Administration
U.S. Department of Transportation
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Washington, DC 20590-0001
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Dear Mr. Supko:

Q-1 I am writing to you to request a written regulatory interpretation concerning whether an *Jet* engine would be considered an *Internal Combustion Engine* for the purposes of hazard classification and shipment under the DOT HAZMAT regulations.

In the Hazardous Material Table (49 CFR 172.101), for the proper shipping name *Engines, Internal Combustion*, column (d) references 49 CFR 173.220. Paragraph (d)(1) of 49 CFR 173.220 allows items of equipment containing hazardous materials, which are integral components of the engine and necessary for the operation of the engine to be shipped as not subject to the DOT HAZMAT regulations, so long as these items are securely installed in the engine.

Aircraft jet engines contain a spark gap. The spark gap, which separately is shipped as a radioactive material excepted package due to a very low amount of Krypton-85 gas, is an item of equipment that is an integral component of any aircraft engine and necessary for the operation of the engine. The spark gap is securely affixed inside an exciter box, which is securely installed in the engine.

Q-2 Would we be able to ship a jet engine with a spark gap securely installed as DOT not restricted if the aircraft engine is cleaned and purged of all residual fuel and meets the requirements of 49 CFR 173.220(a)(1): "An engine may be considered as not containing fuel when the fuel tank, engine components, and fuel lines have been completely drained, sufficiently cleaned of residue, and purged of vapors to remove any potential hazard and the engine when held in any orientation will not release any liquid fuel."

Thank you for your consideration of this request.

Sincerely,

Andrew N. Romach
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URS Corporation

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