



U.S. Department  
of Transportation

**Research and  
Special Programs  
Administration**

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

FEB 24 2000

Mr. Melvin Starks  
Manager, Cargo Loading and  
Hazardous Materials  
Express One International, Inc.  
3890 West Northwest Highway,  
Dallas, TX 75220

Ref. No. 99-0247

Dear Mr. Starks:

This is in response to your letter dated August 27, 1999, regarding the definition of a "compartment or bin" under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180). Your questions are paraphrased and answered as follows:

Is a compartment one pallet position, or is it the entire upper cabin? The answer to your question is no, a cargo compartment is not one pallet position. The term, "cargo compartment" as used in the HMR is based on the requirements for cargo compartments of 14 CFR Part 25 Sections 25.855 and 25.857, which were amended by a February 17, 1998 final rule published by the Federal Aviation Administration (63 FR 8031). Quantities of dry ice in excess of 441 pounds in any cargo compartment are allowed only when a special written arrangement has been made between the shipper and the operator.

Regarding your question of whether the Office of Hazardous Materials Standards is aware of a formula to calculate the maximum quantity of dry ice for a B-727 aircraft, the answer is no. The requirement for special written arrangement with an operator for quantities of dry ice in excess of the limitation provided in § 173.217 is based on the range of possible cargo compartment configurations of different aircraft. The HMR does not specify a formula to be used to determine the maximum amount of dry ice that may be carried on a particular aircraft.

I hope this satisfies your request.

Sincerely,

Delmer F. Billings  
Chief, Standards Development  
Office of Hazardous Materials Standards

# Express ONE

International, Inc.

Nelson  
\$ 173.217

August 27, 1999

MELVIN STARK'S  
Manager - Cargo Loading  
and Hazardous Materials

Mr. Ed Mazullo

400 7th Street Southwest  
Washington, D. C. 20590

99-0247

Dear Mr. Mazullo:

Express One (and most other airlines that fly B727 aircraft) allows up to 4000 pounds of dry ice to be loaded in the main cargo compartment. My concern is that this may be too much. 49 CFR 173.217(d) allows 441 pounds per compartment or bin. I need you give a specific definition of "compartment or bin." In other words, is a compartment one pallet position or the entire upper cabin which consists of 9 or 12 pallet positions? I have contacted FAA dangerous goods specialists, Mr. Richard Tarr of the DOT, and the Research and Special Programs Administration. I received different answers from each one. Mr. Tarr referred me to you. ?

The reason I have concerns in this matter is because it has been reported to me that dry ice shipments have been the cause of death for some pilots. Also the U. S Navy has a dry ice formula that limits the amount of dry ice in the entire upper cabin to about 800 pounds. This could be because cargo and passengers are transported in the same upper compartment. The Navy formula is:

$$X = \frac{VA(0.47)}{32.3}$$

V= Volume of aircraft

A=Air Exchange per hour

X= Maximum dry ice

Do you know of such a formula that calculates the maximum dry ice quantity for the entire main cabin area of a B727 aircraft?

I would appreciate hearing from you on this matter as soon as possible.

Respectfully

Melvin Starks

Melvin Starks

Copy to: Bud Phillips  
Skip Spence  
Neil Johnson  
Ken Schweitzer

MEMORANDUM

DATE: 02 December, 1999  
TO: Spenser Watson  
Jim O'Steen  
FROM: Eric   
SUBJECT: Letter of clarification to Starks

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I have altered the letter to Starks on dry ice and before you read the second draft, I want to outline my analysis of the situation and address your comments.

Spenser:

The company name has been added... thanks. Also, you are right in saying that a pallet position is not a compartment. A compartment is also not a ULD. We can't say, however, that a bin isn't a ULD since I can't locate any explanation for it or rationale for the addition of it into the regulations. I think the mention of a bin in an "or" statement implies a choice between it and the other thing in the statement, and that would be a cargo compartment. After talking to you, I realized that we are in a sticky spot with that term because I contacted the FAA to see if we would have gotten it from them in years past, and they think it is a ULD. Anyway, I removed the reference to a "bin" in the letter. I think the letter sufficiently answers his question now despite the fact I omitted the term.

*I concur with the new draft. Spence 12/07/99*

Jim:

According to the FAA, the term "bin" come from a separating device that prohibited packages from intermixing with other packages before the fuselage of an aircraft was split into defined cargo compartments as they are now. Today, the term "bin" is a ULD, or other device that sufficiently separates packages. When I asked them if that implies that a "bin" affords the same standard for protection that a cargo compartment does (such as from passengers) they said there are no requirements applicable to that, although some do... (as if any of this is very helpful).

Also, you are 100% right about the potential for a dangerous situation, but only if the operator decides to do it that way. There is no limitation except by physical space to the amount of dry ice that can be transported on a single aircraft, because § 173.217 allows them to with a written agreement. This issue is ultimately left to the air carrier to determine what is safe for them to do for any given aircraft configuration.

Maybe we can slip the removal of the term "bin" into a rule that's going out soon.

November 26, 1999

MEMO TO CORRESPONDENCE FILE 99-0247

FROM: Spencer Watson, DHM-21.1

SUBJECT: Comments on Interpretation Letter to Mr. Melvin Starks of Express One International Inc.

1. The company name has been left out of the address.
2. The "main cargo compartment" i.e, the entire upper deck area in a Boeing 727 (or any aircraft) is defined as a Class E cargo compartment in 14 CFR if the flight is cargo-only. So, the short answer to Mr. Starks question is no, a compartment is not one pallet position or unit load device, it is the entire cargo area that is not interconnected with any other area. According to 173.217(d), the company should limit the main deck compartment in a cargo-only flight to 441 pounds of dry ice, except by specific and special arrangement with the aircraft operator or carrier.
3. For the future, the word "bin" in the current text of 173.217(d) is mis-leading and ought to be discontinued.

*Spencer*  
If a bin is considered an overpack or unit load device, 441 pounds of dry ice in many such bins could create a hazardous atmosphere in a cargo compartment. At the time this section was written was a bin considered a small cargo compartment? The current ~~literal~~ interpretation of this section could allow a hazardous practices.

*AKO*  
11/30/99