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**DRAFT REGULATORY IMPACT ANALYSIS,
INITIAL REGULATORY FLEXIBILITY DETERMINATION,
TRADE IMPACT ASSESSMENT, AND UNFUNDED MANDATES**

HAZARDOUS MATERIALS TRAINING REQUIREMENTS

**Notice of Proposed Rulemaking
(14 CFR Parts 119, 121, 135, and 145)**

**OFFICE OF AVIATION POLICY AND PLANS,
OPERATIONS REGULATORY ANALYSIS BRANCH, APO-310
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EXECUTIVE SUMMARY

This notice of proposed rulemaking would amend 14 CFR parts 121 and 135 to update manuals and hazardous materials training requirements for all persons who perform a function or have a supervisory responsibility for a function involving acceptance, rejection, handling, storage incidental to transport, packaging of company owned materials, loading, unloading or carriage of items on an aircraft. The proposed regulations would codify two distinct training programs – one for “will carry” certificate holders; the other for “will not carry” certificate holders who refuse to transport hazardous materials. The proposed regulations are closely based on guidance materials provided by the FAA that have been adopted by many certificate holders. Part 119 would be amended to add language specifying that a certificate holder’s operations specification would include either an authorization permitting the handling and transport of hazardous materials or a designation prohibiting such actions. A Special Federal Aviation Regulation (SFAR) would be placed at the beginning of part 119 that would contain all current hazardous materials manual and training requirements. This SFAR would provide a 15-month transition period. The proposed rule would also amend part 145 repair station certification procedures and require repair stations to ensure that all covered persons receive hazardous materials training and notify all workers of each certificate holder’s hazardous materials status.

The FAA concludes that the proposed rule is cost-beneficial. Costs for this proposed rule would be \$107.5 million (\$75.8 million, discounted) over a 10-year period. If a single accident resulting in fatalities is avoided by this proposed rule, then the monetary benefit is estimated at \$232 million.

The proposed rule would not have a significant impact on a substantial number of small entities, nor would it constitute a barrier to international trade. The proposed rule does not contain a federal intergovernmental or private sector mandate that exceeds \$100 million in any year, therefore, the requirement of the Unfunded Mandates Reform Act of 1995 do not apply.

INTRODUCTION

This regulatory evaluation is performed in accordance with Executive Order 12866, which requires analysis of each regulation to determine the relationship of the proposed rule's benefits to costs. This proposed rule would update and clarify current hazardous materials requirements for part 121 and part 135 aircraft operators. Additionally, the proposed rule would amend the certification procedures and requirements, and training requirements for part 145 repair stations that use or handle hazardous materials, or replace aircraft components. The proposed rule seeks increased compliance with the Department of Transportation's (DOT) Hazardous Materials Regulations (HMR).

The proposed rule would amend the current manual requirements and training regulations in parts 121 and 135 to incorporate current advisory guidance, thus making the guidance material mandatory. The current regulations have not been changed significantly since their adoption over 25 years ago. The proposed rule would ensure that both part 121 and 135 carriers provide adequate training to all persons who perform a function or are assigned a supervisory responsibility for a function involving the acceptance, rejection, handling, storage incidental to transport, packaging of company owned materials, loading, unloading or carriage of items on an aircraft. The proposed rule would also increase oversight of repair stations.

In addition to the benefit-cost analysis, this regulatory evaluation contains an initial regulatory flexibility determination, which analyzes the economic impact of the proposed regulatory changes on small entities, as required by the Regulatory Flexibility Act of 1980, as amended. This evaluation also contains an assessment of the effect of the proposed regulatory changes on international trade, as required by the Office of Management and Budget. Finally, this document contains an Unfunded Mandate Assessment, as required by the Unfunded Mandates Reform Act of 1995.

BACKGROUND

The last amendments to the FAA regulations governing hazardous materials for part 121 operators were adopted in 1980, and for part 135 operators the last amendments were part of a substantial rewrite and recodification completed in 1978. The FAA issued Advisory Circular 121-21B on January 3, 1984 to provide guidance on hazardous materials training programs and manual requirements for part 121, 125, and 135 certificate holders. On May 15, 1992, the Research & Special Programs Administration issued broad hazmat training regulations applicable to all modes of transportation and to shippers of hazmat. The FAA issued national operations and training manuals dated June 24, 1998 to provide training guidance for both “will carry” and “will not carry” operators. These manuals are the basis for the revisions contained in this proposed rulemaking. Many carriers have, or are in the process of, adopting these manuals voluntarily. Many carriers are also applying the terms of these documents to all employees, agents, and contract employees of the air carrier, when these persons are involved in the acceptance, handling, and storage of freight, checked or carry-on baggage and carriage of company-owned hazardous materials (COMAT). However, these guidance documents are not mandatory.

Part 145, Repair Stations, contains the certification requirements for domestic and foreign repair stations and manufacturers. Part 145 does not include hazardous materials manual or training requirements. However, repair stations that use or replace aircraft components or use consumable materials or other items that are regulated under DOT’s HMR are already subject to the training provisions of 49 CFR part 172. Despite the DOT hazmat training requirements, the FAA has noticed a number of aviation incidents, and at least one accident has involved hazmats used or handled by repair stations. The FAA, by this proposal, seeks to close this training gap and improve overall handling and carriage of hazmat transported by aircraft. Closing this gap will implement a National Transportation Safety Board recommendation that subcontractor facilities personnel are provided initial and recurrent hazmat training.

The Proposed Rule

Overview

Sections 121.135 and 135.23 describe what currently must be included in the respective certificate holder's manual. Section 121.135 (b)(23) requires manuals of both "will" and "will not carry" part 121 certificate holders to include procedures and information to assist personnel in identifying packages marked and labeled as containing hazardous materials. In addition, manuals of "will carry" certificate holders must include procedures and instructions related to the carriage, storage, or handling of hazardous materials. Similar manual provisions for Part 135 certificate holders are contained in section 135.23 (p).

The proposed rulemaking would require the manuals of both "will carry" and "will not carry" part 121 and part 135 certificate holders to contain information to assist each person performing a function, or assigned a supervisory responsibility, involving the acceptance, rejection, handling, storage incidental to transport, packaging of COMAT, loading, unloading or carriage of items for transport on board an aircraft, in identifying packages that may contain hazardous materials or exhibit indications of undeclared hazardous materials. It would also require manuals to provide guidance on incident and discrepancy reporting procedures, pilot notification procedures, and information concerning the certificate holder's operations specifications authorization or designation regarding the carriage of hazardous materials to each person performing or supervising a hazmat function. The manual requirements for "will carry" certificate holders are basically the same as what is currently required under both parts 121 and 135.

Existing sections 121.401 and 135.323 prescribe the general training requirements that the respective certificate holders must provide. Current section 121.401(a) (1) mandates that each certificate holder shall ensure that "each person assigned duties for the carriage and handling of dangerous articles and magnetized materials is adequately trained to perform his assigned duties." Current section 135.323 requires certificate holders with more than one pilot to provide a training program that ensures that crewmembers, and persons assigned duties for the carriage and handling of hazardous materials (as defined in 49 CFR 171.8), are adequately trained to perform their assigned duties. The current rules do not clearly address the training requirements for "will not" carry certificate holders.

The proposed rulemaking would amend the current rules to ensure that each person performing a function or assigned a responsibility described in the proposed manual are adequately trained to perform their duties including the ability to recognize and identify items that contain or may contain hazardous materials as defined in 49 CFR 171-180 and that satisfy the requirements of Appendix N. The proposed rule would reemphasize that the training requirement applies to independent contractors and other third-party non-employees who perform these functions for part 121 and part 135 certificate holders, including repair stations. The “will carry” or ”will not carry” authorization/designation would be relevant only to the nature of the training curriculum, not to the application of the training requirement.

The proposed new section 145.5 would prohibit repair stations workers from performing a function, or being assigned a supervisory responsibility, involving the acceptance, rejection, handling, storage incidental to transport, packaging of COMAT, loading, unloading or carriage of items for transport on board an aircraft unless they have received training in accordance with the approved hazmat training program of the part 121 or 135 certificate holder for whom they are performing the function. It would also restate the 49 CFR training requirement clarifying that all part 145 certificate holders that qualify as hazardous materials employers under 49 CFR section 171.8 have a hazardous materials training program. Since they are already required, under DOT’s HMR, to have a training program, this proposal would not impose any significant burden on part 145 certificate holders. In addition, the proposed amendment to section 145.11 would require repair stations to certify compliance with the provisions of the existing training requirements covering the handling and transport of hazardous material for all employees and any contracted employees or independent contractors that use or consume hazmat or other regulated items when applying for certification or rating changes. A new section 145.27, would require each repair station to notify all workers of each certificate holder’s operations specification authorization regarding the carriage of hazardous materials upon notification by the part 121 or 135 operator.

Section-by-Section Summary

Part 119 would be amended by inserting a Special Federal Aviation Regulation (SFAR) containing all current hazardous materials regulations for parts 121 and 135. The SFAR would apply to all certificate holders certificated as of the effective date of the final rule for a period of 15-months from the effective date. Certificate holders certificated after the effective date would have to comply with the new requirements immediately. At the end of the fifteen-month period, all certificate holders would have to comply with the new requirements. Part 119 would also be amended to add language specifying that a certificate holder's operation specifications would include either an authorization permitting the handling and transport of hazardous materials or a designation prohibiting such actions.

Section 121.135 would amend the manual contents of both "will" and "will not" certificate holders to more clearly identify the persons required to receive instructions and information on hazardous materials and to specify the minimum level of information and instructions these persons receive.

Section 121.401(a)(1) would be amended to move the reference to hazardous materials training for persons performing hazardous materials functions from its provisions to a new Subpart Y. The flight and proficiency training requirements would remain in section 121.401. Certificate holders would be required to obtain FAA approval of their hazmat training program. Additionally, Section 121.433a would be removed and the new hazmat training requirements would be placed in new Part 121 Subpart Y. A new Appendix N would be added to part 121. It would set forth the hazardous materials training curriculum for both "will" and "will not" part 121 carriers. It would set training standards for six groups of personnel and its contents would generally comport with the existing Standard Hazardous Materials Training Program guidance document developed by FAA's Dangerous Goods and Cargo Security Office. The guidance document is based on the International Civil Aviation Organization's (ICAO) Technical Instructions for the Safe Transport of Dangerous Goods by Air which already are the basis for many large carriers' hazmat training programs.

Proposed section 121.801 would contain the applicability and definitions provisions. This section would clarify that the training requirement applies to each person performing any

function or assigned supervisory responsibility for a function involving acceptance, rejection, storage incidental to transport, handling, packaging of COMAT, loading, unloading, or carriage of any item that may be placed on board an aircraft for transport. The proposed language is broader than the current requirements. The definitions provision of this section would set forth definitions for initial and recurrent training that are similar to the use of the term in DOT's HMR but are not defined therein. The FAA would continue to require annual recurrent training.

Section 121.802 would require each certificate holder to implement a training program to satisfy the provisions of Appendix N of part 121 and to comply with the Department of Transportation's hazardous materials training requirements in 49 CFR. Appendix N mandates different curriculums for "will carry" and "will not carry" operators. This section would also specify that initial and recurrent training is required and that the FAA must approve the program prior to implementation.

Section 121.803 sets forth the general restriction that no certificate holder may assign a person to perform a supervisory function nor may any person perform a function involving a function regulated by this part unless that person has been trained under the certificate holder's approved initial and recurrent hazmat training program. There are two exceptions to this general restriction. The first exception permits a new hire who is not yet trained or a person with a new job function who is not yet trained to perform a function involving storage incidental to transport, or loading/unloading an aircraft for a period of not more than 30 consecutive days provided the certificate holder maintains proper records and the person performs their function under the direct visual supervision of a trained person. The FAA's principal operations or security inspector would approve the direct visual supervisor to worker ratio. This exception is similar but more limited in scope and time than an existing provision in DOT's HMR. The second exception allows a certificate holder that has written verification from another certificate holder that a non-employee has satisfactorily completed approved hazmat training under that certificate holder's program. The second exception permits the new employer certificate holder to limit the training required to only its approved policies and procedures. This exception is only available if both certificate holders are in the same status, (i.e. "will carry" or "will not carry").

Section 121.803 would also require annual recurrent training. In addition, certificate holders would be required to notify any repair station that performs work for them of the certificate holder's status as a "will" or "will not" carry operator and the certificate holder's policies regarding the handling and transportation of hazardous materials including company materials. An exception to the initial training requirement would be allowed in foreign countries where certificate holders are required to use persons to load and unload aircraft who are not trained to the certificate holder's approved training program. In such situations, the loading and unloading functions would be required to be performed under the direct visual supervision of someone who has successfully completed the approved training program within the past twelve months. This exception is virtually the same as the current exception in section 121.433a(c).

Proposed section 121.804 would require certificate holders to maintain hazmat training records for persons who perform functions specified in section 121.801 including contractors, agents and any other person as well as employees. The records would be retained at the person's work location and the retention period would be inclusive for the past 3 years and extend for at least 90 days after the person no longer was used to perform the covered function. This section also specifies the content of the record. In addition, this section also specifies the record content for the new hires/new job exception.

Section 135.23 – Manual Contents would be amended to explicitly state which persons should be provided with the information and procedures necessary to reject improperly packaged hazardous materials or packages which appear to contain undeclared hazardous materials. Additionally this section would require the manual to include information concerning the certificate holder's operations specifications and policies regarding the carriage of hazardous materials.

Section 135.323 would be amended to more explicitly define persons who must receive hazardous materials training.

Subpart K would be added to part 135. It would be composed of sections 135.501 through 135.504 and would replicate the corresponding sections added to part 121 subpart Y. These sections would prescribe the applicability of the subpart, define initial and recurrent training,

describe the training program requirements and exceptions, and set forth recordkeeping requirements.

Section 145.5 would be added to part 145 which sets forth regulations for certificated repair stations. Subsection 145.5(a) would cross-reference the hazmat training requirements of 49 CFR and 14 CFR parts 121 and 135. While it would not require repair stations to do anything they are not already required to do under the Department of Transportation regulations, it may result in some repair stations implementing hazmat training programs when they determine they are required to do so by 49 CFR. Subsection 145.5(b) would prohibit repair station workers from performing a regulated function under part 121 subpart Y or part 135 subpart K or having a supervisory responsibility involving these functions unless they have received initial and, if applicable, recurrent training, in the part 121/135 certificate holder's approved training program.

Section 145.11 would be amended to require repair stations that qualify as hazardous materials employers to submit evidence to the FAA that all hazmat employees, including contract-employees have received the training required by 49 CFR.

Section 145.27 would be added to require repair stations to notify all workers of the "will carry"/"will not carry" status of the part 121/135 operators for which it works.

Special Emphasis Review

Existing regulations require air carrier manuals to include information regarding the transportation of hazardous materials although the manual's content varies for "will carry" and "will not carry" operators. Parts 121 and 135 also require hazmat training programs to be approved, although there is no defined curriculum. Certificate holders who use only one pilot in their operations are not required to have manuals but are subject to the hazmat training requirements in section 135.333. In an effort to identify and assess the contents of existing manuals and training programs, the FAA conducted a "Special Emphasis Review of Hazardous Materials or Dangerous Goods Manuals and Training Programs" (FSAT 99-06) of all operators conducting operations under part 121 or part 135. On September 22, 1999, Principal Operations Inspectors were requested to review the manuals, training programs, and

category of personnel trained by each of their assigned part 121 and part 135 operators. (The form is included in Appendix A.)

Over 40 percent of active operators submitted responses to the Special Emphasis Review. Overall, the results of this review indicate that a high proportion of both “will carry” and “will not carry” Part 121 operators responding to the survey already are voluntarily complying with most of the provisions of this proposed rule. In addition, many Part 135 “will carry” and “will not carry” operators responding to the survey are also voluntarily complying with many of the provisions of this proposed rule. The results of the review are detailed in Appendix A and are incorporated where appropriate in the cost section.

The Standard Hazardous Materials Training Program

In 1998, the Dangerous Goods and Cargo Security Office developed a model training curriculum for both “will carry” and “will not carry” operators to use for hazmat training. This training is patterned on the training curriculum set forth in the International Civil Aviation Organization’s (ICAO) Technical Instructions for the Safe Transport of Dangerous Goods. Based on an FAA review of operators conducting operations under part 121 or part 135, it appears that most operators conducting operations under part 121 have already adopted this model training program. Additionally, many operators conducting operations under part 135 have adopted all or part of the training model.

The model training curriculum is designed to apply to all employees agents and contract employees of the air carrier, regardless of whether that carrier is a “will carry” or “will not carry” operator. Like the proposed training curriculum in this NPRM, the training curriculum in the model training program contains a number of training modules and suggests that each individual be tested, either orally or in writing, after completing the modules. The FAA suggests that the model training curriculum for “will not” carriers be used for individuals involved in the “acceptance, handling and storage of freight or company owned material destined to be and/or having been transported in air commerce, and in handling checked baggage and/or passenger carry-on baggage.” For “will carry” operators, the FAA suggests that the model training curriculum apply to an individual having “any assigned duties or responsibilities for acceptance, handling, storage, and/or transportation of

Dangerous Goods (DG) or Hazardous Material (HM) cargo, baggage and DG/HM COMAT.” Thus, the model training program designed by the FAA security office is similar in its suggested applicability to the applicability provisions contained in this NPRM.

Analysis of Costs

The FAA has analyzed the expected costs of this regulatory proposal for a 10-year period, from 2002 through 2011. As required by the Office of Management and Budget (OMB), the present value of this cost stream was calculated using a discount factor of 7 percent. All costs in this analysis are expressed in 1999 dollars. Costs for part 121 and 135 operators are examined separately from repair station operators.

Part 121 and Part 135 Costs

An analysis of the proposed rule has identified a number of amendments that would impose costs on part 121 and part 135 operators. These costs can be grouped into administrative and training costs.

Administrative Costs

The following sections contain procedures that will enhance accountability and increase compliance with the proposed rule:

- Sections 121.135 and 135.23 would require operators to revise their manuals. These sections would keep the current requirement to provide information to allow someone to reject improperly marked and labeled hazmat shipments and add a requirement to provide information that would allow the detection of undeclared hazmat shipments. These sections would also specify the persons who need this information.
- Sections 121.803 and 135.503 would require a training record for new hire or new job function persons meeting the requirements of section 121.804 (b). These sections would also establish non-administrative training requirements discussed in the training costs section.
- Sections 121.803 and 135.503 would also require certificate holders to notify any repair station that performs work for them of that certificate holder’s authorizations and policies regarding the transport of hazardous materials.

- Sections 121.804 and 135.504 would expand the current 121 and 135 recordkeeping requirements and increase the record retention period. These sections would also establish non-administrative training requirements discussed in the training costs section.

Manuals

The initial cost to revise manuals to meet the proposed requirements is estimated to be \$321,000 as shown in Table 1. The FAA cost estimate assumes that large companies would need more staff time for revising manuals than small firms¹. FAA data puts the number of active part 121 and part 135 operators at 2,945. However, there are 945 single pilot part 135 operators who are not required to have manuals, reducing the number of operators to 2,000. Part 121 operators number 150 and are evenly split between “will carry” and “will not carry” operators while three-quarters (1,400 of the approximately 1,850) part 135 operators are “will not carry” entities. The FAA has assumed that the size of the firm is more significant in estimating the cost of revising the manual rather than the carrier’s operational specification. The review indicated many operators’ manuals already contain most of the proposed requirements and, therefore, the manuals will only require minimal revision. The FAA estimates that part 121 and large part 135 operators will require 8 hours to revise their manuals and small part 135 operators can accomplish this task in 4 hours. However, based on the review, the FAA estimates 483 operators will need to substantially revise their manuals if the proposed rule is adopted. The estimated number of hours needed for the additional revisions ranges from 40 hours for large part 121 operators to 8 hours for small part 135 operators. Hourly wage costs, including benefits, for making the revision ranges from \$22.65 to \$30.60 per hour.²

¹ This assumption is based on prior discussions with personnel in the industry.

² The estimate of hourly staff time costs was derived from “Industry Wage Survey: Certificated Air Carriers” January 1989, Bureau of Labor Statistics. Wage rates were adjusted to 1999 dollars.

Table 1

HAZARDOUS MATERIALS MANUAL REVISION COSTS (1)

Category	All Firms	Hours	Affected Firms (2)	Additional Hours	Wages	Total	Discount	Present \$
Large Part 121	40	8	7	40	\$ 30.60	\$ 18,360	0.9346	17,159
Small Part 121	110	8	21	20	\$ 28.30	\$ 36,790	0.9346	34,384
Large Part 135	70	8	17	20	\$ 28.30	\$ 25,470	0.9346	23,804
Small Part 135	1780	4	438	8	\$ 22.65	\$240,634	0.9346	224,896
TOTAL	2000		483			\$321,254		\$ 300,244

(1) Cell Entries Subject to Rounding.

(2) Affected Firms estimated based on the responses to Questions 9 and 10 of Tables A-1, A-2.

The "No" responses were added in order to provide a conservative estimate.

For example, in Table A-1, the "Combined 121% Yes" to Q.9 is 89.5% and to Q.10 is 91.8%; the corresponding "No" total is 18.7%. This "No" percent was then applied to "All Firms" to determine "Affected Firms"

The corresponding 135 "No" percentage is 24.6%

Large/Small 121 based on FAA data; large have 1,500 or more employees

Large/Small 135 based on FAA consultant's data

Recordkeeping

The proposed rule would standardize and expand the quantity of data collected. These requirements would improve accountability and enable the FAA to monitor the quality of training. Recordkeeping consists of a format for entering and maintaining the required information and the data entry process. Since operators maintain some data on hazmat training now, the costs of these changes would include a one-time cost to restructure their databases. The FAA cost estimate assumes that large part 121 and part 135 companies would need more staff time for revising a database than small firms. The FAA estimates that a large firm would require three days' staff time each of an administrator, an assistant, and a computer technician to change a computerized database. A small part 121 firm, which has less extensive recordkeeping procedures, would use only two days' of an administrator's time plus an assistant while a small part 135 firm would only use one day. The cost of restructuring databases is estimated to be \$617,100 as shown in Table 2.

Table 2

HAZARDOUS MATERIALS RECORDKEEPING DATABASE REVISION COSTS

	Firms	Hours	Wages	Total	Discount	Present \$
Large Part 121 Firms						
Administrator		24	\$30.60	\$ 29,376	0.9346	\$ 27,455
Assistant		24	\$28.30	\$ 27,168	0.9346	\$ 25,391
Programmer		24	\$22.65	\$ 21,744	0.9346	\$ 20,322
Total	40			\$ 78,288		\$ 73,168
Small Part 121 Firms						
Administrator		16	\$28.30	\$ 49,808	0.9346	\$ 46,551
Assistant		16	\$22.65	\$ 39,864	0.9346	\$ 37,257
Total	110			\$ 89,672		\$ 83,807
All Part 121 Firms	150			\$ 167,960		\$ 156,975
Large Part 135 Firms						
Adminstrator		24	\$28.30	\$ 47,544	0.9346	\$ 44,435
Assistant		24	\$26.15	\$ 43,932	0.9346	\$ 41,059
Programmer		24	\$20.90	\$ 35,112	0.9346	\$ 32,816
Total	70			\$ 126,588		\$ 118,309
Small Part 135 Firms						
Administrator	1780	8	\$22.65	\$322,536	0.9346	\$ 301,442
All Part 135 Firms	1850			\$ 449,124		\$ 419,751
Total	2000			\$ 617,084		\$ 576,727

Cell Entries Subject to Rounding.

While there is a current requirement to maintain a record of the initial and recurrent hazardous materials training given to crewmembers and ground personnel, the FAA believes that, in view of the specific requirements proposed in this rule, the recordkeeping burden will be increased. The FAA estimates that including in training records the additional information that would be required by the proposed rule will take an additional ten minutes for each employee who received hazardous materials training. The hourly wage of the clerk, including benefits is estimated at \$21.50 for part 121 operators and \$14.10 for part 135 operators. The total cost of including the additional information in employee training records over a 10-year period is estimated at \$13.5 million (\$11.1 million for part 121 operators + \$2.4 million for part 135 operators), or \$9.29 million, discounted, (\$7.65 million for part 121 operators + \$1.64 million for part 135 operators) as shown in Tables 3 and 3A.

Table 3
ANNUAL INCREASED RECORDKEEPING COSTS
PART 121 Carriers

Year	Number of Employees (1)	Recordkeeping Cost per Employee(2)	Annual Cost	Discount	Present \$
1	259000	\$3.58	\$ 927,220	0.935	\$ 866,951
2	269360	\$3.58	\$ 964,309	0.873	\$ 841,842
3	280134	\$3.58	\$ 1,002,881	0.816	\$ 818,351
4	291340	\$3.58	\$ 1,042,996	0.763	\$ 795,806
5	302993	\$3.58	\$ 1,084,716	0.713	\$ 773,403
6	315113	\$3.58	\$ 1,128,105	0.666	\$ 751,318
7	327718	\$3.58	\$ 1,173,229	0.623	\$ 730,922
8	340826	\$3.58	\$ 1,220,158	0.582	\$ 710,132
9	354459	\$3.58	\$ 1,268,965	0.544	\$ 690,317
10	368638	\$3.58	\$ 1,319,723	0.508	\$ 670,419
			\$11,132,303		\$ 7,649,460

Note 1: Year 1 Employment is estimated based on 65% of total employees. This percentage is derived from Form 41 Schedule 10 for 1997. Excludes general management, trainees and instructors, recordkeeping, traffic solicitors, "other", and transport-related personnel. Employment is forecast to increase 4% per annum based on the FAA forecast of the US commercial fleet. Employment is based on FAA data

Note 2: Estimated at 10 minutes per employee. Clerk hourly earnings including benefits = \$21.50.

Cell Entries Subject to Rounding

Table 3A
ANNUAL INCREASED RECORDKEEPING COSTS
PART 135 Carriers

Year	Number of Employees (1)	Recordkeeping Cost per Employee(2)	Annual Cost	Discount	Present \$
1	84825	\$2.35	\$ 199,339	0.935	\$ 186,382
2	88218	\$2.35	\$ 207,312	0.873	\$ 180,984
3	91747	\$2.35	\$ 215,605	0.816	\$ 175,934
4	95417	\$2.35	\$ 224,229	0.763	\$ 171,087
5	99233	\$2.35	\$ 233,198	0.713	\$ 166,270
6	103203	\$2.35	\$ 242,526	0.666	\$ 161,522
7	107331	\$2.35	\$ 252,227	0.623	\$ 157,137
8	111624	\$2.35	\$ 262,316	0.582	\$ 152,668
9	116089	\$2.35	\$ 272,809	0.544	\$ 148,408
10	120732	\$2.35	\$ 283,721	0.508	\$ 144,130
			\$ 2,393,282		\$ 1,644,522

Note 1: Year 1 Employment is estimated based on 65% of total employees. This percentage is derived from Form 41 Schedule 10 for 1997. Excludes general management, trainees and instructors, recordkeeping, traffic solicitors, "other", and transport-related personnel. Employment is forecast to increase 4% per annum based on FAA fleet forecast. Employment is based on FAA data

Note 2: Estimated at 10 minutes per employee. Clerk hourly earnings including benefits = \$14.10.

Cell Entries Subject to Rounding

Notification

The total cost to part 121 and part 135 operators of notifying repair stations of the operators' authority and policies regarding hazardous materials is estimated at \$549,500, or \$449,800, discounted as shown in Table 4 A. The FAA estimates that the amount of time required to prepare and approve the notification and verification would vary according to the size of the carrier and ranges from one hour for the largest carriers to fifteen minutes for the smallest carriers. According to FAA staff, the number of repair stations used by part 121 and part 135 carriers varies significantly by the size of the carrier and this is reflected in the estimate shown in Table 4. In addition to the initial notification cost, annual costs would also be incurred over the 10-year period. The FAA estimates that carriers would have to notify 20 percent of the initial number of repair stations annually over the 10-year period as part of the air carriers process of selecting new repair stations and/or advising repair stations of changes in the holder's authority or company policies.

Training Costs

The following sections contain more specific training requirements than the current regulations:

- Parts 121 and 135 would be amended by adding subpart Y to part 121 and subpart K to part 135 entitled; Hazardous Materials Training Program.
- Sections 121.801 and 135.501 would clarify that training applies to both classes of carriers and identify the persons required to receive the training. These sections would also define initial and recurrent training.
- Appendix N would be created in part 121 and divided into separate categories for “will carry” and “will not carry” operators, provide training standards for six categories of persons, and specify the curriculum to be covered. Part 135 operators' training programs would also have to comply with Appendix N.
- Subsection 145.5(b) would prohibit repair station workers from performing a function involving acceptance, rejection, storage incidental to transport, handling, packaging of COMAT, loading, unloading, or carriage of any item that may be placed on board an aircraft for transport or be assigned a supervisory responsibility involving these activities

unless they had initial and recurrent training in their part 121/135 certificate holder's approved training program.

The FAA notes that the training modules in the existing standardized program are very similar to the proposed Appendix N and the persons specified for training are virtually the same. Thus, the FAA believes that most operators will be able to satisfy the new requirements with only minor changes that can be accommodated within their existing program. However, based on the Special Emphasis Review, the FAA estimates that 654 firms would incur additional training costs, as shown in Table 5.

**Table 4
HAZARDOUS MATERIALS REPAIR STATION NOTIFICATION COSTS**

Initial Cost Category	Hours Required	Hourly Wage	Number of Firms	# of non-operator Repair Stations	Initial Cost	Follow-up Notifications	Hours Required	Additional Cost	Total Cost
Major 121 Firms	1	\$21.50	13	595	\$ 166,303	119	0.5	\$ 16,630	\$ 182,933
National 121 Firms	1	\$21.50	34	85	\$ 62,135	17	0.5	\$ 6,214	\$ 68,349
Regional	0.5	\$21.50	49	15	\$ 7,901	3	0.25	\$ 790	\$ 8,691
Other 121 Firms	0.5	\$21.50	54	10	\$ 5,805	2	0.25	\$ 581	\$ 6,386
Total 121			150		\$ 242,144			\$ 24,214	\$ 266,358
Part 135 Firms	0.25	\$14.10	1850	5	\$ 32,606	1	0.125	\$ 3,261	\$ 35,867
Grand Total					\$ 274,750			\$ 27,475	\$ 302,225

**Table 4A
Ten Year Notification Costs**

Annual Cost of Notifications Year	Cost	Discount	Present Cost
1	\$302,225	0.935	\$ 282,580
2	\$27,475	0.873	\$ 23,986
3	\$27,475	0.816	\$ 22,420
4	\$27,475	0.763	\$ 20,963
5	\$27,475	0.713	\$ 19,590
6	\$27,475	0.666	\$ 18,298
7	\$27,475	0.623	\$ 17,117
8	\$27,475	0.582	\$ 15,990
9	\$27,475	0.544	\$ 14,946
10	\$27,475	0.508	\$ 13,957
	\$549,500		\$ 449,848

Table 5

Air Carriers Required to Provide Additional Hazmat Training					
Type	Total Firms	Percent Deficient(1)	Affected Firms		
121 "will"	75	4.00%	3		
121 "will not"	75	9.60%	7		
135 "will"	450	11.70%	53		
135 "will not"	1400	42.2%	591		
Total	2000		654		
(1) Derived from overall responses to Questions 11-25 (x13) Tables A-1 and A-2 for 121 operators and 135 "will carry" operators. Responses to Questions 13, 15, 18, 19 and 22-25 from Table A-2 were used for 135 "will not carry" operators.					

The FAA standardized "will carry" and "will not carry" training programs emphasize that the materials should be covered in such scope and depth as to provide each individual with sufficient knowledge of applicable regulations and procedures to safely accomplish their specific duties. While individual training time may vary among carriers, the FAA believes the "will not carry" curriculum can be accomplished during 8 hours of initial training, and 4 hours of recurrent training. The FAA believes the "will carry" curriculum can be accomplished during 30 hours of initial training and 8 hours of recurrent training. Based on these guidelines, the FAA has assumed that the deficiencies in the training curriculums of the affected part 121 firms and the part 135 "will carry" operators noted in Table 5 could be corrected by providing one-half the number of hours suggested above but that the part 135 "will not carry" operators will require three-quarters of the suggested hours. Thus part 121 "will not carry" firms would need to provide 4 hours of additional initial training and 2 hours of recurrent training and part 135 "will not carry" firms would need to provide 6 hours of additional initial training and 3 hours of recurrent training. All "will carry" firms would need to provide an additional 15 hours of initial training and 4 hours of recurrent training, respectively. Hourly wage costs, including benefits, of this additional training ranges from

\$23.87 to \$30.72 per hour. Instruction costs per hour are estimated at \$5.93.³ Table 6 details the basis for the initial training costs.

Table 6
Initial Hazardous Materials Additional Training Costs

Type of Firm	Number of Firms	Average # of Impacted Employees per Firm	Total Impacted Employees	Training Cost per Hour*	Number of Hours	Total Initial Cost
Large 121 Carriers						
"will carry"	1	3070	3070	\$36.65	15	\$1,687,733
"will not"	2	3070	6140	\$36.65	4	\$ 900,124
Total	3		9210			\$2,587,857
Small 121 Carriers						
"will carry"	2	230	460	\$36.65	15	\$ 252,885
"will not"	5	230	1150	\$36.65	4	\$ 168,590
Total	7		1610			\$ 421,475
Large 135 Carriers						
"will carry"	4	190	760	\$36.65	15	\$ 417,810
"will not"	45	190	8550	\$36.65	6	\$1,880,145
Total	49		9310			\$2,297,955
Small 135 Carriers						
"will carry"	49	30	1470	\$29.80	15	\$ 657,090
"will not"	546	30	16380	\$29.80	6	\$2,928,744
Total	595		17850			\$3,585,834
Total	654		37980			\$8,893,121

Notes: Number of "Large" and "Small" 135 Carriers based on FAA data
 121 Impacted Employees based on 1997 Form 41 statistics for 37 airlines x FAA Employee Data
 Number of "Large" 135 Employees based FAA 121/135 employee data and Form 41 statistics
 Number of "Small" Employees based on FAA consultant data adjusted to 1999
 121/135 Training cost per hour = Hourly Wage of \$30.72 based on 1st Qtr. 1999 Airline Cost Index + \$5.93 instruction cost.
 Small 135 Training cost per hour = Hourly Wage of \$23.87 (based on 1989 BLS Industry Wage Survey relationship between regional/national median wages) + \$5.93 instruction cost.
 Cell Entries Subject to Rounding

The cost of providing this additional training over a 10-year period is estimated at \$61.7 million, or \$43.4 million, discounted as detailed in Tables 7 and 7A. Table 7 indicates that "will carry" operators will incur costs of \$16.0 million (\$11.4 million, discounted) and Table 7A indicates that "will not carry" operators will incur training costs of \$45.7 million (\$32.0 million, discounted).

³ Based on a survey of 10 schools training A&P mechanics which reported an average cost of \$5.46 per hour in 1994, adjusted to \$5.93 in 1999 dollars. See page 27 "Revision of Certification Requirements: Mechanics and Repairmen" Regulatory Evaluation January 15, 1998.

**Table 7
Initial and Annual Hazardous Materials Additional Training Costs
"will carry"**

Year	Impacted 121 Employees	Instruction Cost per Person	Total Cost	Impacted Large 135 Employees	Instruction Cost per Person	Total Cost	Impacted Small 135 Employees	Instruction Cost per Person	Total Cost	Annual "will carry" Cost	Discount	Present \$
Existing Employees*												
1	3530	\$549.75	\$1,940,618	760	\$549.75	\$417,810	1470	\$447.00	\$657,090	\$3,015,518	0.935	\$ 2,819,509
2	3530	\$146.60	\$ 517,498	760	\$146.60	\$ 111,416	1470	\$119.20	\$ 175,224	\$ 804,138	0.873	\$ 702,012
3	3671	\$146.60	\$ 538,198	790	\$146.60	\$ 115,873	1529	\$119.20	\$ 182,233	\$ 836,304	0.816	\$ 682,424
4	3818	\$146.60	\$ 559,726	822	\$146.60	\$ 120,508	1590	\$119.20	\$ 189,522	\$ 869,756	0.763	\$ 663,624
5	3971	\$146.60	\$ 582,115	855	\$146.60	\$ 125,328	1654	\$119.20	\$ 197,103	\$ 904,546	0.713	\$ 644,941
6	4130	\$146.60	\$ 605,399	889	\$146.60	\$ 130,341	1720	\$119.20	\$ 204,987	\$ 940,728	0.666	\$ 626,525
7	4295	\$146.60	\$ 629,615	925	\$146.60	\$ 135,555	1788	\$119.20	\$ 213,187	\$ 978,357	0.623	\$ 609,516
8	4467	\$146.60	\$ 654,800	962	\$146.60	\$ 140,977	1860	\$119.20	\$ 221,714	\$ 1,017,491	0.582	\$ 592,180
9	4645	\$146.60	\$ 680,992	1000	\$146.60	\$ 146,616	1934	\$119.20	\$ 230,583	\$ 1,058,191	0.544	\$ 575,656
10	4831	\$146.60	\$ 708,232	1040	\$146.60	\$ 152,480	2012	\$119.20	\$ 239,806	\$ 1,100,518	0.508	\$ 559,063
	5024		\$7,417,193	1082		\$1,596,903	2092		\$2,511,450	\$11,525,545		\$ 8,475,450
New Employees**												
1	0			0			0					
2	494	\$549.75	\$ 271,686	106	\$549.75	\$ 58,493	206	\$447.00	\$ 91,993	\$ 422,172	0.873	\$ 368,557
3	514	\$549.75	\$ 282,554	111	\$549.75	\$ 60,833	214	\$447.00	\$ 95,672	\$ 439,059	0.816	\$ 358,272
4	535	\$549.75	\$ 293,856	115	\$549.75	\$ 63,266	223	\$447.00	\$ 99,499	\$ 456,622	0.763	\$ 348,402
5	556	\$549.75	\$ 305,610	120	\$549.75	\$ 65,797	231	\$447.00	\$ 103,479	\$ 474,887	0.713	\$ 338,594
6	578	\$549.75	\$ 317,835	124	\$549.75	\$ 68,429	241	\$447.00	\$ 107,618	\$ 493,882	0.666	\$ 328,925
7	601	\$549.75	\$ 330,548	129	\$549.75	\$ 71,166	250	\$447.00	\$ 111,923	\$ 513,637	0.623	\$ 319,996
8	625	\$549.75	\$ 343,770	135	\$549.75	\$ 74,013	260	\$447.00	\$ 116,400	\$ 534,183	0.582	\$ 310,894
9	650	\$549.75	\$ 357,521	140	\$549.75	\$ 76,973	271	\$447.00	\$ 121,056	\$ 555,550	0.544	\$ 302,219
10	676	\$549.75	\$ 371,822	146	\$549.75	\$ 80,052	282	\$447.00	\$ 125,898	\$ 577,772	0.508	\$ 293,508
			\$ 2,875,202			\$ 619,024			\$ 973,539	\$ 4,467,765		\$ 2,969,369
			\$10,292,395			\$2,215,926			\$3,484,989	\$15,993,310		\$ 11,444,819

Ten year Cost for All "will carry" Employees
Notes: Employment is forecast to grow at 4% per year + attrition rate of 10% per year.
Year 1 Employees & Cost from Table 6

*Year 1 total instruction cost = 15 hours X \$36.65 (for 121 and large 135 employees) and 15 X \$29.80 for small 135 employees.
Includes \$5.93 instruction cost per hour.
Year 2-10 instruction cost = 4 X Year 1 wage rates and instruction cost
** Total instruction cost for each year calculated at Year 1 rate of existing employees
Cell Entries Subject to Rounding

Table 7A

Initial and Annual Hazardous Materials Additional Training Costs
"will not carry"

Year	Impacted 121 Employees	Instruction Cost per Person	Total Cost	Impacted Large 135 Employees	Instruction Cost per Person	Total Cost	Impacted Small 135 Employees	Instruction Cost per Person	Total Cost	Annual "will not carry" Cost	Discount	Present \$
Existing Employees*												
1	7290	\$146.60	\$1,068,714	8550	\$219.90	\$1,880,145	16380	\$178.80	\$2,928,744	\$5,877,603	0.935	\$ 5,495,559
2	7290	\$73.30	\$534,357	8550	\$109.95	\$940,073	16380	\$89.40	\$1,464,372	\$2,938,802	0.873	\$ 2,565,574
3	7582	\$73.30	\$555,731	8892	\$109.95	\$977,675	17035	\$89.40	\$1,522,947	\$3,056,354	0.816	\$ 2,493,985
4	7885	\$73.30	\$577,961	9248	\$109.95	\$1,016,782	17717	\$89.40	\$1,583,865	\$3,178,608	0.763	\$ 2,425,278
5	8200	\$73.30	\$601,079	9618	\$109.95	\$1,057,454	18425	\$89.40	\$1,647,219	\$3,305,752	0.713	\$ 2,357,001
6	8528	\$73.30	\$625,122	10002	\$109.95	\$1,099,752	19162	\$89.40	\$1,713,108	\$3,437,982	0.666	\$ 2,289,696
7	8869	\$73.30	\$650,127	10402	\$109.95	\$1,143,742	19929	\$89.40	\$1,781,632	\$3,575,501	0.623	\$ 2,227,537
8	9224	\$73.30	\$676,132	10818	\$109.95	\$1,189,492	20726	\$89.40	\$1,852,898	\$3,718,521	0.582	\$ 2,164,179
9	9593	\$73.30	\$703,177	11251	\$109.95	\$1,237,071	21555	\$89.40	\$1,927,014	\$3,867,262	0.544	\$ 2,103,791
10	9977	\$73.30	\$731,304	11701	\$109.95	\$1,286,554	22417	\$89.40	\$2,004,094	\$4,021,953	0.508	\$ 2,043,152
	10376		\$6,723,705	12169		\$11,828,740	23314		\$18,425,893	\$36,978,338		\$ 26,165,751
New Employees**												
1	0			0			0					
2	1021	\$146.60	\$ 149,620	1197	\$219.90	\$ 263,220	2293	\$178.80	\$ 410,024	\$ 822,864	0.873	\$ 718,361
3	1061	\$146.60	\$ 155,605	1245	\$219.90	\$ 273,749	2385	\$178.80	\$ 426,425	\$ 855,779	0.816	\$ 698,316
4	1104	\$146.60	\$ 161,829	1295	\$219.90	\$ 284,699	2480	\$178.80	\$ 443,482	\$ 890,010	0.763	\$ 679,078
5	1148	\$146.60	\$ 168,302	1346	\$219.90	\$ 296,087	2580	\$178.80	\$ 461,221	\$ 925,611	0.713	\$ 659,960
6	1194	\$146.60	\$ 175,034	1400	\$219.90	\$ 307,931	2683	\$178.80	\$ 479,670	\$ 962,635	0.666	\$ 641,115
7	1242	\$146.60	\$ 182,036	1456	\$219.90	\$ 320,248	2790	\$178.80	\$ 498,857	\$ 1,001,140	0.623	\$ 623,710
8	1291	\$146.60	\$ 189,317	1515	\$219.90	\$ 333,058	2902	\$178.80	\$ 518,811	\$ 1,041,186	0.582	\$ 605,970
9	1343	\$146.60	\$ 196,890	1575	\$219.90	\$ 346,380	3018	\$178.80	\$ 539,564	\$ 1,082,833	0.544	\$ 589,061
10	1397	\$146.60	\$ 204,765	1638	\$219.90	\$ 360,235	3138	\$178.80	\$ 561,146	\$ 1,126,147	0.508	\$ 572,083
			\$ 1,583,397			\$ 2,785,607			\$ 4,339,202	\$ 8,708,206		\$ 5,787,654
			\$8,307,102			\$14,614,346			\$22,765,095	\$45,686,543		\$ 31,953,405
Ten Year Cost for All will not carry Employees												

Notes: Employment is forecast to grow at 4% per year + attrition rate of 10% per year..

Year 1 Employees & Cost from Table 6

*Year 1 total instruction cost = 4 hours x \$36.65 for 121 employees. Total instruction cost for large 135 employees = 6 x \$36.65 and 6 x \$29.80 for small 135 employees. Includes instruction cost of \$5.93 per hour.

Year 2-10 instruction cost = 2 x Year 1 instruction cost for 121 employees and 3 x Year 1 for 135 employees.

** Total instruction cost for each year calculated at Year 1 rate of existing employees

These training costs could be mitigated to some extent by the exception contained in sections 121.803 and 135.503 for persons working for multiple certificate holders. This exception would apply to persons who are not employees of the certificate holder and who work for multiple certificate holders. Upon written certification from another certificate holder with the same “will carry” or “will not carry” status that a person has satisfactorily completed the required training, the other certificate holder does not have to duplicate the training and can limit training of that person to only the policies and procedures portion of its training program. The FAA requests comments on the recordkeeping costs associated with this exception as well as the net cost savings possible and requests that they be accompanied by detailed economic data.

Part 121 and 135 carriers that contract with repair stations would be responsible for the hazardous materials training of repair station workers and supervisors that perform a function or are assigned a responsibility on the carrier’s behalf involving the acceptance, rejection, storage incidental to transport, handling, packaging of COMAT, loading, unloading, or carriage of any item that may be placed on board their aircraft for transport.

The FAA estimates that approximately 400 repair stations ship hazardous materials. The FAA does not have information on how many of these repair stations load hazardous materials on carriers they service (and therefore would be subject to the proposed section 145.5(b)). Repair stations shipping such materials on a third party carrier are not subject to 145.5(b) but would be subject to the hazmat training requirements of 49 CFR 172.700-704.

For purposes of this analysis the FAA makes the following assumptions:

- All 400-repair stations ship hazardous materials on the carriers they service.
- These repair stations employ an estimated 17,150 workers⁴ of which 12,000 are production workers that would be subject to this training provision.
- 9,000 of these workers perform services for “will not carry” operators and 3,000 work for “will carry” operators⁵.
- Training would require the same number of hours as the carriers incur.

⁴Based on data contained in “An Analysis of the Effect of the ‘Foreign Repair Station Rules,’ Since Their Publication on November 22, 1988” FAA, AFS-300 January 15, 1999 Draft.

⁵ Based on the number of “will not carry” and “will carry” operators.

- Training under 14 CFR parts 121 and 135 would be the responsibility of the certificate holder and this would not be a cost to the repair station.

The cost of providing this training to repair station workers is estimated at \$29.8 million over a 10-year period (\$21.1 million discounted) as shown in Table 8. The FAA believes this estimate is very conservative since a number of FAA staff experts believe that many of these repair stations do not place hazardous materials aboard the carrier they service and these staff members also believe the training could be restricted to a significantly fewer number of repair station workers than estimated in Table 8. The FAA requests comments on these assumptions and cost estimates.

Table 8

Initial and Annual Hazardous Materials Repair Station Training Costs

"Will Not Carry"					"Will Carry"					Discount	Present \$	
Year	Employees	Instruction Cost per Person*	Hours Required	Total Cost	Employees	Instruction Cost per Person*	Hours Required	Total Cost	Total Annual Cost			
Existing Employees												
1	9000	\$28.82	8	\$2,075,040	3000	\$28.82	30	\$2,593,800	\$4,668,840	0.935	\$4,365,365	
2	9000	\$28.82	4	\$1,037,520	3000	\$28.82	8	\$691,680	\$1,729,200	0.873	\$1,509,592	
3	9360	\$28.82	4	\$1,079,021	3120	\$28.82	8	\$719,347	\$1,798,368	0.816	\$1,467,468	
4	9734	\$28.82	4	\$1,122,182	3245	\$28.82	8	\$748,121	\$1,870,303	0.763	\$1,427,041	
5	10124	\$28.82	4	\$1,167,069	3375	\$28.82	8	\$778,046	\$1,945,115	0.713	\$1,386,867	
6	10529	\$28.82	4	\$1,213,752	3510	\$28.82	8	\$809,168	\$2,022,919	0.666	\$1,347,264	
7	10950	\$28.82	4	\$1,262,302	3650	\$28.82	8	\$841,534	\$2,103,836	0.623	\$1,310,690	
8	11388	\$28.82	4	\$1,312,794	3796	\$28.82	8	\$875,196	\$2,187,990	0.582	\$1,273,410	
9	11843	\$28.82	4	\$1,365,306	3948	\$28.82	8	\$910,204	\$2,275,509	0.544	\$1,237,877	
10	12317	\$28.82	4	\$1,419,918	4106	\$28.82	8	\$946,612	\$2,366,530	0.508	\$1,202,197	
	12810			\$13,054,902	4270			\$9,913,708	\$22,968,610		\$16,527,771	
New Employees												
1	0				0							
2	1260	\$28.82	8	\$290,506	420	\$28.82	30	\$363,132	\$653,638	0.873	\$570,626	
3	1310	\$28.82	8	\$302,126	437	\$28.82	30	\$377,657	\$679,783	0.816	\$554,703	
4	1363	\$28.82	8	\$314,211	454	\$28.82	30	\$392,764	\$706,974	0.763	\$539,421	
5	1417	\$28.82	8	\$326,779	472	\$28.82	30	\$408,474	\$735,253	0.713	\$524,236	
6	1474	\$28.82	8	\$339,850	491	\$28.82	30	\$424,813	\$764,664	0.666	\$509,266	
7	1533	\$28.82	8	\$353,444	511	\$28.82	30	\$441,806	\$795,250	0.623	\$495,441	
8	1594	\$28.82	8	\$367,582	531	\$28.82	30	\$459,478	\$827,060	0.582	\$481,349	
9	1658	\$28.82	8	\$382,286	553	\$28.82	30	\$477,857	\$860,142	0.544	\$467,918	
10	1724	\$28.82	8	\$397,577	575	\$28.82	30	\$496,971	\$894,548	0.508	\$454,430	
				\$3,074,361				\$3,842,952	\$6,917,313		\$4,597,389	
Ten Year Cost for All Workers				\$16,129,263					\$13,756,659	\$29,885,923		\$21,125,161

Notes: Employment is forecast to grow at 4% per year + attrition rate of 10% per year.
 * Wage rate of \$22.89 + instruction cost of \$5.93 per hour.
 Cell Entries Subject to Rounding

Total costs for part 121 and 135 operators to comply with the proposed rule are estimated at \$106.6 million, or \$75.1 million, discounted, as summarized below.

Table 9 Costs of Proposed Rule to Part 121 and Part 135 Operators

Cost Area	Total Cost	Present Value
Manual Revisions	\$321,300	\$300,200
Database Upgrade	\$617,100	\$576,700
Recordkeeping	\$13,525,600	\$9,294,000
Notifications	\$549,500	\$449,800
<i>Total Administrative Costs</i>	\$15,013,500	\$10,620,700
Deficiency Training Costs	\$61,679,900	\$43,398,200
Repair Station Training Costs	\$29,886,000	\$21,125,200
<i>Total Training Costs</i>	\$91,565,900	\$64,523,400
<i>Grand Total</i>	\$106,579,400	\$75,144,100

Repair Station Costs

The intent of this evaluation is to examine the impact of the proposed changes to part 145 on the U.S. economy. The proposed revisions to part 145 would affect not only repair stations located in the United States but foreign repair stations as well. However, this regulatory evaluation estimates only the costs (and benefits) to U.S. entities. FAA data indicates that there are 4,625 domestic repair stations of which 653 are operated by certificated part 121 or 135 firms. The data also indicates that over 99 percent of all domestic repair stations have fewer than 1,400 employees and some 92 percent employ fewer than 100 workers.

Section 145.5(a) would cross-reference an existing training requirement in 49 CFR on repair stations that qualify as hazardous materials employers. The impact of this section would be on those repair stations that are not aware that many aircraft components and other materials they commonly use are regulated under 49 CFR Parts 171-173 and 175. If a repair station determines that it is using regulated materials, it must establish and implement a hazmat

training program to comply with the Hazardous Materials Regulations contained in 49 CFR sections 172.700-704. However, since the training program is already required under 49 CFR, establishing one would not be a cost of this rule.

Section 145.5(b) would prohibit repair station workers from performing a function involving acceptance, rejection, storage incidental to transport, handling, packaging of COMAT, loading, unloading, or carriage of any item that may be placed on board an aircraft for transport or being assigned a supervisory responsibility involving these activities unless they had completed the hazardous materials training of the part 121 or 135 carrier for whom they were performing the function. This is a cost to part 121 and 135 operators and is estimated as shown in Table 8.

Section 145.11(a) (5) would require repair stations to certify compliance with the hazardous materials training records requirements of 49 CFR section 172.704 for itself, its contractors or subcontractors when applying for a certificate or additional rating. Pursuant to section 145.17 a domestic repair station certificate or rating is effective until it is surrendered, suspended, or revoked, thus this requirement would not effect all repair stations. The FAA estimates that this requirement will cost each applicant \$100⁶ and that approximately one-quarter of all repair stations change their rating annually. As noted earlier, the FAA estimates that approximately 400 repair stations ship hazardous materials and thus the FAA estimates that approximately 100 repair stations would be subject to this provision annually. The total cost to the industry over the 10-year period is estimated at \$100,000 or \$70,000 discounted as shown in Table 10.

⁶ Based on 4 hour to collect information from internal records, contractors and subcontractors at \$22.89 per hour plus reproduction/transmittal costs.

Table 10

Year	Number of Firms	Cost per Firm	Present Cost	Discount	Present Cost
1	100	\$100	\$10,000	0.935	\$9,350
2	100	\$100	\$10,000	0.873	\$8,730
3	100	\$100	\$10,000	0.816	\$8,160
4	100	\$100	\$10,000	0.763	\$7,630
5	100	\$100	\$10,000	0.713	\$7,130
6	100	\$100	\$10,000	0.666	\$6,660
7	100	\$100	\$10,000	0.623	\$6,230
8	100	\$100	\$10,000	0.582	\$5,820
9	100	\$100	\$10,000	0.544	\$5,440
10	100	\$100	\$10,000	0.508	\$5,080
			\$100,000		\$70,230

Cell Entries Subject Rounding

Section 145.27 would require repair stations to notify all workers of the information provided by their part 121 and 135 carrier customers as to the carriers’ “will” or “will not” carry status. This requirement would not apply to all domestic repair stations. First, based on General Accounting Office estimates⁷ approximately 44 percent of repair stations only serve general aviation operators and, therefore, would not be subject to this requirement. In addition, some 653 repair stations are operated by certificated air carriers and are already required to inform their workers. Thus, the FAA estimates that approximately 1,935 independent domestic repair stations serve part 121 and 135 air carriers and would be subject to the notification requirement. The FAA estimates that notifying workers of their customers’ hazmat status will cost small repair stations with less than 25 employees \$25 annually to post notices and have supervisors inform their staff. The annual cost to medium repair stations (25-1,399 employees) is estimated to be \$100 and to large repair stations (1,400+ employees) is estimated to be \$250. The total cost to the industry over the 10-year period is estimated at \$777,800, or \$546,200 discounted as shown in Table 11.

⁷ “Aviation Safety: FAA Oversight of Repair Stations Needs Improvement” page 16 GAO/RCED-98-21

Table 11

REPAIR STATION STAFF NOTIFICATION COSTS

Category	Number of Firms	Cost per Firm	Annual Cost
Large	12	\$250	\$3,000
Medium	356	\$100	\$35,600
Small	1567	\$25	\$39,175
Total*	1935		\$77,775

*Independent repair stations serving certificated carriers

Annual Staff Notification Costs

Year	Cost	Discount	Present Cost
1	\$77,775	0.935	\$ 72,720
2	\$77,775	0.873	\$ 67,898
3	\$77,775	0.816	\$ 63,464
4	\$77,775	0.763	\$ 59,342
5	\$77,775	0.713	\$ 55,454
6	\$77,775	0.666	\$ 51,798
7	\$77,775	0.623	\$ 48,454
8	\$77,775	0.582	\$ 45,265
9	\$77,775	0.544	\$ 42,310
10	\$77,775	0.508	\$ 39,510
	\$777,750		\$ 546,214

Total costs for part 145 domestic repair stations to comply with the proposed rule are estimated at \$877,800, or \$612,400, discounted as summarized in Table 12 below.

Table 12 Costs of Proposed Rule to Domestic Part 145 Repair Stations

Cost Area	Total Cost	Present Value
Training Records	\$100,000	\$70,200
Notification	\$777,800	\$546,200
<i>Grand Total</i>	\$877,800	\$612,400

Summary of Costs

The following table, Table 13, summarizes the estimated cost to part 121 and part 135 operators and domestic part 145 repair stations to comply with the administrative and training provisions over a 10-year period.

Table 13 Total Cost of Proposed Rule

Cost Area	Total Cost	Present Value
Administrative	\$15,891,300	\$11,233,100
Training	\$91,565,900	\$64,523,400
Grand Total	\$107,457,200	\$75,756,500

The estimated industry costs over 10 years total \$107.5 million (\$75.8 million, discounted.) Public comments are invited. The FAA requests that comments provide all germane monetary and qualitative cost information.

Benefits

Notwithstanding current regulatory restrictions and an increased level of inspections, hazardous materials are at times improperly carried aboard part 121 and 135 aircraft. According to a report prepared by the Department of Transportation's Research and Special Programs Administration (RSPA),⁸ several large domestic cargo carriers informed RSPA that "0.05% of their shipments (reported to be 10-25% of hazardous materials carried) are undeclared hazardous materials discovered because of incidents, leaks, or other inspection activities. The number of undeclared hazardous material shipments made without incident, and therefore not discovered, is not known."

The FAA has an aggressive enforcement program to uncover and prevent hazmat violations; during 2000, the FAA sanctioned 64 violations of the hazardous materials regulations and imposed fines amounting to \$1,291,400 for these violations. The potential for further accidents from the improper offering for shipment or carriage of hazardous materials is significant given the number of serious incidents currently being pursued by FAA legal staff.

A review of active cases in 1999 indicated that at least 59 were for serious hazardous material violations against certificate holders. Seven were repair station incidents, five of which entailed the shipment of oxygen generators, one involved an improper shipment by a part 135 operator, and 51 involved part 121 operators. The part 121 incidents involved some 31 different operators, 19 of which are “will carry” and 12 are “will not carry” operators. Of the 51 part 121 incidents, 16 entailed the improper offering of shipments to other carriers and the remainder entailed failure to comply with their obligations as carriers including the carriage of hazardous company materials such as oxygen generators and fuel pumps. This compilation suggests there are benefits to be gained from providing a required training curriculum for all certificate holders operating under parts 121 or 135.

A review of the National Transportation Safety Board (NTSB) accident database resulted in a listing of 10 accidents since 1986 involving hazardous materials. Nine of the accidents were non-fatal, three involved minor injuries, three resulted in substantial aircraft damage and two aircraft were destroyed. The tenth accident, the May 11, 1996 crash of ValuJet Flight 592 in the Florida Everglades, resulted in the death of 110 passengers and crewmembers. The FAA estimated the monetary loss of this accident to be \$303 million (\$213 million, discounted).

If the proposed rule is not adopted, the possibility of similar hazardous materials incidents causing accidents over the next 10-years can be estimated using the Poisson probability distribution. As noted above, the NTSB database includes 10 hazardous material related accidents since 1986; six of which occurred in the 10-year period of 1991-2000. Applying the Poisson probability distribution to this observed rate of hazardous materials accidents, the number of probable future hazardous materials accidents over the next 10-year period are shown below in Table 14.

The Poisson probability distribution with a mean of six, as shown in Table 14, suggests that there is almost no chance (0.002 percent) that there will be no hazardous materials-related accidents in the next decade, based on the past accident history. Moreover, there is a 99.9 percent probability that there will be one or more such hazardous materials-related accidents.

⁸ Threat Assessment of Hazardous Materials Transportation in Aircraft Cargo Compartments, DOT-VNTSC-RSPA-99-01, December 1999, page 4

In addition, there is a 41 percent probability that there will be seven or more hazardous materials related accidents over the next 10 years.

TABLE 14		
Probability Analysis – Hazardous Materials Accidents (mean of 6)		
Number of Events	Probability of Event	Cumulative Probability of Event
0	***	***
1	1	1
2	4	5
3	9	14
4	13	27
5	16	43
6	16	59
7	14	73
8	10	83
9	7	90

*** Probability of event is greater than zero but less than one.

Any one of these future events could result in substantial property damage. Of the six observed accidents in the past 10-year period, two aircraft were destroyed; two experienced substantial damage and one minor damage. Excluding the ValuJet crash, the cost of replacing or restoring these aircraft is estimated at \$9.6 million.⁹ Other costs may also be incurred. In one reported incident an insurance company paid a carrier’s insurance claim of approximately \$40 million as a result of a hazardous material spill aboard a Boeing 747 freighter on January 15,1998. A leak of a one-gallon jug of hydrogen peroxide aboard an Airbus 320 flight on October 28,1998 resulted in clean up costs estimated to be \$40,000-\$50,000. Future costs are likely to be higher.

⁹ Based on the aircraft involved and the replacement or restoration costs contained in “Economic Values for Evaluation of Federal Aviation Administration Investment and Regulatory Programs”, June 1998.

These possible incidents could also result in injuries. Fortunately, only four minor injuries were suffered in the non-fatal accidents noted and the value of these injuries and associated medical and legal costs is estimated at \$31,000.¹⁰ Even if these events were to be replicated in the future, costs would be greater as the value of injuries and associated expenses rise.

These future events could also result in the loss of life. Applying the Poisson probability distribution to the one observed fatal accident in the past 10-year period results in the distribution shown in Table 15.

TABLE 15		
Probability Analysis – Fatal Incidents (mean of 1)		
Number of Events	Probability of Event	Cumulative Probability of Event
0	37	37
1	37	74
2	18	92
3	6	98
4	1.5	99.5
5	***	***
6	***	99.99

*** Probability of event is greater than zero but less than one.

The Poisson probability distribution suggests there is a 37 percent probability that no fatal accident will occur in the next ten years but there is an equal probability that there will be one fatal accident. In addition, there is a 26 percent probability that there will be more than one fatal accident if nothing is done to prevent these accidents.

The cost of a catastrophic, hazardous materials-related accident can be estimated in terms of lives lost and property damaged. The FAA considers a Boeing 737 as representative of a typical airplane flown by a part 121 operator, and the typical 737 airplane has 113 seats. It

¹⁰ IBID

flies with an average load factor of 65 percent, which translates into 73 passengers per flight, and is staffed by six crewmembers. In order to provide a benchmark comparison of the expected safety benefits of this proposed rulemaking with its estimated costs, the FAA assumes the value of avoiding an aviation fatality (based on the willingness to pay approach) is \$2.7¹¹ million. This value is based on guidelines provided by the Department of Transportation and recognized by the Office of Management and Budget. Applying this value, the total fatality loss of a single Boeing 737 is represented by a cost of \$213.3 million (79 x \$2.7 million). The accident investigation costs are estimated at \$2.2 million.¹² The fair market value of a Boeing 737 is \$16.5 million; thus the total monetary loss is estimated to be \$232 million (\$162.9 million, discounted¹³).

Cost-Benefit Analysis

The cost of implementing this proposed rule is estimated at \$107.56 million over the next 10 years. In addition, the Research and Special Programs Administration¹⁴ issued a final rule based on the same accident database and estimated the cost of its rule at \$865,000 thus raising total costs to industry to \$108.3 million.¹⁵ However, if the proposed rule becomes effective, the FAA estimates that there is more than a sixty- percent chance that one or more fatal accidents would be avoided. The monetary benefit of avoiding a single accident resulting in fatalities is estimated at \$232 million. To state the comparison differently, the FAA has also computed the cost of the rule per estimated life saved. As noted in the “Benefits” discussion above, to provide a benchmark comparison of the expected safety benefits of rulemaking actions with estimated costs in dollars, the FAA uses a value of \$2.7 million per avoided fatality. Based on the direct cost of \$107.5 million and an estimated 79 lives saved if the

¹¹ Subsequent to the preparation of this document, the Office of the Secretary of Transportation increased the recommended valuation of averting an accidental fatality to \$3.0 million. Source: “Revised Departmental Guidance, Treatment of Value of Life and Injuries in Preparing Economic Evaluations” OST Memorandum, January 29, 2002.

¹² This is the estimated cost to the federal government, principally the NTSB, and excludes costs incurred by the private sector (aircraft and engine manufacturers and others), and state or local governments.

¹³ Adjusted for the increased value of life to \$3.0 million and the increase in the GDP implicit price deflator of 5.8% between 1999 and 2002, the total monetary loss is estimated at \$257 million, \$180.5 million, discounted. The discounted cost is calculated by annualizing the total costs of the accident over the 10-year period, discounting the annual cost at 7% and summing the annual discounted cost.

¹⁴ Hazardous Materials: Chemical Oxidizers and Compressed Oxygen Aboard Aircraft, Docket No. HM-224A, 64FR 45388 August 19, 1999.

rule is 100 percent effective over 10 years and no other factors were involved, the rule is estimated to cost \$1.36 million per life saved.¹⁶ The rule would have to be less than 50 percent effective for the cost per fatality avoided to significantly exceed the benchmark value of \$2.7 million.¹⁷ Table 16 presents the probability-adjusted costs of the rule. It shows that if all the probable number of events occurred the monetary benefit would still be at least \$232 million.

¹⁵ Adjusted for the increase in the GDP implicit price deflator of 5.8% between 1999 and 2002, the total cost of the rule is estimated at \$114.6 million.

¹⁶ In 2002 dollars, the cost of life saved is \$1.45 million.

¹⁷ The rule would have to be less than 47% effective to exceed the \$3.0 million benchmark.

TABLE 16 Probability Adjusted Cost of Events			
Number of Events	Probability of Events	Cost of Events	Probability Adjusted Cost of Events (Probability x Cost)
0	0.3679	0	0
1	0.3679	\$232 million	\$85.4 million
2	0.1839	\$464 million	\$85.3 million
3	0.0613	\$696 million	\$42.7 million
4	0.0153	\$928 million	\$14.2 million
5	0.0031	\$1.16 billion	\$3.6 million
6	0.0005	\$1.39 billion	\$0.7 million
Total	0.9999	\$4.87 billion	\$231.9 million

Additionally the FAA believes that this rule would reduce the number of incidents involving hazardous materials by improving detection of improperly packaged and shipped hazardous materials. Since the potential benefits exceed the additional costs, the proposed rule would be cost beneficial. As noted previously in the “Summary of Costs” section, the FAA invites public comments and requests that all comments be accompanied with clear and detailed supporting economic documentation.

Initial Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (Act) establishes “as a principle of regulatory issuance that agencies shall endeavor, consistent with the objective of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of the business, organization, and government jurisdictions subject to regulation.” To achieve that principle, the Act requires agencies to solicit and consider flexible regulatory proposals and to explain the rationale for their actions. The Act covers a wide-range of small entities, including small businesses, not-for-profit organizations and small governmental jurisdictions.

Agencies must perform a review to determine whether a proposed or final rule will have a significant economic impact on a substantial number of small entities. If the determination is that it will, the agency must prepare a regulatory flexibility analysis as described in the Act.

However, if an agency determines that a proposed or final rule is not expected to have a significant economic impact on a substantial number of small entities, section 605 (b) of the 1980 act provides that the head of the agency may so certify and a regulatory flexibility analysis is not required. The certification must include a statement providing the factual basis for this determination, and the reasoning should be clear.

The Small Business Administration (SBA) suggests that “small” entities can be identified either on the basis of employees or revenues. For this proposed rule, small entities are composed of two distinct groups: aircraft operators and repair stations. The SBA suggests that aircraft operators with 1,500 or fewer employees are “small” entities. The SBA does not provide revenue information for firms with fewer than 1,500 employees, but does provide data for firms with fewer than 500 and fewer than 20 employees. To determine the impact of the proposed rule on the 110 small part 121 operators and the 1,780 small part 135 operators, the FAA has estimated the annualized cost impact on these two categories of small entities separately, since the proposed rule’s impacts differ.

The proposed rule is expected to impose an estimated cost of \$4.5 million on the 110 small part 121 operators over the next 10 years. The average annualized cost per small operator is estimated at \$4,100. However, the FAA estimates that two “will carry” operators would incur all six cost elements and the annualized cost to each of these entities is estimated at \$82,400. The costs to “will not carry” operators would be lower since less training would be required. According to a Small Business Administration analysis of Bureau of Census data for scheduled air transportation firms,¹⁸ firms with fewer than 500 employees have average revenues of \$10,753,147. The estimated cost to each of these small entities is approximately eight-tenths of one percent of the average revenue of \$107,531 of these firms. Thus none of the 110 small part 121 entities would incur a substantial economic impact in the form of higher annual costs as the result of the proposed rule.

The proposed rule is expected to impose an estimated cost of \$32.6 million on the 1,780 small part 135 operators over the next 10 years. While the average annualized cost per small

¹⁸ Source: www.SBA.gov/advo/stats/us97. Data are not available for firms with fewer than 1,500 employees. Presumably, the average revenue for firms with 1,500 employees would be higher than those firms with fewer than 500 employees.

operator is estimated at \$1,800, some 49 “will carry” entities would each incur annualized costs of \$7,600. These operators would incur higher training costs than “will not carry” operators would. According to a Small Business Administration analysis of Bureau of Census data for non-scheduled air transportation firms,¹⁹ firms with fewer than 500 employees have average revenues of \$1.87 million. The estimated cost to each of these small entities is approximately four-tenths of one percent of the average revenue (\$18,700) of non-scheduled air transportation firms with fewer than 500 employees based on the SBA’s Census data cited. Thus none of the small part 135 entities would incur a substantial economic impact in the form of higher annual costs as the result of the proposed rule.

Therefore, the FAA has determined that this proposed rule would not have a significant impact on a substantial number of small part 121 or part 135 operators.

The SBA suggests that “small” repair stations can be identified as those firms with annual revenues of \$5 million or less. Research conducted for the FAA indicates that approximately 56 percent of all repair stations meet this criterion²⁰. The proposed rule is expected to impose an estimated cost of \$877,800 on the 1,935 small independent domestic part 145 repair stations. The average annualized cost to the 56 small repair stations that incur both cost elements is estimated at \$125. The FAA considers this amount economically insignificant.

Therefore, the FAA has determined that this proposed rule would not have a significant impact on a substantial number of small entities. Accordingly, pursuant to the Regulatory Flexibility Act, 5 U.S.C. 605 (b), the Federal Aviation Administration certifies that this proposed rule would not have a significant economic impact on a substantial number of small entities. The FAA invites industry comments and requests that all comments be accompanied with clear and detailed supporting data.

¹⁹ Source: www.SBA.gov/advo/stats/us97. Data are not available for firms with fewer than 1,500 employees. Presumably, the average revenue for firms with 1,500 employees would be higher than those firms with fewer than 500 employees.

²⁰ “An Analysis of International Trade Flows in Aircraft Repair Services” GRA Inc. Contract No. DTFA01-93-C-00066 Work Order 46 Figure 6, page 18

INTERNATIONAL TRADE IMPACT ASSESSMENT

The Trade Agreement Act of 1979 prohibits Federal agencies from engaging in any standards or related activities that create unnecessary obstacles to the foreign commerce of the United States. Legitimate domestic objectives, such as safety, are not considered unnecessary obstacles. The statute also requires consideration of international standards and where appropriate, that they be the basis for U.S. standards.

In accordance with the above statute, the FAA has assessed the potential effect of this proposed rule and has determined that it would impose costs on domestic entities that international entities operating into and out of the United States would not incur. However, the anticipated safety benefits warrant these costs and, therefore, these costs are not considered unnecessary obstacles to the foreign commerce of the United

UNFUNDED MANDATES REFORM ACT ASSESSMENT

The Unfunded Mandates Reform Act of 1995 (the Act), enacted as Pub. L. 104-4 on March 22, 1995 is intended, among other things, to curb the practice of imposing unfunded Federal mandates on State, local, and tribal governments.

Title II of the Act requires each Federal agency to prepare a written statement assessing the effects of any Federal mandate in a proposed or final agency rule that may result in a \$100 million or more expenditure (adjusted annually for inflation) in any one year by State, local, and tribal governments, in the aggregate, or by the private sector; such a mandate is deemed to be a “significant regulatory action.”

This proposed rule does not contain such a mandate. Therefore, the requirements of Title II of the Unfunded Mandates Reform Act of 1995 do not apply.

APPENDIX A

Special Emphasis Review Hazardous Materials or Dangerous Goods Programs and Requirements

SUMMARY

Bulletin FSAT 99-06 was issued by the FAA's Air Transportation Division on September 22, 1999 and directed all Principal Operations Inspectors to complete the attached form for each of their part 121 and part 135 assigned operators within 30 days of receipt. The Bulletin noted that the notification and training requirements also included any contract personnel who perform these services on behalf of the operator. As of November 30, 1999, some 1,293 responses were returned or 43.9 percent of active operators. This included 92 part 121 operators or 61.3 percent of all part 121 operators and 1,201 responses for part 135 operators or 43.0 percent of all part 135 operators. All of the part 121 responses were either complete or substantially complete, but 60 part 135 responses were significantly incomplete and were not included in the accompanying tables.

Accurate completion of each question on the form was complicated by some shortcomings in the form and bulletin. Neither the form or the bulletin distinguished between all-cargo and passenger operators, provided for "Not Applicable" (N/A) responses or, in the case of part 135 operators, for the identification of single pilot operators that do not require a manual or an approved in-house training program. This resulted in dubious responses to a number of questions, particularly to Questions 13a-13k, covering the training provided various categories of personnel. Some respondents replied N/A, offered no response in other cases, and a "No" in some cases when a N/A would have been a more appropriate response. For example, a cargo operator response may have included a "No" to Question 13j – Flight Attendants when N/A would have been a better response. On the other hand, the "Yes" responses do not appear to be skewed by these deficiencies. The tables that follow this narrative have therefore excluded N/A and non-response to each question in determining the percentage of respondents replying positively and negatively to the questions. The responses of "will not carry" and "will carry" operators are presented separately in each table. Of the 1,201 part 135 operator responses, 172 were identified as being single pilot operators and these responses are presented separately, although other responses, which may in fact be for single pilot operations, but were not identified as such, are included with the other part 135 responses.

Table A-1 summarizes the responses of part 121 operators. Overall, 90 percent of part 121 “will not carry” operator manuals, training programs, and categories of personnel being trained, meet the proposed standards. The greatest training deficiencies noted (one-quarter of the responses) is in the proper procedures for the completion of shipping papers (Question 15) and in hazardous materials stowage compatibility procedures (Question 22), which is probably attributable to the fact that the “will not carry” operators do not carry these materials. Forklift operators were cited by some 40 percent of the respondents as not receiving the necessary training. Other groups, which also may need to receive training, are other cargo-related personnel and flight attendants.

Over 99 percent of the part 121 “will carry” operators’ manuals and training programs already meet the proposed standards. Personnel who may need training to comply are forklift operators, passenger service personnel, flight attendants and aircraft dispatchers since between 10 and 15 percent were reported as not receiving such training now.

It should be noted that the absence of training in the categories mentioned above for both “will not” and “will” carry operators may be overstated since “No” responses were given when a N/A may have been more appropriate.

Table A-2 summarizes the responses of part 135 operators with more than one pilot. Some 78 percent of the “will not carry” operator’s manuals and training programs meet the existing national program and thus may meet the proposed standards. The overall percentage of compliance is heavily effected by low positive responses in four areas: shipping papers, stowage, quantity limitations, and company materials (COMAT).

The apparent lack of COMAT training (nearly one out of every two responses) and the failure of manuals to identify by position the need for hazmat training, reduces the overall positive response rate of part 135 “will carry” operators to 88 percent.

Table A-3 contains the responses identified as single pilot operators (SPO). The total number of these responses accounts for only 9 percent of all SPO and thus firm conclusions cannot be drawn. However, the overall compliance with the existing national program appears to be comparable to other part 135 operators.

Special Emphasis Review

Hazardous Materials or Dangerous Goods Programs and Requirements

1. Name of the Air Carrier:		2. Principal Operations Inspector:	
3. Air Carrier Designator:		4. Date of Review:	5. CHDO:
5. Date of last review and acceptance of the HAZMAT Manual:	6. Date of last review and approval of HAZMAT Training program:	7. Part 121 <input type="checkbox"/> Part 135 <input type="checkbox"/>	8. Does Carry HAZMAT <input type="checkbox"/> Does Not Carry HAZMAT <input type="checkbox"/>
9. Does the operator's manuals identify, by position, who will receive training and the extent of the training?			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
10. Does the manual describe topics to be covered and/or does it reference AC 121-21B, the Standard Hazardous Materials Training Program, or IATA Dangerous Goods Manual?			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
11. Does the operator train personnel to identify cargo that is declared as HAZMAT?			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
12. Does the operator train personnel to identify cargo that is undeclared as HAZMAT?			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
13. Does the operator provide training to the following personnel assigned duties and responsibilities for:			
a. Cargo Acceptance			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
b. Cargo Supervisors			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
c. Cargo Load Planning			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
d. Weight And Balance			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
e. Aircraft Loading			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
f. Forklift Operators			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
g. Passenger Reservation/Check-in Agent			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
h. Pilots In Command			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
i. Other Flight Crewmembers			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
j. Flight Attendants			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
k. Aircraft Dispatchers			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
14. Does the operator's training program cover the use of the HAZMAT table (49 CFR 172.101) and their proper classifications?			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
15. Does the operator's training program cover the proper procedures for completion of shipping papers?			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
16. Does the operator's training program cover the proper packaging, marking, and labeling for HAZMAT packages?			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
17. Does the operator's training program cover exceptions in 49 CFR 175.10?			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
18. Does the operator's training program cover HAZMAT exemptions?			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
19. Does the operator's training program cover required notification to the pilot in command (49 CFR 175.33)?			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
20. Does the operator's training program cover reporting HAZMAT incidents (49 CFR 171.15 & 171.16)?			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
21. Does the operator's training program cover reporting HAZMAT discrepancies (49 CFR 175.31)?			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
22. Does the operator's training program cover stowage compatibility (175.78 and 175.85)?			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
23. Does the operator's training program cover quantity limitations (175.75)?			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
24. Does the operator provide training for their employees that work in supplies or stores and are involved in the shipping of the operator's aircraft parts or company materials (COMAT)?			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
25. Does the operator's training program cover HAZMAT COMAT in 49 CFR 175.10 (a)(1)(2)?			Yes: <input type="checkbox"/> No: <input type="checkbox"/>
26. Comments:			

TABLE A-1

Question	121 "Will Not Carry" Operators								121 "Will Carry" Operators								Combined 121%Yes
	Yes	No	N/A- NR	Total	% of Adj.Total		Ques- Tion	Yes	No	N/A- NR	Total	Adj. Total	% of Adj.Total				
					Adj. total	Yes							No	Yes	No		
9	38	6		44	44	86.4%	13.6%	9	43	3	2	48	46	93.5%	6.5%	90.0%	
10	36	7	1	44	43	83.7%	16.3%	10	46		2	48	46	100.0%	0.0%	92.1%	
11	41	3		44	44	93.2%	6.8%	11	46		2	48	46	100.0%	0.0%	96.7%	
12	40	4		44	44	90.9%	9.1%	12	46		2	48	46	100.0%	0.0%	95.6%	
14	41	2	1	44	43	95.3%	4.7%	14	46		2	48	46	100.0%	0.0%	97.8%	
15	28	9	7	44	37	75.7%	24.3%	15	47		1	48	47	100.0%	0.0%	89.3%	
16	37	2	5	44	39	94.9%	5.1%	16	48			48	48	100.0%	0.0%	97.7%	
17	43	1		44	44	97.7%	2.3%	17	48			48	48	100.0%	0.0%	98.9%	
18	37	6	1	44	43	86.0%	14.0%	18	46	1	1	48	47	97.9%	2.1%	92.2%	
19	33	5	6	44	38	86.8%	13.2%	19	47		1	48	47	100.0%	0.0%	94.1%	
20	41	3		44	44	93.2%	6.8%	20	48			48	48	100.0%	0.0%	96.7%	
21	41	3		44	44	93.2%	6.8%	21	48			48	48	100.0%	0.0%	96.7%	
22	28	9	7	44	37	75.7%	24.3%	22	46	1		48	47	97.9%	2.1%	88.1%	
23	32	6	6	44	38	84.2%	15.8%	23	46		1	48	46	100.0%	0.0%	92.9%	
24	42	2		44	44	95.5%	4.5%	24	45	1	1	48	46	97.8%	2.2%	96.7%	
25	43	1		44	44	97.7%	2.3%	25	47			48	47	100.0%	0.0%	98.9%	
Sum	601	69			670	89.7%	10.3%	Sum	743	6		749		99.2%	0.8%	94.7%	
13a	37	6	1	44	43	86.0%	14.0%	13a	44	2	2	48	46	95.7%	4.3%	91.0%	
13b	36	7	1	44	43	83.7%	16.3%	13b	43	2	3	48	45	95.6%	4.4%	89.8%	
13c	41	3		44	44	93.2%	6.8%	13c	43	2	3	48	45	95.6%	4.4%	94.4%	
13d	40	4		44	44	90.9%	9.1%	13d	42	3	3	48	45	93.3%	6.7%	92.1%	
13e	34	6	4	44	40	85.0%	15.0%	13e	44	2	2	48	46	95.7%	4.3%	90.7%	
13f	15	11	18	44	26	57.7%	42.3%	13f	35	5	8	48	40	87.5%	12.5%	75.8%	
13g	41	1	2	44	42	97.6%	2.4%	13g	24	4	20	48	28	85.7%	14.3%	92.9%	
13h	43	1		44	44	97.7%	2.3%	13h	46		2	48	46	100.0%	0.0%	98.9%	
13i	43	0	1	44	43	100.0%	0.0%	13i	46		2	48	46	100.0%	0.0%	100.0%	
13j	34	5	5	44	39	87.2%	12.8%	13j	27	3	18	48	30	90.0%	10.0%	88.4%	
13k	38	3	3	44	41	92.7%	7.3%	13k	38	5	5	48	43	88.4%	11.6%	90.5%	
Sum	402	47			449	89.5%	10.5%	Sum	432	28		460		93.9%	6.1%	91.7%	

TABLE A-2

Question	135 "Will Not Carry" Operators						135 "Will Carry" Operators						Combined 135Yes%			
	Yes	No	N/A- NR	Total	Adj. total	% of Adj.Total	Yes	No	Ques- tion	Yes	No	N/A- NR		Total	Adj. Total	% of Adj.Total
9	552	69	2	623	621	88.9%	11.1%	9	238	100	9	347	338	70.4%	29.6%	82.4%
10	560	51	12	623	611	91.7%	8.3%	10	328	14	5	347	342	95.9%	4.1%	93.2%
11	558	58	7	623	616	90.6%	9.4%	11	340	2	1	347	342	99.4%	0.6%	93.7%
12	593	25	5	623	618	96.0%	4.0%	12	337	6	0	347	343	98.3%	1.7%	96.8%
14	502	99	23	623	601	83.5%	16.5%	14	345	2	0	347	347	99.4%	0.6%	89.3%
15	255	235	133	623	490	52.0%	48.0%	15	310	37	0	347	347	89.3%	10.7%	67.5%
16	447	110	69	623	557	80.3%	19.7%	16	342	5	0	347	347	98.6%	1.4%	87.3%
17	506	84	36	623	590	85.8%	14.2%	17	314	33	0	347	347	90.5%	9.5%	87.5%
18	415	143	67	623	558	74.4%	25.6%	18	302	45	0	347	347	87.0%	13.0%	79.2%
19	415	135	76	623	550	75.5%	24.5%	19	313	33	1	347	346	90.5%	9.5%	81.3%
20	581	31	12	623	612	94.9%	5.1%	20	331	15	1	347	346	95.7%	4.3%	95.2%
21	482	80	63	623	562	85.8%	14.2%	21	341	4	2	347	345	98.8%	1.2%	90.7%
22	243	259	124	623	502	48.4%	51.6%	22	302	42	3	347	344	87.8%	12.2%	64.4%
23	252	246	128	623	498	50.6%	49.4%	23	279	64	1	347	343	81.3%	18.7%	63.1%
24	280	238	108	623	518	54.1%	45.9%	24	174	166	7	347	340	51.2%	48.8%	52.9%
25	417	117	92	623	534	78.1%	21.9%	25	227	112	8	347	339	67.0%	33.0%	73.8%
Sum	7058	1980			9038	78.1%	21.9%		4823	680			5503	87.6%	12.4%	81.7%
13a	354	143	125	623	497	71.2%	28.8%	13a	199	86	62	347	285	69.8%	30.2%	70.7%
13b	119	267	236	623	386	30.8%	69.2%	13b	96	158	93	347	254	37.8%	62.2%	33.6%
13c	203	214	205	623	417	48.7%	51.3%	13c	149	119	79	347	268	55.6%	44.4%	51.4%
13d	324	142	156	623	466	69.5%	30.5%	13d	193	89	65	347	282	68.4%	31.6%	69.1%
13e	332	151	139	623	483	68.7%	31.3%	13e	190	89	68	347	279	68.1%	31.9%	68.5%
13f	56	284	282	623	340	16.5%	83.5%	13f	76	185	86	347	261	29.1%	70.9%	22.0%
13g	144	252	226	623	396	36.4%	63.6%	13g	95	149	103	347	244	38.9%	61.1%	37.3%
13h	596	22	8	623	618	96.4%	3.6%	13h	326	12	9	347	338	96.4%	3.6%	96.4%
13i	340	142	144	623	482	70.5%	29.5%	13i	120	147	80	347	267	44.9%	55.1%	61.4%
13j	35	297	290	623	332	10.5%	89.5%	13j	33	185	129	347	218	15.1%	84.9%	12.4%
13k	109	278	235	623	387	28.2%	71.8%	13k	47	183	117	347	230	20.4%	79.6%	25.3%
Sum	2612	2192			4804	54.4%	45.6%	Sum	1524	1402	891		2926	52.1%	47.9%	53.5%

TABLE A-3

135 NO - SPOs				Percent of Adj.Total				135 YES - SPOs				Percent of Adj.Total		Combined		
Ques. #	Yes	No	N/A-NR	Total	Adj.Total	Yes	No	Ques. #	Yes	No	N/A-NR	Total	Adj.Total	Yes	No	135Yes%
9	44	13	5	62	57	77.2%	22.8%	9	12	11	1	24	23	52.2%	47.8%	70.0%
10	51	11		62	62	82.3%	17.7%	10	23	0	1	24	23	100.0%	0.0%	87.1%
11	58	4		62	62	93.5%	6.5%	11	24	0		24	24	100.0%	0.0%	95.3%
12	54	8		62	62	87.1%	12.9%	12	24	0		24	24	100.0%	0.0%	90.7%
14	49	10	3	62	59	83.1%	16.9%	14	24	0		24	24	100.0%	0.0%	88.0%
15	25	22	15	62	47	53.2%	46.8%	15	21	2	1	24	23	91.3%	8.7%	65.7%
16	44	7	11	62	51	86.3%	13.7%	16	24	0		24	24	100.0%	0.0%	90.7%
17	53	7	2	62	60	88.3%	11.7%	17	22	2		24	24	91.7%	8.3%	89.3%
18	41	17	4	62	58	70.7%	29.3%	18	21	3		24	24	87.5%	12.5%	75.6%
19	32	14	16	62	46	69.6%	30.4%	19	23	1		24	24	95.8%	4.2%	78.6%
20	48	9	5	62	57	84.2%	15.8%	20	20	0	4	24	20	100.0%	0.0%	88.3%
21	44	13	5	62	57	77.2%	22.8%	21	24	0		24	24	100.0%	0.0%	84.0%
22	18	25	19	62	43	41.9%	58.1%	22	20	4		24	24	83.3%	16.7%	56.7%
23	25	18	19	62	43	58.1%	41.9%	23	20	3	1	24	23	87.0%	13.0%	68.2%
24	22	26	14	62	48	45.8%	54.2%	24	16	8		24	24	66.7%	33.3%	52.8%
25	32	21	9	62	53	60.4%	39.6%	25	22	2		24	24	91.7%	8.3%	70.1%
Total	640	225	127	992	865	74.0%	26.0%	Total	340	36	8	384	376	90.4%		79.0%