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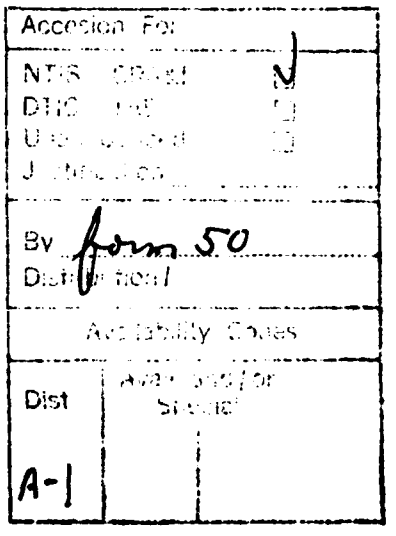
PREFACE

This report was undertaken to document, analyze, and place into national perspective the findings from the 1990 National Aviation Safety Inspection Program (NASIP). This report is the fifth in a series of annual reports covering the results of Federal Aviation Administration (FAA) national inspection programs of FAA certificate holders. The first published report covered inspections performed during FY86 (October 1985 through September 1986). The second, third, and fourth reports presented the results of the 1987 NASIP, 1988 NASIP, and 1989 NASIP, including comparisons with the prior NASIP results. This report presents summarized results obtained from the inspections conducted during FY90 and also includes comparisons with prior year NASIP results. The next planned report will cover inspections conducted as part of the FY91 NASIP.

The FY90 annual report was produced through a team effort. Several persons and organizations were instrumental in its production. The data were obtained by 20 NASIP inspection teams consisting of 126 inspectors, who documented the findings from the inspections of selected FAA Certificate Holding Federal Aviation Regulation (FAR) Part 121 Air Carriers, FAR Part 135 Scheduled Commuter Air Carriers, FAR Part 141 Pilot Schools and FAR Part 145 Repair Stations. The preparation of this report was directed by Debra Entricken, acting manager, Current Operations Branch, AFS-540, and was performed by the Economic Analysis Division, DTS-42, Research and Special Programs Administration, Volpe National Transportation Systems Center (RSPA/VNTSC). At RSPA/VNTSC, the technical manager was Donald Wright, who with Jon Ohman, analyzed the data and wrote the report. Others who directly contributed include Ellen Bowie, AFS-540, who helped clarify and interpret the inspection findings, and the Unisys Corporation under contract to VNTSC, which processed the findings data. Eve Rutyna of EG&G Dynatrend Corporation, under contract to VNTSC, provided editorial support and oversaw the preparation of the manuscript.



FAA NATIONAL AVIATION SAFETY INSPECTION PROGRAM
ANNUAL REPORT - FY90

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1. INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

1.1.1 FAA Regulatory Responsibility for Surveillance

The Federal Aviation Act of 1958 as amended (49 U.S.C. App. 1301 et seq.), charges the Secretary of Transportation with regulating air commerce in such a manner as to best promote its development and safety. The FAA carries out its safety-related responsibilities by promulgating regulations; certificating air carriers, air operators, and air agencies; monitoring compliance with Federal Aviation Regulations (FARs); and taking enforcement actions where necessary. Ensuring the safety of air travel is, however, a joint responsibility of the FAA and the certificate holder. The FAA issues and enforces the aviation regulations that set minimum acceptable standards of safety. The industry is responsible for compliance and the highest level of safety in operating and maintaining its aircraft.

Although some aspects of economic regulation, primarily those dealing with fares and routes, were removed by the Airline Deregulation Act of 1978 (Public Law 95-504), the FAA retained its responsibility for providing oversight of airline compliance with safety regulations. To carry out these responsibilities, the FAA first approves an airline's entire operation when the airline seeks a certificate to operate. The FAA then follows up with periodic surveillance to assure continued compliance with safety regulations relating to the operations and maintenance of the airline's fleet.

Scheduled commercial airlines operate their aircraft under FAR Parts 121 or 135. FAR Part 121 applies to large passenger and cargo aircraft which carry more than 30 passengers or a payload greater than 7,500 pounds. FAR Part 135 applies to smaller aircraft which carry 30 or fewer passengers and a payload not exceeding 7,500 pounds. The FAA is also responsible for inspecting corporate, private, and agricultural operators which operate under other parts of the FAR. In addition, the FAA certificates and inspects air agencies such as FAR Part 145 repair stations, FAR Part 141 pilot schools, and FAR Part 147 aviation maintenance technician schools.

1.1.2 FAA Organization for Safety Surveillance

Within the FAA, the Flight Standards Service (AFS) is responsible for developing the FAR that airlines must follow and for providing guidance on how inspectors should perform inspections. Flight Standards offices in the ten FAA regional offices disseminate headquarters' guidance, perform administrative functions, supervise the operations of district offices, and perform routine and special inspections. Most airline inspections

are conducted by inspectors in approximately 90 district offices located throughout the United States. Although these inspectors perform both original certification activities and inspection duties, inspections of existing certificate holders are the number one work priority for inspectors -- ahead of certification work.

The FAA's inspections are divided into three functional categories -- operations, maintenance, and avionics (aviation electronics). Operations inspections generally monitor the operational aspects of an airline, including pilot certification and performance, flight crew training, dispatching, and flight operations record keeping. Maintenance inspections monitor an airline's overall maintenance program, including personnel training and maintenance policies and procedures. Avionics inspections review matters similar to those of maintenance inspections, except that they focus on aircraft electronic components. These three functional categories are further divided into specific inspection types such as spot, en route, and main base.

The FAA district office inspectors fall into two main specialties: air carrier and general aviation. Air carrier inspectors primarily inspect FAR Part 121 operators, while general aviation inspectors are responsible for operators which operate under FAR Part 135 and other parts of the FAR. As of July 31, 1990, the FAA had 1,014 air carrier and 1,234 general aviation inspectors, for a total of 2,248 inspectors.

Each air carrier is assigned three principal inspectors, one for each of the three functional categories of inspections, who are usually located in an FAA district office at or near the airline's main operations or maintenance facilities. They are the Principal Maintenance Inspector (PMI), the Principal Operations Inspector (POI), and the Principal Avionics Inspector (PAI). Principal inspectors assigned to larger airlines often have assistants. Within their functional category, principal inspectors are responsible for certification, inspection, investigation, and enforcement duties for their assigned airline(s). The principal inspectors are also assisted in these duties by inspectors from the other FAA district offices within whose geographic boundaries the airline operates.

1.1.3 Ongoing Surveillance and Inspection Planning

Since 1977, as part of its ongoing surveillance and inspection functions, FAA headquarters has prepared and distributed program guidelines to field offices for developing and executing annual work programs. In October 1985, the National Program Guidelines (NPG) replaced the original program planning guidance established in 1977. These guidelines specify inspection and other program tasks that must be done, set priorities among task categories and, in certain instances, (e.g., surveillance of carrier compliance with safety requirements), prescribe minimum allowable levels of coverage. Field offices have the flexibility to schedule, direct, and adjust work activity, but are required to follow the guidelines

in preparing their annual work programs. The guidelines identify the types of inspections that FAA headquarters require for airline surveillance. The guidelines also establish reporting requirements for monitoring work programs nationwide.

In the course of implementing these program guidelines, district offices perform ongoing surveillance of aviation certificate holders located in their geographic area. They also provide cross-regional support to monitor operations and maintenance of certificate holders that are based in another region, but operate in their region.

1.1.4 National Inspection Programs

In January 1986, the FAA implemented its first annual plan for targeting inspection work on selected air carriers and air agencies. The initial plan represented management's first step toward institutionalizing the methodology developed for the NATI Program.[1] The plan for 1986 focused inspection work on certain engine repair stations and on commercial carriers that derive significant income from military charter flights. From this effort, the National Aviation Safety Inspection Program (NASIP) has evolved into an annual program of in-depth inspections of certificated air carriers and air agencies performed in accordance with national standards and guidelines, under the authority of Sections 313, 605, and 609 of the Federal Aviation Act of 1958, as amended.

The NASIP complements the mandatory ongoing NPG and regional inspection programs by providing the flexibility to focus inspection efforts where analysis reveals that they are most needed. NASIP program emphasis is redefined annually and certificate holders targeted for inspection are identified at that time. Special focus inspections are conducted as events and circumstances warrant. Consequently, each annual NASIP plan

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1. National Air Transportation Inspection (NATI) Program: Conducted by the FAA during March-June 1984, NATI inspected 327 air carriers nationwide and included follow-up, in-depth examinations of 43 carriers believed to have substantive safety problems. While NATI concluded that the vast majority of carriers (about 95% of those inspected) were meeting FAA safety requirements, it reported over 4,600 safety deficiencies and resulted in 16 carriers suspending or curtailing operations or withdrawing pilots from service. A subsequent analysis of the NATI findings, conducted by an FAA-convened panel of experts, concluded that about 16 percent of the reported deficiencies had presented a direct or adverse effect on flight safety or a high potential for an unsafe condition. NATI recommended several actions to strengthen inspection management and provided baseline data for evaluating program effectiveness.

targets air carriers, air operators, and air agencies for comprehensive in-depth inspections as well as overseeing special focus inspections where circumstances indicate a requirement for immediate additional surveillance.

NASIP inspections are carried out by specially formed and trained national teams supported by inspectors from outside the region in which the certificate is managed. The NATI and other special projects have shown that balanced teams can be a productive approach to performing inspection work. These teams permit more effective planning, more thorough inspections, and provide on-the-job training for younger staff. Teams can also provide a more concentrated review of a certificate holder's compliance with regulations. Prior national inspection programs also showed that teams can provide the FAA with feedback on the adequacy of the inspections performed by the certificate holder's principal inspectors. Safety problems which exist undetected or uncorrected for long periods are more likely to be identified and resolved much sooner using this approach.

The NASIP findings enable the FAA to continuously assess aviation certificate holder compliance with Federal Aviation Regulations using national standards and approved guidelines. Inspection findings under the 1986, 1987, 1988, 1989, and 1990 NASIPs have been collected and reviewed by FAA headquarters. Headquarters officials are systematically analyzing reported findings. The results of their analyses are used to formulate annual inspection plans, develop operational effectiveness measures, schedule work programs and target future inspection efforts.

1.2 BACKGROUND

1.2.1 1986 National Inspection Plan

On January 14, 1986, the Secretary of Transportation directed the FAA to conduct special inspections of airlines operating under military charter. These were conducted as part of the Flight Standards National Inspection Plan for 1986 and were implemented through Notice 8000.266. This plan called for special, in-depth inspections of air carriers and air agencies. There were two specially targeted areas of emphasis in the 1986 National Inspection Plan: 1) inspection of FAR Part 145 certificated turbine engine repair facilities, and 2) inspection of FAR Part 121 air carriers which derive significant income from military charter flights.

During FY86, 20 FAR Part 145 turbine engine repair facilities and 18 FAR Part 121 air carriers were inspected as part of the National Inspection Plan. The results of these inspections were summarized and published in July 1987.[1]

1.2.2 1987 National Aviation Safety Inspection Program

In FY87, the FAA continued the inspection activity which was begun under the 1986 National Inspection Plan by publishing Notice 8000.270 and implementing the 1987 National Aviation Safety Inspection Program. The 1987 NASIP continued the in-depth inspections of FAR Part 121 air carriers which derive significant income from military charter flights while adding the following aviation certificate holders: 1) FAR Part 135 scheduled commuter air carriers; 2) FAR Part 141 pilot schools; and 3) FAR Part 145 repair stations.

During FY87, a total of 8 FAR Part 121 air carriers, 3 FAR Part 135 scheduled commuter air carriers, 14 FAR Part 141 pilot schools, and 13 FAR Part 145 repair stations were inspected as part of the 1987 National Aviation Safety Inspection Program. The results of these inspections were summarized and published in September 1988.[2]

In addition to the 38 certificate holders identified by the 1987 Notice, five all-cargo FAR Part 121 air carrier special emphasis inspections were conducted. Finally, several special focus inspections were carried out. These were unanticipated surveillance requirements resulting from events and incidents that occurred during the year, such as the special focus operations inspection of Delta Airlines which was necessitated by an unusually high incidence of pilot deviations.

1.2.3 1988 National Aviation Safety Inspection Program (NASIP)

The FY88 NASIP was conducted under Notice 8000.271, which was published on August 9, 1987. The FY88 special emphasis areas included:

1) Federal Aviation Regulation (FAR) Part 121 air carriers, some of which derive significant income from military charter flights;

2) FAR Part 135 scheduled commuter air carriers;

3) FAR Part 135 helicopter emergency medical service operators;

4) FAR Part 141 pilot schools;

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1. "FAA National Aviation Safety Inspection Program Annual Report FY86," *VNTSC Project Memorandum DOT-VNTSC-FA793-PM-87-15*, July 1987.
2. "FAA National Aviation Safety Inspection Program Annual Report FY87," VNTSC Project Memorandum DOT-VNTSC-FA893-PM-88-15, September 1988.

5) FAR Part 145 repair stations; and

6) FAR Part 147 aviation maintenance technician schools.

In all, 31 inspections were performed using 304 inspectors over a period of 519 days on-site. More specifically, seven FAR Part 121 air carriers, six FAR Part 135 commuter air carriers, four FAR Part 135 helicopter emergency medical service operators, seven FAR Part 141 pilot schools, six FAR Part 145 repair stations, and one FAR Part 147 aviation maintenance technician school were inspected. One FAR Part 135 scheduled commuter air carrier was also inspected for its FAR Part 133 rotorcraft external load operator operations. The findings from these 31 inspections were statistically summarized for publication in June 1989.[1]

In addition to the full NASIP inspections, 35 special emphasis inspections of selected FAR Part 135 commuter air carriers were conducted during 1988, as were specially mandated ramp inspections of Eastern Airlines and Continental Airlines.

1.2.4 1989 NASIP

The FY89 NASIP was conducted under Order 8000.68, published on February 6, 1989. The FY89 special emphasis areas included:

1) Federal Aviation Regulation (FAR) Part 121 air carriers, some of which derive significant income from military charter flights;

2) FAR Part 133 rotorcraft external load operators;

3) FAR Part 135 scheduled commuter air carriers;

4) FAR Part 141 pilot schools;

5) FAR Part 145 repair stations; and

6) FAR Part 147 aviation maintenance technician schools.

In all, 30 inspections were performed, using 262 inspectors over a period of 464 days on-site. More specifically, eight FAR Part 121 air carriers, three FAR Part 133 rotorcraft external load operators, two FAR Part 135 scheduled commuter air carriers, seven FAR Part 141 pilot schools, seven FAR Part 145 repair stations, and three FAR Part 147 aviation maintenance technician schools were inspected. The findings from these 30 inspections were statistically summarized for publication in July 1990.[1]

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1. "FAA National Aviation Safety Inspection Program Annual Report FY89," DOT-VNTSC-FA093-90-17, July 1990.

1.2.5 1990 NASIP

In total, 1,575 inspector labor-days were required to perform the 1990 National Aviation Safety Inspection Program. Each FAR Part 121 and 135 air carrier/operator, and FAR Part 141 pilot school inspection included both an operations and airworthiness inspection, each performed by a different team. Each FAR Part 145 repair station required only an airworthiness inspection.

In the first quarter of FY90, seven in-depth inspections were conducted. These inspections were comparable to the inspections conducted in the previous years of the NASIP.

NASIP inspection activity was limited during the remainder of FY90 because of reductions in resources, i.e., a smaller budget and decreased inspector availability. No inspections were performed during the second and third quarters of FY90. In the fourth quarter, 12 focused inspections were conducted. Focused inspections cover only selected elements of in-depth inspections and involve much less inspector effort, i.e., smaller teams and shorter inspections. For example, in FY90, a typical (median value) NASIP FAR Part 121 in-depth inspection required 12 inspectors and 21 days on-site, while a typical (median value) NASIP FAR Part 121 focused inspection required only 7 inspectors and 9 days on-site. It is anticipated that future NASIP inspection programs will include a combination of in-depth and focused inspections.

The items included in the focused inspections were determined by analyzing the final actions taken on category 1 findings from NASIP inspections from the previous three years. Those items which had 1) the most category 1 findings, or 2) category 1 findings resulting in the most severe sanctions, were selected for inclusion in the focused inspections. A field survey of district offices was also done to verify the importance of items to be selected for focused inspections. Additionally, "management" sections were included in focused inspections because of the importance of those sections to the entire operation of each certificate holder.

Since the results of focused inspections are not comparable with the results of fixed inspections, the results of the two types of inspections can not be summarized together. In addition, in FY90, there were no more than three in-depth inspections per FAR Part, and, with one exception, no more than two focused inspections per FAR Part. These small numbers of inspections make it impractical to publish these results separately. Therefore, the FY90 in-depth inspection results have been combined with the FY89 (in-depth) inspection results and are published in this report. Similarly, the FY90 focused inspection results will be combined with the FY91 focused inspection results and published in the FY91 annual report. The exception to this rule is the FY90 focused inspections for FAR Part 121. Since there were a sufficient number (seven) of these inspections in FY90 to publish separately, those results are included in this report.

The result of these decisions is that, for analysis purposes, FY90 is being treated as a transition year for NASIP. The inspection activity (in-depth inspections) in the first quarter of FY90 is being treated as a continuation of the FY89 program. The inspection activity (focused inspections) in the fourth quarter of FY90 will be included with the published results from the FY91 program.

In addition to the in-depth and focused NASIP inspections, a FAR 145 NASIP special certification inspection was conducted during FY90. The results of this inspection do not conform to the NASIP reporting guidelines, so they are not included in this report.

Table 1-1 presents labor usage data by certificate holder and summarizes the effort by FAR Part. The data are also broken down by type of inspection (in-depth vs. focused).

1.3 NASIP COVERAGE BY YEAR AND FEDERAL AVIATION REGULATION (FAR) PART

Tables 1-2 and 1-3 show the number of NASIP inspections and labor-days for FY86, FY87, FY88, FY89, and FY90 broken down by the type of certificate (FAR Part) of the certificate holder inspected and the type of inspection (in-depth or focused). In 1986, the first NASIP year, a heavy emphasis was placed on large (FAR Part 121) air carriers, particularly those with significant Department of Defense charter business. This first NASIP year followed the December 1985 fatal accident of a military charter carrying 286 military personnel and was during the early period of airline deregulation. In the second NASIP year, 1987, a continued emphasis was placed on large (FAR Part 121) air carriers including all-cargo carriers. Additional effort was expended on FAR Part 145 repair stations and two additional FAR Parts (FAR Part 135 commuter air carriers and FAR Part 141 pilot schools) were added to the program.

In the third NASIP year, FY88, a more balanced (across FAR Parts) program was conducted with special emphasis on FAR Part 135 commuter air carriers. 1988 followed a period of significant new commuter start-up operations to meet the demand which resulted from major air carrier consolidation and route restructuring. In 1987, there had also been an increase in accident rates for FAR Part 135 commuters resulting in increased surveillance activity. In FY88, inspections of FAR Part 141 pilot schools and FAR Part 145 repair stations continued at somewhat lower levels than in 1987, but resources were expended to add two new FAR Part certificate holder groups, FAR Part 135 helicopter emergency medical service operators, and a FAR Part 147 aviation maintenance technician school.

In FY89, fewer resources were available to perform NASIP inspections. As a result, there was a reduction in the number of inspections and in the number of labor-days expended on NASIP

TABLE 1-1. LABOR USAGE FOR THE FY90 NASIP

FAR PART 121 AIR CARRIERS	NUMBER OF TEAM MEMBERS	DAYS ON-SITE	LABOR -DAYS
IN-DEPTH INSPECTIONS:			
ERA Aviation	14	25	350
Command Airways	10	17	170
IN-DEPTH SUBTOTALS	24	42	520
FOCUSED INSPECTIONS:			
MarkAir	7	10	70
Northern Air Cargo	5	12	60
Pennsylvania Commuter Airlines	7	5	35
United Parcel Service	8	10	80
American Trans Air	8	8	64
Carnival Air Lines	3	5	15
Business Express	5	9	45
FOCUSED SUBTOTALS	43	59	369
FAR PART 121 TOTALS	67	101	889

FAR PART 135 SCHEDULED COMMUTER AIR CARRIERS	NUMBER OF TEAM MEMBERS	DAYS ON-SITE	LABOR -DAYS
IN-DEPTH INSPECTIONS:			
Christman Air Systems	6	10	60
Big Sky Transportation Co.	9	13	117
Express Airlines I	11	24	264
IN-DEPTH SUBTOTALS	26	47	441
FOCUSED INSPECTIONS:			
Executive Express II	3	8	24
Papillon Airways	3	5	15
FOCUSED SUBTOTALS	6	13	39
FAR PART 135 TOTALS	32	60	480

TABLE 1-1. LABOR USAGE FOR THE FY90 NASIP (cont.)

FAR PART 141 PILOT SCHOOLS	NUMBER OF TEAM MEMBERS	DAYS ON-SITE	LABOR -DAYS
IN-DEPTH INSPECTIONS:			
Aerospace Technology	6	9	54
IN-DEPTH SUBTOTALS	6	9	54
FOCUSED INSPECTIONS:			
Great Southwest Aviation	3	4	12
Aviation Career Academy	4	5	20
FOCUSED SUBTOTALS	7	9	32
FAR PART 141 TOTALS	13	18	86

FAR PART 145 REPAIR STATIONS	NUMBER OF TEAM MEMBERS	DAYS ON-SITE	LABOR -DAYS
IN-DEPTH INSPECTIONS:			
Agro Air Associates	5	9	45
Jet Power*	6	11	66
IN-DEPTH SUBTOTALS	11	20	111
FOCUSED INSPECTIONS:			
Pacific Southwest Airmotive	3	3	9
FOCUSED SUBTOTALS	3	3	9
FAR PART 145 TOTALS	14	23	120

* - Special Certification Inspection

TABLE 1-1. LABOR USAGE FOR THE FY90 NASIP (cont.)

SUMMARY OF LABOR FOR FY90 - IN-DEPTH INSPECTIONS

TYPE OF OPERATOR	NUMBER OF INSPECTORS USED	DAYS ON-SITE	LABOR -DAYS
FAR PART 121	24	42	520
FAR PART 135	26	47	441
FAR PART 141	6	9	54
FAR PART 145	11	20	111
GRAND TOTALS FOR FY90	67	118	1,126

SUMMARY OF LABOR FOR FY90 - FOCUSED INSPECTIONS

TYPE OF OPERATOR	NUMBER OF INSPECTORS USED	DAYS ON-SITE	LABOR -DAYS
FAR PART 121	43	59	369
FAR PART 135	6	13	39
FAR PART 141	7	9	32
FAR PART 145	3	3	9
GRAND TOTALS FOR FY90	59	84	449

SUMMARY OF LABOR FOR FY90 - ALL INSPECTIONS

TYPE OF OPERATOR	NUMBER OF INSPECTORS USED	DAYS ON-SITE	LABOR -DAYS
FAR PART 121	67	101	889
FAR PART 135	32	60	480
FAR PART 141	13	18	86
FAR PART 145	14	23	120
GRAND TOTALS FOR FY90	126	202	1,575

TABLE 1-2. 1986-1990 NASIP, NUMBER OF INSPECTIONS BY FAR PART

FAR PART		NUMBER OF INSPECTIONS						
		1986	1987	1988	1989	1990 In-Depth	1990 Focused	TOTAL
121	AIR CARRIERS	18	13**	7	8	2	7	55
133	ROTORCRAFT EXTERNAL LOAD OPERATORS	-	-	-	3	-	-	3
135	COMMUTER AIR CARRIERS	-	3	41***	2	3	2	51
135	HELICOPTER EMERGENCY MEDICAL SERVICE OPERATORS	-	-	4	-	-	-	4
141	PILOT SCHOOLS	-	14	7	7	1	2	31
145	REPAIR STATIONS	20*	13	6	7	2****	1	49
147	AVIATION MAINTENANCE TECHNICIAN SCHOOLS	-	-	1	3	-	-	4
TOTAL		38	43	66	30	8	12	197

*Turbine engine repair facilities only.
**Includes five special emphasis all-cargo air carriers.
***Includes 35 special emphasis commuter air carriers.
****Includes one special certification inspection.

TABLE 1-3. 1986-1990 NASIP, LABOR-DAYS BY FAR PART

FAR PART		LABOR-DAYS						
		1986	1987	1988	1989	1990 In-Depth	1990 Focused	TOTAL
121	AIR CARRIERS	10,082	5,427	2,895	3,910	520	369	23,203
133	ROTORCRAFT EXTERNAL LOAD OPERATORS	-	-	-	349	-	-	349
135	COMMUTER AIR CARRIERS	-	833	1,077*	341	441	39	2,731
135	HELICOPTER EMERGENCY MEDICAL SERVICE OPERATORS	-	-	849	-	-	-	849
141	PILOT SCHOOLS	-	663	437	317	54	32	1,503
145	REPAIR STATIONS	440	616	551	402	111	9	2,129
147	AVIATION MAINTENANCE TECHNICIAN SCHOOLS	-	-	45	119	-	-	164
TOTAL		10,522	7,539	5,854	5,438	1,126	449	30,928

*Does not include 35 special emphasis commuter air carriers included in Table 1-2.

inspections. In FY89, inspections continued of FAR Parts 121, 135, 141, 145, and 147 certificate holders and three FAR Part 133 rotorcraft external load operators were added.

In FY90, NASIP inspections of FAR Part 121, 135, 141, and 145 certificate holders were conducted. However, in FY90, there was a further decrease in the resources available to perform NASIP inspections. As a result, not only were the number of inspections and the number of labor days expended on inspections reduced, but over half of the inspections performed were focused inspections. Focused inspections cover only selected areas of in-depth inspections, and thus, require fewer inspectors and fewer days on-site, i.e., fewer labor-days. Since focused inspections require fewer labor-days than in-depth inspections, the switch to focused inspections in FY90 prevented a much greater reduction in the number of NASIP inspections performed.

Table 1-2 shows the number of inspections conducted annually from 1986 to 1990 by FAR Part and type of inspection (in-depth or focused). (Note: All inspections performed from 1986 to 1989 were in-depth inspections.) Table 1-3 shows the number of labor-days expended on those inspections.

1.4 INSPECTION GUIDANCE AND REPORTING OF FINDINGS

The 1990 NASIP was the fifth national inspection program and was implemented during fiscal year 1990 (October 1, 1989 - September 30, 1990). The order formalizing and defining the scope of the NASIP, FAA Order 8000.68, was published on February 6, 1989. The guidance material containing the standards and instructions for the NASIP inspection teams, entitled "Interim Guidance for Conducting In-depth Inspections," was published for FAR Part 121 air carriers on April 13, 1987; for FAR Part 135 air carriers on June 14, 1988; for FAR Part 141 pilot schools on September 14, 1988; and for FAR Part 145 repair stations on April 13, 1987.

The final written reports (one for each certificate holder) containing inspection findings were written in formats conforming to the published Interim Guidance documents, with a few exceptions. Most of the exceptions involved sections not described in the Interim Guidance documents. These final reports were the source of the findings data used by the Volpe National Transportation Systems Center (VNTSC) in the analysis of findings contained in Chapters 2-4 of this report. Inspection findings documented any violation of Federal Aviation Regulations (FARs) or other federal regulations, noncompliance with FAA airworthiness directives, notices, orders, or with FAA-approved company policies and procedures, as well as nonconformance with nonmandatory FAA or manufacturer guidance material. When violation of regulations occurred and Enforcement Investigative Reports (EIRs) were filed, the EIR numbers were noted. Although part of the final inspection reports, the individual findings that were used as data in this report are considered to be initial findings. That is, they are subject to appeal by the certificate holder and review and

adjudication by the FAA (particularly when a violation of an FAR resulted in the filing of an EIR). The coding of all these findings and the association of documented violations with the applicable FARs often required the interpretive judgment of the VNTSC analyst.

1.5 CODING AND PROCESSING OF THE NASIP FINDINGS

The coding and processing of the NASIP inspection findings data from the 1990 NASIP was made as consistent as possible with the comparable processes used in prior year NASIPs. The inspection teams' findings were coded on the 1990 National Aviation Safety Inspection Program Coding Form (Appendix 2) using the procedures first developed for the 1986 NASIP and later revised. The form contains 26 data fields.

Field 1, "Year," indicates the fiscal year in which the inspection was completed (1990 for this report). Field 2, "FAR Part," shows the FAR part that applies to the certificate holder (FAR Part 121, 135, 141, or 145). Field 3, "Designator Code," identifies the certificate holder by its unique FAA designator code.

The next two groups of fields uniquely identify each certificate holder. "Report" Fields 4a-4c, "Part," "Section," and "Number," indicate the finding identification found in the inspection report, i.e., the finding number assigned by the inspection team. If findings were not numbered or were assigned nonnumeric characters (e.g., A-4), then VNTSC assigned numbers to the findings.

Some inspection teams deviated from the Interim Guidance document instructions when assigning section numbers to the findings. It was necessary for VNTSC to renumber some findings to conform to the Interim Guidance document instructions so that all the data would be summarized in the appropriate sections. "Database" Fields 5a-5c, "Part," "Section," and "Number," contain the revised finding numbers, i.e., finding numbers that were reviewed by VNTSC and changed, where required, to conform to the formats in the Interim Guidance documents. In addition, some sections found in the inspection reports were not described in the Interim Guidance documents. VNTSC established a uniform numbering system for these sections to supplement the Interim Guidance document instructions. Findings in these sections were assigned "Database" finding numbers that conform to these supplemental instructions.

Thus, if a finding was not originally numbered in accordance with the Interim Guidance document instructions (or the VNTSC supplemental instructions), or was otherwise reported inconsistently, then its "Database ID" (Fields 5a-5c) will be different than its "Report ID" (Fields 4a-4c). The tables in this report were summarized using the "Database ID" (Fields 5a-5c),

i.e., in accordance with the section numbering formats in the Interim Guidance documents, as supplemented by VNTSC.

Field 6, "Category of Finding," defines the category of each finding reported by the inspection teams. The findings were coded into four different categories:[1] (1) noncompliance with a FAR or airworthiness directive resulting in an EIR being issued; (2) noncompliance with a FAR or airworthiness directive where an EIR was not issued; (3) nonconformance with written FAA guidance material, such as an FAA notice, order, or advisory circular; and (4) "other" for findings not classifiable into categories 1, 2, or 3.

Due to differences in the way the inspection teams recorded findings, the numbers of findings in the inspection reports may differ from the numbers in this report. In some cases, findings were reported which were not adverse. For example, some teams would report as findings the fact that a certificate holder was performing a particular activity, or that there were no problems to report. Such "comments" were not counted as findings unless problems or discrepancies were noted. These "comment" findings were coded, but were assigned a special category code of "9" so that they would not be summarized. (The tables in this report do not include any data from these "comment" findings.)

In addition, teams would sometimes combine different discrepancies under a single finding. To obtain finding counts that were consistent across all inspections, each of these "multiple findings" was weighted by the number of discrepancies in the finding. This number was entered in Field 7, "Multiple Findings." Therefore, for each inspection, the number of findings was equal to the number of different discrepancies. (Note: This weight was applied only when calculating the number of findings. The numbers of EIRs and FARs in these "multiple findings" were <u>not</u> weighted.)

The remaining fields on the coding form indicate the EIRs, FARs, FAR subparts, FAA airworthiness directives, notices, orders, and advisory circulars cited in each finding. There is also a "Remarks" field for additional information. If a finding had more than three EIRs or FARs, or more than one FAA airworthiness directive, notice, order, or advisory circular, then additional coding forms were used until all of the items were coded. (In these instances, a "Y" was entered in Field 17 to alert the data entry person that the finding required more than one form.)

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1. These category definitions are consistent with the definitions in the "Interim Guidance for Conducting In-depth Inspections" published in 1987 and 1988 and used in the 1988 and 1989 annual reports. However, they differ slightly from the category definitions that were used in the 1986 and 1987 annual reports.

Fields 9b, 10b, and 11b, "Subpart," contain the subparts of the applicable FAR (121, 135, 141, or 145) for the corresponding FARs coded. If a finding cited an appendix to the applicable FAR, then the subpart field was coded "X." If a finding cited the applicable FAR, but did not indicate the particular subpart involved, then the subpart field was coded "Y." If a finding cited a FAR other than the applicable FAR, then the subpart field was coded "Z."

After the coding process was completed, the data were entered into a database of findings. This database contains a record for each coded finding from the 1990 NASIP inspections and to the degree possible was made similar to comparable databases of findings from previous NASIPs.

1.6 ANALYZING THE RESULTS

The number of findings issued per inspection was dependent on several factors. The more items that were inspected (e.g., records, procedures), the more opportunities there were for findings to be issued. However, there were no firm requirements for determining the number of items to be inspected. For a small operator, it might have been possible for the inspection team to examine all of the records in a certain area (e.g., training records). This task would be impossible when inspecting a large operator. In this case, the inspection team would examine a random sample of records. The sampling fractions employed varied from operator to operator and from section to section. In many cases, the reports did not indicate the sampling fractions that were used. Therefore, statistical inferences (extrapolations of the same results), as to the total number of findings for a given certificate holder or an entire FAR Part population are not possible. However, even though extrapolations or inferences about the total population of the FAR Part certificate holders cannot be made from the NASIP results, certain comparisons can be made among the numbers of findings associated with different sections (areas inspected within operations and airworthiness), and the rates at which findings occurred between different certificate holders. In the latter case, a findings rate is calculated to normalize the different inspection results by inspector labor-days. Normalized comparisons show the observed range of results obtained on a comparative basis between certificate holders within a FAR Part peer group. Also, comparisons with prior NASIP results are possible in cases when there are two or more inspections during the current year and at least one prior year with three or more inspections.

Specifically, in this report, for each FAR Part (i.e., 121, 135, 141, and 145), the analysis of in-depth inspection results performed includes: 1) the summarization by part and section of the actual counts of findings; 2) the comparison of 1989-1990 findings with NASIP results from prior years; and 3) the calculation of the rate of findings for each inspected certificate holder, and a comparison of those rates for all certificate holders inspected.

These tables and analyses follow in Chapter 2 (FAR Part 121 air carriers and FAR Part 135 scheduled commuter air carriers), Chapter 3 (FAR Part 141 pilot schools), and Chapter 4 (FAR Part 145 repair stations).

The only analysis of focused inspection results included in this report is the summarization by part and section of the actual counts of findings from the FY90 FAR Part 121 focused inspections. These tables and analysis follow in Chapter 2.

2. NASIP AIR CARRIER INSPECTIONS

This chapter contains descriptions of: 1) the methods and procedures used, and 2) the results obtained in the FY90 NASIP inspections of FAR Part 121 air carriers and FAR Part 135 scheduled commuter air carriers.

Since there were only two FAR Part 121 in-depth inspections and three FAR Part 135 in-depth inspections conducted in FY90, these results have been combined with the FY89 results for each FAR Part. This chapter contains descriptions of the combined FY89 and FY90 in-depth inspection results for both FAR Part 121 and FAR Part 135.

Since there were seven FAR Part 121 focused inspections conducted in FY90, descriptions of these results are contained in this chapter.

Since there were only two FAR Part 135 focused inspections conducted in FY90, the results of these inspections are not included in this report but will be combined with subsequent focused inspection results to be published in a future annual report.

2.1 PART 121 AIR CARRIER IN-DEPTH INSPECTIONS

2.1.1 Methods and Procedures

2.1.1.1 Guidelines - The objective of in-depth inspections is to determine air carrier compliance with FARs, FAA-approved company procedures and policies, and written FAA guidance material. The FAR Part 121 Interim Guidance document contains two lists (one for operations and another for airworthiness) of criteria for determining this compliance. Each list is organized by the sections to be contained in the final report. Neither list is intended to be all-inclusive.

The FAR Part 121 Interim Guidance document specifies that each NASIP FAR Part 121 in-depth inspection team normally consist of an operations group and an airworthiness group.[1] There is a team leader who is responsible for planning the inspection and indoctrinating the team members in the systems and procedures used by the air carrier to be inspected. The Interim Guidance document specifies that each NASIP FAR Part 121 inspection team present briefings to the air carrier before and after the inspection. In addition, following the inspection, the team is to write a final

1. The inspection teams included avionics, hazmat, engineering, and security specialists when appropriate.

report in accordance with the format shown in the document. The format indicates the sections to be included in both the operations and airworthiness parts of the report.

There were ten FAR Part 121 air carriers that received NASIP inspections in FY89 and FY90. The reports written by the inspection teams conform to the format in the Interim Guidance document, with a few minor exceptions.

2.1.1.2 Methods and Procedures Used - The in-depth inspection of each air carrier consisted of two parts: Operations and Airworthiness. These two parts were broken down into 31 sections which are described in the Interim Guidance document, and are as follows:

1.0 OPERATIONS

- 1.1 Management
- 1.2 Operations Specifications
- 1.3 Operations Training
- 1.4 Operations Manuals
- 1.5 Operations Training Records
- 1.6 En Route Inspections
- 1.7 Minimum Equipment Lists (MELs)
- 1.8 Dispatch/Flight Release
- 1.9 Flight and Duty Time
- 1.10 Airport Analysis/Performance
- 1.11 Station Facility Inspections
- 1.12 Hazardous Materials

2.0 AIRWORTHINESS

- 2.1 Management
- 2.2 Operations Specifications
- 2.3 Manuals and Procedures
- 2.4 Training Programs
- 2.5 Records Systems
- 2.6 Maintenance Facilities
- 2.7 Contractual Arrangements
- 2.8 MEL/Deferred Maintenance
- 2.9 Weight and Balance Programs
- 2.10 Airworthiness Directives Compliance
- 2.11 Maintenance Programs
- 2.12 Reliability Programs
- 2.13 Maintenance Inspection System and Required Inspection Items
- 2.14 Continuing Analysis and Surveillance Program
- 2.15 Mechanical Reporting Procedures
- 2.16 Major Repair and Alteration Conformity
- 2.17 Fueling and Servicing
- 2.18 Aircraft Ramp Inspections
- 2.19 Maintenance Spot Inspections

The following are descriptions of the methods and procedures used in each of the above sections:

1.0 OPERATIONS

The following operations appeared in (or were applicable to) all ten FAR Part 121 air carrier in-depth inspection reports, with the exception of Section 1.11. The number of reports in which this section appeared is indicated in parentheses after the section title.

1.1 Management

The inspection teams reviewed the air carriers' organizational structures and management qualifications to determine compliance with FAR 121 and Orders 8430.6C (Air Carrier Operations Inspector's Handbook) and 8400.10 (Air Transportation Operations Inspector's Handbook).

1.2 Operations Specifications

The air carriers' Operations Specifications were reviewed for compliance with standard operations specifications, FAR 121, and Orders 8430.6C and 8400.10.

1.3 Operations Training

The air carriers' training programs were evaluated for compliance with FAR 121. Team members reviewed training manuals and course materials, and observed ground and flight training.

1.4 Operations Manuals

The inspection teams reviewed the air carriers' operations manuals to determine compliance with the applicable FARs and the air carriers' Operations Specifications.

1.5 Operations Training Records

The inspection teams reviewed randomly selected pilot, flight engineer, flight attendant, and dispatcher training records to determine compliance with FAR 121 and the approved training programs.

1.6 En Route Inspections

The inspection teams conducted en route inspections, using the guidelines in Order 8430.6C, Form 8430-5, and the Interim Guidance document.

1.7 Minimum Equipment Lists (MELs)

The inspection teams compared the air carriers' Minimum Equipment Lists (MELs) with the current FAA Master MELs to determine currency and appropriate content. The air carriers' MEL procedures were examined to determine compliance with Order 8430.6C.

1.8 Dispatch/Flight Release

The air carriers' dispatch/flight release centers were inspected for compliance with company procedures, FAR 121, and Order 8430.6C.

1.9 Flight and Duty Time

The inspection teams reviewed randomly selected air carrier crewmember flight and duty time records to determine compliance with the flight time limitations and rest period requirements of FAR 121.

1.10 Airport Analysis/Performance

The inspection teams compared data from the air carriers' airport analysis charts with performance data from various approved aircraft flight manuals for accuracy and completeness. The teams also reviewed the data to determine if the airports used by the air carriers were proper and adequate for the aircraft they operated.

1.11 Station Facility Inspections (9)

Station facility inspections were conducted at stations throughout the air carriers' systems, according to the guidelines of Order 8430.6C and Form 8430-10, to determine compliance with FAR requirements and company procedures.

1.12 Hazardous Materials

The air carriers' hazardous materials programs were inspected in accordance with Order 1650.9A (Transportation of Hazardous Materials). The inspection teams reviewed operations and training manuals to determine compliance with FARs 121.135, 121.401, and Part 175 of Title 49 of the Code of Federal Regulations (49 CFR 175). Team members reviewed training records to determine compliance with FAR 121.433a. In addition, flight crew and ground personnel were interviewed to verify hazardous materials training and knowledge.

2.0 AIRWORTHINESS

The following airworthiness sections appeared in (or were applicable to) all ten FAR Part 121 air carrier in-depth inspection reports, with the exceptions of Sections 2.7 and 2.12. The number of reports in which each of these sections appeared is indicated in parentheses after the section title.

2.1 Management

The inspection teams evaluated the management of the air carriers' maintenance organizations by reviewing the air carriers' maintenance manuals and interviewing company personnel.

2.2 Operations Specifications

Parts D and E of the air carriers' Operations Specifications were examined to determine compliance with FAR 121.25 and Order 8300.9 (Airworthiness Inspector's Handbook).

2.3 Manuals and Procedures

The inspection teams reviewed the air carriers' maintenance manuals to determine compliance with FARs 121.133, 121.135, 121.137, 121.369, and Order 8300.9.

2.4 Training Programs

The inspection teams reviewed samples of the air carriers' maintenance training records to determine compliance with FAR 121.375.

2.5 Records Systems

The air carriers' maintenance records systems were examined for compliance with FAR 121.380 and the procedures in the air carriers' maintenance manuals. Team members reviewed samples of maintenance records, including flight logs, inspection packages, airworthiness directive records, major repair and alteration records, and life-limited parts records.

2.6 Maintenance Facilities

On-site inspections of the air carriers' maintenance facilities were conducted to determine compliance with FAR 121 and Order 8300.9.

2.7 Contractual Arrangements (7)

The air carriers' maintenance contract procedures and the associated contracts were reviewed for compliance with FAR 121 and Order 8300.9.

2.8 MEL/Deferred Maintenance

The inspection teams examined the air carriers' MELs for conformity with the FAA Master MELs. Team members reviewed the air carriers' aircraft maintenance records to determine compliance with FAR 121 and company manuals.

2.9 Weight and Balance Programs

The inspection teams evaluated the air carriers' weight and balance programs for compliance with FAR 121 and Advisory Circular 120-27A (Aircraft Weight and Balance Control). Team members reviewed the air carriers' Operations Specifications Part E, weight and balance manuals, and samples of individual aircraft weight and balance records.

2.10 Airworthiness Directives Compliance

The air carriers' airworthiness directive (AD) records were reviewed to determine status and methods of compliance. Team members inspected selected aircraft to verify AD compliance.

2.11 Maintenance Programs

The inspection teams evaluated the air carriers' maintenance programs to determine compliance with FAR 121.367 and Order 8300.9. Team members reviewed Operations Specifications, maintenance manuals, inspection worksheets, and logbook records.

2.12 Reliability Programs (6)

The inspection teams reviewed the air carriers' reliability program documents to determine compliance with Order 8300.9 and Advisory Circular 120-17A (Maintenance Control by Reliability Methods).

2.13 Maintenance Inspection System and Required Inspection Items

The air carriers' maintenance inspection systems and Required Inspection Item (RII) lists were examined for compliance with FAR 121 and Order 8300.9. Team members reviewed maintenance manuals and interviewed randomly selected RII inspectors. Samples of completed inspection packages, work orders, and logbooks were inspected for proper signatures and compliance with established procedures.

2.14 Continuing Analysis and Surveillance Program

The inspection teams reviewed the air carriers' continuing analysis and surveillance programs for compliance with FAR 121.373 and Order 8300.9. Team members reviewed maintenance records (e.g., logbooks) and audit reports, and interviewed some of the air carriers' Chief Inspectors.

2.15 Mechanical Reporting Procedures

The inspection teams reviewed the air carriers' maintenance manuals, aircraft logbooks, Mechanical Reliability Reports, Mechanical Interruption Summary

Reports, and Alteration and Repair Reports (Form 337) to determine compliance with FARs 121.703, 121.705, and 121.707.

2.16 Major Repair and Alteration Conformity

The inspection teams reviewed selected air carrier engineering orders and Alteration and Repair Reports (Form 337) to determine if repairs were properly classified (as major or minor) and if the technical data used were FAA-approved. These reports and the air carriers' maintenance manuals were reviewed for compliance with company procedures and the applicable FARs.

2.17 Fueling and Servicing

The inspection teams reviewed the air carriers' fueling and servicing manuals and records to determine compliance with FAR 121.135. Team members observed fueling operations to determine compliance with company procedures.

2.18 Aircraft Ramp Inspections

The inspection teams performed ramp inspections on selected aircraft in accordance with the guidance contained in Order 8300.9.

2.19 Maintenance Spot Inspections

The inspection teams performed maintenance spot inspections on selected aircraft in accordance with the guidance in Order 8300.9. Spot inspections were conducted on aircraft undergoing scheduled and nonroutine maintenance to determine whether applicable maintenance performance requirements in FARs 43, 91, and 121 were met.

2.1.2 Results

The initial findings of the inspections are summarized in this section. Initial inspection findings may or may not have been substantiated. Enforcement actions which were recommended may or may not have resulted in sanctions, depending on the outcome of subsequent reviews. The sanctions imposed and the corrective actions taken varied, depending on the nature and severity of the violations.

2.1.2.1 Findings - Table 2-1 indicates the distribution of findings by part, section, and category[1] for all ten FAR Part 121 air carriers that received in-depth inspections in 1989-1990. A total of 1,467 findings was issued, an average of 146.7 per air carrier. The number of findings issued in the FAR Part 121 in-depth inspections ranged from 46 to 153.

Of the total of 1,467 findings, 564 (38.4%) were in Part 1.0 - Operations, while 903 (61.6%) were in Part 2.0 - Airworthiness. Category 1 findings constituted 23.4% of the total, while Categories 2, 3, and 4 accounted for 30.7%, 15.0%, and 30.9% of the findings, respectively.

Figure 2-1 shows the distribution of findings by section in descending order for Part 1.0 - Operations. Figure 2-2 displays the comparable distribution for Part 2.0 - Airworthiness. Figures 2-3 (Operations) and 2-4 (Airworthiness) show the distributions of Category 1 findings (i.e., findings resulting in "IRs) only.

2.1.2.2 FARs Cited - Table 2-2 indicates the number of times that FARs were cited in the findings. The citings are broken down by 1) the FAR 121 subpart (see Appendix 3 for FAR Part 121 subpart definitions) or other FAR or other regulation that was cited and 2) category of finding.

There were 738 instances of FARs being cited, 516 (69.9%) of which involved FAR 121. The other 222 instances involved other FARs or other regulations that are not FARs. For example, in Table 2-2, "171," "172," "173," and "175" represent hazardous materials regulations from Title 49 of the Code of Federal Regulations, i.e., 49 CFR Parts 171, 172, 173, and 175. (Note: In Table 2-2, "S38" refers to Special Federal Aviation Regulation (SFAR) 38-2.)

Of the total of 738 citings, 50.1% involved Category 1 findings, while 49.9% involved Category 2 findings.

The FAR 121 subparts that were cited most frequently were Subpart L - Maintenance, Preventative Maintenance, and Alterations (117 times); Subpart G - Manual Requirements (106 times); and

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1. See Pg. 1-16, Field 6, "Category of Finding," for definitions of categories.

Subpart N - Training Programs (71 times). The FARs other than FAR 121 that were cited most often were FAR 135 - Air Taxi Operators and Commercial Operators (63 times) and FAR 43 - Maintenance, Preventative Maintenance, Rebuilding, and Alteration (59 times).

The FAR 121 subparts that were cited most frequently in Category 1 findings were Subpart L (61 times), Subpart G (36 times), and Subpart V - Records and Reports (35 times). The FARs other than FAR 121 that were cited most often in Category 1 findings were FAR 43 (42 times) and FAR 135 (32 times).

2.1.2.3 Enforcement Actions (EIRs) Initiated - The total number of different EIRs recommended in FAR Part 121 air carrier inspections was 257. The number of different EIRs recommended by part was as follows:

	Part 1.0 - Operations	Part 2.0 - Airworthiness
Number of Different EIRs Recommended	92	165

Tables 2-3 and 2-4 show the number of different EIRs issued by section for Parts 1.0 - Operations and 2.0 - Airworthiness, respectively. The sections with the most different EIRs issued were Section 1.5 - Operations Training Records (33) and Section 2.13 - Maintenance Inspection System and Required Inspection Items (29). The totals of the numbers by section in Tables 2-3 and 2-4 are greater than the comparable totals by part, shown above, because any EIR that was listed in more than one section was counted once in each of those sections.

It should be noted that the regions sometimes differed in the assignment of EIRs. In most cases, a single finding indicating a violation resulted in a single EIR. In other cases, a single type of violation resulted in several EIRs if there were multiple events (e.g., flight and duty time violations by more than one crewmember or multiple occurrences by a single crewmember). In still other cases, a single EIR covered more than one violation as several findings were grouped under one enforcement action.

2.1.2.4 Comparison of NASIP Findings by Year - NASIP in-depth inspections of FAR Part 121 air carriers have been conducted in each of the 5 years of the program. In 1986, the first NASIP year, 18 inspections were performed, resulting in 1,701 findings. In the succeeding years, there were 8 inspections with 1,397 findings in 1987, 7 inspections with 1,290 findings in 1988, and 10 inspections with 1,467 findings in 1989-1990. Over the 5 years of the NASIP, there were 43 FAR Part 121 air carrier in-depth inspections, resulting in 5,855 findings. Table 2-5 shows the number of NASIP inspections and findings by part for the years 1986-1990.

The comparison of findings by year was accomplished by examining the yearly distributions of findings across the inspection areas (sections) within the two parts of the inspections, Part 1.0 - Operations and Part 2.0 - Airworthiness. For each year, the percentage of the total number of findings in each section within each part was determined. Comparisons then were made among sections, and among years for the same sections. Tables 2-6 (Operations) and 2-7 (Airworthiness) show these distributions. The last column contains the percentage distributions for the 5-year totals. Figures 2-5 (Operations) and 2-6 (Airworthiness) illustrate the distributions of the totals in bar chart form.

For Part 1.0 - Operations, the distributions of findings by section were generally consistent over the 5-year period. The sections with the most findings during the 5-year period were Section 1.3 - Operations Training and Section 1.4 - Operations Manuals. Together, these two sections accounted for 36.7% of the findings. Three other sections (Sections 1.5 - Operations Training Records, 1.6 - En Route Inspections, and 1.7 - Minimum Equipment Lists (MELs)) collectively accounted for 35.1% of the findings. The remaining eight sections accounted for 28.2% of the findings. An examination of year-to-year changes shows that, in 1989-1990, the relative number of findings increased significantly from 1988 in Section 1.4 - Operations Manuals.

For Part 2.0 - Airworthiness, the distributions of findings by section were also generally consistent over the 5-year period. The sections with the most findings during the 5-year period were Section 2.3 - Manuals and Procedures and Section 2.6 - Maintenance Facilities. Together, these two sections accounted for 27.1% of the findings. The remainder of the findings were distributed over the other 19 sections. In 1989-1990, the relative number of findings decreased significantly from 1988 in Sections 2.3 - Manuals and Procedures and 2.8 - MEL/Deferred Maintenance, but increased significantly from 1988 in Section 2.6 - Maintenance Facilities.

2.1.2.5 Analysis of Normalized Results - In order to determine if NASIP results varied significantly among in-depth inspections, normalized findings rates, which measure the numbers of findings per 100 inspector labor-days, were calculated. This rate was calculated for each certificate holder inspected by dividing, in turn, the number of findings in Part 1.0 - Operations, Part 2.0 - Airworthiness, and the total number of findings by the number of labor-days spent on that inspection and multiplying the results by 100. This normalizing procedure makes it possible to compare results among certificate holders inspected under the same guidelines, but with different levels of inspector effort. Due to the small number of different inspections in any one year, these findings rates were calculated for 42 FAR Part 121 air carrier in-depth inspections conducted between 1986-1990 in order to obtain enough observations for the distributions. The distributions of these rates show the variation in the relative performance of the inspected certificate holders. The lower the rate, the better the

performance, since a low rate indicates fewer adverse findings per 100 days of inspector effort. The distributions of these rates are shown in Figure 2-7 for Part 1.0 - Operations, in Figure 2-8 for Part 2.0 - Airworthiness, and in Figure 2-9 for total findings.

The distribution of findings rates for Part 1.0 - Operations is skewed to the right. Thirty of the 42 inspections produced fewer than 20 operations findings per 100 inspector labor-days, while only one inspection had a findings rate of 40 or greater. Operations findings rates ranged from 2.34 for the carrier with the lowest rate (best case) to 44.41 for the highest rate (worst case), indicating significant differences among carriers. The median findings rate for operations inspections was 12.95, while the average (mean) rate was 11.45. These numbers are near the lower end of the distribution, reflecting its skewed nature.

The distribution of findings rates was also skewed to the right for Part 2.0 - Airworthiness, but not to the extent of the Part 1.0 - Operations inspections. Twenty-two carriers had findings rates of 20 or fewer findings per 100 inspector labor-days, while five carriers had rates of above 40. Airworthiness findings rates ranged from 4.63 to 73.60, which also indicates significant differences among inspected carriers. The median findings rate was 18.44, which was close to the average (mean) rate of 17.67. For most inspections, there were more findings under Airworthiness than under Operations, which partially explains the greater range and higher mean and median findings rates in the Airworthiness results. Also, although specific individual carrier comparisons are not made here, it should be mentioned that the carriers with relatively high operations findings rates were not necessarily the carriers with high airworthiness findings rates.

The distribution of the total findings rates or overall inspections results is derived from the combination of the Part 1.0 - Operations and the Part 2.0 - Airworthiness findings. As such, this distribution is also skewed to the right with 27 inspections producing fewer than 40 findings per 100 inspector labor-days and only two resulting in 80 or more. Total findings rates for NASIP FAR Part 121 in-depth inspections ranged from 7.28 to 118.01 per 100 inspector labor-days. The average total findings rate was 29.12, while the median was 32.60.

In conclusion, the data show that while most FAR Part 121 NASIP inspections (27, or 64%) produced a relatively modest number of adverse findings (fewer than 40 per 100 inspector labor-days), two of the inspections resulted in significantly higher findings rates (80 or more), and another 13 had total findings rates well above the average rate. This suggests that, although most carriers are in general compliance with NASIP guideline standards, NASIP inspections are necessary to supplement ongoing surveillance for a significant number of FAR Part 121 certificate holders. Furthermore, because of the variation in results, the preselection of those carriers likely to be worse case would increase the effectiveness of the program.

TABLE 2-1. FAR PART 121 AIR CARRIERS
1989-1990 IN-DEPTH INSPECTIONS
FINDINGS BY PART/SECTION AND CATEGORY

PART/SECTION		CATEGORY				
1.0	OPERATIONS	1	2	3	4	TOTAL
1.1	Management	0	5	1	2	8
1.2	Operations Specifications	3	9	15	7	34
1.3	Operations Training	19	55	14	17	105
1.4	Operations Manuals	29	59	14	31	133
1.5	Operations Training Records	36	15	4	5	60
1.6	En Route Inspections	18	15	20	7	60
1.7	Minimum Equipment Lists (MELs)	0	25	12	11	48
1.8	Dispatch/Flight Release	7	8	2	3	20
1.9	Flight and Duty Time	5	5	0	2	12
1.10	Airport Analysis/Performance	7	4	0	2	13
1.11	Station Facility Inspections	3	2	8	3	16
1.12	Hazardous Materials	12	29	10	4	55
	SUBTOTAL	139	231	100	94	564
2.0	AIRWORTHINESS					
2.1	Management	0	4	1	3	8
2.2	Operations Specifications	6	5	3	16	30
2.3	Manuals and Procedures	10	25	7	70	112
2.4	Training Programs	5	18	6	20	49
2.5	Records Systems	18	10	12	16	56
2.6	Maintenance Facilities	33	27	18	65	143
2.7	Contractual Arrrangements	0	3	3	7	13
2.8	MEL/Deferred Maintenance	15	50	4	12	81
2.9	Weight and Balance Programs	6	3	14	31	54
2.10	Airworthiness Directives Compliance	16	6	4	5	31
2.11	Maintenance Programs	19	11	5	7	42
2.12	Reliability Programs	0	1	2	2	5
2.13	Maint. Insp. System and Req. Insp. Items	26	12	2	18	58
2.14	Continuing Analysis and Surveillance Program	20	8	8	5	41
2.15	Mechanical Reporting Procedures	4	2	0	1	7
2.16	Major Repair and Alteration Conformity	16	23	16	5	60
2.17	Fueling and Servicing	1	7	14	46	68
2.18	Aircraft Ramp Inspections	5	2	1	25	33
2.19	Maintenance Spot Inspections	4	2	0	6	12
	SUBTOTAL	204	219	120	360	903
	TOTAL	343	450	220	454	1467

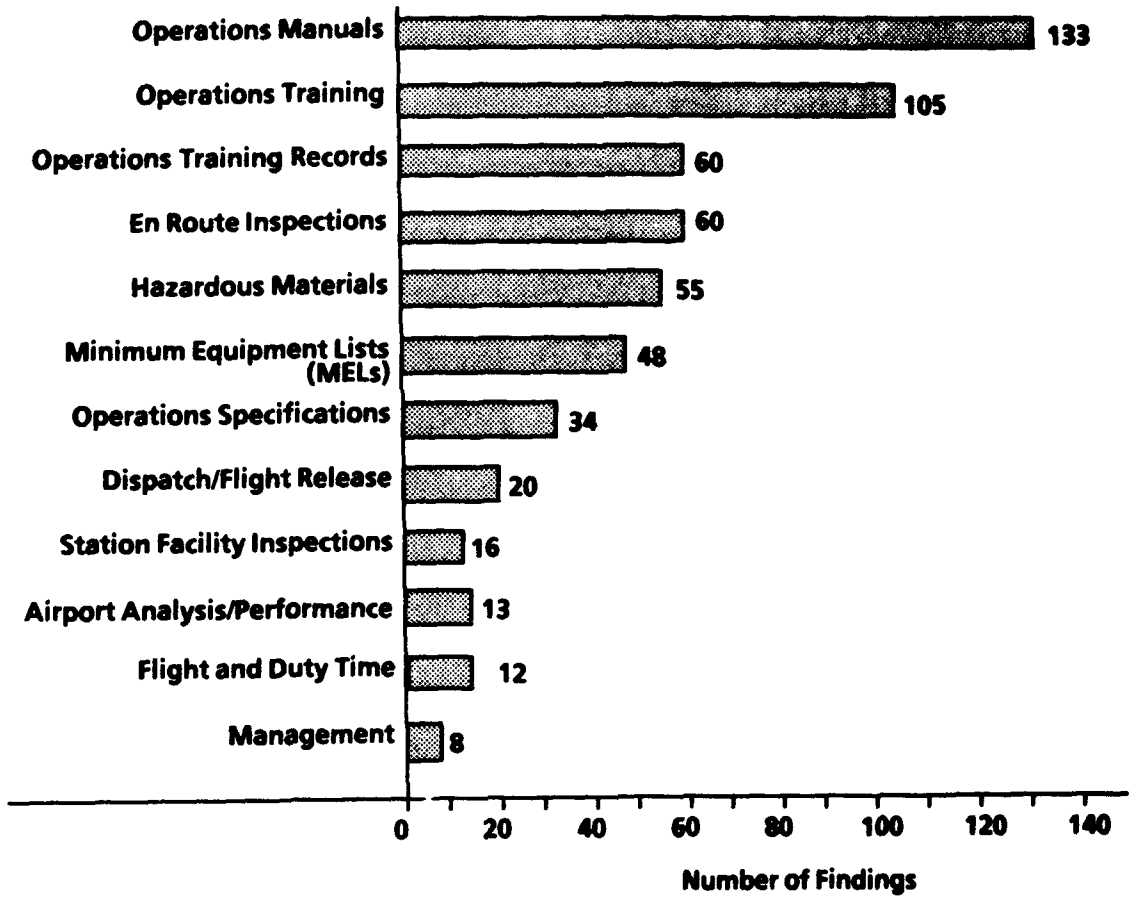

FIGURE 2-1. FAR PART 121 AIR CARRIERS
1989 - 1990 IN-DEPTH INSPECTIONS
NUMBER OF FINDINGS BY SECTION - OPERATIONS

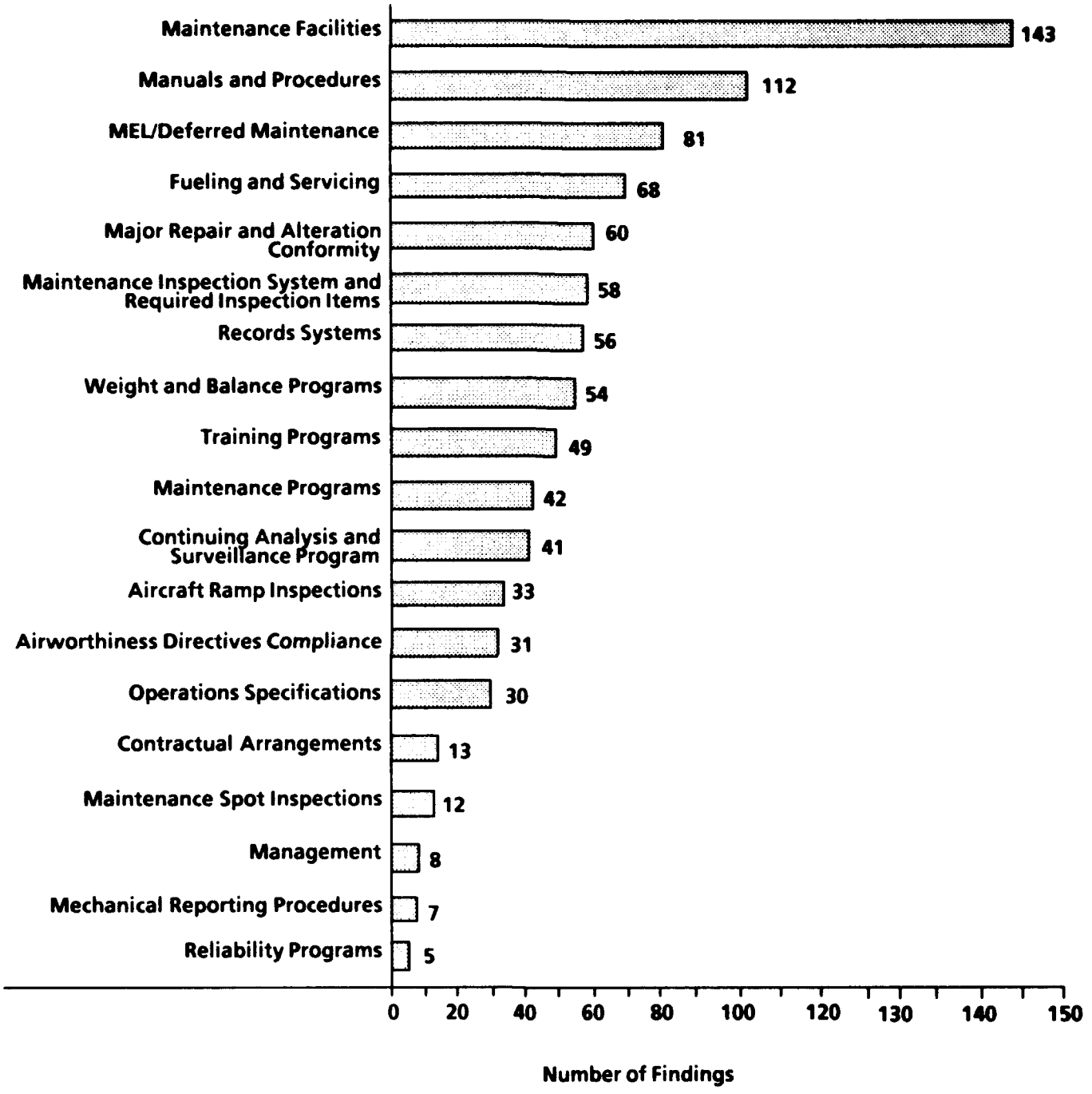

FIGURE 2-2. FAR PART 121 AIR CARRIERS
1989 - 1990 IN-DEPTH INSPECTIONS
NUMBER OF FINDINGS BY SECTION - AIRWORTHINESS

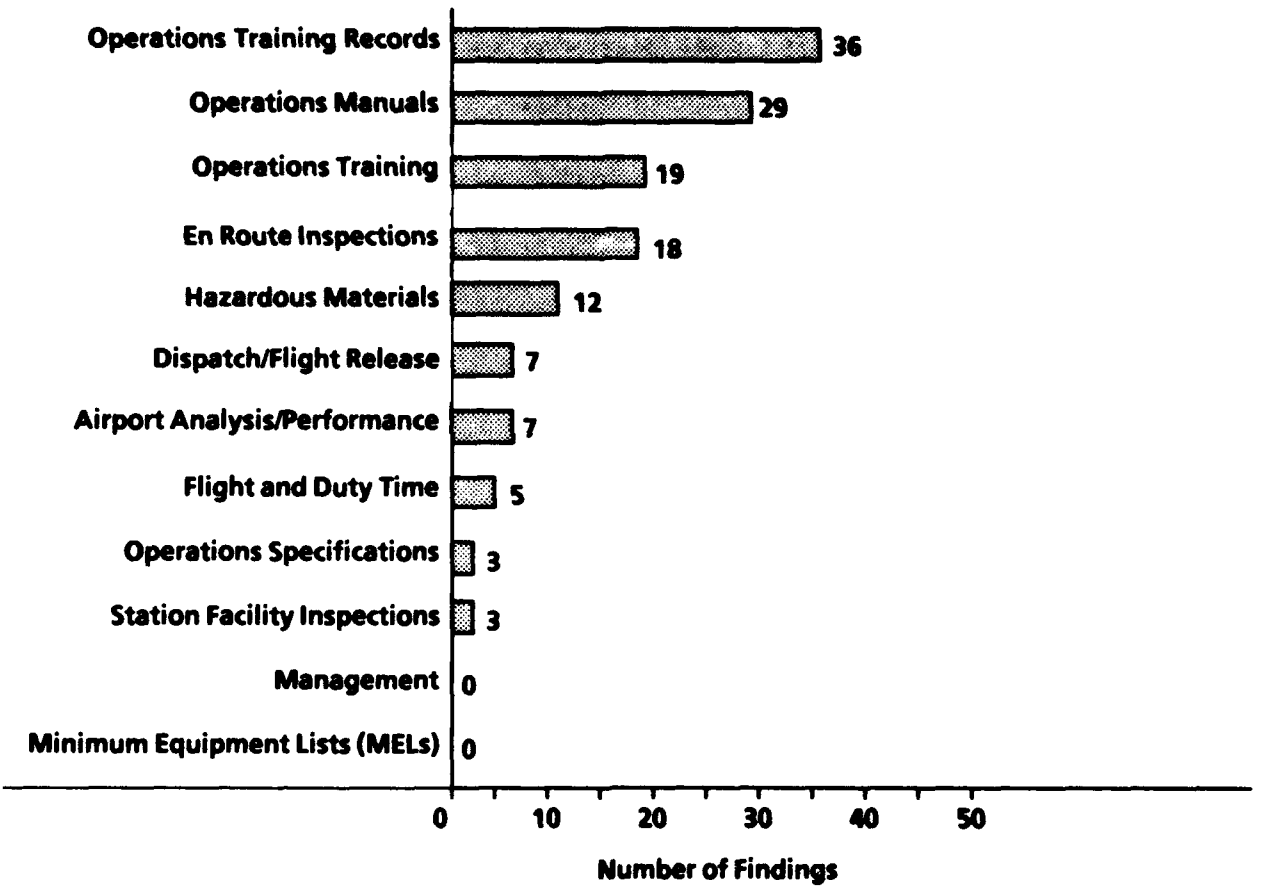

FIGURE 2-3. FAR PART 121 AIR CARRIERS
1989 - 1990 IN-DEPTH INSPECTIONS
NUMBER OF CATEGORY 1 FINDINGS BY SECTION - OPERATIONS

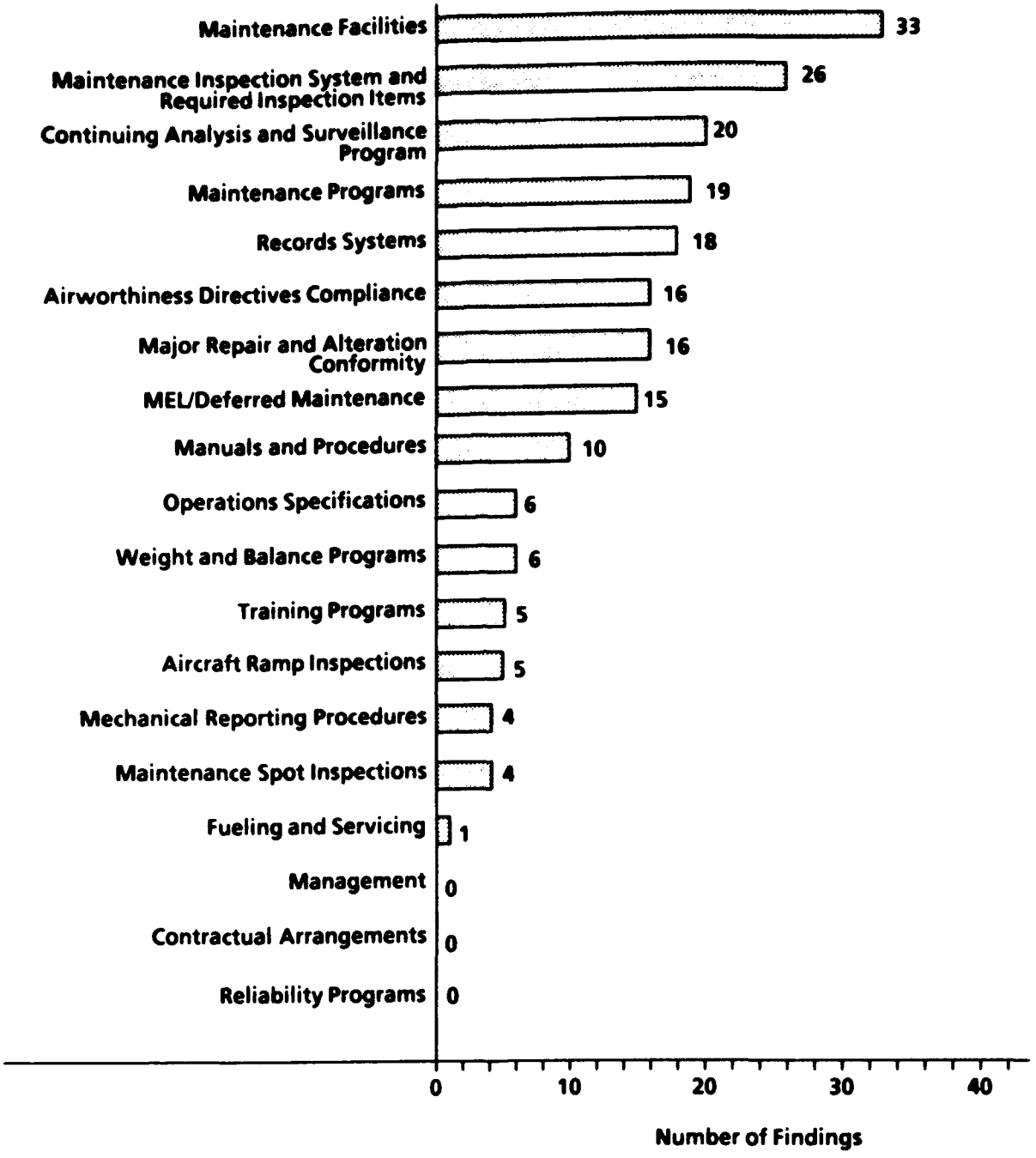

FIGURE 2-4. FAR PART 121 AIR CARRIERS
1989 - 1990 IN-DEPTH INSPECTIONS
NUMBER OF CATEGORY 1 FINDINGS BY SECTION - AIRWORTHINESS

TABLE 2-2. FAR PART 121 AIR CARRIERS
1989-1990 IN-DEPTH INSPECTIONS
NUMBER OF TIMES FARs CITED BY FAR/SUBPART AND
CATEGORY OF FINDING

FAR 121 SUBPART		CATEGORY 1	CATEGORY 2	TOTAL
A	General	19	7	26
B	Cert. Rules for Dom. & Flag Air Carriers	1	5	6
C	Cert. Rules: Supp. Air Carr. & Comm. Op.	0	6	6
D	Rules Gov. Cert. Holders Under This Part	1	1	2
E	Appr. of Routes: Dom. & Flag Air Carriers	0	4	4
F	Appr. of Areas & Routes: Supp. A.C. & C.O.	1	7	8
G	Manual Requirements	36	70	106
H	Aircraft Requirements	16	0	16
I	Airplane Performance Operation Limitations	0	4	4
J	Special Airworthiness Requirements	2	0	2
K	Instrument and Equipment Requirements	7	9	16
L	Maintenance, Prev. Maint., & Alterations	61	56	117
M	Airman and Crewmember Requirements	0	2	2
N	Training Programs	29	42	71
O	Crewmember Qualifications	18	15	33
P	Aircraft Dispatch. Qual. & Duty Time Limit.	0	3	3
Q	Flight Time Limit. & Rest Reqs.: Dom. A.C.	3	1	4
R	Flight Time Limit.: Flag Air Carriers	0	0	0
S	Flight Time Limit.: Supp. A.C. & Comm. Op.	0	4	4
T	Flight Operations	11	8	19
U	Dispatching and Flight Release Rules	4	14	18
V	Records and Reports	35	12	47
W	Crewmember Certificate: International	0	0	0
X	FAR 121: Appendix	0	2	2
Y	FAR 121: Subpart Unknown	0	0	0
TOTAL FAR 121		244	272	516
OTHER FARs AND OTHER REGULATIONS				
1	Definitions and Abbreviations	0	2	2
21	Cert. Procedures for Products and Parts	1	4	5
25	Airw. Standards: Transport Cat. Aircraft	1	2	3
39	Airworthiness Directives	11	3	14
43	Maint., Prev. Maint., Rebldng., & Alter.	42	17	59
61	Cert.: Pilots and Flight Instructors	1	1	2
91	General Operating and Flight Rules	15	6	21
108	Airplane Operator Security	0	1	1
135	Air Taxi Operators & Commercial Operators	32	31	63
171	Haz. Materials: Gen. Info., Reg., and Def.	2	1	3
172	Haz. Materials: Tables and Commun. Reqs.	2	5	7
173	Haz. Materials: Gen. Req. for Ship. & Pkg.	0	1	1
175	Haz. Materials: Carriage by Aircraft	15	19	34
S38	Certification and Operating Requirements	1	3	4
TOTAL OTHER FARs AND OTHER REGULATIONS		126	96	222
TOTAL		370	368	738

TABLE 2-3. FAR PART 121 AIR CARRIERS
1989-1990 IN-DEPTH INSPECTIONS
NUMBER OF EIRs BY SECTION - OPERATIONS

PART/SECTION		NUMBER OF EIRs
1.0	OPERATIONS	
1.1	Management	0
1.2	Operations Specifications	3
1.3	Operations Training	14
1.4	Operations Manuals	15
1.5	Operations Training Records	33
1.6	En Route Inspections	14
1.7	Minimum Equipment Lists (MELs)	0
1.8	Dispatch/Flight Release	6
1.9	Flight and Duty Time	5
1.10	Airport Analysis/Performance	1
1.11	Station Facility Inspections	3
1.12	Hazardous Materials	6
TOTAL		100

TABLE 2-4. FAR PART 121 AIR CARRIERS
1989-1990 IN-DEPTH INSPECTIONS
NUMBER OF EIRs BY SECTION - AIRWORTHINESS

PART/SECTION		NUMBER OF EIRs
2.0	AIRWORTHINESS	
2.1	Management	0
2.2	Operations Specifications	6
2.3	Manuals and Procedures	9
2.4	Training Programs	4
2.5	Records Systems	16
2.6	Maintenance Facilities	18
2.7	Contractual Arguments	0
2.8	MEL/Deferred Maintenance	11
2.9	Weight and Balance Programs	4
2.10	Airworthiness Directive Compliance	12
2.11	Maintenance Programs	16
2.12	Reliability Programs	0
2.13	Maint. Insp. System and Req. Insp. Items	29
2.14	Continuing Analysis and Surveillance Program	20
2.15	Mechanical Reporting Procedures	4
2.16	Major Repair and Alteration Conformity	11
2.17	Fueling and Servicing	1
2.18	Aircraft Ramp Inspections	5
2.19	Maintenance Spot Inspections	3
TOTAL		169

TABLE 2-5. FAR PART 121 AIR CARRIERS
NUMBER OF NASIP IN-DEPTH INSPECTIONS AND FINDINGS BY YEAR

	Year				
	1986	1987	1988	1989-1990	TOTAL
Number of In-Depth Inspections	18	8	7	10	43
Number of Findings					
Operations	687	627	425	564	2303
Airworthiness	1014	770	865	903	3552
TOTAL	1701	1397	1290	1467	5855

TABLE 2-6. FAR PART 121 AIR CARRIERS
IN-DEPTH INSPECTIONS
PERCENT OF FINDINGS BY SECTION - OPERATIONS
1986-1990 AND TOTAL

SECTION	PERCENT				
	1986	1987	1988	1989-1990	TOTAL
1.1 Management	2.2	0.2	3.1	1.4	1.6
1.2 Operations Specifications	6.4	2.7	7.1	6.0	5.4
1.3 Operations Training	19.6	15.6	17.6	18.6	17.9
1.4 Operations Manuals	19.5	19.0	11.0	23.6	18.8
1.5 Operations Training Records	9.5	15.0	8.0	10.6	11.0
1.6 En Route Inspections	10.0	8.6	13.2	10.6	10.4
1.7 Minimum Equipment Lists (MELs)	12.2	20.3	13.2	8.5	13.7
1.8 Dispatch/Flight Release	6.0	2.7	4.7	3.6	4.3
1.9 Flight and Duty Time	3.8	2.9	3.3	2.1	3.0
1.10 Airport Analysis/Performance	2.8	0.3	2.1	2.3	1.9
1.11 Station Facility Inspections	4.5	2.7	6.8	2.9	4.0
1.12 Hazardous Materials	1.5	9.1	9.9	9.8	7.1
Other	2.0	0.9	0	0	0.9

TABLE 2-7. FAR PART 121 AIR CARRIERS
IN-DEPTH INSPECTIONS
PERCENT OF FINDINGS BY SECTION - AIRWORTHINESS
1986-1990 AND TOTAL

SECTION	1986	1987	1988	PERCENT 1989-1990	TOTAL
2.1 Management	2.1	0.8	0.8	0.9	1.2
2.2 Operations Specifications	10.9	6.9	7.2	3.3	7.2
2.3 Manuals and Procedures	12.9	15.4	18.5	12.4	14.7
2.4 Training Records	3.7	4.3	4.8	5.4	4.6
2.5 Records Systems	10.7	7.0	4.2	6.2	7.1
2.6 Maintenance Facilities	13.2	10.3	9.6	15.8	12.4
2.7 Contractual Arrangements	0.3	2.2	2.8	1.4	1.6
2.8 MEL/Deferred Maintenance	1.5	7.9	17.0	9.0	8.6
2.9 Weight and Balance Programs	3.9	3.5	2.0	6.0	3.9
2.10 Airworthiness Directives Compliance	4.1	3.4	2.4	3.4	3.4
2.11 Maintenance Programs	14.7*	11.3*	5.0	4.7	9.9*
2.12 Reliability Programs			2.9	0.7	
2.13 Maintenance Inspection System and Required Inspection Items	7.2	4.3	5.2	6.3	5.9
2.14 Continuing Analysis and Surveillance Program	3.1	4.0	3.3	4.5	3.7
2.15 Mechanical Reporting Procedures	0.1	0.9	0.5	0.8	0.5
2.16 Major Repair & Alteration Conformity	3.2	8.6	3.2	6.7	5.2
2.17 Fueling and Servicing	4.0	3.1	4.0	7.5	4.7
2.18 Aircraft Ramp Inspections	1.5#	3.8#	2.1	3.7	3.6#
2.19 Maintenance Spot Inspections			2.3	1.3	
2.20 Avionics	0.8	1.3	2.2	0	1.0
Other	2.1	1.0	0	0	0.8

* - Sections 2.11 and 2.12 combined
# - Sections 2.18 and 2.19 combined

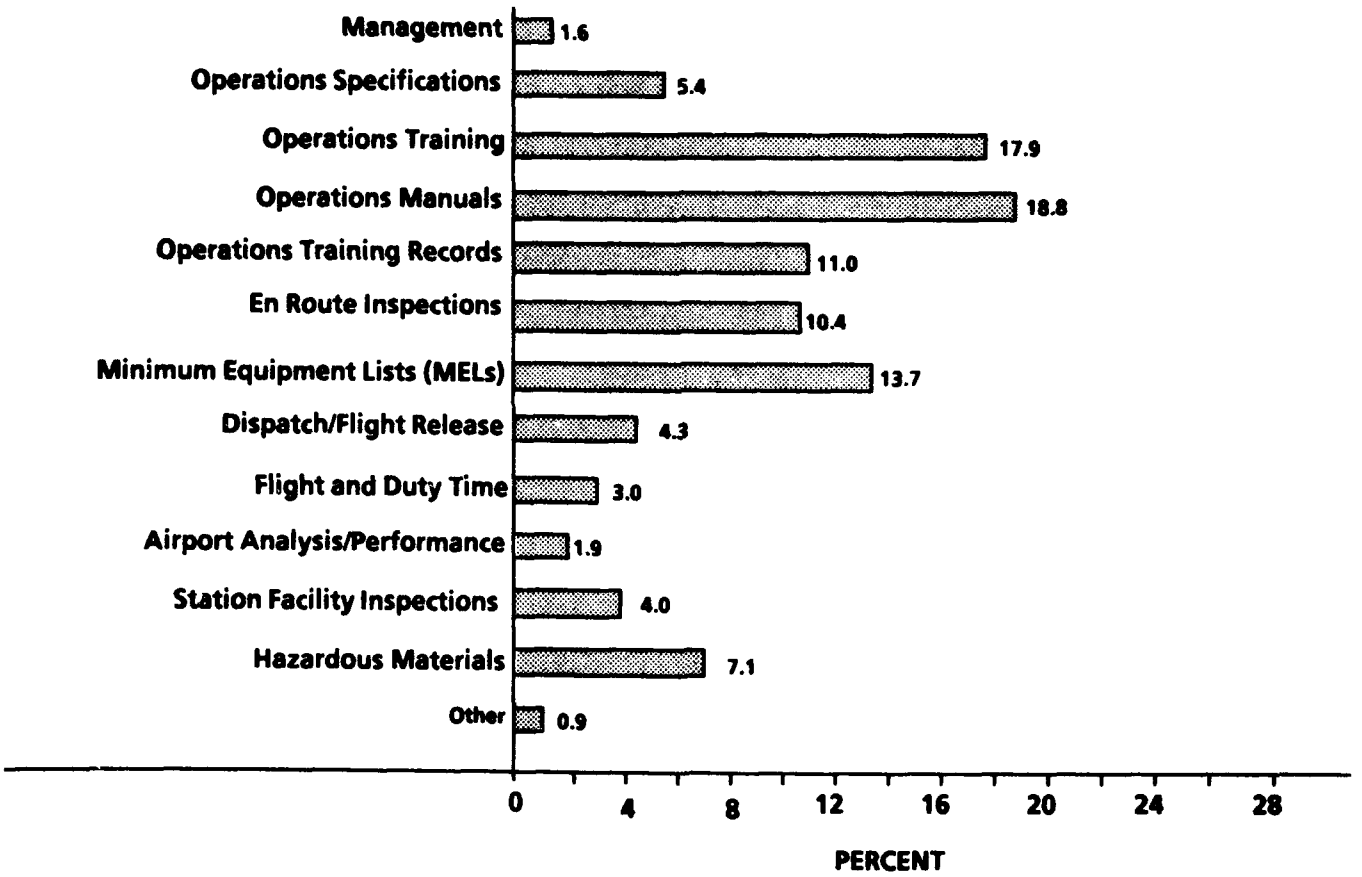

FIGURE 2-5. FAR PART 121 AIR CARRIERS
IN-DEPTH INSPECTIONS
PERCENT OF FINDINGS BY SECTION - OPERATIONS
TOTAL FROM 1986 - 1990

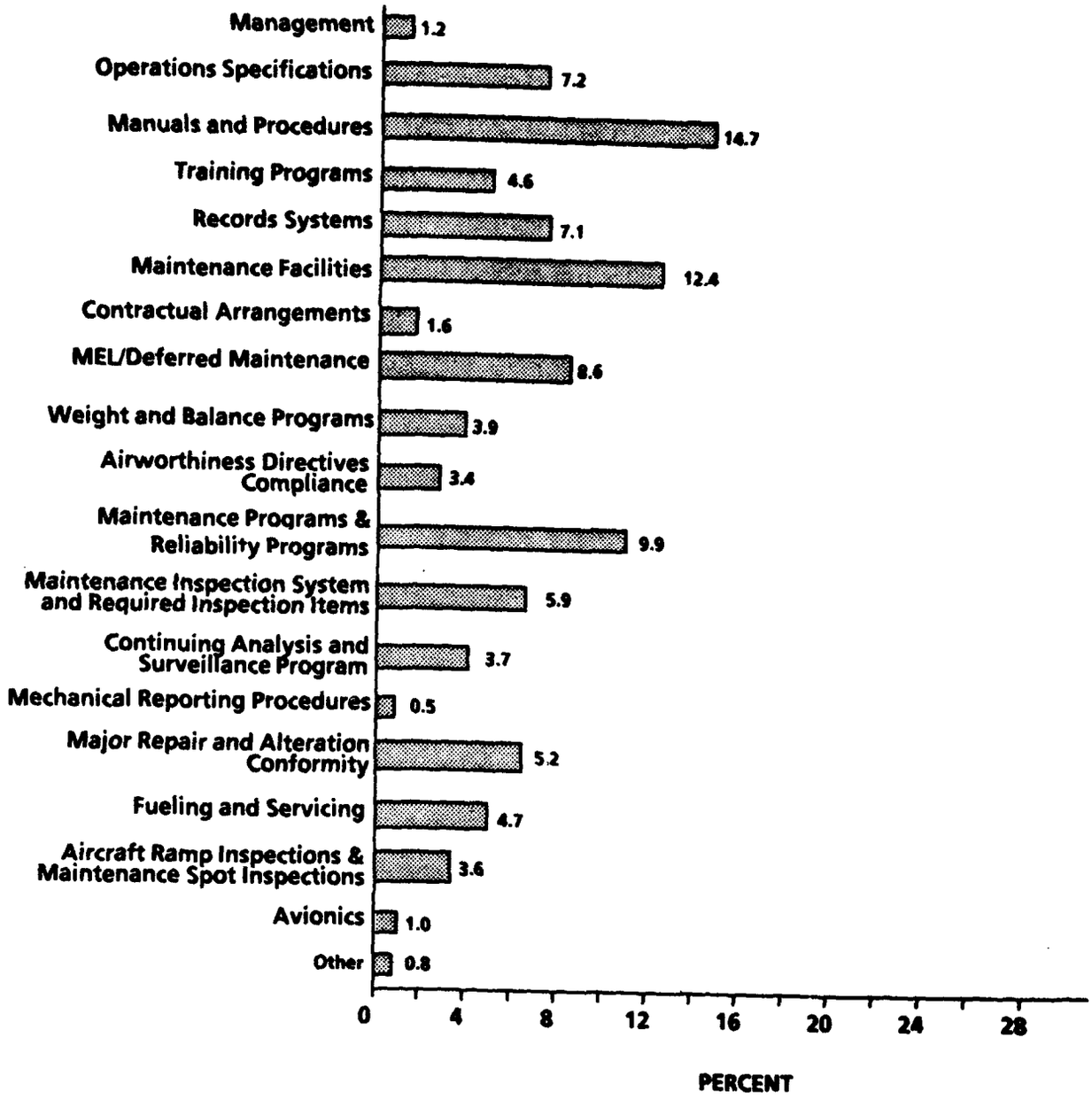

FIGURE 2-6. FAR PART 121 AIR CARRIERS
IN-DEPTH INSPECTIONS
PERCENT OF FINDINGS BY SECTION - AIRWORTHINESS
TOTAL FROM 1986-1990

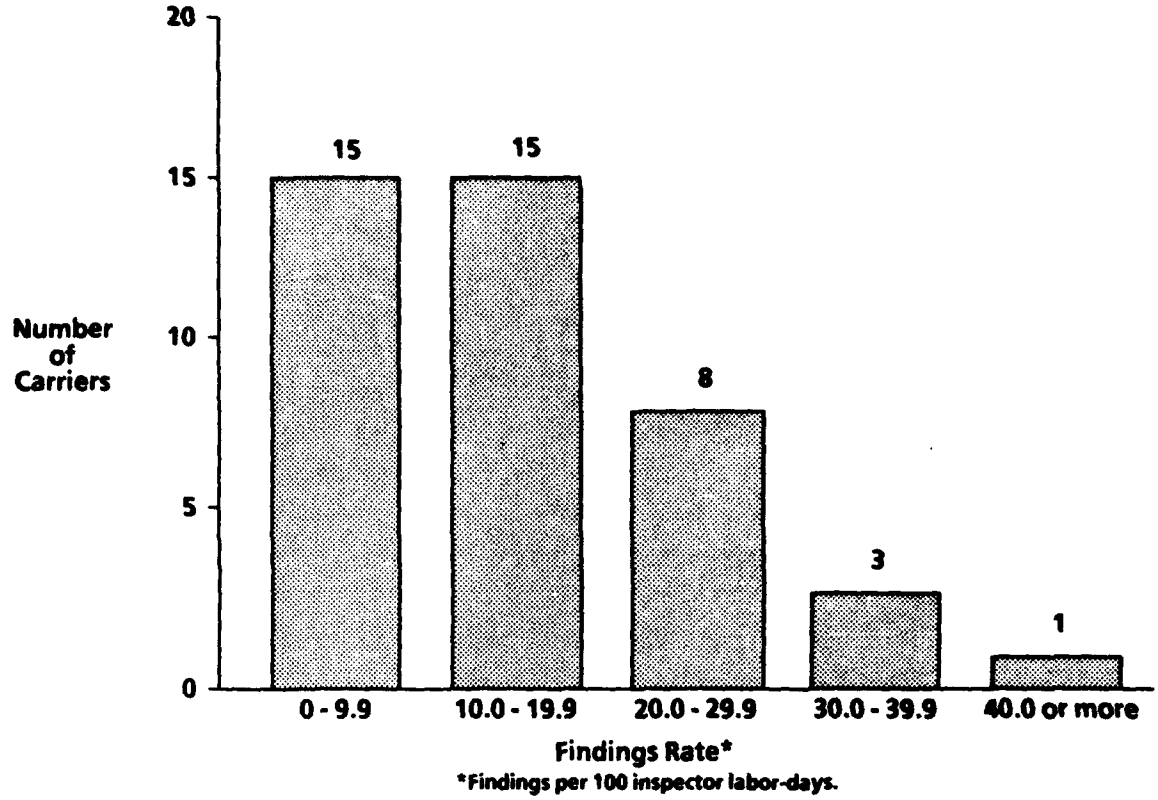

FIGURE 2-7. FAR PART 121 AIR CARRIERS
1986 - 1990 IN-DEPTH INSPECTIONS
NORMALIZED RESULTS - OPERATIONS

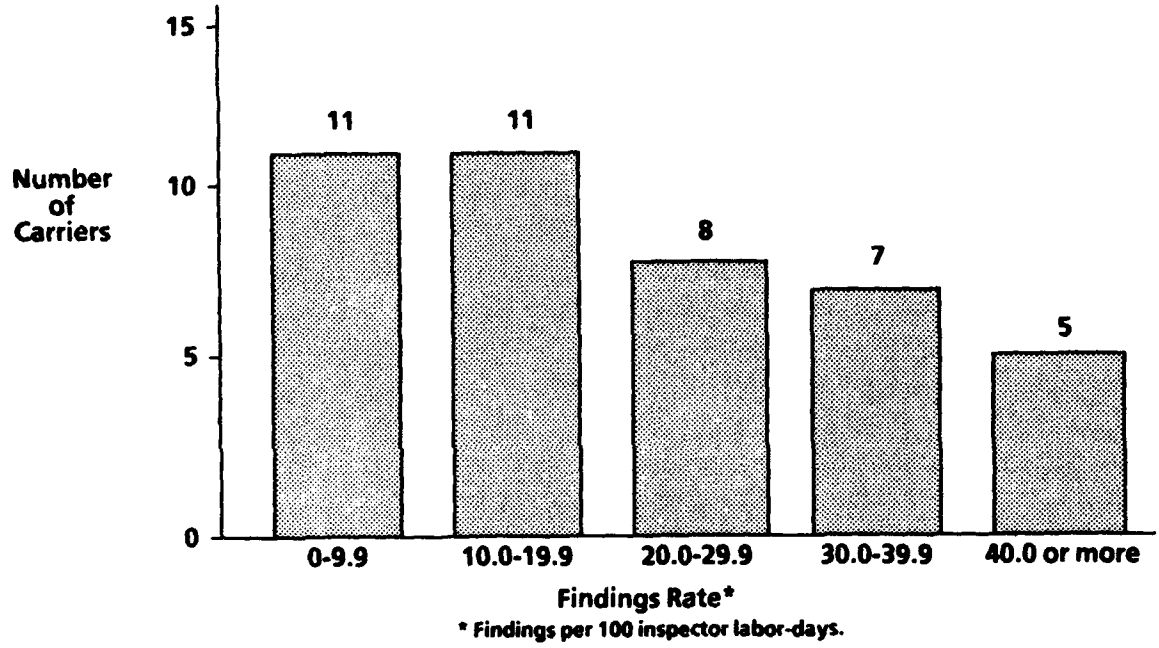

FIGURE 2-8. FAR PART 121 AIR CARRIERS
1986 - 1990 IN-DEPTH INSPECTIONS
NORMALIZED RESULTS - AIRWORTHINESS

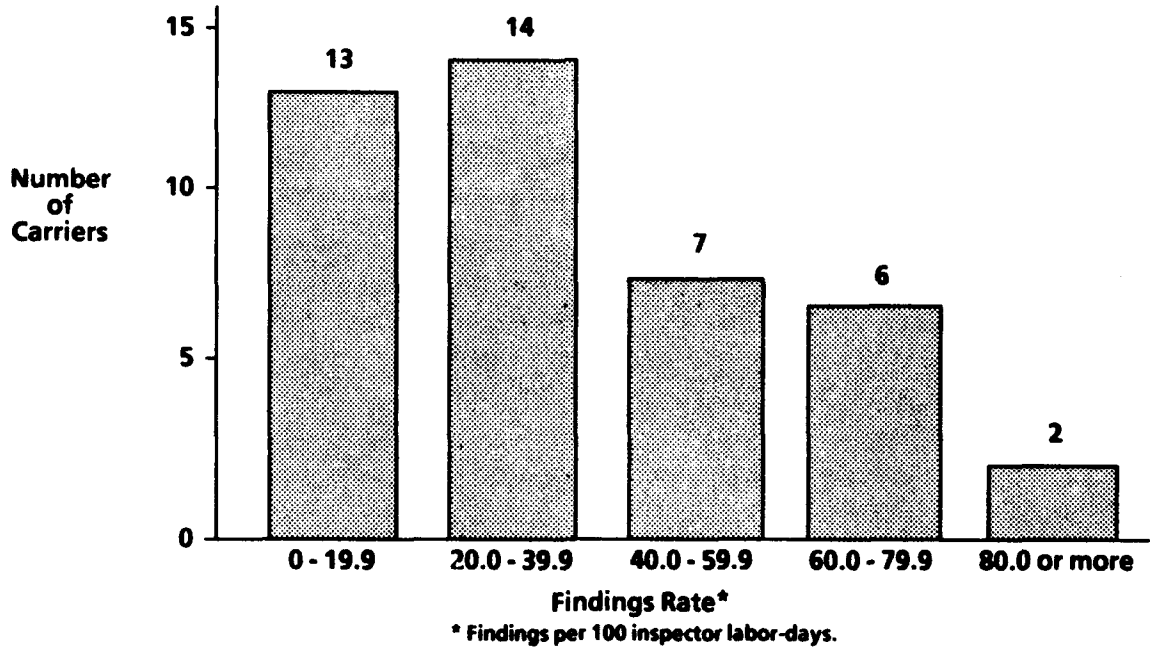

FIGURE 2-9. FAR PART 121 AIR CARRIERS
1986 - 1990 IN-DEPTH INSPECTIONS
NORMALIZED RESULTS - TOTAL FINDINGS

2.2 PART 121 AIR CARRIER FOCUSED INSPECTIONS

2.2.1 Methods and Procedures

2.2.1.1 Guidelines - The objective of focused inspections is the same as that for in-depth inspections: to determine air carrier compliance with FARs, FAA-approved company procedures and policies, and written FAA guidance material. The FAA Part 121 Interim Guidance document contains two lists (one for operations and another for airworthiness) of criteria for compliance. Each list is organized by the sections to be included in a final in-depth inspection report. To make more efficient use of scarce resources, a focused inspection includes only those sections (i.e., criteria) that have been identified as problem areas in previous years' in-depth inspections and which were verified as being important by a survey of field offices. (Specifically, the FY90 focused inspections consisted of those sections in previous years' in-depth inspections that had the most findings that resulted in EIRs and severe sanctions.) In addition, the section "1.1 - Management" was included because of its importance to all aspects of operations. Since there are fewer items to be inspected, it is possible to perform a focused inspection with fewer inspectors and in a shorter period of time than what are required for an in-depth inspection.

The FAR Part 121 Interim Guidance document specifies that each NASIP FAR Part 121 in-depth inspection team normally consist of an operations group and an airworthiness group.[1] There is a team leader who is responsible for planning the inspection and indoctrinating the team members in the systems and procedures used by the air carrier to be inspected. The Interim Guidance document specifies that each FAR Part 121 in-depth inspection team present briefings to the air carrier before and after the inspection. In addition, following the inspection, the team is to write a final report in accordance with the format shown in the document. The format indicates the sections to be included in both the operations and airworthiness parts of the report.

Each FAR Part 121 focused inspection team followed the same procedures as those for the in-depth inspection teams. The differences were that fewer items (i.e., sections) were inspected and smaller inspection teams were used and consequently fewer days were required.

There were seven FAR Part 121 air carriers that received NASIP focused inspections in FY90. The reports written by the inspection teams conform to the format in the Interim Guidance document, with a few minor exceptions.

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1. The inspection teams included avionics specialists where appropriate.

2.2.1.2 Methods and Procedures Used - The focused inspection of each air carrier consisted of two parts: Operations and Airworthiness. These two parts were broken down into 12 sections which are described in the Interim Guidance document, and are as follows:

1.0 OPERATIONS

- 1.1 Management
- 1.2 Operations Specifications
- 1.3 Operations Training
- 1.4 Operations Manual
- 1.5 Operations Training Records
- 1.8 Dispatch/Flight Release
- 1.12 Hazardous Materials

2.0 AIRWORTHINESS

- 2.10 Airworthiness Directives Compliance
- 2.11 Maintenance Programs
- 2.13 Maintenance Inspection System and Required Inspection Items
- 2.18 Aircraft Ramp Inspections
- 2.19 Maintenance Spot Inspections

The methods and procedures used in the above sections were the same as those used in the comparable sections of the FAR Part 121 air carrier in-depth inspections. Those methods and procedures are described in Section 2.1.1.2.

2.2.2 Results

The initial findings of the inspections are summarized in this section. Initial inspection findings may or may not have been substantiated. Enforcement actions which were recommended may or may not have resulted in sanctions, depending on the outcome of subsequent reviews. The sanctions imposed and the corrective actions taken varied, depending on the nature and the severity of the violations.

2.2.2.1 Findings - Table 2-8 indicates the distribution of findings by part, section, and category for all seven FAR Part 121 air carriers that received focused inspections in 1990. A total of 132 findings was issued, an average of 18.9 per air carrier. The number of findings issued in the FAR Part 121 focused inspections ranged from 3 to 29.

Of the total of 132 findings, 83 (62.9%) were in Part 1.0 - Operations, while 49 (37.1%) were in Part 2.0 - Airworthiness. The sections with the most findings were Section 1.4 - Operations Manuals (44), Section 2.11 - Maintenance Programs (37), and Section 1.3 - Operations Training (22).

Category 1 findings constituted 25.8% of the total, while categories 2, 3, and 4 accounted for 45.4%, 14.4%, and 14.4% of the findings, respectively. The section with the most Category 1 findings was Section 1.4 - Operations Manuals (17).

Figure 2-10 shows the distribution of findings by section in descending order for Part 1.0 - Operations. Figure 2-11 displays the comparable distribution for Part 2.0 - Airworthiness. Figures 2-12 (Operations) and 2-13 (Airworthiness) show the distributions of Category 1 findings (i.e., findings resulting in EIRs) only.

Figures 2-14 (Operations) and 2-15 (Airworthiness) show the percentage distributions of findings by section.

2.2.2.2 FARs Cited - Table 2-9 indicates the number of times that FARs were cited in the findings. The citings are broken down by 1) the FAR 121 subpart (see Appendix 3 for FAR 121 subpart definitions) or other regulation that was cited and 2) category of finding.

There were 113 instances of FARs being cited, 98 (86.7%) of which involved FAR 121. The other 15 instances involved other FARs or other regulations that are not FARs. For example, in Table 2-9, "175" represents a hazardous materials regulation from Title 49 of the Code of Federal Regulations, i.e., 49 CFR Part 175.

Of the total of 113 citings, 31.9% involved Category 1 findings, while 68.1% involved Category 2 findings.

The FAR 121 subparts that were cited most frequently were Subpart G - Manual Requirements (33 times); Subpart N - Training Program (21 times); and Subpart L - Maintenance, Preventative Maintenance, and Alterations (16 times). The FARs other than FAR 121 that were cited most often were FAR 39 - Airworthiness Directives (6 times) and FAR 135 - Air Taxi Operators and Commercial Operators (5 times).

The FAR 121 subpart that was cited most frequently in Category 1 findings was Subpart G (10 times). The FAR other than FAR 121 that was cited most often in Category 1 findings was FAR 39 (5 times).

2.2.2.3 Enforcement Actions (EIRs) Initiated - The total number of different EIRs recommended in FAR Part 121 air carrier focused inspections was 18. The number of different EIRs recommended by part was as follows:

	Part 1.0 - Operations	Part 2.0 - Airworthiness
Number of Different EIRs Recommended	10	8

Tables 2-10 and 2-11 show the number of different EIRs issued by section for Parts 1.0 - Operations and 2.0 - Airworthiness, respectively. The sections with the most different EIRs issued were Section 1.8 - Dispatch/Flight Release (5), Section 1.4 - Operations Manuals (4), Section 2.10 - Airworthiness Directives Compliance (4), and Section 2.11 - Maintenance Programs (3). The total of the numbers by section in Table 2-10 is greater than the comparable total shown above because any EIR that was cited in findings in more than one section was counted once in each of those sections.

It should be noted that the regions sometimes differed in the assignment of EIRs. In some cases, a single finding indicating a violation resulted in a single EIR. In other cases, a single EIR covered more than one violation as several findings were grouped under one enforcement action.

TABLE 2-8. FAR PART 121 AIR CARRIERS
1990 FOCUSED INSPECTIONS
FINDINGS BY PART/SECTION AND CATEGORY

PART/SECTION		CATEGORY				
1.0	OPERATIONS	1	2	3	4	TOTAL
1.1	Management	0	0	1	0	1
1.2	Operations Specifications	0	0	0	0	0
1.3	Operations Training	4	16	1	1	22
1.4	Operations Manuals	17	15	2	10	44
1.5	Operations Training Records	0	0	0	0	0
1.8	Dispatch/Flight Release	5	7	1	1	14
1.12	Hazardous Materials	0	2	0	0	2
	SUBTOTAL	26	40	5	12	83
2.0	AIRWORTHINESS					
2.10	Airworthiness Directives Compliance	4	1	1	0	6
2.11	Maintenance Programs	3	17	10	7	37
2.13	Maint. Insp. System and Req. Insp. Items	0	2	0	0	2
2.18	Aircraft Ramp Inspections	0	0	0	0	0
2.19	Maintenance Spot Inspections	1	0	3	0	4
	SUBTOTAL	8	20	14	7	49
	TOTAL	34	60	19	19	132

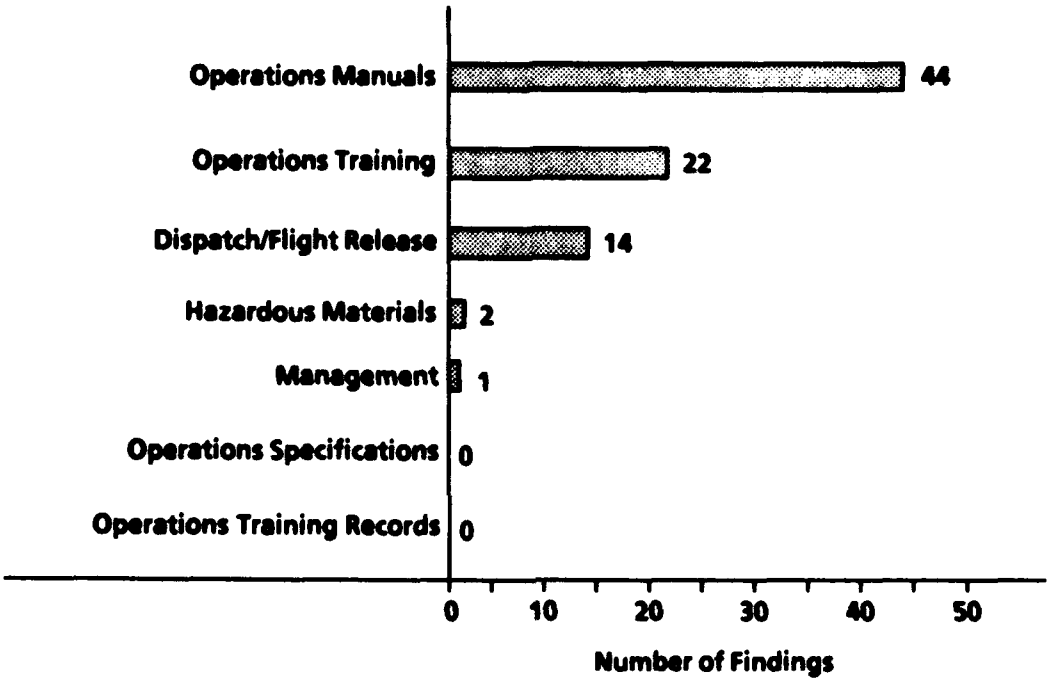

FIGURE 2-10. FAR PART 121 AIR CARRIERS
1990 FOCUSED INSPECTIONS
NUMBER OF FINDINGS BY SECTION - OPERATIONS

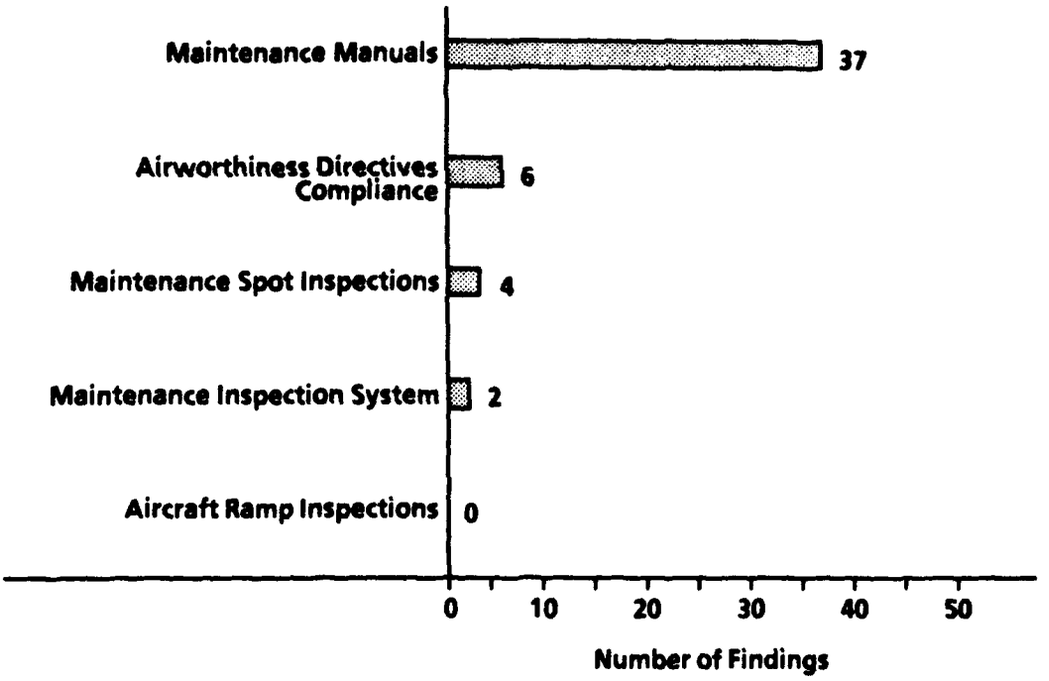

FIGURE 2-11. FAR PART 121 AIR CARRIERS
1990 FOCUSED INSPECTIONS
NUMBER OF FINDINGS BY SECTION - AIRWORTHINESS

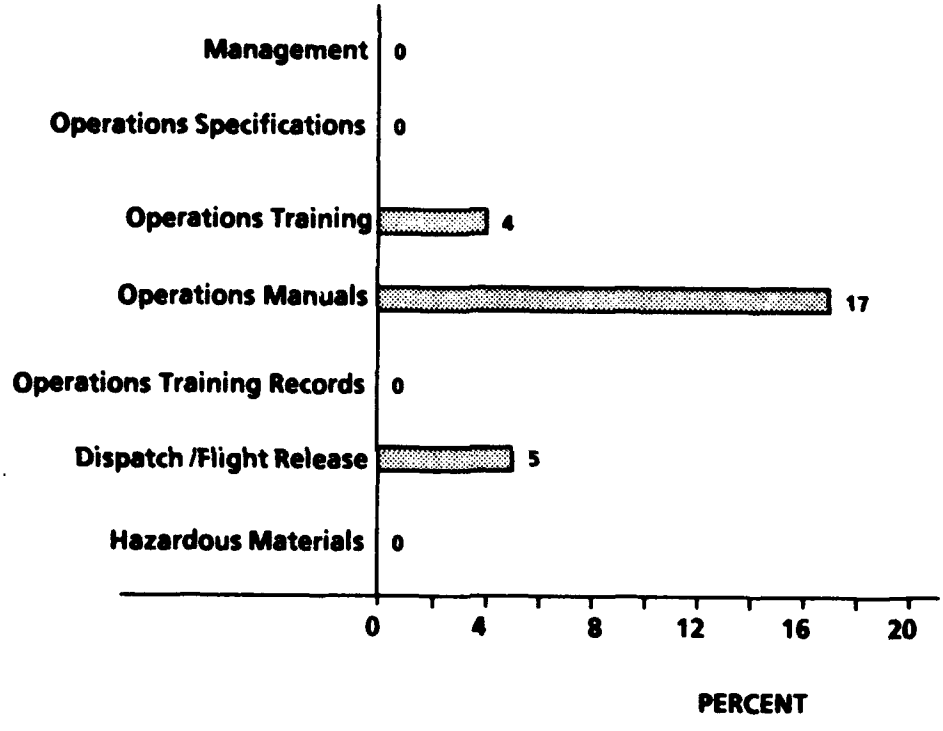

FIGURE 2-12. FAR PART 121 AIR CARRIERS
1990 FOCUSED INSPECTIONS
NUMBER OF CATEGORY 1 FINDINGS BY SECTION - OPERATIONS

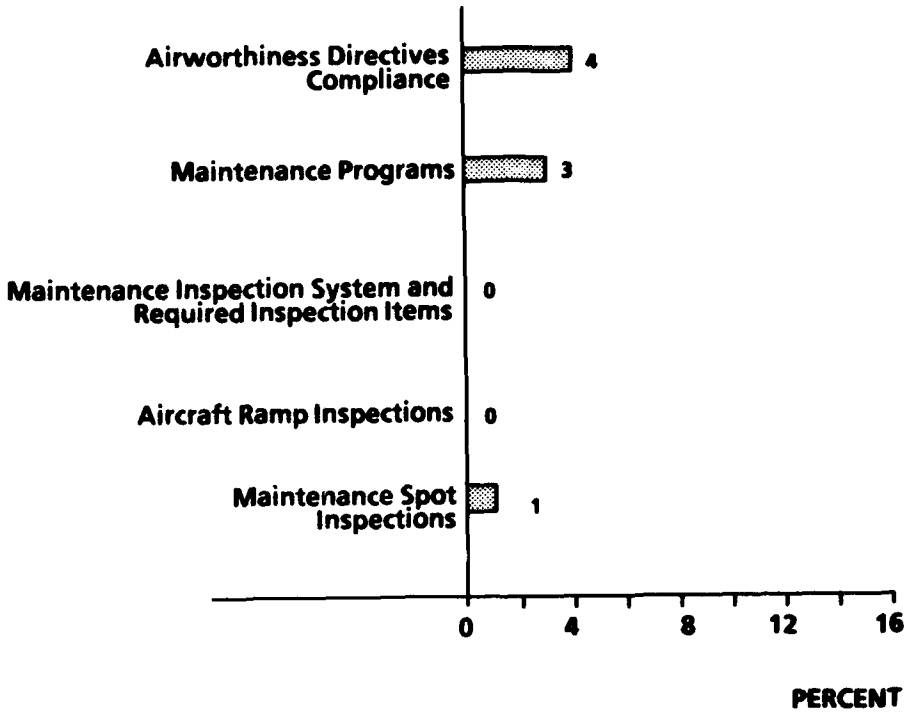

FIGURE 2-13. FAR PART 121 AIR CARRIERS
1990 FOCUSED INSPECTIONS
NUMBER OF CATEGORY 1 FINDINGS BY SECTION - AIRWORTHINESS

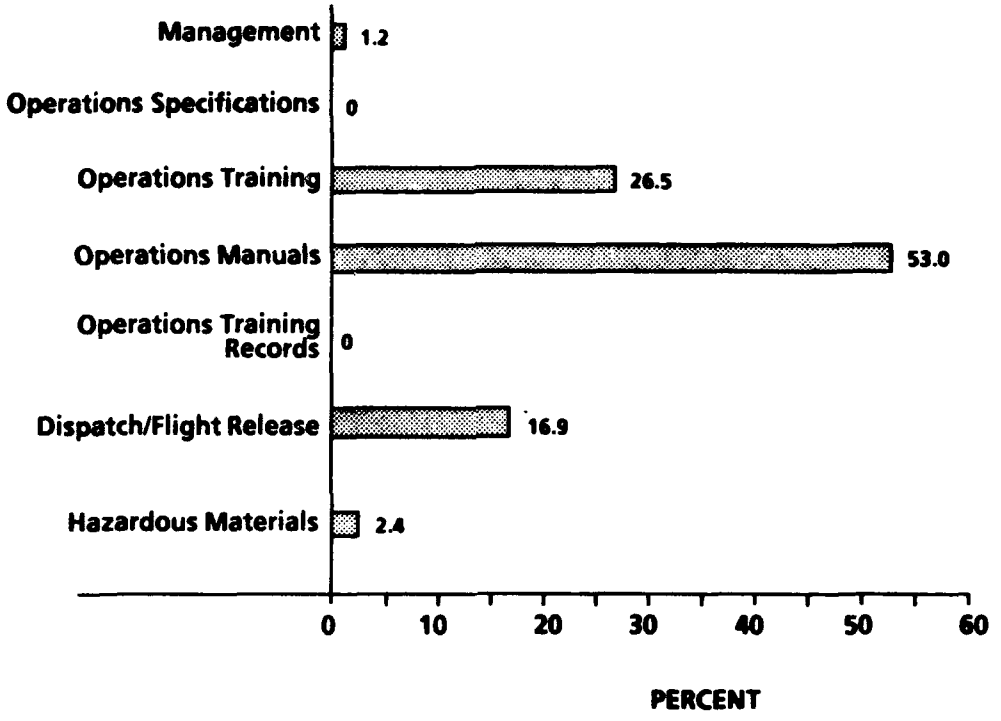

FIGURE 2-14. FAR PART 121 AIR CARRIERS
1990 FOCUSED INSPECTIONS
PERCENT OF FINDINGS BY SECTION - OPERATIONS

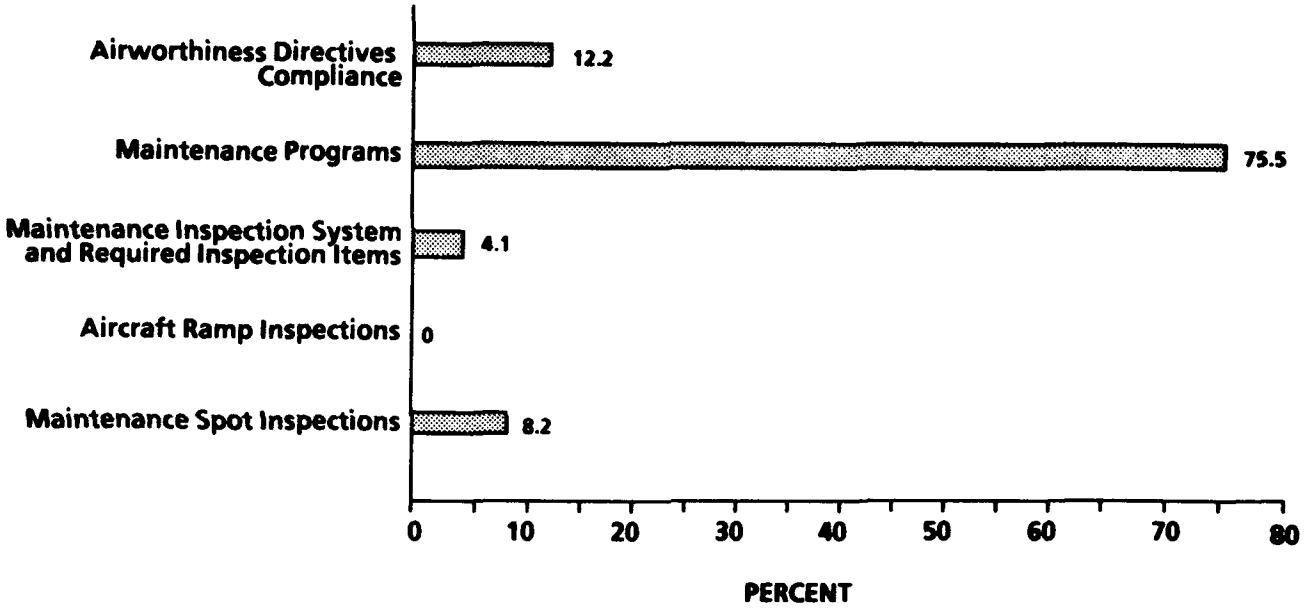

FIGURE 2-15. FAR PART 121 AIR CARRIERS
1990 FOCUSED INSPECTIONS
PERCENT OF FINDINGS BY SECTION - AIRWORTHINESS

TABLE 2-9. FAR PART 121 AIR CARRIERS
1990 FOCUSED INSPECTIONS
NUMBER OF TIMES FARs CITED BY FAR/SUBPART AND
CATEGORY OF FINDING

FAR 121 SUBPART		CATEGORY 1	CATEGORY 2	TOTAL
A	General	0	0	0
B	Cert. Rules for Dom. & Flag Air Carriers	0	2	2
C	Cert. Rules: Supp. Air Carr. & Comm. Op.	0	0	0
D	Rules Gov. Cert. Holders Under This Part	0	0	0
E	Appr. of Routes: Dom. & Flag Air Carriers	1	2	3
F	Appr. of Areas & Routes: Supp. A.C. & C.O.	0	0	0
G	Manual Requirements	10	23	33
H	Aircraft Requirements	0	1	1
I	Airplane Performance Operation Limitations	0	1	1
J	Special Airworthiness Requirements	0	0	0
K	Instrument and Equipment Requirements	1	1	2
L	Maintenance, Prev. Maint., & Alterations	2	14	16
M	Airman and Crewmember Requirements	1	0	1
N	Training Programs	3	18	21
O	Crewmember Qualifications	2	2	4
P	Aircraft Dispatch. Qual. & Duty Time Limit.	0	0	0
Q	Flight Time Limit. & Rest Reqs.: Dom. A.C.	0	0	0
R	Flight Time Limit.: Flag Air Carriers	0	0	0
S	Flight Time Limit.: Supp. A.C. & Comm. Op.	0	0	0
T	Flight Operations	2	0	2
U	Dispatching and Flight Release Rules	3	3	6
V	Records and Reports	5	1	6
W	Crewmember Certificate: International	0	0	0
X	FAR 121: Appendix	0	0	0
Y	FAR 121: Subpart Unknown	0	0	0
TOTAL FAR 121		30	68	98
OTHER FARs AND OTHER REGULATIONS				
39	Airworthiness Directives	5	1	6
43	Maint., Prev. Maint., Rebldng., & Alter.	1	1	2
91	General Operating and Flight Rules	0	1	1
135	Air Taxi Operators & Commercial Operators	0	5	5
175	Haz. Materials: Carriage by Aircraft	0	1	1
TOTAL OTHER FARs AND OTHER REGULATIONS		6	9	15
TOTAL		36	77	113

TABLE 2-10. FAR PART 121 AIR CARRIERS
1990 FOCUSED INSPECTIONS
NUMBER OF EIRs BY SECTION - OPERATIONS

PART/SECTION		NUMBER OF EIRs
1.0	OPERATIONS	
1.1	Management	0
1.2	Operations Specifications	0
1.3	Operations Training	2
1.4	Operations Manuals	4
1.5	Operations Training Records	0
1.8	Dispatch/Flight Release	5
1.12	Hazardous Materials	0
TOTAL		11

TABLE 2-11. FAR PART 121 AIR CARRIERS
1990 FOCUSED INSPECTIONS
NUMBER OF EIRs BY SECTION - AIRWORTHINESS

PART/SECTION		NUMBER OF EIRs
2.0	AIRWORTHINESS	
2.10	Airworthiness Directives Compliance	4
2.11	Maintenance Programs	3
2.13	Maint. Insp. System and Req. Insp. Items	0
2.18	Aircraft Ramp Inspections	0
2.19	Maintenance Spot Inspections	1
TOTAL		8

2.3 PART 135 SCHEDULED COMMUTER AIR CARRIER IN-DEPTH INSPECTIONS

2.3.1 Methods and Procedures

2.3.1.1 Guidelines - The objective of in-depth inspections is to determine air carrier compliance with FARs, FAA-approved company procedures and policies, and written FAA guidance material. The FAR Part 135 Interim Guidance document contains two lists (one for operations and another for airworthiness) of criteria for determining this compliance. Each list is organized by the sections to be contained in the final report. Neither list is intended to be all-inclusive.

The FAR Part 135 Interim Guidance document specifies that each NASIP FAR Part 135 in-depth inspection team normally consist of an operations group and an airworthiness group.[1] There is a team leader who is responsible for planning the inspection and indoctrinating the team members in the systems and procedures used by the air carrier to be inspected. The Interim Guidance document specifies that each NASIP FAR Part 135 inspection team present briefings to the air carrier before and after the inspection. In addition, following the inspection, the team is to write a final report in accordance with the format shown in the document. The format indicates the sections to be included in both the operations and airworthiness parts of the report.

There were five FAR Part 135 scheduled commuter air carriers that received NASIP in-depth inspections in FY 1989-1990. The reports written by four of the operations groups and four of the airworthiness groups conform to the format in the Interim Guidance document. However, the reports written by the other operations and airworthiness groups do not conform to this format. Their reports are in formats with section titles that are completely different from those listed in the Interim Guidance document. VNTSC edited these reports to conform to the Interim Guidance format before beginning the coding process.

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1. The inspection teams included avionics, hazmat, engineering, and security specialists when appropriate.

2.3.1.2 Methods and Procedures Used - The in-depth inspection of each air carrier consisted of two parts: Operations and Airworthiness. These two parts were broken down into the following 29 sections:

1.0 OPERATIONS

- 1.1 Management
- 1.2 Operations Specifications
- 1.3 Operations Training
- 1.4 Operations Manuals
- 1.5 Operations Training Records
- 1.6 En Route Inspections
- 1.7 Minimum Equipment Lists (MELs)
- 1.8 Flight Release
- 1.9 Flight and Duty Time
- 1.10 Hazardous Materials

2.0 AIRWORTHINESS

- 2.1 Responsibility for Airworthiness
- 2.2 Approved Aircraft Inspection Program
- 2.3 Training Programs
- 2.4 Certificate Requirements
- 2.5 Maintenance Recording Requirements
- 2.6 Airworthiness Release
- 2.7 Maintenance, Preventative Maintenance, and Alteration-Organization and Programs
- 2.8 Manual Requirements
- 2.9 Required Inspection Personnel
- 2.10 Mechanical Reliability Reports and Mechanical Interruption Summary Reports
- 2.11 Continuing Analysis and Surveillance Program
- 2.12 Operations Specifications
- 2.13 Weight and Balance Programs
- 2.14 Aircraft Ramp Inspections
- 2.15 Fueling and Servicing
- 2.16 Major Repair and Alteration Conformity
- 2.17 MEL/Deferred Maintenance
- 2.18 Airworthiness Directives Compliance
- 2.19 Maintenance Spot Inspections

All but nine of the sections are described in the Interim Guidance document. The nine sections that are not described in the Interim Guidance document are Sections 1.10 and 2.12 - 2.19.

The following are descriptions of the methods and procedures used in each of the above sections:

1.0 OPERATIONS

The following operations sections appeared in (or were applicable to) all five FAR Part 135 scheduled commuter air carrier in-depth inspection reports, with the exception of Section 1.8. The number of reports in which this section appeared is indicated in parentheses after the section title.

1.1 Management

The inspection teams inspected the air carriers' management structures to determine compliance with FAR 135. Team members interviewed management and other company personnel, and monitored the companies' daily operations.

1.2 Operations Specifications

The air carriers' Operations Specifications were reviewed for compliance with FAR 135, Order 8430.1D (Air Carrier Inspector's Handbook Part 135), and Order 8400.10.

1.3 Operations Training

The air carriers' training programs were evaluated for compliance with FAR 135 Subpart H and Order 8430.1D. Team members inspected training manuals and training records.

1.4 Operations Manuals

The inspection teams reviewed the air carriers' operations manuals to determine compliance with FAR 135 and Order 8430.1D. Manuals assigned to individual aircraft were reviewed for completeness and currency of material.

1.5 Operations Training Records

The inspection teams reviewed the air carriers' pilot training records, including the records of check airmen, to determine compliance with FAR 135.63, and to verify that logged training was actually conducted.

1.6 En Route Inspections

En route inspections were conducted by operations, airworthiness, avionics, and security inspectors to evaluate the air carriers' flight operations and station facilities. Flights were selected in order to observe as many routes, crewmembers, and stations as possible.

1.7 Minimum Equipment Lists (MELs)

The air carriers' Minimum Equipment Lists (MELs) were compared to the FAA Master MELs for completeness and accuracy.

1.8 Flight Release (4)

The inspection teams evaluated the air carriers' flight release and dispatch procedures by interviewing pilots and management personnel, reviewing operations manuals, and monitoring flight control communications.

1.9 Flight and Duty Time

The inspection teams inspected the air carriers' pilot flight and duty records to determine compliance with FAR 135.63 and FAR 135 Subpart F.

1.10 Hazardous Materials

The inspection teams reviewed the air carriers' operations manuals and hazardous materials training programs to determine compliance with Order 1650.9A, FAR Part 135, and 49 CFR 175. Team members inspected training records and interviewed employees to verify that the required training had been conducted and was adequate. The teams also inspected station facilities to determine if the required hazardous materials signs were posted.

2.0 AIRWORTHINESS

The following airworthiness sections appeared in (or were applicable to) at least three of the five FAR Part 135 scheduled commuter air carrier in-depth inspection reports. The number of reports in which each section appeared is indicated in parentheses after the section title.

2.1 Responsibility for Airworthiness (5)

The inspection teams evaluated the air carriers' organizational structures and managements to determine compliance with FAR 135 and Order 8300.9. Team members reviewed the air carriers' maintenance and inspection programs by examining maintenance manuals and records.

2.2 Approved Aircraft Inspection Program (3)

The inspection teams examined the air carriers' approved Aircraft Inspection Programs for compliance with FAR 135. Team members reviewed Operations Specifications and maintenance manuals and procedures, inspected tools and equipment, and reviewed completed maintenance and maintenance in progress.

2.3 Training Programs (4)

The air carriers' training programs were reviewed for compliance with FAR 135.433. The inspection teams examined training records, course handout material, and training aids.

2.4 Certificate Requirements (4)

The inspection teams interviewed the air carriers' maintenance personnel and checked their certificates to determine compliance with FAR 135.435.

2.5 Maintenance Recording Requirements (5)

The air carriers' aircraft maintenance records were inspected for compliance with FARs 43, 91, and 135.

2.6 Airworthiness Release (4)

The air carriers' aircraft maintenance and inspection records were reviewed for compliance with FAR 135.443 and Order 8300.9.

2.7 Maintenance, Preventative Maintenance, and Alteration - Organization and Programs (5)

The inspection teams reviewed the air carriers' maintenance programs to determine compliance with FARs 135.423 and 135.425. During these inspections, team members examined the air carriers' maintenance manuals, maintenance records, inspection records, airworthiness

directive (AD) notes, and precision tool calibration data. The teams also observed maintenance in progress, interviewed maintenance personnel, and inspected maintenance facilities.

2.8 Manual Requirements (5)

All the air carriers' manuals were reviewed to determine revision status. The inspection teams examined the contents to ensure that the procedures developed were adequate and in compliance with FARs 135.23 and 135.427. Maintenance practices were audited to verify that company personnel were following those procedures.

2.9 Required Inspection Personnel (4)

The inspection teams reviewed the air carriers' maintenance manuals and training records to determine compliance with FAR 135, Subpart J. Maintenance personnel were interviewed to determine their qualifications and knowledge regarding required inspection items.

2.10 Mechanical Reliability Reports and Mechanical Interruption Summary Reports (5)

The air carriers' Mechanical Reliability Reports, Mechanical Interruption Summary Reports, maintenance records, and maintenance manuals were inspected for compliance with FAR 135.415 and 135.417. Reports were reviewed for content, accuracy, and timeliness of submission.

2.11 Continuing Analysis and Surveillance Program (4)

The inspection teams reviewed the air carriers' maintenance manuals and inspection worksheets to determine compliance with FAR 135.431 and Order 8300.9. Aircraft records were examined for compliance with the company programs.

2.13 Weight and Balance Programs (3)

The air carriers' weight and balance procedures were reviewed for compliance with the applicable FARs and company manuals. Team members inspected samples of load manifests for accuracy and completeness.

Since each of the following airworthiness sections appeared in fewer than three FAR Part 135 scheduled commuter air carrier in-depth inspection reports, the methods and procedures used in these sections are not described in this report. The number of reports in which each section appeared is indicated in parentheses.

2.12 Operations Specifications (2)
2.14 Aircraft Ramp Inspections (2)
2.15 Fueling and Servicing (2)
2.16 Major Repair and Alteration Conformity (2)
2.17 MEL/Deferred Maintenance (1)
2.18 Airworthiness Directives Compliance (1)
2.19 Maintenance Spot Inspections (2)

2.3.2 Results

The initial findings of the inspections are summarized in this section. Initial inspection findings may or may not have been substantiated. Enforcement actions which were recommended may or may not have resulted in sanctions, depending on the outcome of subsequent reviews. The sanctions imposed and the corrective action taken varied, depending on the nature and severity of the violations.

2.3.2.1 Findings - Table 2-12 indicates the distribution of findings by part, section, and category for all five FAR Part 135 scheduled commuter air carriers that received in-depth inspections in 1989-1990. The number of findings issued in the FAR Part 135 in-depth inspections ranged from 18 to 147. A total of 345 findings was issued, an average of 69 per air carrier.

Of the total of 345 findings, 146 (42.3%) were in Part 1.0 - Operations, while 199 (57.7%) were in Part 2.0 - Airworthiness. Category 1 findings constituted 25.8% of the total, while Categories 2, 3, and 4 accounted for 33.9%, 20.9%, and 19.4% of the findings, respectively.

Figure 2-16 shows the distribution of findings by section in descending order for Part 1.0 - Operations. Figure 2-17 displays the comparable distribution for Part 2.0 - Airworthiness. Figures 2-18 (Operations) and 2-19 (Airworthiness) show the distributions of Category 1 findings only (i.e., findings resulting in EIRs).

2.3.2.2 FARs Cited - Table 2-13 indicates the number of times that FARs were cited in the findings. The citings are broken down by 1) the FAR 135 subpart (see Appendix 4 for FAR Part 135 subpart definitions) or other FAR that was cited and 2) category of finding.

There were 289 instances of FARs being cited, 136 (47.1%) of which involved FAR 135. Of the total of 289 citings, 42.6% involved Category 1 findings, while 57.4% involved Category 2 findings.

The FAR 135 subparts cited most frequently were Subpart J - Maintenance, Preventative Maintenance, and Alterations (42 times); Subpart B - Flight Operations (34 times); and Subpart A - General (31 times). The FARs other than FAR 135 that were cited most often were FAR 121 - Certification and Operations: Domestic, Flag, and Supplemental Air Carriers and Commercial Operators of Large Aircraft (72 times); FAR 91 - General Operating and Flight Rules (37 times); and FAR 43 - Maintenance, Preventative Maintenance, Rebuilding, and Alteration (32 times).

The FAR 135 subparts that were cited most frequently in Category 1 findings were Subpart B (22 times), Subpart J (15 times), and Subpart A (14 times). The FARs other than FAR 135 that were cited most often in Category 1 findings were FAR 43 (22 times) and FAR 91 (22 times).

2.3.2.3 Enforcement Actions (EIRs) Initiated - The total number of different EIRs recommended in FAR Part 135 scheduled commuter air carrier in-depth inspections was 42. The number of different EIRs recommended by part was as follows:

	Part 1.0 - Operations	Part 2.0 - Airworthiness
Number of Different EIRs Recommended	21	22

The sum of the EIRs recommended in the two parts is one greater than the total number of different EIRs because one of the EIRs was associated with findings in both parts.

Tables 2-14 and 2-15 show the number of different EIRs issued by section for Parts 1.0 - Operations and 2.0 - Airworthiness, respectively. The sections with the most different EIRs issued were Section 1.6 - En Route Inspections (12); Section 2.7 - Maintenance, Preventative Maintenance, and Alteration - Organization and Programs (12); and Section 1.9 - Flight and Duty Time (11). The totals of the numbers by section in Tables 2-16 and 2-17 are greater than the comparable totals by part shown above because any EIR that was listed in more than one section was counted once in each of those sections.

It should be noted that the regions sometimes differed in the assignment of EIRs. In some cases, a single finding indicating a violation resulted in a single EIR. In other cases, a single type of violation resulted in several EIRs if there were multiple events (e.g., flight and duty time violations by more than one crewmember or multiple occurrences by a single crewmember). In still other cases, a single EIR covered more than one violation as several findings were grouped under one enforcement action.

2.3.2.4 Comparison of NASIP Findings by Year - In-depth NASIP inspections of FAR Part 135 scheduled commuter air carriers have been conducted in each of the past 4 years. In 1987, three inspections were performed, resulting in 158 findings. In the succeeding years, there were six inspections with 463 findings in 1988 and five inspections with 345 findings in 1989-1990. Over the past 4 years of the NASIP, there were 14 FAR Part 135 scheduled commuter air carrier in-depth inspections, resulting in 966 findings. Table 2-16 shows the number of NASIP inspections and findings by part for the years 1987-1990.

The comparison of findings by year was accomplished by examining the yearly distributions of findings across the inspection areas (sections) within the two parts of the inspections, Part 1.0 - Operations and Part 2.0 - Airworthiness. For each year, the percentage of the total number of findings in each section within each part was determined. Comparisons were then made among sections, and among years for the same sections. The last column contains the percentage distributions for the 4-year totals. Tables 2-17 (Operations) and 2-18 (Airworthiness) show these distributions. Figures 2-20 (Operations) and 2-21 (Airworthiness) illustrate the distributions of the totals as bar charts.

For Part 1.0 - Operations, the distributions of findings by section varied greatly over the 4-year period. The sections with the most findings during the 4-year period were Section 1.3 - Operations Training and Section 1.7 - Minimum Equipment Lists (MELs). Together these two sections accounted for 38.4% of the findings. Three other sections, (Sections 1.4 - Operations Manuals, 1.6 - En Route Inspections, and 1.10 - Hazardous Materials) collectively accounted for 35.7% of the findings. The other five sections accounted for 25.9% of the findings. An examination of year-to-year changes shows that, in 1989-1990, the relative number of findings decreased significantly in Sections 1.3 - Operations Training and 1.5 - Operations Training Records, as compared to 1988. On the other hand, the relative number of findings increased significantly from 1988 in Section 1.7 - Minimum Equipment Lists (MELs).

For Part 2.0 - Airworthiness, the distributions of findings by section also varied greatly over the 4-year period. The sections with the most findings during the 4-year period were Section 2.7 - Maintenance, Preventative Maintenance, and Alteration - Organization and Programs and Section 2.8 - Manual Requirements. Together, these two sections accounted for 38.8% of the findings. Four other sections (Sections 2.1 - Responsibility for Airworthiness; 2.3 - Training Programs; 2.5 - Maintenance Recording Requirements; and 2.9 - Required Inspection Personnel) collectively accounted for 35.7% of the findings. The remaining 13 sections accounted for 25.5% of the findings. In 1989-1990, the relative number of findings decreased significantly from 1988 in Sections 2.1 - Responsibility for Airworthiness, 2.5 - Maintenance Recording Requirements, and 2.8 - Manual Requirements. On the other hand, the relative number of findings increased significantly from 1988 in Sections 2.7 - Maintenance, Preventative Maintenance, and Alteration - Organization and Programs; 2.13 - Weight and Balance Programs; and 2-14 - Aircraft Ramp Inspections.

2.3.2.5 Analysis of Normalized Results - In order to determine if NASIP results varied significantly among in-depth inspections, normalized findings rates, which measure the numbers of findings per 100 inspector labor-days, were calculated. This rate was calculated for each certificate holder inspected by dividing, in turn, the number of findings in Part 1.0 - Operations, Part 2.0 - Airworthiness, and the total number of findings by the number of labor-days spent on that inspection and multiplying the results by 100. This normalizing procedure makes it possible to compare results among certificate holders inspected under the same guidelines, but with different levels of inspector effort. Due to the small number of different inspections in any one year, these findings rates were calculated for the entire 4-year sample of 14 FAR Part 135 scheduled commuter air carrier in-depth inspections, in order to obtain enough observations for the distributions. The distributions of these rates show the variation in the relative performance of the inspected certificate holders. The lower the rate, the better the performance, since a low rate indicates fewer adverse findings per 100 days of inspector effort. The distributions of these rates are shown in Figure 2-22 for Part 1.0 - Operations, in Figure 2-23 for Part 2.0 - Airworthiness, and in Figure 2-24 for total findings.

The distribution of findings rates for Part 1.0 - Operations is skewed slightly to the right. Nine of the 14 inspections produced fewer than 20 operations findings per 100 inspector labor-days, while only one inspection had a findings rate of 40 or greater. Operations findings rates ranged from a low of 2.90 (the best-case carrier) to a high of 51.43 (the worst-case carrier), indicating significant differences among carriers. The median findings rate was 14.71, while the average rate was 15.19. These numbers are slightly below the center of the distribution, reflecting its skewed nature.

The distribution of findings rates for Part 2.0 - Airworthiness has a large spike in the center. Six carriers had airworthiness findings rates between 10 and 20 per 100 inspector labor-days. The other eight carriers' rates were scattered over the rest of the distribution. Airworthiness findings rates ranged from 2.68 to 48.57, also indicating significant differences among carriers. The median findings rate was 18.75, while the average rate was 21.36. These numbers were near the center of the distribution, reflecting the presence of the spike. In addition, although specific carrier comparisons are not made here, it should be mentioned that the carriers with relatively high operations findings rates were also the carriers with high airworthiness findings rates.

The distribution of the total findings rates is derived from the combination of the findings rate distributions for Part 1.0 - Operations and Part 2.0 - Airworthiness. As such, this distribution has a large spike in the center. Six carriers had total findings rates between 20 and 40 per 100 inspector labor-days. The other eight carriers' rates were scattered over the rest of the distribution. FAR Part 135 NASIP in-depth inspections had

total findings rates ranging from 6.70 to 100.00. The median total findings rate was 32.18, while the average rate was 36.55. This suggests that, although there is general compliance with NASIP guideline standards, NASIP inspections are necessary to supplement ongoing surveillance for some FAR Part 135 certificate holders. Furthermore, because of the variation in results, the preselection of those carriers likely to be worse case would increase the effectiveness of the program.

TABLE 2-12. FAR PART 135 SCHEDULED COMMUTER AIR CARRIERS
1989-1990 IN-DEPTH INSPECTIONS
FINDINGS BY PART/SECTION AND CATEGORY

PART/SECTION		CATEGORY				
1.0	OPERATIONS	1	2	3	4	TOTAL
1.1	Management	0	7	1	0	8
1.2	Operations Specifications	0	1	5	2	8
1.3	Operations Training	7	1	3	5	16
1.4	Operations Manuals	2	11	0	4	17
1.5	Operations Training Records	3	1	0	0	4
1.6	En Route Inspections	15	0	4	0	19
1.7	Minimum Equipment Lists (MELs)	0	23	7	4	34
1.8	Flight Release	4	1	2	0	7
1.9	Flight and Duty Time	14	0	0	0	14
1.10	Hazardous Materials	0	4	1	14	19
SUBTOTAL		45	49	23	29	146
2.0	AIRWORTHINESS					
2.1	Responsibility for Airworthiness	5	1	2	0	8
2.2	Approved Aircraft Inspection Program	1	0	1	0	2
2.3	Training Programs	0	5	1	0	6
2.4	Certificate Requirements	0	0	0	0	0
2.5	Maintenance Recording Requirements	3	5	5	3	16
2.6	Airworthiness Release	1	1	1	2	5
2.7	Maint., Prev. Maint., & Alt.-Org. & Prgrms.	17	21	17	7	62
2.8	Manual Requirements	1	10	7	9	27
2.9	Required Inspection Personnel	0	6	3	0	9
2.10	Mech. Rel. Rpts. & Mech. Inter. Sum. Rpts.	6	3	0	0	9
2.11	Continuing Analysis and Surveillance Program	1	3	0	6	10
2.12	Operations Specifications	0	0	1	6	7
2.13	Weight and Balance Programs	3	1	7	1	12
2.14	Aircraft Ramp Inspections	0	7	0	4	11
2.15	Fueling and Servicing	0	2	1	0	3
2.16	Major Repair and Alteration Conformity	3	0	2	0	5
2.17	MEL/Deferred Maintenance	2	0	1	0	3
2.18	Airworthiness Directives Compliance	1	0	0	0	1
2.19	Maintenance Spot Inspections	0	3	0	0	3
SUBTOTAL		44	68	49	38	199
TOTAL		89	117	72	67	345

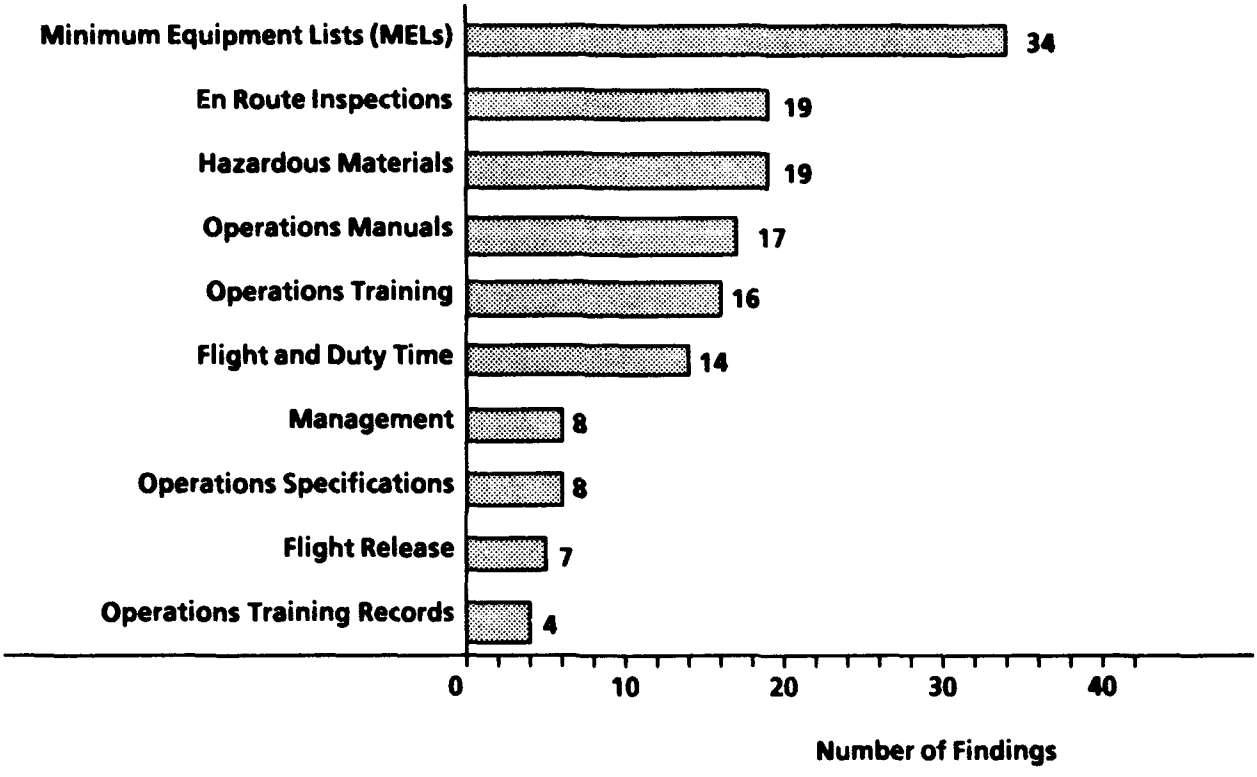

FIGURE 2-16. FAR PART 135 SCHEDULED COMMUTER AIR CARRIERS
1989 - 1990 IN-DEPTH INSPECTIONS
NUMBER OF FINDINGS BY SECTION - OPERATIONS

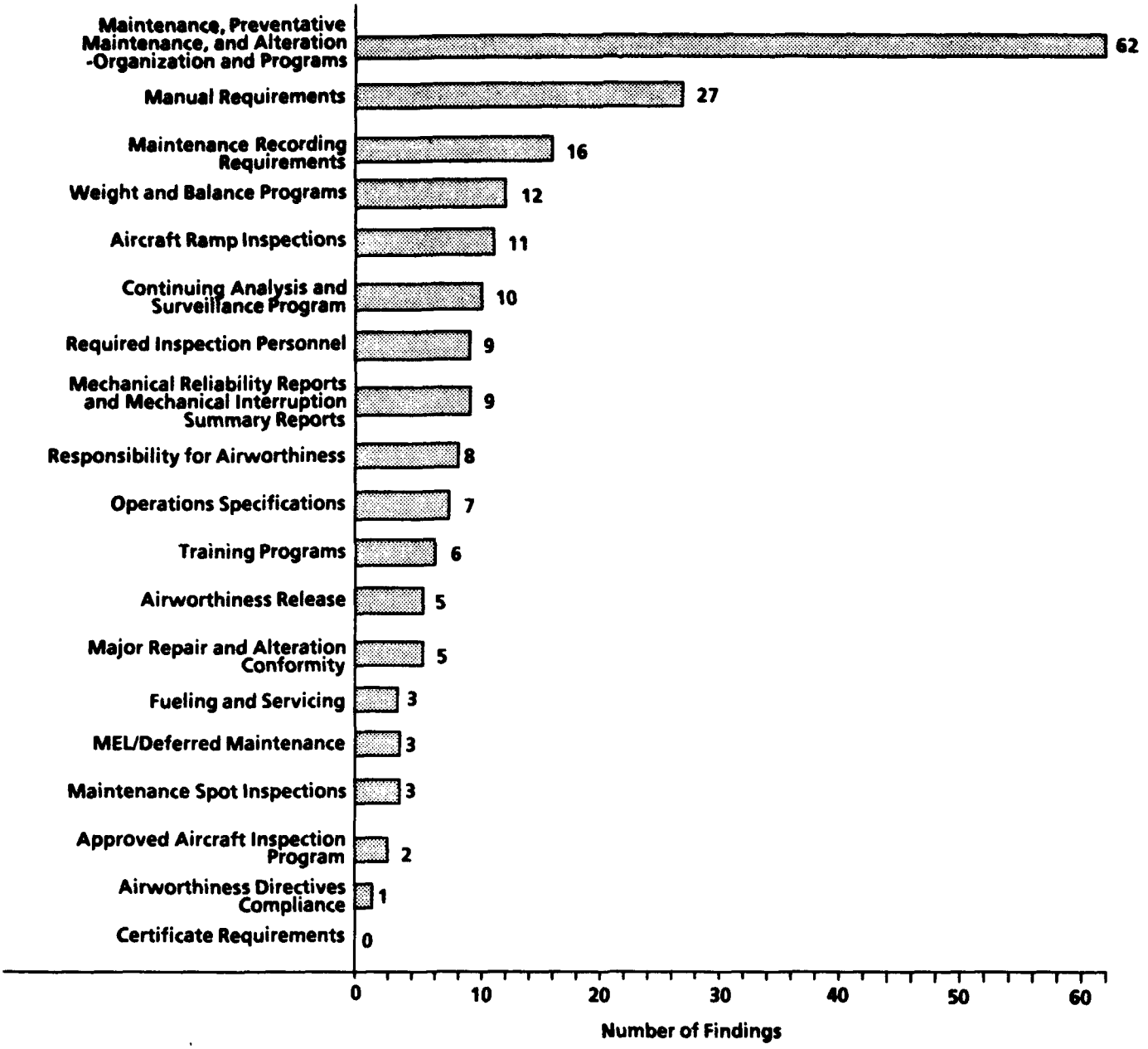

FIGURE 2-17. FAR PART 135 SCHEDULED COMMUTER AIR CARRIERS
1989 - 1990 IN-DEPTH INSPECTIONS
NUMBER OF FINDINGS BY SECTION - AIRWORTHINESS

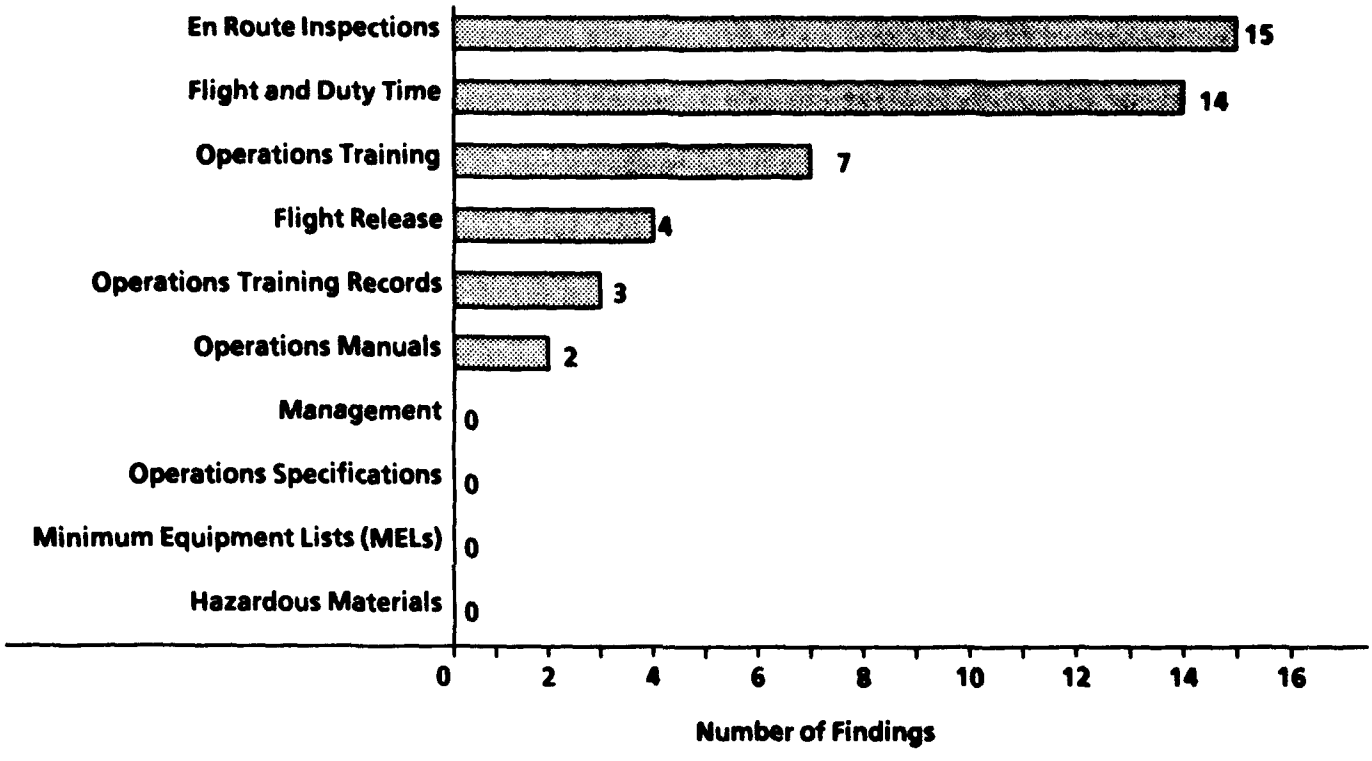

FIGURE 2-18. FAR PART 135 SCHEDULED COMMUTER AIR CARRIERS
1989 - 1990 IN-DEPTH INSPECTIONS
NUMBER OF CATEGORY 1 FINDINGS BY SECTION - OPERATIONS

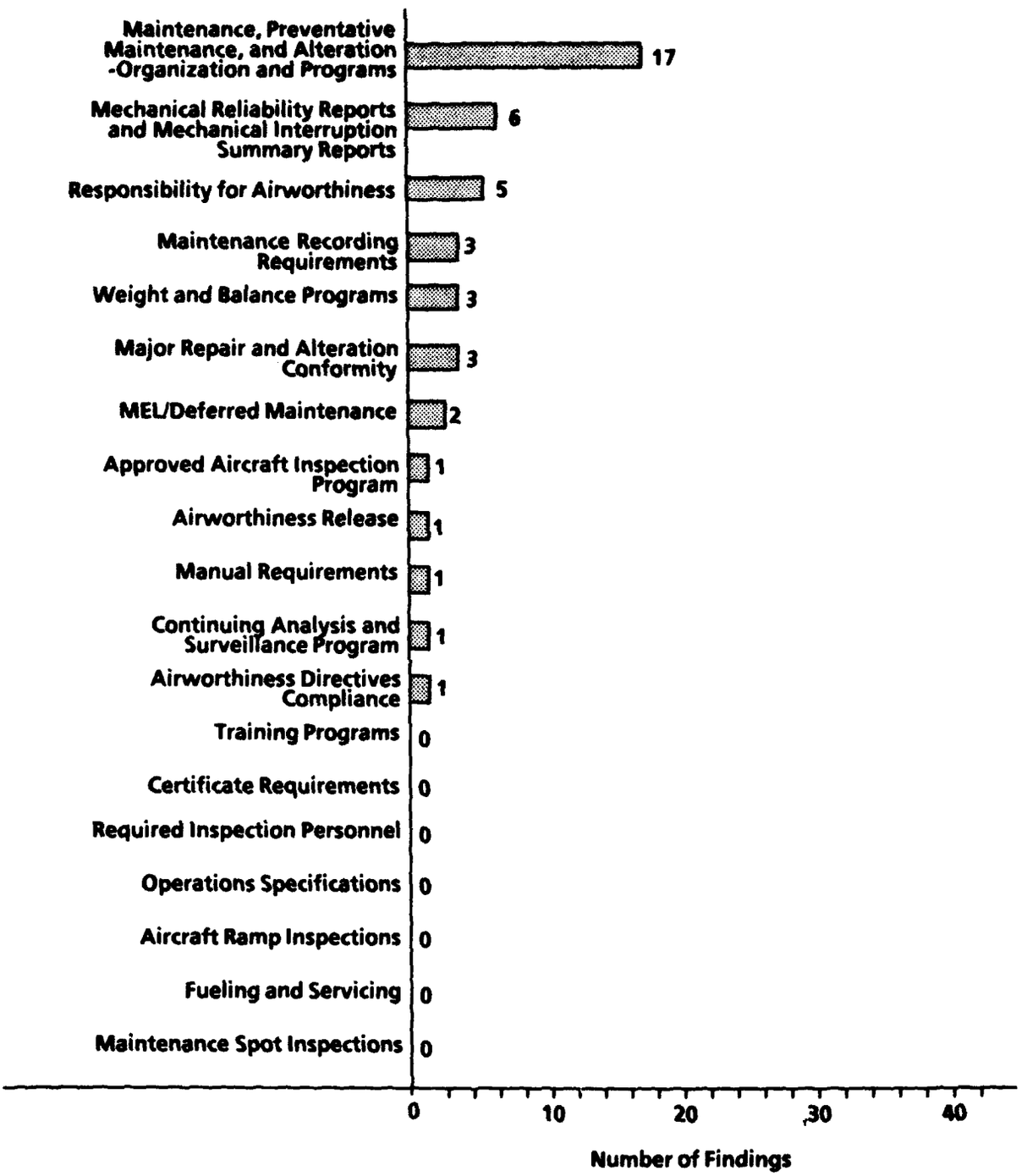

FIGURE 2-19. FAR PART 135 SCHEDULED COMMUTER AIR CARRIERS
1989 - 1990 IN-DEPTH INSPECTIONS
NUMBER OF CATEGORY 1 FINDINGS BY SECTION - AIRWORTHINESS

TABLE 2-13. FAR PART 135 SCHEDULED COMMUTER AIR CARRIERS
1989-1990 IN-DEPTH INSPECTIONS
NUMBER OF TIMES FARs CITED BY FAR/SUBPART AND
CATEGORY OF FINDINGS

FAR 135 SUBPART		CATEGORY 1	CATEGORY 2	TOTAL
A	General	14	17	31
B	Flight Operations	22	12	34
C	Aircraft and Equipment	4	5	9
D	VFR/IFR Operation Limit. & Weather Reqs.	0	0	0
E	Flight Crewmember Requirements	0	0	0
F	Flight Crew. Flight Time Lim. & Rest Reqs.	5	0	5
G	Crewmember Testing Requirements	0	0	0
H	Trianing	8	6	14
I	Airplane Performance Operation Limitations	0	0	0
J	Maintenance, Prev. Maint., and Alterations	15	27	42
X	FAR 135: Appendix	0	0	0
Y	FAR 135: Subpart Unknown	0	1	1
TOTAL FAR 135		68	68	136
OTHER FARs				
21	Cert. Procedures for Products and Parts	0	2	2
39	Airworthiness Directives	5	0	5
43	Maint., Prev. Maint., Rebldng., & Alter.	22	10	32
65	Cert.: Airmen Other Than Flight Crwmmbrs.	0	1	1
91	General Operating and Flight Rules	22	15	37
121	Ce. & Op.: D., F., & S.A.C. & C.O. of L.A.	6	66	72
TOTAL OTHER FARs		55	98	153
TOTAL		123	166	289

TABLE 2-14. FAR PART 135 SCHEDULED COMMUTER AIR CARRIERS
1989-1990 IN-DEPTH INSPECTIONS
NUMBER OF EIRs BY SECTION - OPERATIONS

PART/SECTION		NUMBER OF EIRs
1.0	OPERATIONS	
1.1	Management	0
1.2	Operations Specifications	0
1.3	Operations Training	2
1.4	Operations Manuals	2
1.5	Operations Training Records	3
1.6	En Route Inspections	12
1.7	Minimum Equipment Lists (MELs)	0
1.8	Flight Release	3
1.9	Flight and Duty Time	11
1.10	Hazardous Materials	0
TOTAL		33

TABLE 2-15. FAR PART 135 SCHEDULED COMMUTER AIR CARRIERS
1989-1990 IN-DEPTH INSPECTIONS
NUMBER OF EIRs BY SECTION - AIRWORTHINESS

PART/SECTION		NUMBER OF EIRs
2.0	AIRWORTHINESS	
2.1	Responsibility for Airworthiness	2
2.2	Approved Aircraft Inspection Program	1
2.3	Training Programs	0
2.4	Certificate Requirements	0
2.5	Maintenance Recording Requirements	1
2.6	Airworthiness Release	1
2.7	Maint., Prev. Maint., & Alt.-Org. & Prgrms.	12
2.8	Manual Reqirements	1
2.9	Required Inspection Personnel	0
2.10	Mech. Rel. Rpts. & Mech. Inter. Sum. Rpts.	3
2.11	Continuing Analysis and Surveillance Program	1
2.12	Operations Specifications	0
2.13	Weight and Balance Programs	2
2.14	Aircraft Ramp Inspections	0
2.15	Fueling and Servicing	0
2.16	Major Repair and Alteration Conformity	3
2.17	MEL/Deferred Maintenance	1
2.18	Airworthiness Directives Complianace	1
2.19	Maintenance Spot Inspections	0
TOTAL		29

TABLE 2-16. FAR PART 135 SCHEDULED COMMUTER AIR CARRIERS
NUMBER OF NASIP IN-DEPTH INSPECTIONS AND FINDINGS BY YEAR

	Year			
	1987	1988	1989-1990	TOTAL
Number of In-Depth Inspections	3	6	5	14
Number of Findings				
Operations	41	222	146	409
Airworthiness	117	241	199	557
TOTAL	158	463	345	966

TABLE 2-17. FAR PART 135 SCHEDULED COMMUTER AIR CARRIERS
IN-DEPTH INSPECTIONS
PERCENT OF FINDINGS BY SECTION - OPERATIONS
1987-1990 AND TOTAL

OPERATIONS SECTION	1987	1988	1989-1990	TOTAL
1.1 Management	9.7	1.8	5.5	3.9
1.2 Operations Specifications	9.8	6.7	5.5	6.6
1.3 Operations Training	12.2	27.5	11.0	20.1
1.4 Operations Manuals	19.5	15.3	11.6	14.4
1.5 Operations Training Records	7.3	8.6	2.7	6.4
1.6 En Route Inspections	12.2	8.1	13.0	10.3
1.7 Minimum Equipment Lists (MELs)	14.6	15.8	23.3	18.3
1.8 Flight Release	0	0.9	4.8	2.2
1.9 Flight and Duty Time	4.9	5.4	9.6	6.8
1.10 Hazardous Materials	9.8	9.9	13.0	11.0

TABLE 2-18. FAR PART 135 SCHEDULED COMMUTER AIR CARRIERS
IN-DEPTH INSPECTIONS
PERCENT OF FINDINGS BY SECTION - AIRWORTHINESS
1987-1990 AND TOTAL

AIRWORTHINESS SECTION	1987	1988	1989-1990	TOTAL
2.1 Responsibility for Airworthiness	2.6	12.5	4.0	7.4
2.2 Approved Aircraft Inspection Program	0	4.6	1.0	2.3
2.3 Training Programs	26.5	6.2	3.0	9.3
2.4 Certificate Requirements	0	2.1	0	0.9
2.5 Maintenance Recording Requirements	2.6	18.3	8.1	11.3
2.6 Airworthiness Release	0.8	5.0	2.5	3.2
2.7 Maintenance, Preventative Maintenance, and Alteration - Organization and Programs	11.1	9.1	31.2	17.4
2.8 Manual Requirements	31.6	22.8	13.6	21.4
2.9 Required Inspection Personnel	16.2	6.2	4.5	7.7
2.10 Mechanical Reliability Reports and Mechanical Interruption Summary Reports	0.9	5.8	4.5	4.3
2.11 Continuing Analysis and Surveillance Program	3.4	4.2	5.0	4.3
2.12 Operations Specifications	1.7	1.2	3.5	2.2
2.13 Weight and Balance Programs	2.6	0.4	6.1	2.9
2.14 Aircraft Ramp Inspections	0	0.4	5.5	2.2
2.15 Fueling and Servicing	0	1.2	1.5	1.1
2.16 Major Repair and Alteration Conformity	0	0	2.5	0.9
2.17 MEL/Deferred Maintenance	0	0	1.5	0.5
2.18 Airworthiness Directives Compliance	0	0	0.5	0.2
2.19 Maintenance Spot Inspections	0	0	1.5	0.5

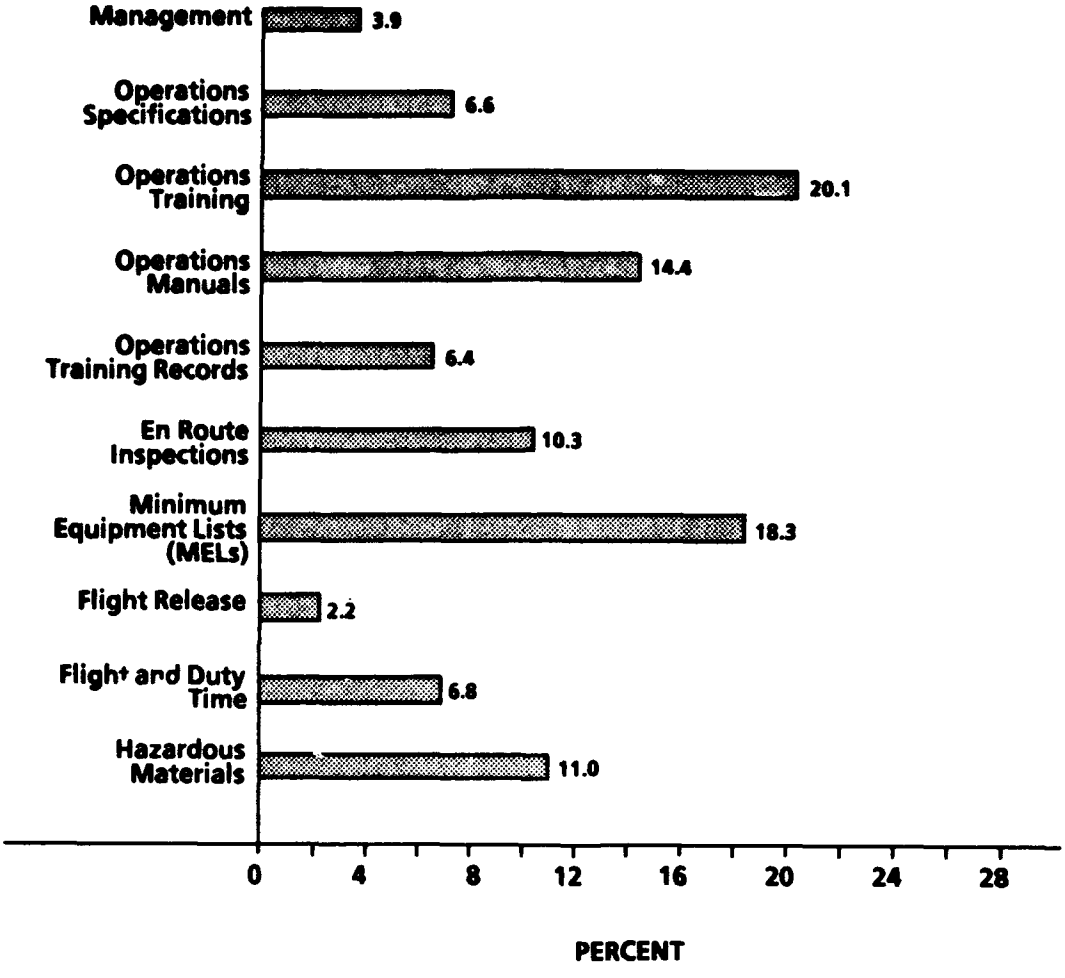

FIGURE 2-20. FAR PART 135 SCHEDULED COMMUTER AIR CARRIERS
IN-DEPTH INSPECTIONS
PERCENT OF FINDINGS BY SECTION - OPERATIONS
TOTAL FROM 1987 - 1990

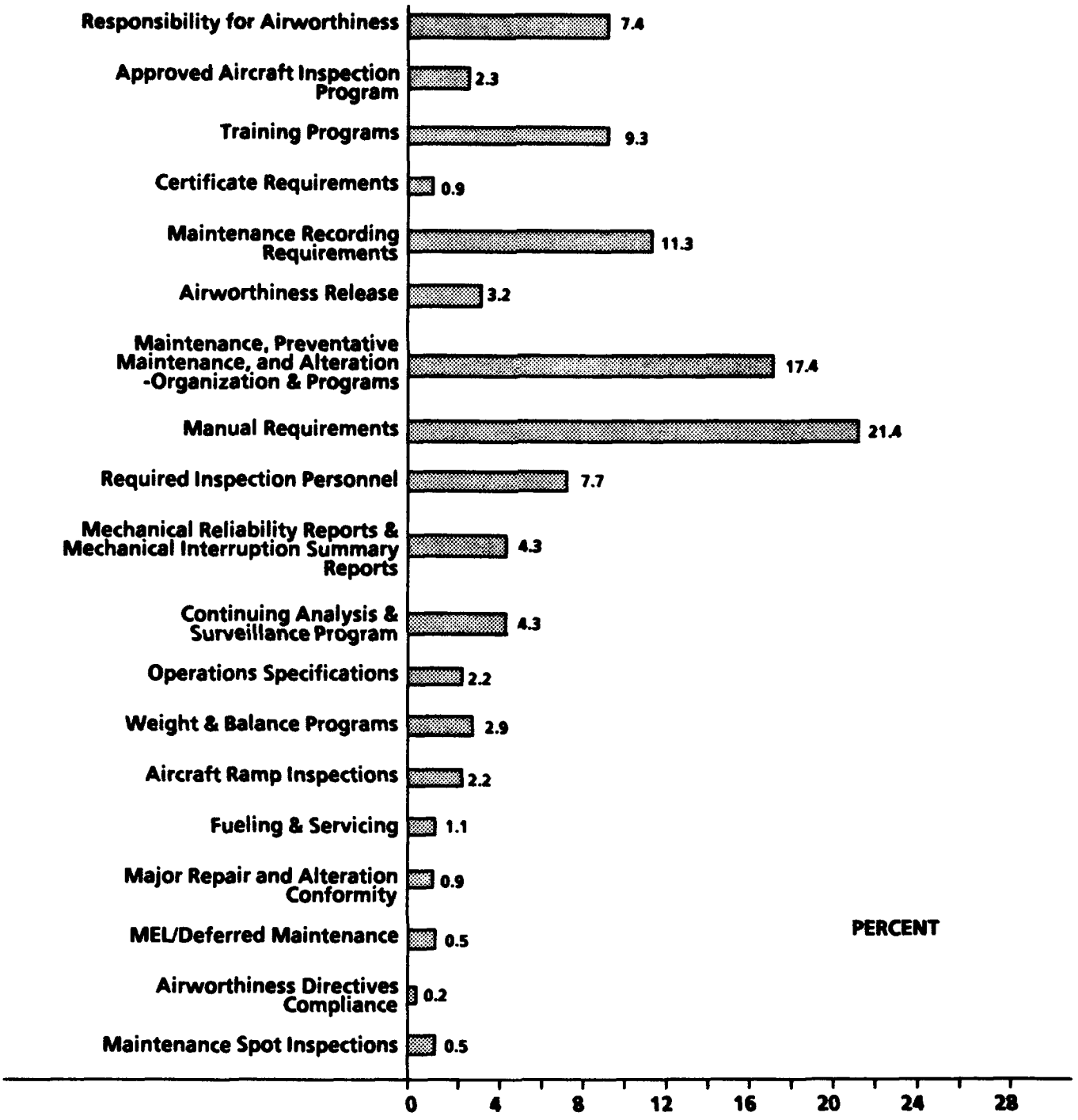

FIGURE 2-21. FAR PART 135 SCHEDULED COMMUTER AIR CARRIERS
IN-DEPTH INSPECTIONS
PERCENT OF FINDINGS BY SECTION - AIRWORTHINESS
TOTAL FROM 1987 - 1990

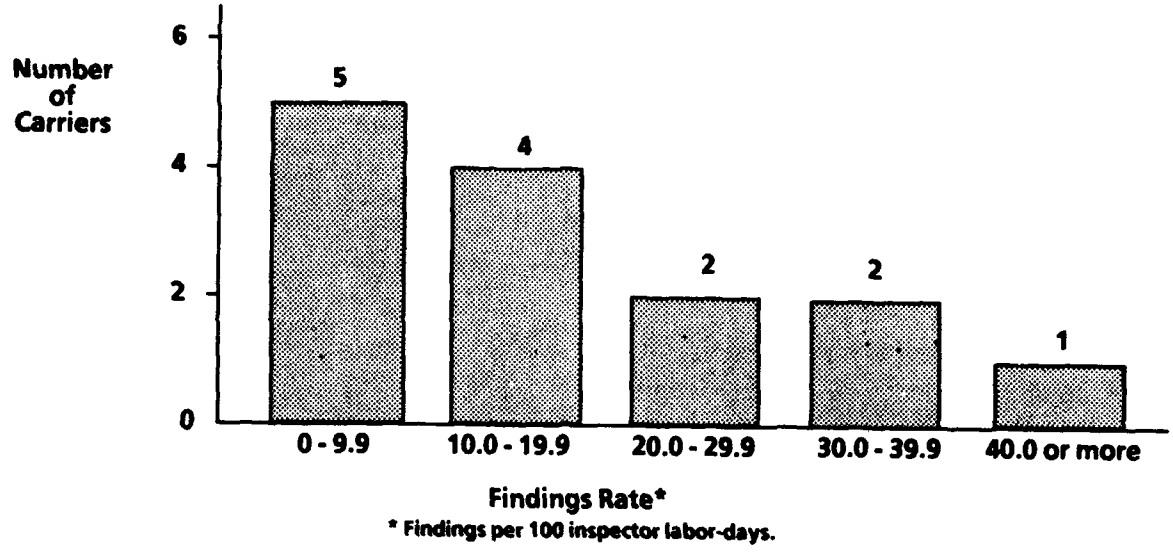

FIGURE 2-22. FAR PART 135 SCHEDULED COMMUTER AIR CARRIERS
1987 - 1990 IN-DEPTH INSPECTIONS
NORMALIZED RESULTS - OPERATIONS

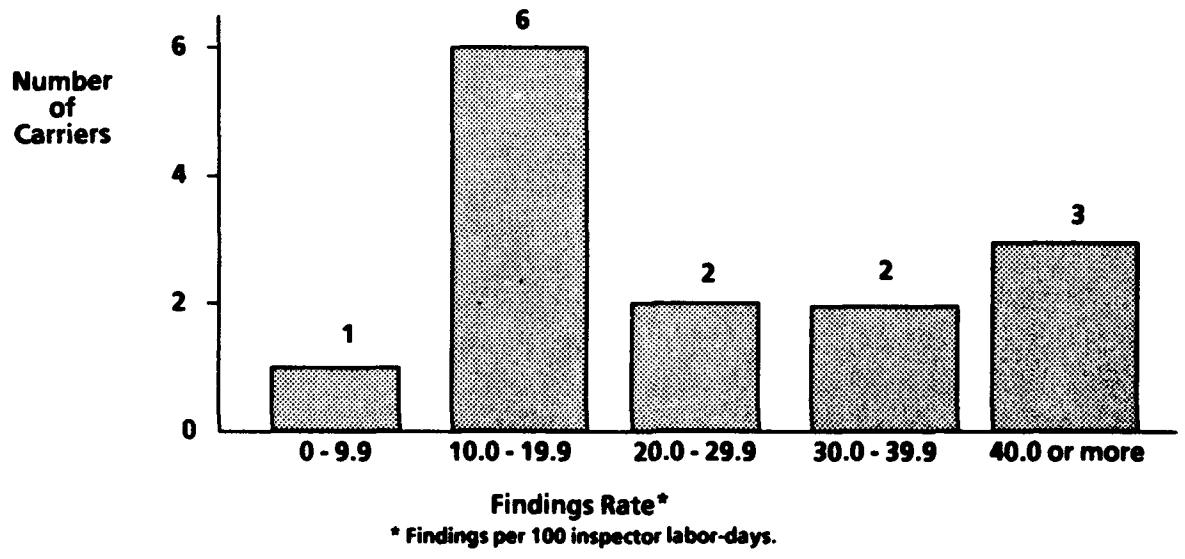

FIGURE 2-23. FAR PART 135 SCHEDULED COMMUTER AIR CARRIERS
1987 - 1990 IN-DEPTH INSPECTIONS
NORMALIZED RESULTS - AIRWORTHINESS

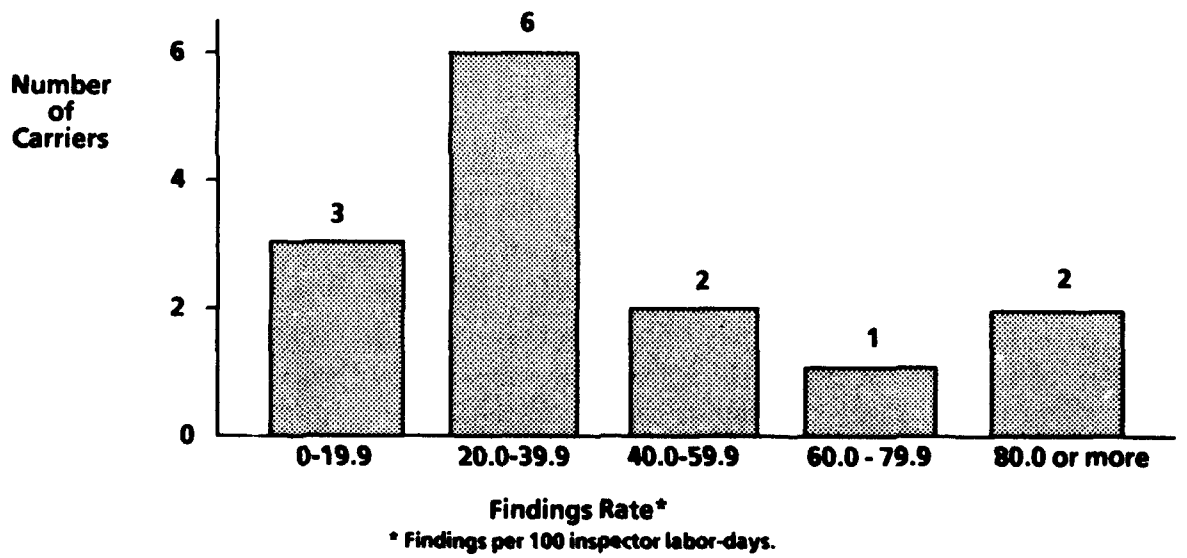

FIGURE 2-24. FAR PART 135 SCHEDULED COMMUTER AIR CARRIERS
1987 - 1990 IN-DEPTH INSPECTIONS
NORMALIZED RESULTS - TOTAL FINDINGS

3. NASIP PART 141 PILOT SCHOOL INSPECTIONS

This chapter contains descriptions of: 1) the methods and procedures used, and 2) the results obtained in the FY90 NASIP inspections of FAR Part 141 pilot schools.

Since there was only one FAR Part 141 in-depth inspection conducted in FY90, these results have been combined with the FY89 results for FAR Part 141. This chapter contains descriptions of the combined FY89 and FY90 in-depth inspection results for FAR Part 141.

Since there were only two FAR Part 141 focused inspections conducted in FY90, the results of these inspections are not included in this report.

3.1 PART 141 IN-DEPTH INSPECTIONS

3.1.1 Methods and Procedures

3.1.1.1 Guidelines - The objective of in-depth inspections is to determine air agency compliance with FARs, exemptions, FAA-approved company procedures and policies, and written FAA guidance material. The FAR Part 141 Interim Guidance document contains two lists (one for operations and another for airworthiness) of criteria for determining this compliance. Each list is organized by the sections to be contained in the final report. Neither list is intended to be all-inclusive.

The FAR Part 141 Interim Guidance document specifies that each NASIP FAR Part 141 inspection team normally consist of an operations group and an airworthiness group. There is a team leader who is responsible for planning the inspection and indoctrinating the team members in the systems and procedures used by the air agency to be inspected. The Interim Guidance document specifies that each NASIP FAR Part 141 inspection team present briefings to the pilot school before and after the inspection. In addition, following the inspection, the team is to write a final report in accordance with the format shown in the document. The format indicates the sections to be included in both the operations and airworthiness parts of the report.

There were eight FAR Part 141 pilot schools that received NASIP inspections in FY89 and FY90. The reports written by the inspection teams conform to the format in the Interim Guidance document.

3.1.1.2 Methods and Procedures Used - The in-depth inspection of each pilot school consisted of two parts: Operations and Airworthiness. These two parts were broken down into 24 sections which are described in the Interim Guidance document and are as follows:

1.0 OPERATIONS

- 1.1 Management
- 1.2 Ratings and Authorizations
- 1.3 Examining Authority and Airman Certification Representative (ACR)
- 1.4 Training Course Outlines
- 1.5 Staff Qualifications
- 1.6 Records
- 1.7 Exemptions
- 1.8 Facilities
- 1.9 Airports
- 1.10 Training Aids/Simulators/Training Devices
- 1.11 Quality of Instruction
- 1.12 Advertising
- 1.13 FAR 61 Activity
- 1.14 Minimum Equipment List Procedures

2.0 AIRWORTHINESS

- 2.1 Management
- 2.2 Ratings and Authorizations
- 2.3 Personnel-Qualifications/Supervision
- 2.4 Maintenance Program/Inspection Times
- 2.5 Facilities
- 2.6 Records
- 2.7 Airworthiness Directives
- 2.8 Fueling/Servicing
- 2.9 Aircraft/Manuals/Pilot Operating Handbook
- 2.10 Inoperative Equipment/Deferred Maintenance

The following are descriptions of the methods and procedures used in each of the above sections.

1.0 OPERATIONS

The following operations sections appeared in (or were applicable to) at least four of the eight FAR Part 141 pilot school in-depth inspection reports. The number of reports in which each section appeared is indicated in parentheses after the section title.

1.1 Management (8)

During the course of these inspections, the inspection teams closely monitored the schools' operations. Team members interviewed management personnel and flight instructors, and compared the information obtained with that in the FAA Flight Standards District Offices' files.

1.2 Ratings and Authorizations (8)

The inspection teams compared the schools' air agency certificates, lists of approved courses, and training course outlines with the copies in the Flight Standards District Offices' files. The schools' records were reviewed to verify that the schools did not offer any other courses under the authority of FAR 141.

1.3 Examining Authority and Airman Certification Representative (ACR) (4)

The inspection teams reviewed the pilot schools' files at the Flight Standards District Offices (FSDOs) to determine if the schools were sending copies of the training records of examining authority graduates to the FSDOs, as required by FAR 141.67. The teams also reviewed student records, observed written testing procedures, and interviewed the schools' Airman Certification Representatives (ACRs) concerning their responsibilities and duties under this authority.

1.4 Training Course Outlines (8)

All of the schools' FAA-approved training course outlines were inspected in depth by audits of the curricula. The contents of each outline were compared to the requirements of FAR 141, Order 8710.5 (Certification: Pilot Schools), and Advisory Circular 141-1 (Pilot School Certification). The inspection teams also observed ground school training and flight training.

1.5 Staff Qualifications (8)

The inspection teams reviewed the records of the schools' Chief Flight Instructors, their assistants, and all other flight and ground instructors to evaluate their qualifications. In addition, the instructors were interviewed by team members.

1.6 Records (8)

The inspection teams examined student records to determine compliance with FARs 141.77, 141.93, 141.95, and 141.101. Team members reviewed records of students enrolled at the time of the inspection and students who graduated or terminated their studies in the year prior to the inspections. Team members discussed record keeping procedures with school officials.

1.8 Facilities (8)

The inspection teams visually checked all the schools' facilities to determine compliance with FAR 141.

1.9 Airports (8)

The inspection teams conducted visual inspections of the airports used for training. Team members gathered data from various publications on these airports as well as on airports utilized on cross-country training flights. The information was used to determine if the airports met the requirements of FAR 141.37.

1.10 Training Aids/Simulators/Training Devices (8)

All of the schools' training aids and training devices were inspected for proper operation. Team members observed training sessions in which training aids and training devices were used.

1.11 Quality of Instruction (8)

During the course of these inspections, the inspection teams closely monitored all aspects of the pilot schools' FAR 141 training operations. Team members reviewed training course outlines, examined student records, interviewed students and instructors, and observed training in progress. Team members discussed training practices with the Chief Flight Instructors and other staff instructors.

1.12 Advertising (7)

The inspection teams reviewed the schools' use of advertising in brochures, catalogs, aviation publications, telephone directories, and on school signs to determine compliance with FAR 141.23.

1.13 FAR 61 Activity (8)

The inspection teams discussed FAR 61 training activity with the schools' Chief Flight Instructors and other school officials, observed training in progress, and reviewed student records to determine compliance with FAR 61.

Since each of the following operations sections appeared in (or was applicable to) only two FAR Part 141 pilot school in-depth inspection reports, the methods and procedures used in these sections are not described in this report.

1.7 Exemptions
1.14 Minimum Equipment List Procedures

2.0 AIRWORTHINESS

The following airworthiness sections appeared in (or were applicable to) at least six of the eight FAR Part 141 pilot school in-depth inspection reports. The number of reports in which each section appeared is indicated in parentheses after the section title.

2.1 Management (8)

The inspection teams interviewed maintenance personnel and checked their certificates to determine their training and experience levels. Team members reviewed the schools' aircraft status boards for accuracy.

2.2 Ratings and Authorizations (7)

The inspection teams reviewed maintenance personnel records for proper certification. In addition, maintenance personnel were interviewed to evaluate their knowledge of the aircraft that the schools operate.

2.3 Personnel-Qualifications/Supervision (8)

The inspection teams interviewed maintenance personnel to determine their certification, experience, and knowledge of the aircraft utilized by the pilot schools.

2.4 Maintenance Program/Inspection Times (8)

The inspection teams reviewed aircraft records to determine if the 100-hour and annual inspections required by FAR 91.169 had been performed on time.

2.5 Facilities (8)

The schools' facilities were inspected for cleanliness and the adequacy of equipment required to perform work on the schools' aircraft. The schools' technical libraries were inspected for complete and current maintenance manuals and technical data.

2.6 Records (8)

The maintenance records of the schools' aircraft were reviewed for compliance with FAR 91.173.

2.7 Airworthiness Directives (8)

The inspection teams reviewed the schools' airworthiness directive (AD) files for currency. The methods of recording were checked for compliance with FAR 91.173. In addition, team members inspected several aircraft to verify AD compliance.

2.8 Fueling/Servicing (8)

During inspections of the schools' fuel facilities, the inspection teams checked that fire extinguishers were in proper condition and that fuel tanks and trucks had the proper markings. Fuel servicing personnel were interviewed for knowledge of refueling and safety procedures.

2.9 Aircraft/Manuals/Pilot Operating Handbook (8)

The inspection teams inspected the schools' aircraft for the presence of checklists, manuals, and pilot operating handbooks, and to determine if the aircraft had been maintained in accordance with FARs 141.39 and 91.169.

2.10 Inoperative Equipment/Deferred Maintenance (6)

The inspection teams reviewed the schools' aircraft discrepancy sheets for corrective action taken and approval for return to service.

3.1.2 Results

The initial findings of the inspections are summarized in this section. Initial inspection findings may or may not have been substantiated. Enforcement actions which were recommended may or may not have resulted in sanctions, depending on the outcome of subsequent reviews. Sanctions and corrective actions taken on NASIP findings varied, depending on the nature and severity of the violations.

3.1.2.1 Findings - Table 3-1 shows the distribution of findings by part, section, and category for all eight FAR Part 141 pilot schools that received in-depth inspections in 1989-1990. A total of 269 findings was issued, an average of 33.6 per pilot school. The number of findings issued in the FAR Part 141 in-depth inspections ranged from 4 to 118.

Of the total of 269 findings, 123 (45.7%) were in Part 1.0 - Operations, while 146 (54.3%) were in Part 2.0 - Airworthiness. Category 1 findings constituted 54.3% of the total, while Categories 2, 3, and 4 constituted 18.6%, 8.9%, and 18.2%, respectively.

Figure 3-1 shows the distribution of findings by section in descending order for Part 1.0 - Operations. Figure 3-2 displays the comparable distribution for Part 2.0 - Airworthiness. Figures 3-3 (Operations) and 3-4 (Airworthiness) show the distributions of Category 1 findings (i.e., findings resulting in EIRs) only.

3.1.2.2 FARs Cited - Table 3-2 shows the number of times that specific FARs were cited in the findings. The citings are broken down by 1) the FAR 141 subpart (see Appendix 5 for FAR Part 141 subpart definitions) or other FAR that was cited, and 2) category of finding.

There were 236 instances of FARs being cited, 117 (49.6%) of which involved FAR 141. Of the total of 236 citings, 181 (76.7%) involved Category 1 findings, while 55 (23.3%) involved Category 2 findings.

The FAR 141 subparts cited most frequently were Subpart E - Operating Rules (38 times) and Subpart B - Personnel, Aircraft, and Facilities Requirements (34 times). The FARs other than FAR 141 that were cited most often were FAR 91 - General Operating and Flight Rules (68 times) and FAR 43 - Maintenance, Preventative Maintenance, Rebuilding, and Alteration (33 times).

The FAR 141 subparts cited most frequently in Category 1 findings were Subpart E (25 times) and Subpart B (23 times). The FARs other than FAR 141 that were cited most often were FAR 91 (64 times) and FAR 43 (25 times).

3.1.2.3 Enforcement Actions (EIRs) Initiated - The total number of different EIRs recommended in FAR Part 141 pilot school inspections was 21. The number of different EIRs recommended by part was as follows:

	Part 1.0 - Operations	Part 2.0 - Airworthiness
Number of Different EIRs Recommended	6	16

The sum of the EIRs recommended in the two parts is one greater than the total number of different EIRs because one of the EIRs was associated with findings in both parts.

Tables 3-3 and 3-4 show the number of different EIRs issued by section for Parts 1.0 - Operations and 2.0 - Airworthiness, respectively. The section with the most EIRs was Section 2.6 - Records (15). The totals of the numbers by section in Tables 3-3 and 3-4 are greater than the comparable totals by part shown above because any EIR that was cited in findings in more than one section was counted once in each of those sections.

It should be noted that the regions sometimes differed in the assignment of EIRs. In some cases, a single finding indicating a violation resulted in a single EIR. In other cases, a single type of violation resulted in several EIRs if there were multiple events (i.e., several occurrences of the same violation). However, in most pilot school inspections, a single EIR covered all violations as several findings were grouped under one enforcement action.

3.1.2.4 Comparison of NASIP Findings by Year - NASIP in-depth inspections of FAR Part 141 pilot schools have been conducted in each of the past 4 years. In 1987, 14 inspections were performed, resulting in 211 findings. In the succeeding years, there were seven inspections with 371 findings in 1988 and eight inspections with 269 findings in 1989-1990. Over the past 4 years of the NASIP, there were 29 FAR Part 141 pilot school in-depth inspections, resulting in 851 findings. Table 3-5 shows the number of NASIP inspections and findings by part for the years 1987-1990.

The comparison of findings by year was accomplished by examining the yearly distributions of findings across the inspection areas (sections) within the two parts of the inspections, Part 1.0 - Operations and Part 2.0 - Airworthiness. For each year, the percentage of the total number of findings in each section within each part was determined. Comparisons then were made among sections, and among years for the same sections. Tables 3-6 (Operations) and 3-7 (Airworthiness) show these distributions. The last column contains the percentage distributions for the 4-year totals. Figures 3-5 (Operations) and 3-6 (Airworthiness) illustrate the distributions of the totals in bar chart form.

For Part 1.0 - Operations, the distributions of findings by section were generally consistent over the 4-year period. The section with the most findings during the 4-year period was Section 1.4 - Training Course Outlines with 45.2% of the findings. Section 1.6 - Records accounted for 19.8% of the findings. The other 12 sections accounted for 35.0% of the findings. An examination of year-to-year changes shows that, in 1989-1990, the relative number of findings decreased significantly in Section 1.4 - Training Course Outlines, but increased significantly in Section 1.11 - Quality of Instruction.

For Part 2.0 - Airworthiness, the distributions of findings by section varied greatly over the 4-year period. The sections with the most findings during the 4-year period were Section 2.6 - Records and Section 2.9 - Aircraft/Manuals/Pilot Operating Handbook. Together, these two sections accounted for 66.4% of the findings. The remaining eight sections accounted for 33.6% of the findings. In 1989-1990, the relative number of findings increased significantly from 1988 in Section 2.6 - Records, but decreased significantly from 1988 in Sections 2.7 - Airworthiness Directives and 2.9 - Aircraft/Manuals/Pilot Operating Handbook.

3.1.2.5 Analysis of Normalized Results - In order to determine if NASIP results varied significantly among in-depth inspections, normalized findings rates, which measure the numbers of findings per 100 inspector labor-days, were calculated. This rate was calculated for each certificate holder inspected by dividing, in turn, the number of findings in Part 1.0 - Operations, Part 2.0 - Airworthiness, and the total number of findings by the number of labor-days spent on that inspection and multiplying the results by 100. This normalizing procedure makes it possible to compare results among certificate holders inspected under the same guidelines, but with different levels of inspector effort. Due to the small number of different inspections in any given year, these findings rates were calculated for the entire 4-year sample of 29 FAR Part 141 pilot school in-depth inspections, in order to obtain enough observations for the distributions. The distributions of these rates show the variation in the relative performance of the inspected certificate holders. The lower the rate, the better the performance, since a low rate indicates fewer adverse findings per 100 hours of inspector effort. The distributions of these rates are shown in Figure 3-7 for Part 1.0 - Operations, in Figure 3-8 for Part 2.0 - Airworthiness, and in Figure 3-9 for total findings.

The distribution of findings rates for Part 1.0 - Operations is skewed to the left. Three of the 29 inspections produced fewer than 10 operations findings per 100 inspector labor-days, while 12 inspections had findings rates of 40 or greater. Operations findings rates ranged from a low of 0 (the best-case pilot school) to a high of 94.00 (the worst-case pilot school), indicating significant differences among pilot schools. The median findings

rate was 34.38, while the average (mean) rate was 33.99. The mean and median are near the higher end of distribution, reflecting its skewed nature.

The distribution of findings rates for Part 2.0 - Airworthiness is skewed to the right. Fifteen carriers had airworthiness findings rates below 10 findings per 100 inspector labor-days, while only four carriers had rates of 40 or greater. Airworthiness findings rates ranged from 0 to 317.50, also indicating significant differences among pilot schools. The median findings rate was 7.69, while the average (mean) rate was 25.22. The mean and the median findings rates are near the lower end of the distribution, reflecting its skewed nature. The average findings rate is higher, because the two inspections with the highest rates accounted for nearly 60% of the airworthiness findings.

The distribution of the total findings rates is derived from the combination of the findings rate distributions for Part 1.0 - Operations and Part 2.0 - Airworthiness. As such, this distribution is fairly uniform, with 12 inspections producing fewer than 40 findings per 100 inspector labor-days and eight resulting in 80 or more. FAR Part 141 NASIP in-depth inspections had total findings rates ranging from 0 to 330.00. The median total findings rate was 53.57, while the average rate was 59.21.

In conclusion, the data show that while 12 (41%) of the FAR Part 141 NASIP inspections produced relatively modest numbers of findings (fewer than 40 per 100 inspector labor-days), and 9 (31%) resulted in findings rates near the average (between 40 and 80), the remaining 8 (28%) had significantly higher total findings rates (80 or greater). This suggests that although there is general compliance with NASIP guideline standards, NASIP inspections are necessary to supplement ongoing surveillance for some FAR Part 141 certificate holders. Furthermore, because of the variation in results, the preselection of those pilot schools likely to be worse case would increase the effectiveness of the program.

TABLE 3-1. FAR PART 141 PILOT SCHOOLS
1989-1990 IN-DEPTH INSPECTIONS
FINDINGS BY PART/SECTION AND CATEGORY

PART/SECTION		CATEGORY				
1.0	OPERATIONS	1	2	3	4	TOTAL
1.1	Management	0	1	0	1	2
1.2	Ratings and Authorizations	0	0	0	2	2
1.3	Examining Authority and ACR	0	3	1	2	6
1.4	Training Course Outlines	13	11	8	10	42
1.5	Staff Qualifications	5	10	0	0	15
1.6	Records	16	3	4	1	24
1.7	Exemptions	0	0	0	0	0
1.8	Facilities	1	2	1	1	5
1.9	Airports	0	1	0	0	1
1.10	Training Aids/Simulators/Training Devices	0	1	1	0	2
1.11	Quality of Instruction	6	5	3	4	18
1.12	Advertising	3	0	0	0	3
1.13	FAR 61 Activity	0	0	0	0	0
1.14	Minimum Equipment List Procedures	0	1	0	2	3
SUBTOTAL		44	38	18	23	123
2.0	AIRWORTHINESS					
2.1	Management	0	1	0	1	2
2.2	Ratings and Authorizations	0	1	0	0	1
2.3	Personnel-Qualifications/Supervision	0	0	1	1	2
2.4	Maintenance Program/Inspection Times	4	0	1	1	6
2.5	Facilities	0	0	0	3	3
2.6	Records	37	8	3	16	64
2.7	Airworthiness Directives	13	0	0	0	13
2.8	Fueling/Servicing	0	0	0	2	2
2.9	Aircraft/Manuals/Pilot Operating Handbook	41	2	1	1	45
2.10	Inoperative Equipment/Deferred Maintenance	7	0	0	1	8
SUBTOTAL		102	12	6	26	146
TOTAL		146	50	24	49	269

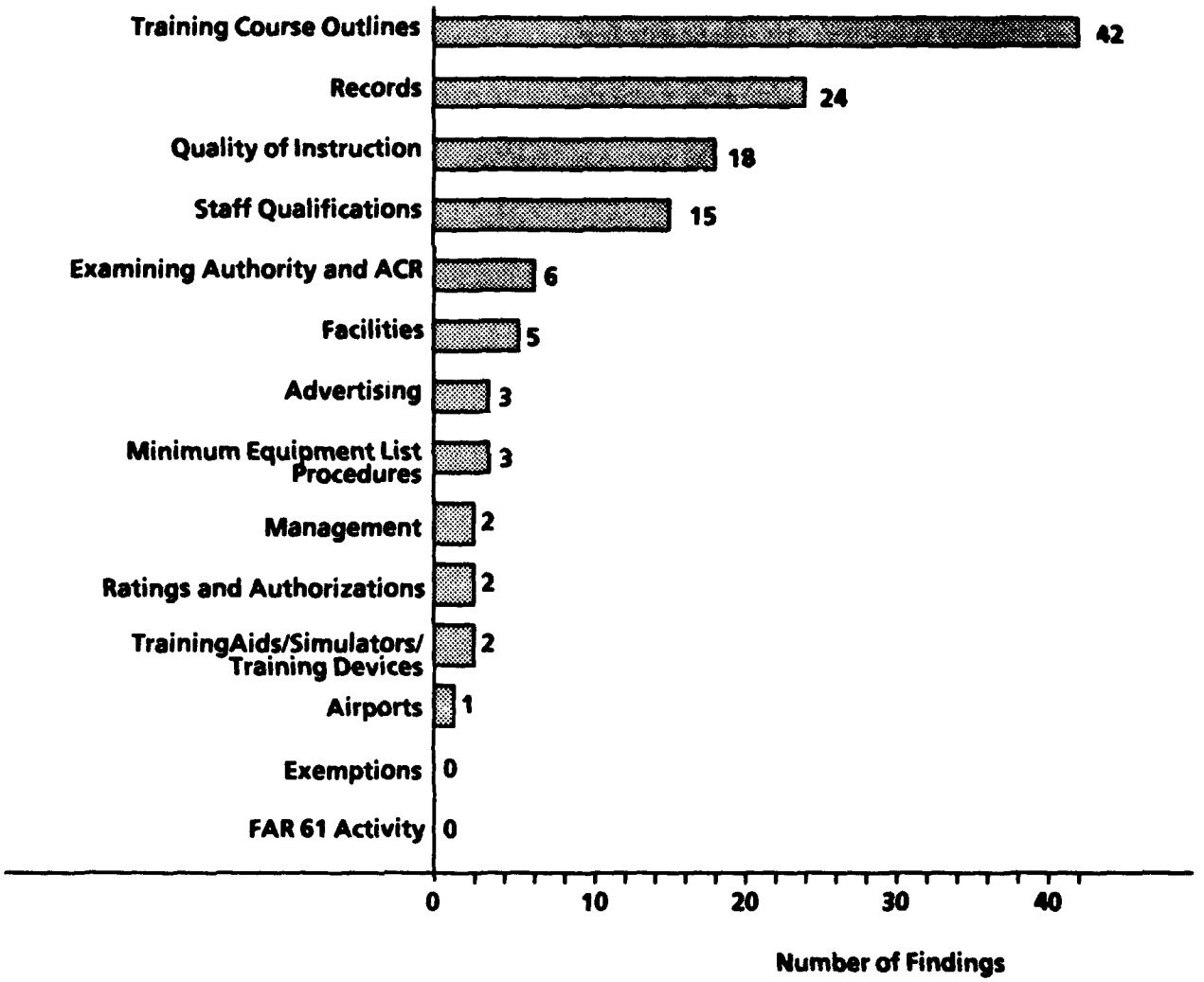

FIGURE 3-1. FAR PART 141 PILOT SCHOOLS
1989 - 1990 IN-DEPTH INSPECTIONS
NUMBER OF FINDINGS BY SECTION - OPERATIONS

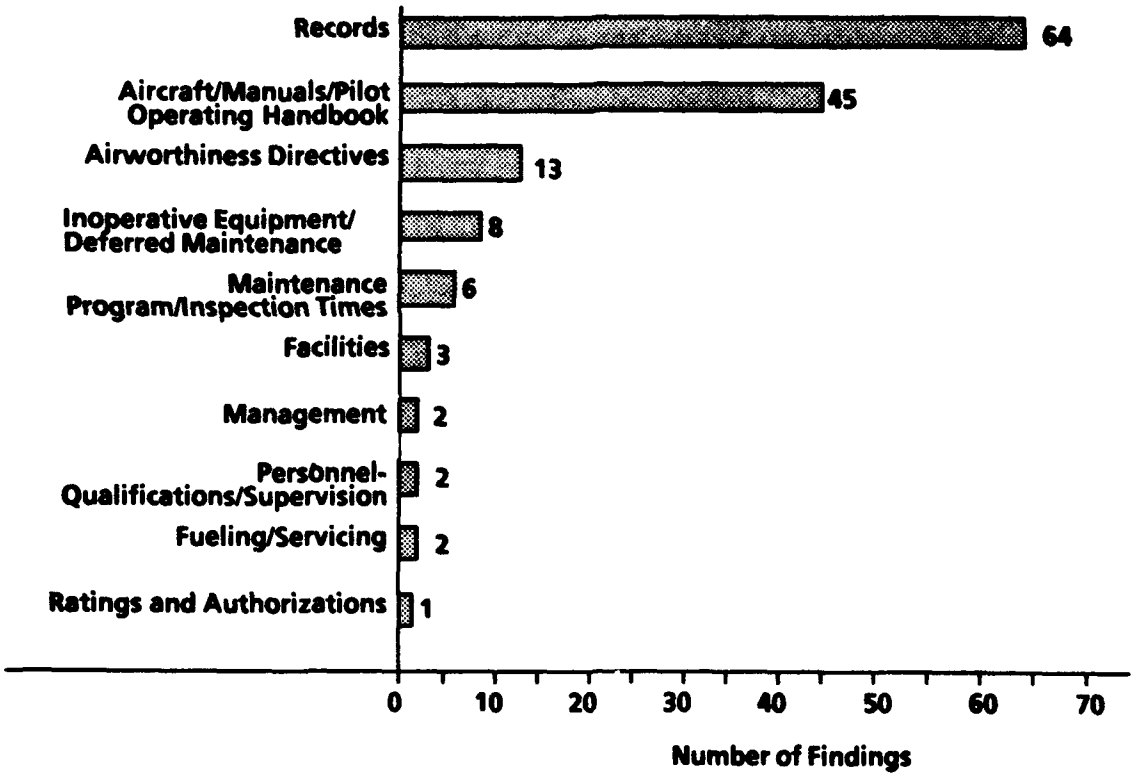

FIGURE 3-2. FAR PART 141 PILOT SCHOOLS
1989 - 1990 IN-DEPTH INSPECTIONS
NUMBER OF FINDINGS BY SECTION - AIRWORTHINESS

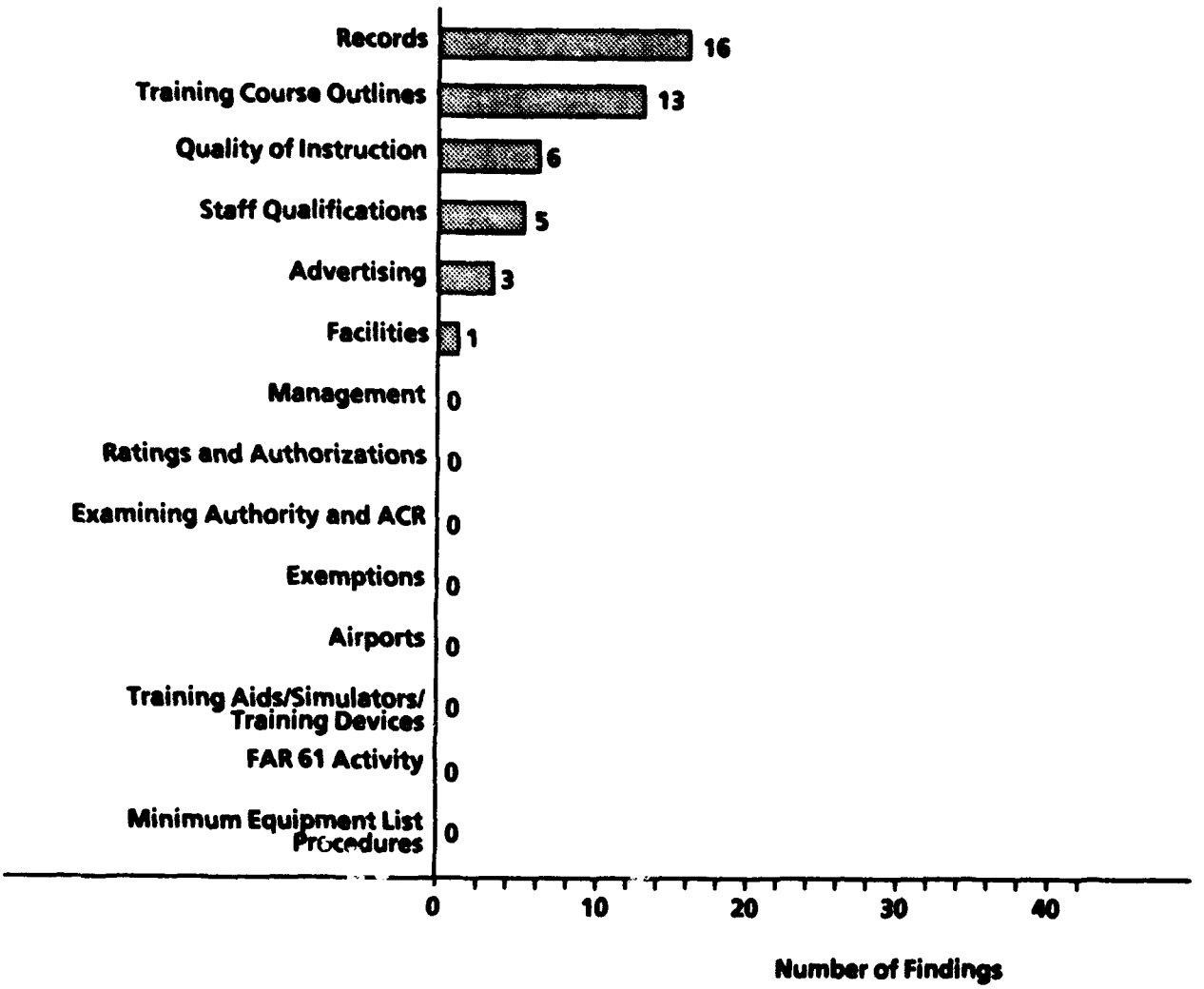

FIGURE 3-3. FAR PART 141 PILOT SCHOOLS
1989 - 1990 IN-DEPTH INSPECTIONS
NUMBER OF CATEGORY 1 FINDINGS BY SECTION - OPERATIONS

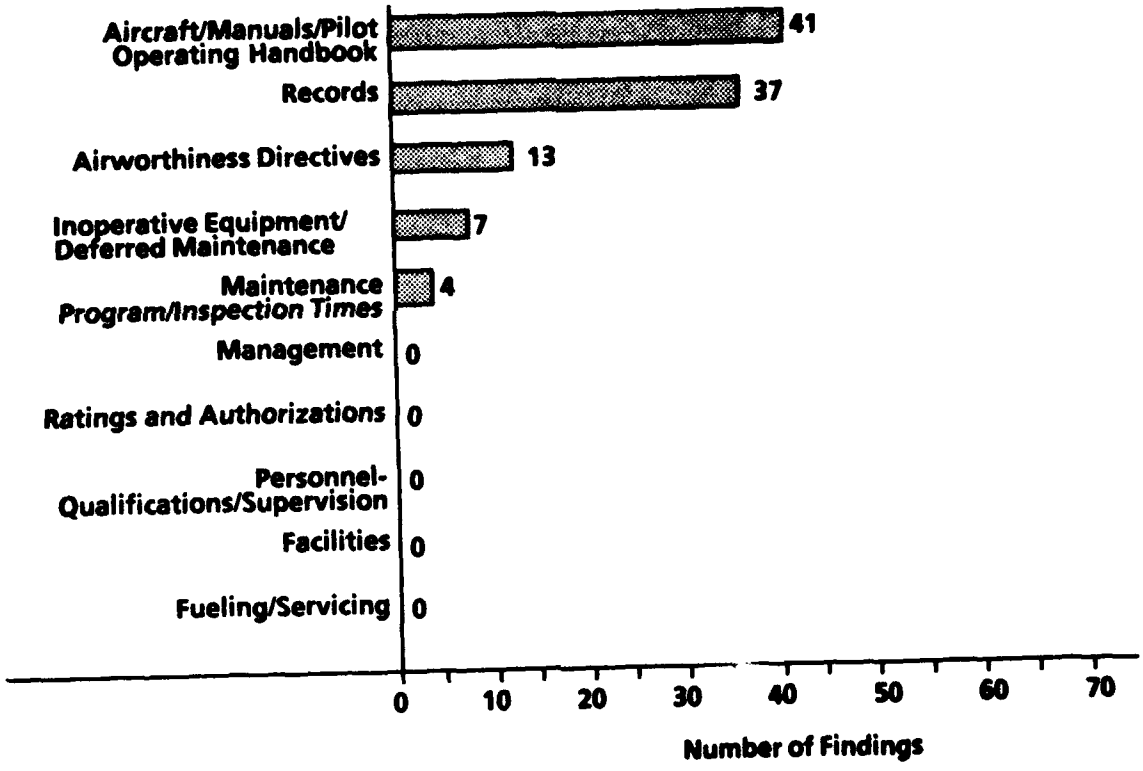

FIGURE 3-4. FAR PART 141 PILOT SCHOOLS
1989 - 1990 IN-DEPTH INSPECTIONS
NUMBER OF CATEGORY 1 FINDINGS BY SECTION - AIRWORTHINESS

TABLE 3-2. FAR PART 141 PILOT SCHOOLS
1989-1990 IN-DEPTH INSPECTIONS
NUMBER OF TIMES FARs CITED BY FAR/SUBPART AND
CATEGORY OF FINDING

FAR 141 SUBPART	CATEGORY 1	CATEGORY 2	TOTAL
A General	3	1	4
B Personnel, Aircraft, & Facilities Reqs.	23	11	34
C Training Course Outline and Curriculum	12	6	18
D Examining Authority	0	3	3
E Operating Rules	25	13	38
F Records	11	0	11
X FAR 141: Appendix	2	7	9
Y FAR 141: Subpart Unknown	0	0	0
TOTAL FAR 141	76	41	117
OTHER FARs			
23 Airw. Stds: N., U., A., & C. Cat. Airpl.	0	1	1
39 Airworthiness Directives	10	0	10
43 Maint., Prev. Maint., Rebldng., & Alter.	25	8	33
45 Identification and Registration Marking	2	0	2
65 Cert.: Airmen Other Than Flight Crewmmbrs.	1	0	1
91 General Operating and Flight Rules	64	4	68
145 Repair Stations	3	1	4
TOTAL OTHER FARs	105	14	119
TOTAL	181	55	236

TABLE 3-3. FAR PART 141 PILOT SCHOOLS
1989-1990 IN-DEPTH INSPECTIONS
NUMBER OF EIRs BY SECTION - OPERATIONS

PART/SECTION		NUMBER OF EIRs
1.0	OPERATIONS	
1.1	Management	0
1.2	Ratings and Authorizations	0
1.3	Examining Authority and ACR	0
1.4	Training Course Outline	5
1.5	Staff Qualifications	3
1.6	Records	6
1.7	Exemptions	0
1.8	Facilities	1
1.9	Airport	0
1.10	Training Aids/Simulators/Training Devices	0
1.11	Quality of Instruction	3
1.12	Advertising	3
1.13	FAR 61 Activity	0
1.14	Minimum Equipment List Procedures	0
TOTAL		21

TABLE 3-4. FAR PART 141 PILOT SCHOOLS
1989-1990 IN-DEPTH INSPECTIONS
NUMBER OF EIRs BY SECTION - AIRWORTHINESS

PART/SECTION		NUMBER OF EIRs
2.0	AIRWORTHINESS	
2.1	Management	0
2.2	Ratings and Authorizations	0
2.3	Personnel-Qualifications/Supervision	0
2.4	Maintenance Program/Inspection Times	5
2.5	Facilities	0
2.6	Records	15
2.7	Airworthiness Directives	4
2.8	Fueling/Servicing	0
2.9	Aircraft/Manuals/Pilot Operating Handbook	2
2.10	Inoperative Equipment/Deferred Maintenance	2
TOTAL		28

TABLE 3-5. FAR PART 141 PILOT SCHOOLS
NUMBER OF NASIP IN-DEPTH INSPECTIONS AND FINDINGS BY YEAR

	Year			
	1987	1988	1989-1990	TOTAL
Number of In-Depth Inspections	14	7	8	29
Number of Findings				
Operations	166	211	123	500
Airworthiness	45	160	146	351
TOTAL	211	371	269	851

TABLE 3-6. FAR PART 141 PILOT SCHOOLS
IN-DEPTH INSPECTIONS
PERCENT OF FINDINGS BY SECTION - OPERATIONS
1987-1990 AND TOTAL

OPERATIONS SECTION		1987	1988	1989-1990	TOTAL
1.1	Management	3.6	3.3	1.6	3.0
1.2	Ratings and Authorizations	4.8	2.4	1.6	3.0
1.3	Examining Authority and Airman Certification Representative (ACR)	4.2	2.4	4.9	3.6
1.4	Training Course Outlines	41.0	55.0	34.2	45.2
1.5	Staff Qualifications	7.8	9.5	12.2	9.6
1.6	Records	22.9	17.5	19.5	19.8
1.7	Exemptions	1.8	0.5	0	0.8
1.8	Facilities	1.8	0.9	4.1	2.0
1.9	Airports	0	0	0.8	0.2
1.10	Training Aids/Simulators/Training Devices	3.0	1.4	1.6	2.0
1.11	Quality of Instruction	8.5	2.4	14.7	7.4
1.12	Advertising	0.6	0	2.4	0.8
1.13	FAR 61 Activity	0	0.9	0	0.4
1.14	Minimum Equipment Lists (MELs)	0	3.8	2.4	2.2

TABLE 3-7. FAR PART 141 PILOT SCHOOLS
IN-DEPTH INSPECTIONS
PERCENT OF FINDINGS BY SECTION - AIRWORTHINESS
1987-1990 AND TOTAL

AIRWORTHINESS SECTION		1987	1988	1989-1990	TOTAL
2.1	Management	4.4	0	1.4	1.1
2.2	Ratings and Authorizations	0	2.5	0.7	1.4
2.3	Personnel-Qualifications/Supervision	4.4	0	1.4	1.1
2.4	Maintenance Program/Inspection Times	31.1	4.4	4.1	7.7
2.5	Facilities	2.2	0	2.0	1.2
2.6	Records	31.1	16.9	43.8	29.9
2.7	Airworthiness Directives	6.7	20.0	8.9	13.7
2.8	Fueling/Servicing	8.9	1.2	1.4	2.3
2.9	Aircraft/Manuals/Pilot Operating Handbook	6.7	50.0	30.8	36.5
2.10	Inoperative Equipment/Deferred Maintenance	4.5	5.0	5.5	5.1

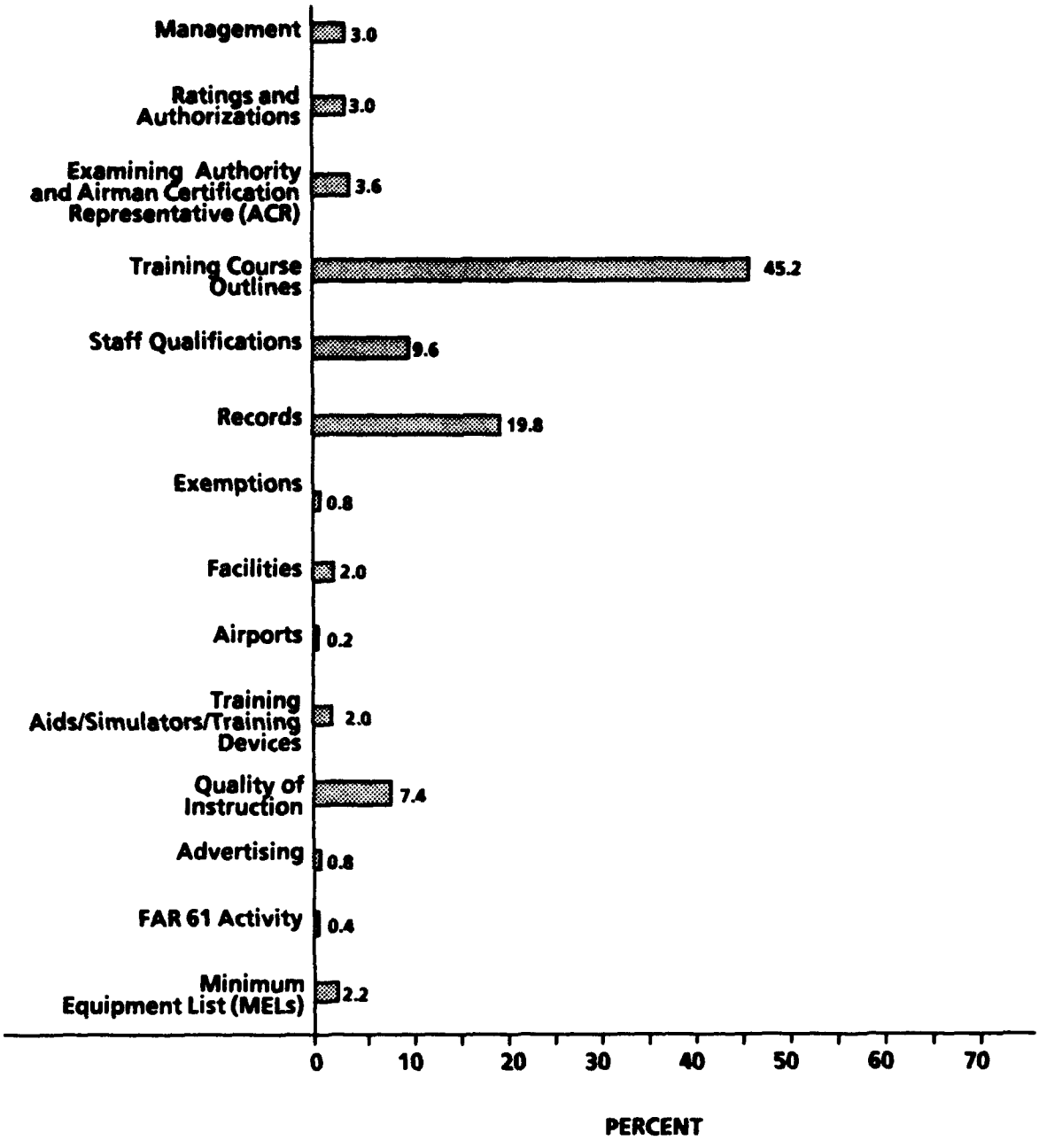

FIGURE 3-5. FAR PART 141 PILOT SCHOOLS
IN-DEPTH INSPECTIONS
PERCENT OF FINDINGS BY SECTION - OPERATIONS
TOTAL FROM 1987 - 1990

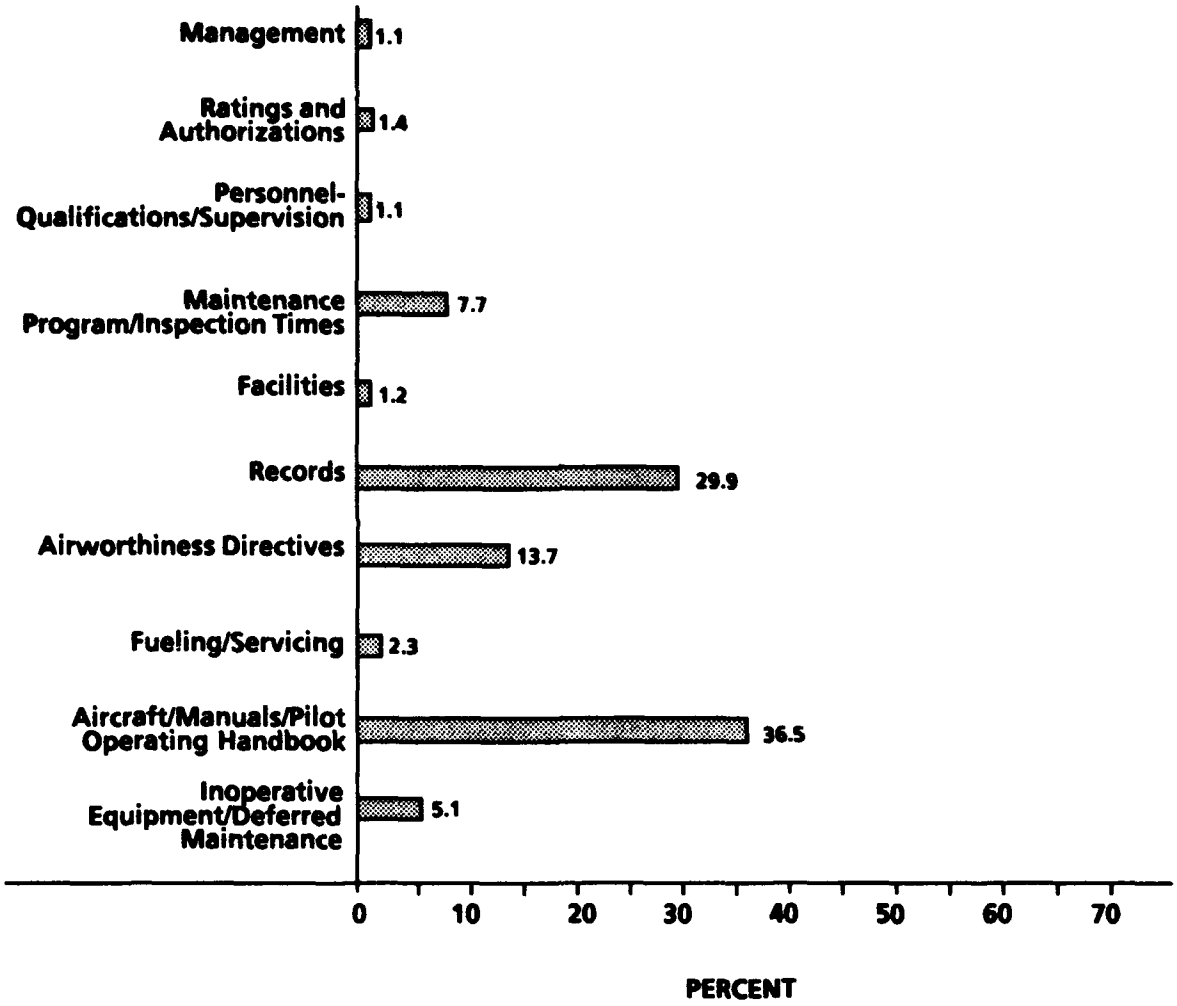

FIGURE 3-6. FAR PART 141 PILOT SCHOOLS
IN-DEPTH INSPECTIONS
PERCENT OF FINDINGS BY SECTION - AIRWORTHINESS
TOTAL FROM 1987 - 1990

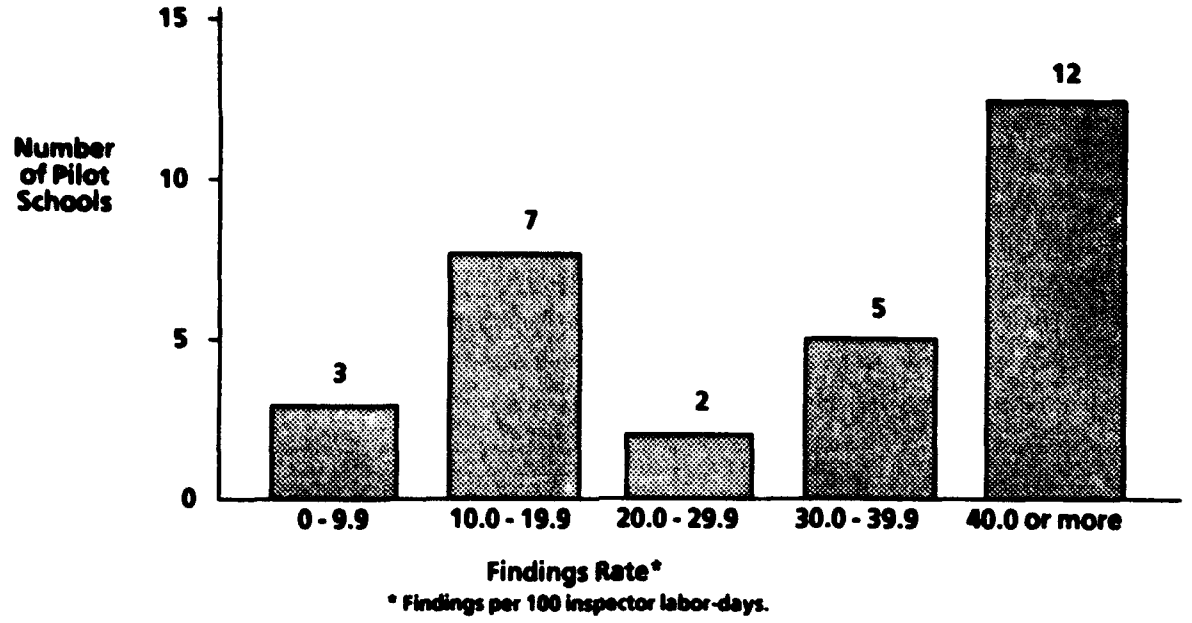

FIGURE 3-7. FAR PART 141 PILOT SCHOOLS
1987 - 1990 IN-DEPTH INSPECTIONS
NORMALIZED RESULTS - OPERATIONS

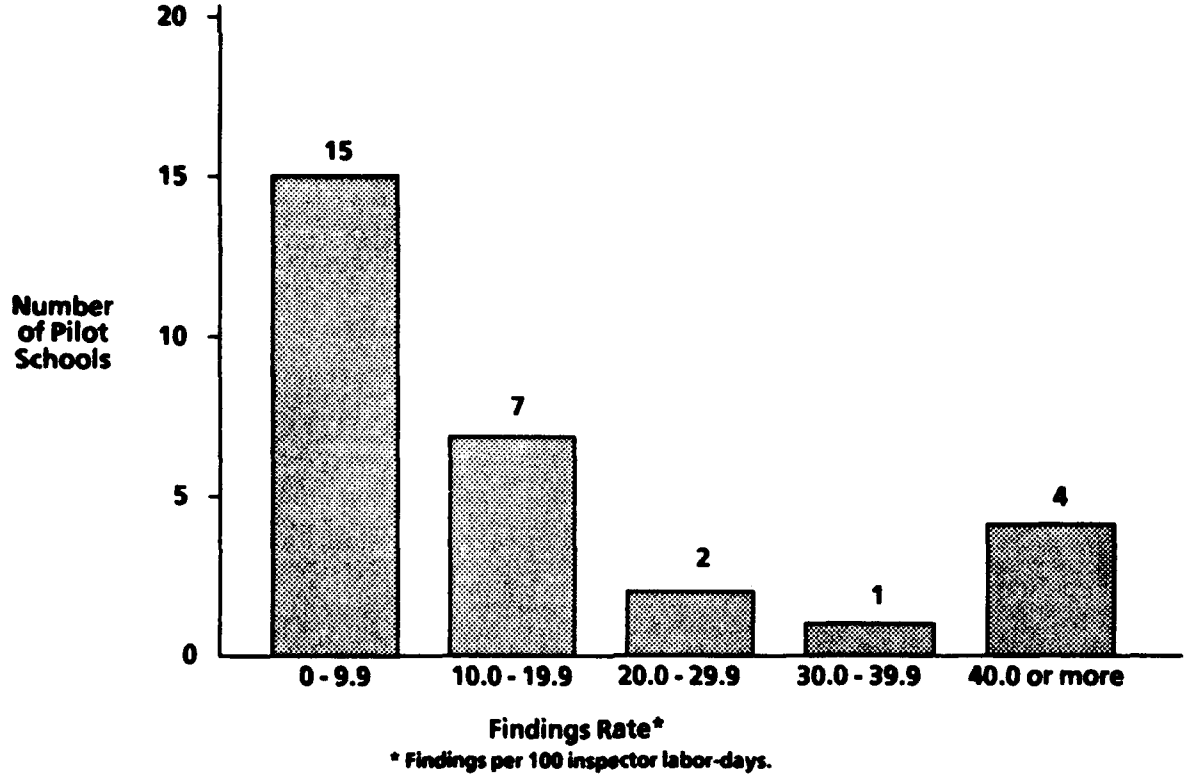

FIGURE 3-8. FAR PART 141 PILOT SCHOOLS
1987 - 1990 IN-DEPTH INSPECTIONS
NORMALIZED RESULTS - AIRWORTHINESS

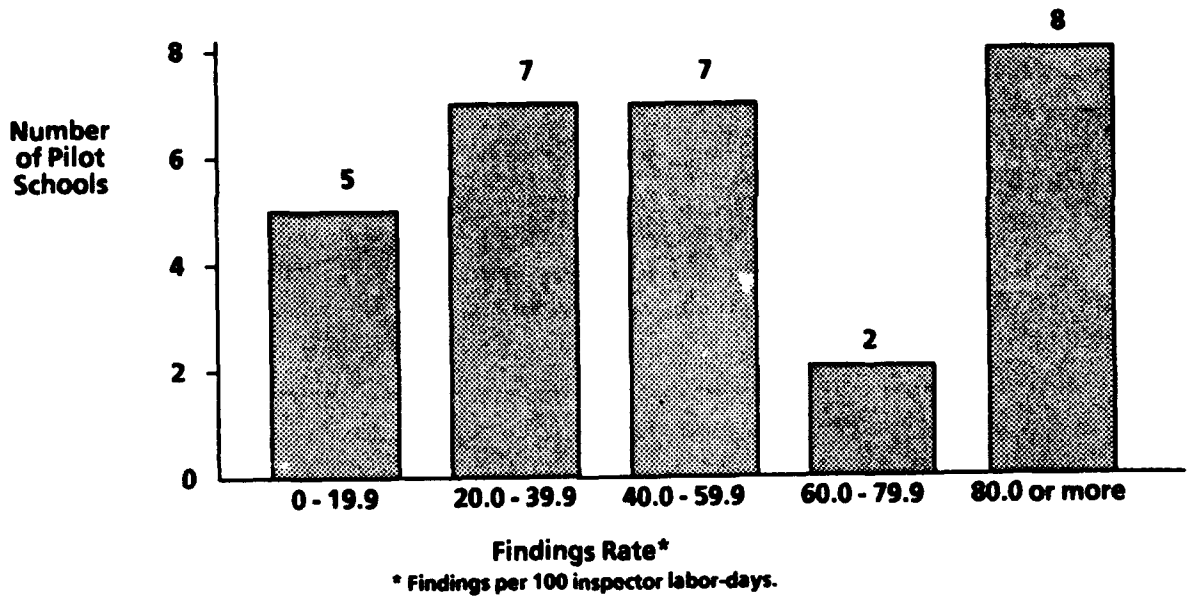

FIGURE 3-9. FAR PART 141 PILOT SCHOOLS
1987 - 1990 IN-DEPTH INSPECTIONS
NORMALIZED RESULTS - TOTAL FINDINGS

4. NASIP PART 145 REPAIR STATION INSPECTIONS

This chapter contains descriptions of: 1) the methods and procedures used, and 2) the results obtained in the FY90 NASIP inspections of FAR Part 145 repair stations.

Since there was only one FAR Part 145 in-depth inspection conducted in FY90, these results have been combined with the FY89 results for FAR Part 145. This chapter contains descriptions of the combined FY89 and FY90 in-depth inspection results for FAR Part 145. Additionally, there was only one FAR Part 145 focused inspection conducted in FY90. The results of this inspection are not included in this report.

In addition to the inspections cited above, a FAR Part 145 special certification inspection was conducted as part of the FY90 NASIP. The report from this inspection is written in a format that is different from the in-depth FAR Part 145 NASIP inspection reports. The results of this inspection, therefore, can not be included with the inspections summarized in this report.

4.1 PART 145 IN-DEPTH INSPECTIONS

4.1.1 Methods and Procedures

4.1.1.1 Guidelines - The objective of in-depth inspections is to determine repair station compliance with FARs, FAA-approved company procedures and policies, and written FAA guidance material. The FAR Part 145 Interim Guidance document contains a list of criteria for determining this compliance. Unlike the criteria lists in the other Interim Guidance documents for the 1990 NASIP, this list is not organized by the sections to be contained in the final report. The list is not intended to be all-inclusive.

The FAR Part 145 Interim Guidance document specifies that each NASIP FAR Part 145 in-depth inspection team normally consist of a team leader, airworthiness inspectors, and, if necessary, representatives from an Aircraft Certification Office (ACO) and/or a Manufacturing Inspection District Office (MIDO). The team leader is responsible for planning the inspection and indoctrinating the team members in the systems and procedures used by the repair station to be inspected. The Interim Guidance document specifies that each NASIP FAR Part 145 inspection team present briefings to the repair station before and after the inspection. In addition, following the inspection, the team is to write a final report in accordance with the format shown in the document. The format indicates the sections to be included in the report.

There were eight FAR Part 145 repair stations that received NASIP inspections in FY89 and FY90. The reports written by the inspection teams conform to the format in the Interim Guidance document, with a few minor exceptions.

4.1.1.2 Methods and Procedures Used - The in-depth inspection of each repair station consisted of one part: Airworthiness. This part was broken down into the following 20 sections:

2.0 AIRWORTHINESS

- 2.1 Management
- 2.2 Certificate/Rating
- 2.3 Manuals and Procedures
- 2.4 Training Programs
- 2.5 Records Systems
- 2.6 Maintenance Facilities
- 2.7 Contractual Arrangements
- 2.8 MEL/Deferred Maintenance
- 2.9 Airworthiness Directives Compliance
- 2.10 Maintenance Programs
- 2.11 Maintenance Inspection System and Required Inspection Items
- 2.12 Mechanical Reporting Procedures
- 2.13 Major Repair and Alteration Conformity
- 2.14 Fueling and Servicing
- 2.15 Precision Tool Calibration
- 2.16 Technical Library
- 2.17 Life Limited Parts
- 2.18 Nondestructive Inspection Shop
- 2.19 Stores and Shelf Life Limits
- 2.20 SFAR 36 Program

The first 14 sections (Sections 2.1 - 2.14) are listed in the Interim Guidance document, while the last six sections (Sections 2.15 - 2.20) are not.

The following are descriptions of the methods and procedures used in each of the above sections.

2.0 AIRWORTHINESS

The following airworthiness sections appeared in (or were applicable to) at least four of the eight FAR Part 145 repair station in-depth inspection reports. The number of reports in which each section appeared is indicated in parentheses after the section title.

2.1 Management (8)

The inspection teams reviewed the qualifications, duties, and responsibilities of management personnel to determine compliance with FARs 145.39 and 145.43. Team members interviewed management personnel, and reviewed personnel records (to obtain information on qualifications) and the repair stations' inspection procedures manuals (to obtain data on duties and responsibilities).

2.2 Certificate/Rating (8)

The repair stations' certificates and Operations Specifications were reviewed for compliance with FAR 145 and Order 8300.9. The repair stations were inspected to determine if they had the equipment, personnel, tooling, facilities, and technical data to perform the work for the ratings held.

2.3 Manuals and Procedures (8)

The inspection teams reviewed the repair stations' inspection procedures manuals to determine compliance with FAR 145, Order 8300.9, and Advisory Circular 145-3 (Guide For Developing and Evaluating Repair Station Inspection Procedures Manuals).

2.4 Training Programs (8)

The repair stations' training programs were reviewed for compliance with FAR 145.39. Team members reviewed employee training records and interviewed company personnel.

2.5 Records Systems (8)

The inspection teams reviewed randomly selected maintenance records to determine compliance with FARs 145.57 and 145.61, and the repair stations' inspection procedures manuals.

2.6 Maintenance Facilities (8)

The inspection teams inspected the repair stations' maintenance facilities to determine compliance with FARs 145.35 and 145.37. Team members interviewed management, supervisory, technical, and inspection personnel. Items inspected included housing, work areas, parts, and technical data.

2.7 Contractual Arrangements (7)

The inspection teams reviewed the contract procedures described in the repair station manuals, and inspected samples of components repaired by subcontractors, to determine compliance with FAR 145 and Advisory Circular 145-3.

2.9 Airworthiness Directives Compliance (8)

The repair stations were inspected to determine if they had complete and current sets of airworthiness directives on file. Team members reviewed repair station airworthiness directives compliance procedures by reviewing maintenance records and inspecting aircraft.

2.11 Maintenance Inspection System and Required Inspection Items (6)

The inspection teams examined the repair stations' required inspection items lists for content, form, and currency. Team members reviewed the repair stations' inspection procedures manuals, work orders, and contract records to determine compliance with FAR 145, Order 8300.9, and Advisory Circular 145-3.

2.12 Mechanical Reporting Procedures (8)

The repair stations' Malfunction or Defect Report reporting systems were inspected to determine compliance with FAR 145.63 and Order 8300.9.

2.13 Major Repair and Alteration Conformity (8)

The inspection teams reviewed records, including work orders and Form 337s, of major repairs and alterations to determine compliance with FARs 145 and 43, and the repair stations' inspection procedures manuals. Repairs were reviewed to verify that they had been performed using FAA-approved technical data.

2.15 Precision Tool Calibration (4)

The inspection teams examined random samples of the repair stations' precision tools and the corresponding calibration records to determine compliance with FAR 145.47 and the repair stations' inspection procedures manuals.

Since the following airworthiness sections appeared in (or were applicable to) fewer than four FAR Part 145 repair station in-depth inspection reports, the methods and procedures used in these sections are not described in this report. The number of reports in which each section appeared is indicated in parentheses.

2.8 MEL/Deferred Maintenance (0)
2.10 Maintenance Programs (0)
2.14 Fueling and Servicing (2)
2.16 Technical Library (2)
2.17 Life Limited Parts (1)
2.18 Nondestructive Inspection Shop (1)
2.19 Stores and Shelf Life Limits (2)
2.20 SFAR 36 Program (1)

4.1.2 Results

The initial findings of the inspections are summarized in this section. Initial inspection findings may or may not have been substantiated. Enforcement actions which were recommended may or may not have resulted in sanctions, depending on the outcome of subsequent reviews. The sanctions imposed and corrective actions taken varied, depending on the nature and severity of the violations.

4.1.2.1 Findings - Table 4-1 indicates the distribution of findings by part, section, and category for all eight FAR Part 145 repair stations that received in-depth inspections in 1989-1990. A total of 294 findings was recorded, an average of 36.8 per repair station. The number of findings issued in the FAR Part 145 in-depth inspections ranged from 11 to 58. Category 1 findings constituted 38.4% of the total, while Categories 2, 3, and 4 accounted for 24.2%, 23.5%, and 13.9% of the findings, respectively.

Figure 4-1 shows the total number of findings by section in descending order. Figure 4-2 shows the comparable distribution for Category 1 findings (i.e., findings resulting in EIRs) only.

4.1.2.2 FARs Cited - Table 4-2 shows the number of times that specific FARs were cited in the findings. The citings are broken down by 1) the FAR 145 subpart (see Appendix 6 for Part 145 subpart definitions) or other FAR that was cited, and 2) category of finding.

There were 229 instances of FARs being cited, 184 (80.3%) of which involved FAR 145. Of the total of 229 citings, 64.2% involved Category 1 findings, while 35.8% involved Category 2 findings.

The FAR 145 subparts that were cited most frequently were Subpart B - Domestic Repair Stations (154 times) and Subpart A - General (27 times). The FAR other than FAR 145 that was cited most often was FAR 43 - Maintenance, Preventative Maintenance, Rebuilding, and Alteration (34 times). (Note: In Table 4-2, "S36" refers to Special Federal Aviation Regulation (SFAR) 36.)

The FAR 145 subparts that were cited most frequently in Category 1 findings were Subpart B (88 times) and Subpart A (21 times). The FAR other than FAR 145 that was cited most often in Category 1 findings was FAR 43 (29 times).

4.1.2.3 Enforcement Actions (EIRs) Initiated - The total number of different EIRs recommended in the FAR Part 145 repair station inspection reports was 49. Table 4-3 indicates the number of different EIRs by section. The section with the most different EIRs was Section 2.5 - Records Systems (26).

It should be noted that the regions sometimes differed in the assignment of EIRs. In some cases, a single finding indicating a violation resulted in a single EIR. In other cases, a single EIR covered more than one violation as several findings were grouped under one enforcement action. Therefore, the total in Table 4-3 is greater than the total number of different EIRs because any EIR that was listed in findings in more than one section was counted once in each of those sections.

4.1.2.4 Comparison of NASIP Findings by Year - NASIP in-depth inspections of FAR Part 145 repair stations have been conducted in each of the 5 years of the program. In 1986, the first NASIP year, 20 FAR Part 145 turbine engine repair facilities were inspected. The results from the 1986 inspections were reported and summarized in formats completely different from the format specified in the Interim Guidance document, which was first issued for the 1987 NASIP. Therefore, the 1986 results cannot be compared with the results from later years. In 1987, 11 FAR Part 145 repair station inspections were performed, resulting in 250 findings. (Note: The results of two other inspections could not be summarized.) In the succeeding years, there were six inspections with 267 findings in 1988 and eight inspections with 294 findings in 1989-1990. (Note: The results of another inspection could not be summarized.) Over the past 4 years of the NASIP, there were 25 FAR Part 145 repair station in-depth inspections, resulting in 751 findings. Table 4-4 shows the number of NASIP inspections and findings for the years 1987-1990.

The comparison of findings by year was accomplished by examining the yearly distributions of findings across the inspection areas (sections). For each year, the percentage of the total number of findings in each section was determined. Comparisons then were made among sections, and among years for the same sections. Table 4-5 shows these distributions. The last column contains the percentage distributions for the 4-year totals. Figure 4-3 illustrates the distributions of the totals in bar chart form.

The distributions of findings by section generally were consistent over the 4-year period. The two sections with the most findings during the 3-year period were Section 2.3 - Manuals and Procedures and Section 2.5 - Records Systems, with 43.4% of the findings. Four other sections (Sections 2.2 - Certificate/Rating, 2.4 - Training Programs, 2.6 - Maintenance Facilities, and 2.13 - Major Repair and Alteration Conformity) collectively accounted for 36.8% of the findings. The remaining 14 sections accounted for 19.8% of the findings. In 1989-1990, the relative number of findings decreased significantly from 1988 in Section 2.6 - Maintenance Facilities. On the other hand, the relative number of findings in Section 2.15 - Precision Tool Calibration was a significant change from 1988, since this section did not appear in NASIP inspection reports prior to 1989-1990.

4.1.2.5 Analysis of Normalized Results - In order to determine if NASIP results varied significantly among in-depth inspections, normalized findings rates, which measure the numbers of findings per 100 inspector labor-days, were calculated. This rate was calculated for each certificate holder inspected by dividing the total number of findings by the number of labor-days spent on that inspection and multiplying the results by 100. This normalizing procedure makes it possible to compare results among certificate holders inspected under the same guidelines, but with different levels of inspector effort. Due to the small number of different inspections in any given year, these findings rates were calculated for the entire 4-year sample of 25 FAR Part 145 repair station in-depth inspections, in order to obtain enough observations for the distribution. The distribution of these rates shows the variation in the relative performance of the inspected certificate holders. The lower the rate, the better the performance, since a low rate indicates fewer adverse findings per 100 hours of inspector effort. The distribution of these rates is shown in Figure 4-4.

The distribution of the total findings rates is skewed to the left. Eight inspections produced fewer than 40 findings per 100 inspector labor-days and eight resulted in 80 or more. However, five inspections had findings rates greater than 120, including three with rates of 200 or more. FAR Part 145 NASIP in-depth inspections had total findings rates ranging from 2.50 to 260.00. The median total findings rate was 60.00, while the average rate was 53.64.

In conclusion, the data show that while eight (32%) of the FAR Part 145 NASIP inspections produced relatively modest numbers of findings (fewer than 40 per 100 inspector labor-days), and nine (36%) resulted in findings rates near the average (between 40 and 80), the remaining eight (32%) had significantly higher total findings rates (80 or greater). This suggests that, although there is general compliance with NASIP guideline standards, NASIP inspections are necessary to supplement ongoing surveillance for some FAR Part 145 certificate holders. Furthermore, because of the variation in results, the preselection of those repair stations likely to be worse case would increase the effectiveness of the program.

TABLE 4-1. FAR PART 145 REPAIR STATIONS
1989-1990 IN-DEPTH INSPECTIONS
FINDINGS BY PART/SECTION AND CATEGORY

PART/SECTION		CATEGORY				
2.0	AIRWORTHINESS	1	2	3	4	TOTAL
2.1	Management	8	1	0	0	9
2.2	Certificate/Rating	1	12	9	4	26
2.3	Manuals and Procedures	21	26	13	25	85
2.4	Training Programs	5	4	7	4	20
2.5	Records Systems	34	4	13	1	52
2.6	Maintenance Facilities	9	10	6	1	26
2.7	Contractual Arrangements	2	4	1	0	7
2.8	MEL/Deferred Maintenance	0	0	0	0	0
2.9	Airworthiness Directive Compliance	4	3	0	0	7
2.10	Maintenance Programs	0	0	0	0	0
2.11	Maint. Insp. System and Req. Insp. Items	2	0	2	1	5
2.12	Mechanical Reporting Procedures	4	2	1	0	7
2.13	Major Repair and Alteration Conformity	13	1	0	1	15
2.14	Fueling and Servicing	0	0	0	0	0
2.15	Precision Tool Calibration	5	1	14	0	20
2.16	Technical Library	1	2	0	0	3
2.17	Life Limited Parts	0	0	1	0	1
2.18	Nondestructive Inspection Shop	1	0	0	0	1
2.19	Stores and Shelf Life Limits	3	0	2	4	9
2.20	SFAR 36 Program	0	1	0	0	1
TOTAL		113	71	69	41	294

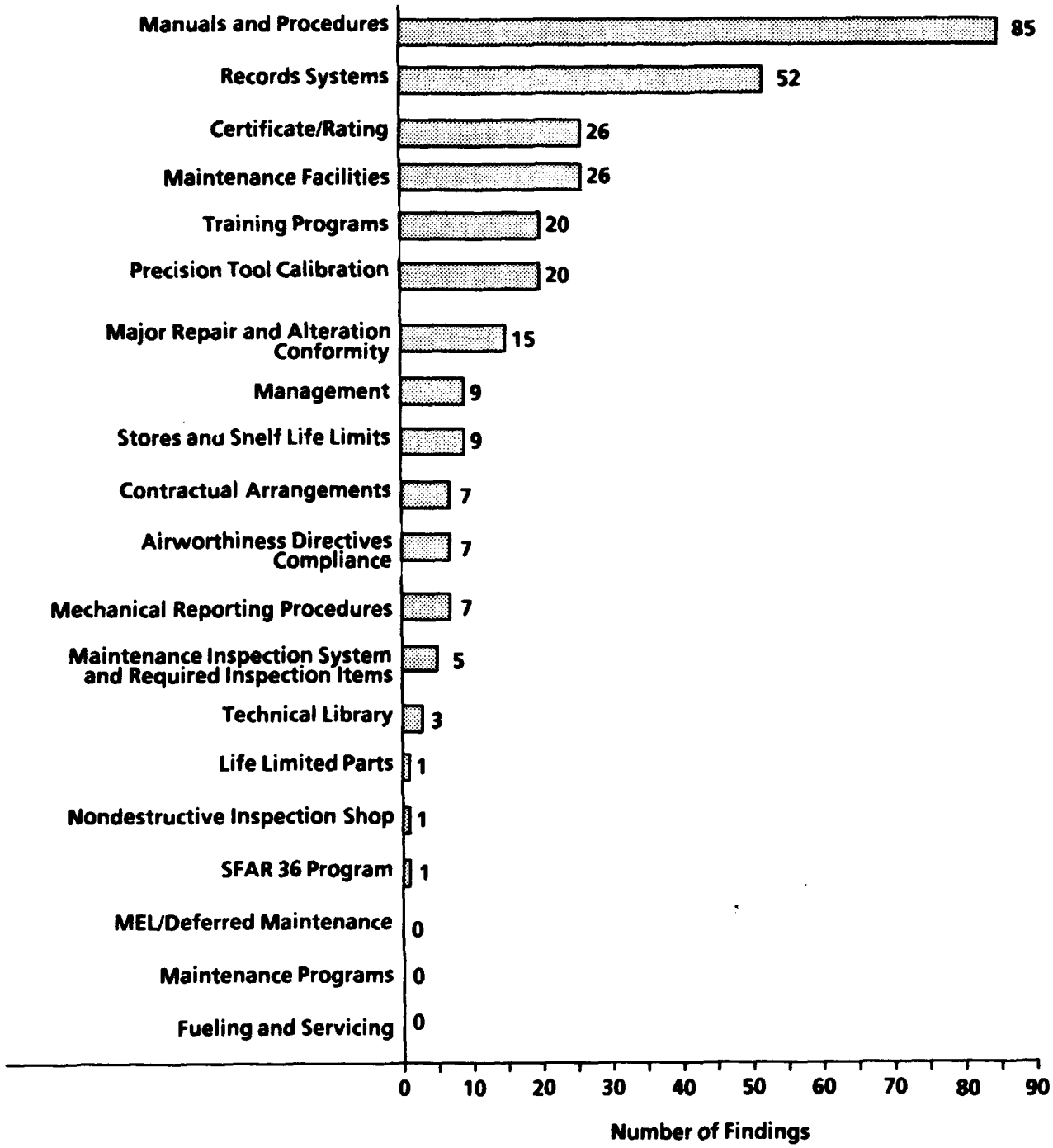

FIGURE 4-1. FAR PART 145 REPAIR STATIONS
1989 - 1990 IN-DEPTH INSPECTIONS
NUMBER OF FINDINGS BY SECTION - AIRWORTHINESS

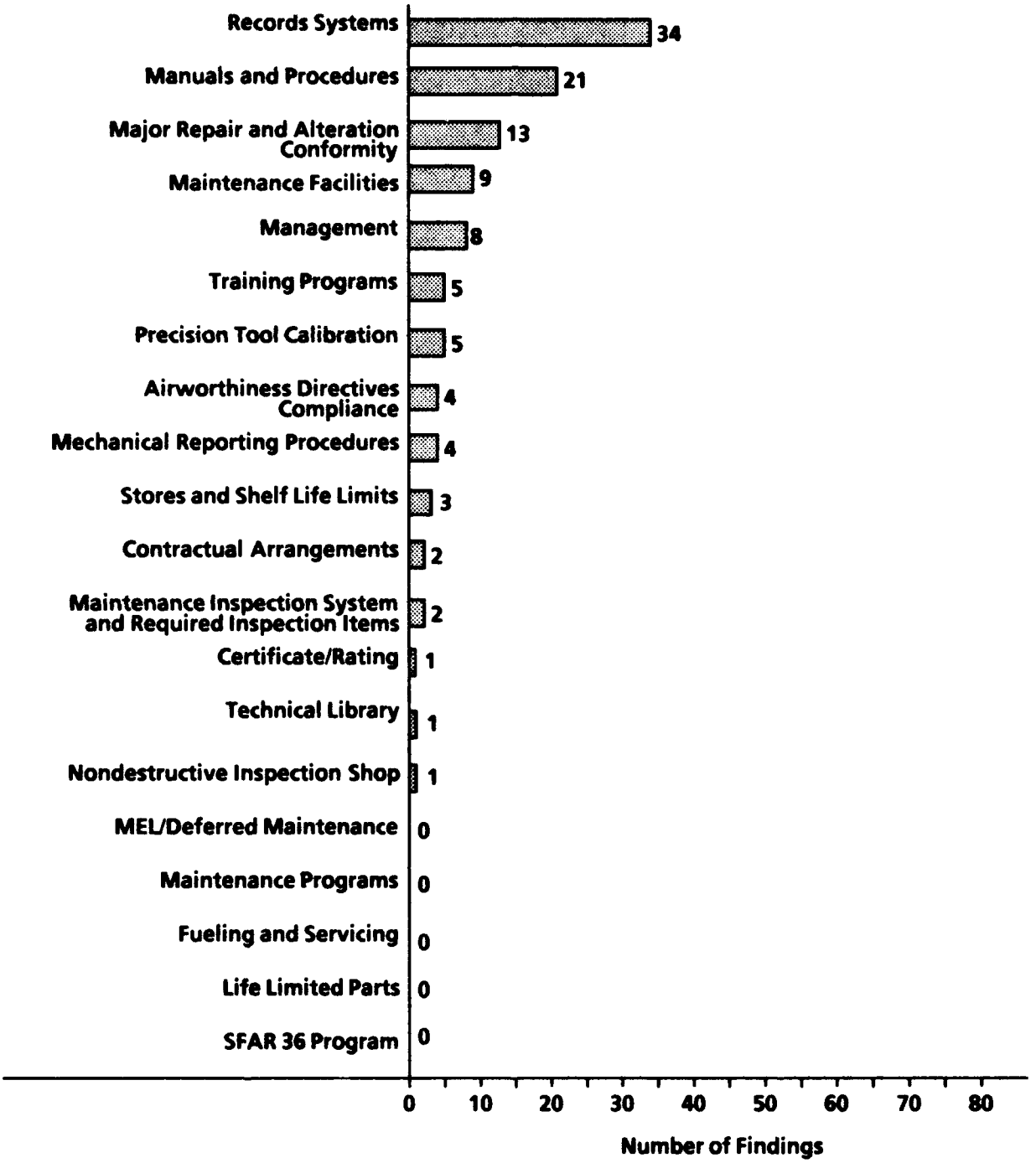

FIGURE 4-2. FAR PART 145 REPAIR STATIONS
1989 - 1990 IN-DEPTH INSPECTIONS
NUMBER OF CATEGORY 1 FINDINGS BY SECTION - AIRWORTHINESS

TABLE 4-2. FAR PART 145 REPAIR STATIONS
1989-1990 IN-DEPTH INSPECTIONS
NUMBER OF TIMES FARs CITED BY FAR/SUBPART AND
CATEGORY OF FINDING

FAR 145 SUBPART	CATEGORY 1	CATEGORY 2	TOTAL
A General	21	6	27
B Domestic Repair Stations	88	66	154
C Foreign Repair Stations	0	0	0
D Limited Rating for Manufacturers	0	0	0
X FAR 145: Appendix	1	1	2
Y FAR 145: Subpart Unknown	1	0	1
TOTAL FAR 145	111	73	184
OTHER FARs			
21 Cert. Procedures for Products and Parts	3	0	3
43 Maint., Prev. Maint., Rebldng., & Alter.	29	5	34
65 Cert.: Airmen Other Than Flight Crewmmbrs.	1	2	3
91 General Operating and Flight Rules	1	0	1
121 Ce. & Op.: D., F., & S.A.C. & C.O. of L.A.	2	0	2
S36 Technical Data for Major Repairs	0	1	1
TOTAL OTHER FARs	36	9	45
TOTAL	147	82	229

TABLE 4-3. FAR PART 145 REPAIR STATIONS
1989-1990 IN-DEPTH INSPECTIONS
NUMBER OF EIRs BY SECTION - AIRWORTHINESS

PART/SECTION		NUMBER OF EIRs
2.0	AIRWORTHINESS	
2.1	Management	3
2.2	Certificate/Rating	1
2.3	Manuals and Procedures	5
2.4	Training Programs	3
2.5	Records Systems	26
2.6	Maintenance Facilities	3
2.7	Contractual Arrangements	1
2.8	MEL/Deferred Maintenance	0
2.9	Airworthiness Directives Compliance	3
2.10	Maintenance Programs	0
2.11	Maint. Inspection System & Required Inspection Items	1
2.12	Mechanical Reporting Procedures	2
2.13	Major Repair and Alteration Conformity	5
2.14	Fueling and Servicing	0
2.15	Precision Tool Calibration	4
2.16	Technical Library	1
2.17	Life Limited Parts	0
2.18	Nondestructive Inspection Shop	1
2.19	Stores and Shelf Life Limits	3
2.20	SFAR 36 Program	0
TOTAL		62

TABLE 4-4. FAR PART 145 REPAIR STATIONS
NUMBER OF NASIP IN-DEPTH INSPECTIONS AND FINDINGS BY YEAR

	Year			
	1987	1988	1989-1990	TOTAL
Number of In-Depth Inspections	11*	6	8**	25
Number of Findings	250	207	294	751

*There were a total of 13 inspections performed. However, the results of two inspections could not be summarized

**There were a total of 9 inspections performed. However, the results of one inspection could not be summarized

TABLE 4-5. FAR PART 145 REPAIR STATIONS
IN-DEPTH INSPECTIONS
PERCENT OF FINDINGS BY SECTION - AIRWORTHINESS
1987-1990, AND TOTAL

AIRWORTHINESS SECTION	1987	1988	1989-1990	TOTAL
2.1 Management	4.0	3.4	3.1	3.5
2.2 Certificate/Rating	13.2	7.2	8.8	9.9
2.3 Manuals and Procedures	20.8	30.4	28.9	26.6
2.4 Training Programs	7.6	10.6	6.8	8.1
2.5 Records Systems	16.8	15.5	17.7	16.8
2.6 Maintenance Facilities	8.8	14.5	8.9	10.4
2.7 Contractual Arrangements	2.4	2.4	2.4	2.4
2.8 MEL/Deferred Maintenance	0.4	0	0	0.1
2.9 Airworthiness Directives Compliance	2.4	3.4	2.4	2.6
2.10 Maintenance Programs	0	0	0	0
2.11 Maintenance Inspection System and Required Inspection Items	4.8	6.3	1.7	4.0
2.12 Mechanical Reporting Procedures	3.6	0.5	2.4	2.3
2.13 Major Repair and Alteration Conformity	14.4	5.8	5.1	8.4
2.14 Fueling and Servicing	0.8	0	0	0.3
2.15 Precision Tool Calibration	0	0	6.8	2.7
2.16 Technical Library	0	0	1.0	0.4
2.17 Life Limited Parts	0	0	0.3	0.1
2.18 Nondestructive Inspection Shop	0	0	0.3	0.1
2.19 Stores and Shelf Life Limits	0	0	3.1	1.2
2.20 SFAR 36 Program	0	0	0.3	0.1

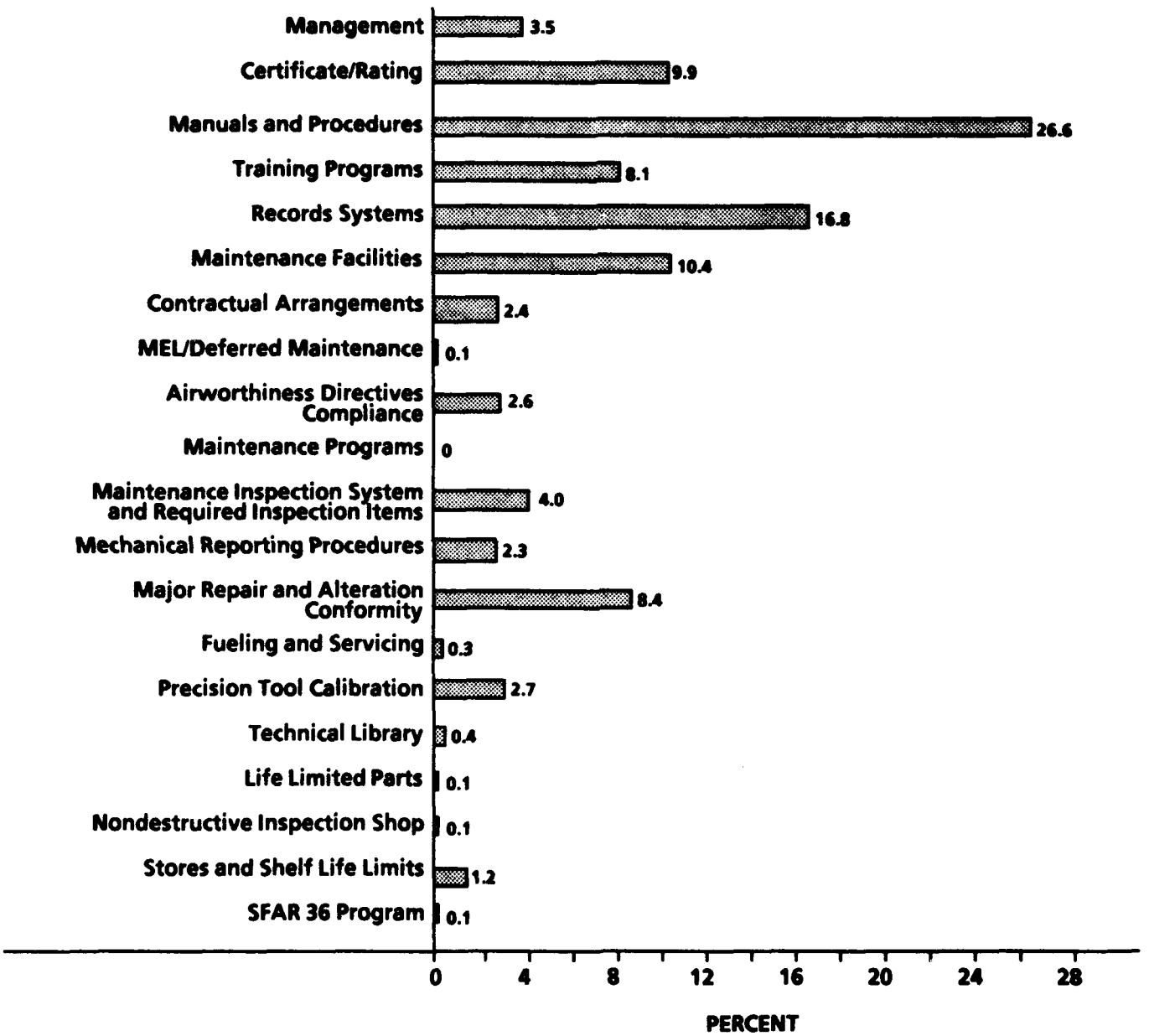

FIGURE 4-3. FAR PART 145 REPAIR STATIONS
IN-DEPTH INSPECTIONS
PERCENT OF FINDINGS BY SECTION - AIRWORTHINESS
TOTAL FROM 1987 - 1990

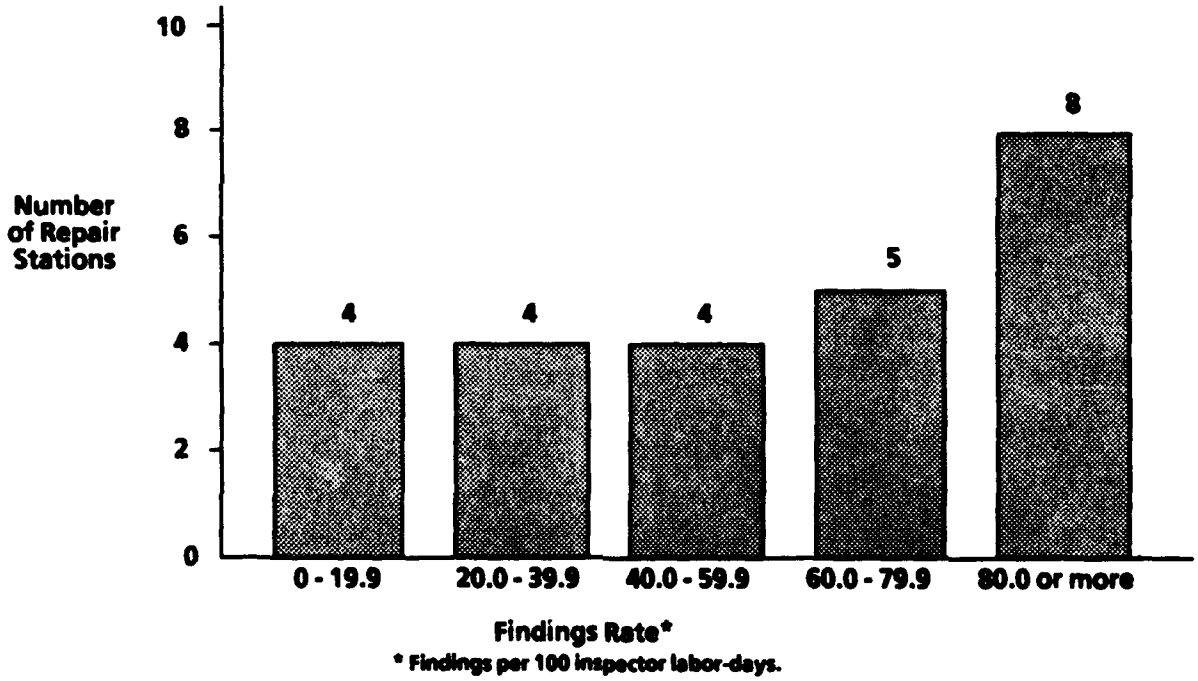

FIGURE 4-4. FAR PART 145 REPAIR STATIONS
1987 - 1990 IN-DEPTH INSPECTIONS
NORMALIZED RESULTS - AIRWORTHINESS

APPENDIX 1

FLIGHT STANDARDS NATIONAL AVIATION SAFETY
INSPECTION PROGRAM ORDER 8000.68

ORDER

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

8000.68

2/6/89

SUBJ: FLIGHT STANDARDS NATIONAL AVIATION SAFETY INSPECTION PROGRAM

1. PURPOSE. This order prescribes the Flight Standards National Aviation Safety Inspection Program (NASIP) for special, indepth inspections of selected air carriers, air operators, and air agencies.

2. DISTRIBUTION. This order is distributed to the Associate Administrator for Regulation and Certification; to the branch level in the Flight Standards Service and Office of Civil Aviation Security; to the division level in the Offices of Budget, Chief Counsel, Public Affairs, Personnel and Technical Training, and Aviation Safety; to the division level in the Aircraft Certification Service; to the branch level in the regional Flight Standards Divisions; to the division level of the Regional Counsel, Public Affairs, Personnel Management and Human Resource Management Divisions, Budget, Civil Aviation Security, and Aircraft Certification Directorates in the regions; to all Flight Standards and Civil Aviation Security field offices; to all Aircraft Certification Offices; and to the Flight Standards Branch at the Aeronautical Center.

3. BACKGROUND. On January 14, 1986, the Secretary of Transportation directed the Federal Aviation Administration (FAA) to conduct special inspections of airlines operating under military charter. Those inspections were part of the Flight Standards National Inspection Plan for 1986. That plan called for special, indepth inspections of air carriers and air agencies. It was the first step toward institutionalizing the inspection methodology developed for the 1984 National Air Transportation Inspection Program. The NASIP encompasses inspections of:

a. Federal Aviation Regulations (FAR) Part 121 air carriers, some of which derive significant income from military charter flights.

b. FAR Part 133 rotorcraft external load operators.

c. FAR Part 135 scheduled commuter air carriers.

d. FAR Part 135 helicopter emergency medical service operators.

Distribution: A-W(VS)-1; A-W(FS/CS)-3; A-W(BU/GC/PA/PT/SF/IR)-2; A-X(FS)-3; A-X(GC/PA/PM/HR/BU/CS/CD)-2; A-FFS-0 (STD); A-FCS-1 (STD); A-FAC-0 (STD); AAC-950 (160 copies)

Initiated By: AFS-540

e. FAR Part 141 pilot schools.

f. FAR Part 145 repair stations.

g. FAR Part 147 aviation maintenance technician schools.

4. APPLICABILITY. This order applies to all Flight Standards personnel; Aircraft Engineering Division personnel, Aircraft Manufacturing Division personnel, and Aircraft Certification Directorate personnel assigned to FAR Part 21, Special Federal Aviation Regulation 36, and FAR Part 43 work functions; Chief Counsel and Regional Counsel; regional Public Affairs; and Civil Aviation Security Special Agent personnel assigned to hazardous materials compliance and enforcement work functions.

5. OBJECTIVE. The objective of the NASIP is to ensure that identified air carriers, air operators, and air agencies are operating in compliance with the FAR and to correct deficiencies as necessary.

6. CONCEPT OF OPERATIONS. The inspections required by this order will be scheduled by regional Flight Standards division managers, or their representatives, at scheduling conferences convened by the Flight Standards Service (AFS). Changes to scheduled NASIP inspections of air carriers, air operators, or air agencies must be coordinated with the certificate-holding region and the Director, Flight Standards Service, AFS-1. During scheduling conferences, start and tentative finish dates for each inspection will be established, and an inspection team leader will be selected from a region other than the region holding the certificate of the air carrier, air operator, or air agency to be inspected. Inspection team members will also be selected from regions other than the certificate-holding region to the maximum extent practicable. In any case, no inspection team members will be selected from the certificate-holding district office. Changes to start and finish dates or substitution of team leaders, subsequent to scheduling conferences, must be approved by AFS-1. Changes to inspection team membership must be coordinated directly with the inspection team leader. Regional division managers or assistant managers must approve any changes which involve their region's personnel. Replacements must possess equal or better qualifications than the team member being replaced. Interregional coordination of support and personnel requirements will be accomplished through designated regional NASIP coordinators. A designated regional NASIP coordinator is to be identified by name and submitted to the Current Operations Branch, AFS-540.

7. RESPONSIBILITIES.

a. The Flight Standards Service, Field Programs Division, Current Operations Branch, AFS-540, is designated as the headquarters focal point to coordinate the activities required by this inspection program. The Flight Standards Service will develop, coordinate with all affected offices, publish, and distribute directives to accomplish the program. The Director, Flight Standards Service, will convene conferences to compose NASIP inspection teams, schedule inspections of air carriers, air operators, and air agencies, and assist in analyzing inspection findings and corrective action programs. The Flight Standards Field Programs Division (AFS-500) will provide general guidance to regional program coordinators and arrange technical support to inspection team personnel, when requested by the team leader. The Field Programs Division will also coordinate with engineering, hazardous material, and manufacturing inspection specialists for support of specific inspection requirements. The Current Operations Branch (AFS-540) will serve as the headquarters focal point for the program. The director will appoint representatives from the General Aviation Staff (AFS-20), Air Transportation Division (AFS-200), Aircraft Maintenance Division (AFS-300), Technical Programs Division (AFS-400), and General Aviation and Commercial Division (AFS-800) to assist AFS-540 in preparing directives, selecting inspection candidates, and providing technical guidance throughout the inspections.

b. The Office of Civil Aviation Security will provide guidance and logistical information to regional Civil Aviation Security Divisions and distribute directives to accomplish the program. The Director of Civil Aviation Security will designate representatives from the Domestic Civil Aviation Security Division (ACS-100) to serve as NASIP coordinators to assist the Current Operations Branch (AFS-540) in providing general assistance and technical guidance prior to and throughout the inspection program. The program coordinators from the Hazardous Materials Branch (ACS-130) will coordinate hazardous materials representatives' participation on NASIP teams with support of specific inspection requirements.

c. The Aircraft Certification Service will coordinate Aircraft Certification Directorate participation in the inspection process. The Director, Aircraft Certification Service, will appoint a representative from the Aircraft Engineering Division (AIR-100) and the Aircraft Manufacturing Division (AIR-200) to assist the Current Operations Branch (AFS-540) in preparing directives, arranging for inspection participants, and providing technical guidance throughout the inspection program.

d. Regional Flight Standards division managers are responsible for the inspection of certificates in their respective regions. Division managers, or their representatives, will attend scheduling conferences for the purpose of implementing the concept of operations described in paragraph 6. Additionally, division managers will:

(1) Identify inspection candidates, as requested by the Flight Standards Service, and provide a list of these candidates to the Flight Standards Service and to the local regional Civil Aviation Security office.

(2) Designate regional program coordinators.

(3) Identify cadres of aviation safety inspectors (operations and airworthiness) to participate in program inspections and provide lists of these inspectors as requested by the Flight Standards Service.

(4) Ensure that the budgetary, logistic, and administrative support requirements of inspection teams are fully supported from regional resources.

(5) Ensure that inspection team leaders are briefed on the current status of air carriers, air operators, and air agencies to be inspected.

(6) Meet with team leaders prior to beginning an inspection. At a minimum, this meeting shall include the regional Flight Standards division manager, the regional NASIP coordinator, and the team leader. When the regional Flight Standards division manager deems appropriate, Regional Counsel, regional Public Affairs, and the certificate-holding district office manager shall attend the meeting. This meeting shall cover the roles of all participants and, where appropriate, the assignment of an attorney to assist the team with enforcement issues and a Public Affairs participant for controlling the release of information. In all cases, the daily management of the team must be exercised by the regional Flight Standards division manager, or their designated representative.

(7) Ensure that the air carriers, air operators, or air agencies receive minimum notice to no notice of inspection dates and requirements.

(8) Review and know the content of each report.

(9) Assure release of the report within 7 days after the final report is written.

(10) Establish a management system to ensure that discrepancies discovered during inspections are corrected.

(11) Ensure that followup actions are accomplished by the certificate-holding district office to fully resolve all areas of noncompliance. District offices must thoroughly investigate inspection findings to reveal and resolve systemic problems.

(12) Establish a followup schedule to subparagraphs d(10) and d(11). The certificate holder shall prepare an action plan to address how and when actions will be taken to correct the NASIP findings. This plan should be requested by the certificate-holding district office no later than 30 days after the completion of the inspection. Periodically, the region and headquarters may require a status report of corrective actions. This plan, plus monthly updates, is to be used as a source for these requests.

(13) Ensure close coordination of significant or complex enforcement cases. The certificate-holding district office and the Flight Standards division shall recommend the type of legal enforcement action and the amount of sanction to the Assistant Chief Counsel for the region. The Chief Counsel (AGC-1), upon consultation with the Associate Administrator for Regulation and Certification (AVR-1), shall concur with the recommended action and sanction prior to submitting the case to the Administrator for final approval.

(14) Provide the Field Programs Division, AFS-500, with a quarterly status update on all NASIP enforcement actions which result from the inspection until they are closed. This update shall contain the enforcement investigative report (EIR) number, date of the letter of investigation, FAR involved, recommended sanction, and status.

e. Aircraft Certification Directorate managers will provide engineering and/or manufacturing inspection personnel, as appropriate, for participation in NASIP inspections to assure timely inspection of the engineering and manufacturing aspects of FAR compliance.

f. Regional Civil Aviation Security division managers will: (1) provide the regional Hazardous Materials Coordinator, or a Civil Aviation Security Special Agent of similar background and knowledge, on all NASIP teams assembled for inspection of FAR Parts 121, 133, and 135 air carriers; and (2) ensure that the budgetary and logistic requirements of the hazardous materials representatives are fully supported from regional resources.

g. Regional NASIP coordinators, when designated, will be authorized to make decisions and act on behalf of the division manager to ensure completion of inspections and regional compliance with the requirements of this order. The coordinator will direct and coordinate all regional inspection activities in support of the program. NASIP coordinators are authorized to communicate directly with each other and with inspection team leaders in accordance with the provisions of paragraph 6.

h. Inspection team leaders are responsible for planning and conducting the NASIP inspections according to this order and guidelines distributed by the Flight Standards Service. Inspection reports will be written in accordance with these guidelines. Team leaders work for the division manager of the certificate-holding region and will keep the division manager and headquarters evaluation officer apprised of the status of inspections. Team leaders will obtain legal counsel as soon as the probability of a significant or complex enforcement action is identified. For all enforcement cases, team leaders will ensure that the inspection team collects sufficient items of proof to support the case and provides these materials in a useable form to the certificate-holding district office. Under no circumstances can the NASIP team release the report to a certificate holder.

i. Flight Standards field offices will adjust work programs to support the program. National inspection work functions may be credited toward national work program guideline requirements. Field offices will provide aviation safety inspectors for participation in the NASIP inspections and will provide administrative and logistic support as necessary. Managers of host field offices will ensure that inspection teams are briefed on local facilities, operational restrictions, and other local requirements.

j. Aircraft Certification field offices will adjust their work programs as necessary to support the program. The national inspection work functions may be credited toward national work program guideline requirements to assure the continued airworthiness of type-certificated aircraft, engines, propellers, and appliances.

k. Principal operations inspectors, principal maintenance inspectors, principal avionics inspectors, and principal security inspectors will fully support inspection team leaders during the planning and execution of program inspections involving their assigned air carrier, air operator, or air agency. Principal inspectors will ensure that discrepancies discovered during the inspection are adequately corrected in a timely manner and appropriate enforcement action is initiated as necessary. Discrepancies shall be thoroughly investigated to determine if system-wide problems exist.

l. Regional Assistant Chief Counsel shall assign an attorney to each inspection team and participate in the pre-inspection meeting as outlined in paragraph 7d(6). The inspection team attorney will provide onsite legal counsel as determined necessary by the team leader in coordination with the Flight Standards division manager. Regional Assistant Chief Counsel will ensure coordination with the Office of the Chief Counsel, Regulations and Enforcement Division, AGC-200.

m. Regional Public Affairs shall participate in the pre-inspection meeting as outlined in paragraph 7d(6). No initial legal enforcement action documents (e.g., notices of proposed action, initial civil penalty letters) relating to any type of certificate holder will be made available to the public, after a request for it, until the Office of Public Affairs (APA-1) has approved such a request. APA-1 will be responsible for coordinating the matter with appropriate headquarters offices, including AGC-1, before approving the release. Since there is significant public interest in legal enforcement actions against operators inspected, initial enforcement action documents should be made available to the media and the interested public within a reasonable period of time. APA-1, consulting with AGC-1, will determine what constitutes such a reasonable period of time. Prior to the release of an initial enforcement action document, the alleged violator will be made aware that the FAA plans to make such a release. Other than making initial enforcement action documents available to the public as described above, the FAA will not provide any information to the public regarding the matter until final enforcement action has been taken.

n. Upon coordination with AGC and APA, regional Public Affairs can issue press releases regarding significant final legal enforcement actions (e.g., orders, civil penalty settlements, etc.) against air carriers, air operators, and air agencies. Prior to the issuance of a press release, the alleged violator should be made aware of its existence. The alleged violator may be offered the opportunity to review and comment on the draft release, but under no circumstances are the contents of the release to be considered a matter for negotiation. All press releases should: be factual and objective; avoid comparisons with other cases; accurately reflect the status of the case; and state whether the alleged violator disputes the allegations or has filed an appeal, if either is known. FAA offices may not disseminate any information regarding the subject of a press release until the release has, in fact, been issued.

o. Military liaison will be accomplished by an Air Force officer attached to the Flight Standards Service. When an operator with a military contract is inspected, this officer will coordinate attendance at the carrier's inbriefing and will attend the carrier's outbriefing with the FAA team when Department of Defense expresses an interest. The liaison officer will provide any special interest areas from the military perspective. The military will not be an active participant in the FAA inspection, but may observe inspections and review final reports submitted by the teams.

8. FREEDOM OF INFORMATION ACT (FOIA) REQUESTS. These type requests for NASIP reports can be expected and are to be processed similar to other FOIA requests. The reports can be released only after the certificate holder has been provided a copy of the document.

9. PREVIOUSLY SCHEDULED SPECIAL INSPECTIONS. Regions may conduct their own previously programmed, indepth inspections provided they do not interfere with the region's capability to support the National Aviation Safety Inspection Program.

/s/ T. Allan McArtor
T. Allan McArtor
Administrator

APPENDIX 2

1990 NATIONAL AVIATION SAFETY INSPECTION PROGRAM CODING FORM

1. Year 9 0 2. FAR Part _ _ _ 3. Designator Code _ _ _ _

Finding ID:

Report: 4a. Part _ 4b. Section _ _ 4c. Number _ _

Database: 5a. Part _ 5b. Section _ _ 5c. Number _ _

6. Category of Finding _ 7. Multiple Findings _ _ _ _

8a. 1st EIR Number _ _ _ _ _ _ _ _ _ _ _ _

8b. 2nd EIR Number _ _ _ _ _ _ _ _ _ _ _ _

8c. 3rd EIR Number _ _ _ _ _ _ _ _ _ _ _ _

9a. 1st FAR Number _ _ _ . _ _ _ _ 9b. 1st FAR Subpart _

10a. 2nd FAR Number _ _ _ . _ _ _ _ 10b. 2nd FAR Subpart _

11a. 3rd FAR Number _ _ _ . _ _ _ _ 11b. 3rd FAR Subpart _

12. Airworthiness Directive Number _ _ - _ _ - _ _

13. Notice/Order Number _ _ _ _ _ . _ _ _

14. Advisory Circular Number _ _ _ - _ _ _

15. Remarks Indicator (Y/N) _

16. Remarks _____

_____

17. More than one coding form for this finding? (Y/N) _

APPENDIX 3

FAR PART 121 SUBPARTS AND ASSOCIATED SFARs

Part 121 - Certification and Operations: Domestic, Flag, and Supplemental Air Carriers and Commercial Operators of Large Aircraft

Subpart A	-	General	Sec. 121.1 - 121.15
Subpart B	-	Certification Rules for Domestic and Flag Air Carriers	Sec. 121.21 - 121.29
Subpart C	-	Certification Rules for Supplemental Air Carriers and Commercial Operators	Sec. 121.41 - 121.61
Subpart D	-	Rules Governing All Certificate Holders Under This Part	Sec. 121.71 - 121.83
Subpart E	-	Approval of Routes: Domestic and Flag Air Carriers	Sec. 121.91 - 121.107
Subpart F	-	Approval of Areas and Routes for Supplemental Air Carriers and Commercial Operators	Sec. 121.111 - 121.127
Subpart G	-	Manual Requirements	Sec. 121.131 - 121.141
Subpart H	-	Aircraft Requirements	Sec. 121.151 - 121.163
Subpart I	-	Airplane Performance Operating Limitations	Sec. 121.171 - 121.207
Subpart J	-	Special Airworthiness Requirements	Sec. 121.211 - 121.291
Subpart K	-	Instrument and Equipment Requirements	Sec. 121.301 - 121.360
Subpart L	-	Maintenance, Preventive Maintenance, and Alterations	Sec. 121.361 - 121.380a
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Subpart O	-	Crewmember Qualifications	Sec. 121.431 - 121.457
Subpart P	-	Aircraft Dispatcher Qualifications and Duty Time Limitations: Domestic and Flag Air Carriers	Sec. 121.461 - 121.465

Subpart Q -	Flight Time Limitations and Rest Requirements: Domestic Air Carriers	Sec. 121.470 - 121.471
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Subpart S -	Flight Time Limitations: Supplemental Air Carriers and Commercial Operators	Sec. 121.500 - 121.525
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Subpart W -	Crewmember Certificate: International	Sec. 121.721 - 121.723

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APPENDIX 4

FAR PART 135 SUBPARTS AND ASSOCIATED SFARs

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Subpart B	-	Flight Operations	Sec. 135.61 - 135.129
Subpart C	-	Aircraft and Equipment	Sec. 135.141 - 135.185
Subpart D	-	VFR/IFR Operating Limitations and Weather Requirements	Sec. 135.201 - 135.229
Subpart E	-	Flight Crewmember Requirements	Sec. 135.241 - 135.251
Subpart F	-	Flight Crewmember Flight Time Limitations and Rest Requirements	Sec. 135.261 - 135.271
Subpart G	-	Crewmember Testing Requirements	Sec. 135.291 - 135.303
Subpart H	-	Training	Sec. 135.321 - 135.353
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Subpart J	-	Maintenance, Preventive Maintenance, and Alterations	Sec. 135.411 - 135.443

Special Federal Aviation Regulations

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APPENDIX 5

FAR PART 141 SUBPARTS

Part 141 - Pilot Schools

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APPENDIX 6

FAR 145 SUBPARTS AND ASSOCIATED SFARs

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