

# AIR CARRIER OPERATIONS

FOURTH EDITION





MARK J. HOLT & PHILLIP J. POYNOR



# FOURTH EDITION

# MARK J. HOLT & PHILLIP J. POYNOR

Assisted by: Andrea Georgiou, PhD, and Caitlin Lyons



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### PREFACE TO THE FOURTH EDITION

I confess that in 1901, I said to my brother Orville that man would not fly for fifty years. —Wilbur Wright, 1908

#### What's New in the Fourth Edition?

This fourth edition of *Air Carrier Operations* includes an overall update and necessary revisions to address FAA regulatory changes made since the publication of the third edition. Specifically, new sections cover the Pilot Records Improvement Act and the FAA's creation of a new 14 CFR Part 111 Pilot Records Database. This edition also includes a discussion on the recent allowance for a single-engine type rating and offers a review of type ratings, class, and category definitions. With updates throughout the book and the addition of new material, this text continues to provide students and professionals with the essential information pertinent to today's air carrier operations. Now, let's take a look at how to get the most out of the fourth edition of this textbook.

#### Getting the Most Out of This Text

Air Carrier Operations is an entry-level text that introduces the student to the significant regulatory environment impacting airline operations. Although it is primarily intended for use in an air carrier flight operations course, it can be easily adapted for use in a flight dispatcher course, as part of a general air carrier operations management course, or in independent study by an aviation manager seeking a better understanding of air carrier operations. This book is intended primarily for use in university-level courses and for independent study by airline pilot or dispatcher candidates and aviation managers. At this juncture in their career development, they have been exposed to very little of the restrictive regulations that make up modern airline operations. Whether Part 121 airline or Part 135 charter operator, these companies live or die by their compliance with the applicable Federal Aviation Regulations, or FARs (14 CFR). Surprisingly, aviation students are largely unexposed to the layers of regulations in a Part 61 flight-training program or, at best, minimally exposed to them in a Part 141 pilot school.

The purpose of this book, therefore, is to examine the multitude of regulations governing an air carrier. It will focus primarily on Part 121 air carriers, though we necessarily discuss portions of Parts 25, 110, 117, 119 and relevant portions of Parts 135, 91, and 61 of the FARs. We approach this discussion assuming that the student has some background in piloting or maintenance and has been exposed to introductory courses in aviation. These introductory courses are often found in the freshman or sophomore year and have titles such as General Aeronautics or Introduction to Aviation and are often conducted as a private pilot ground school. Due to the nature of air carrier operations, a large portion of this text focuses on instrument flight rules (IFR) flight operations. Consequently, we recommend that flight students complete the instrument rating before undertaking study of this book.

We do not attempt to explain every regulation in all of its nuances. Rather, we try to paint a mosaic that explains as much the *why* as it does the *what*, leaving the student with a clear understanding of why some of the complex rules are as they are. For this reason, we don't quote excessively from the regulations. Where actual regulation text is provided in the book, it is called out in a different font style for easy identification (with any paraphrased text placed in brackets and italicized). We do try to give the appropriate reference so the student may read it on his or her own, and *it is essential* that the student do this as part of the study of this book. Therefore, the student should acquire a copy of the current FARs that includes at a minimum 14 CFR Parts 1, 61, 91, 110, 117, 119, 121, and 135. These are available from ASA, online at *faa.gov*, and in various forms from other aviation publishers, including in a subscription format.

When we reference a regulation in the text, it is important that students reference a copy of the regulations and *read the text* of that rule at the same time the explanation is read. That way, they get not only the "big picture" from our text but also the detail and wording from the actual regulation. If there is ever a conflict between our statement of the rule and the actual rule, obviously the rule governs. In addition to learning about that particular rule, students will also develop the skills needed to properly read and interpret the FARs. This is a skill that will surely be needed as students progress further along in their professional careers.

This book is designed to assist students in their first serious foray into the FARs by explaining what something means and why it is done, and then allowing students to get the full meaning of the rule by reading it on their own. At the conclusion of the book, students will have been exposed to the entirety of 14 CFR Part 121 and collateral parts of the FARs. We don't expect an expert level of understanding after one pass through this text. It is reasonable to expect at the conclusion of this book that students should have an appreciation of the variety of regulatory issues involved in air carrier operations and be able to identify the appropriate and applicable regulations pertaining to them. The students should then be able to read the regulations and apply them with an understanding of what is required. With this in mind, it is suggested that any testing in a course based on this text be open book with respect to use of the Federal Aviation Regulations.

We intend this book to be useful as a review or introduction of Part 121 regulations to the airline pilot

candidate. Whether the pilot is going for an employment interview or starting an initial training class with a 121 carrier, this book can provide a quick study so the pilot will be better prepared. In recent times due to changes in the hiring process, pilots are going to the airlines with a minimum of 750 to 1,500 flight hours but relatively little to no experience in operations other than flight instruction (or military piloting background). Yet at the same time, design of the initial training programs more or less still assume that pilots have been exposed to this material somewhere. Increasingly, that is not true. Pilots that have not gone through collegiate training programs (e.g., many military pilots or civilian flight school trained pilots) have probably never seen most of the material in this book. This book can enable the pilot to get a head start on the interview process or initial training class. Such pilots should pay particular attention to Chapters 2, 8, 9, 10, 11, and 12 as these chapters are most directly related to the operational issues likely to be asked about in an interview or addressed in the indoctrination and initial training programs.

As pilots, we understand the angst that you may be feeling about your aviation future as a result of the 2020 COVID-19 pandemic and the awful conditions that created in the aviation field (and many, many other segments of society and industry). That may create a considerable sense of indecision and doubt as to whether pursuing an aviation career is still a good idea. If you do have doubts about whether continuing toward an aviation career is wise, we thought it might be helpful to give you some encouragement and things to consider.

The aviation industry is one of the most regulated industries in the world. It is also one of the most challenging, but also rewarding, fields in which a person can engage. It seems that every time we think we have it all down pat, some major event happens that forces the industry and its employees to, yet again, adapt to unfamiliar circumstances. Now, as *Air Carrier Operations* goes to press, is such a time. Flight operations carry on under very challenging conditions while managers and planners address the challenges of recovery.

Under difficult circumstance, people begin to pick up the pieces, start recovering, and then begin to strive to achieve even greater heights. The days start to brighten. Through creativity and hard work, commerce begins to recover. Slowly, things start to grow again. Creativity has time to blossom and, as always, the doers will rise to the challenges of their profession. This process is found in virtually all fields of endeavor. It's not always easy, but for the young person just embarking on a career in aviation, it will be a seminal moment in time.

As a little background, I (Poynor) was the owner of a large flight training and charter company in New York and watched in utter horror as the towers fell on 9/11 about 30 miles distant. In a matter of minutes, the airport was shut, not to reopen for about two months and then much restricted as to use for the training fleet of airplanes—the great majority of our business. It seemed like my aviation career was pretty much ended. But, in reality, it opened a whole different world of aviation to me. Now, after nearly 50 years in the industry, I have had aviation adventures of all kinds, taught aviation in colleges and to individuals, bought and sold airplanes, and, yes, flown them for training and charter.

The point? If you have read this far, you very obviously still desire a career in aviation—as a pilot, a dispatcher, an aviation entrepreneur or something of your own making. With the 2020 pandemic damaging the world economy and all the rest, you may be feeling, like I did, that there is no hope for an aviation career. Here is advice from an "old timer": if aviation was the career you dreamed of before recent events, follow your heart and dreams. Things really do tend to smooth out and improve over time. What you thought you would be doing in aviation might be how you spend your time, but, remember, things you haven't even dreamt of might be hiding in your future as well.

As for those of you reading this text as a college student, let me give you a tremendous insight I got from a sophomore student in New York after 9/11. He came by my office for discussion and guidance about where things were going to go and if he had a career. After telling him something like what I shared above, he thought a few seconds and came up with a truly inspirational thought:

I was worried about 9/11 keeping me from getting a job, but then I realized: *I'm not ready for a job.* I still have two years of school and then finishing flight training. *This actually gives me an advantage because I can study now and then be qualified when hiring returns.* 

That was exactly how it played out.

#### **Organization of the Text**

In organizing this text, we decided, for ease of correlation to the FARs, to follow the general layout of the subparts to 14 CFR Part 121. Within the subparts, we intentionally do not attempt to present the rules in numerical order. In some cases that might make sense, but in many others the flow of the material in the FARs is confusing and misleading. We have tried to reorganize the material so that related rules are discussed at the same time. We want the reader to be able to put the disjointed pieces together and grasp the interrelationships that so often exist in the FARs. For this reason, each chapter pretty much stands on its own. If you are especially interested in a particular area (operational rules, for example), you can go directly to Chapter 12, which covers Subpart T, Operations. Again, for the most part, you can start your journey through this book at any point and end it at any point and still get the full value of the effort expended.

At the end of each chapter you will find a brief summary and list of important terms. The summary gives a condensed view of the chapter and helps you identify important ideas. The list of important terms is organized in alphabetical order and will help in the review of the material to facilitate study for the end-of-chapter exam questions.

If an unfamiliar term is used in the text, check the glossary. We have included a greatly expanded and extensive glossary of new terms that are introduced in the book. If you don't find the term in our glossary, another place you can try is the FAA Pilot/Controller Glossary found in the *Aeronautical Information Manual* (AIM), which is widely available from ASA as well as online at faa.gov. Finally, a symbol that may not be familiar to some readers is the "\$" symbol. This is used in legislation and legal documents as an abbreviation for the word "section."

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Finally, thanks to Jackie Spanitz and the great staff at ASA in working closely with us, prodding when needed, and always encouraging. Our special thank you for a job well done goes to our editors.

Each of these kind folks contributed their valuable time, knowledge, support, and encouragement of our goal to produce the best and most appropriate materials for pilots striving to learn and achieve at the top rung on the commercial aviation ladder—employment as a pilot at a major air carrier.

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The authors appreciate and gratefully acknowledge the editorial assistance and contributions to this edition provided by:

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# ABBREVIATIONS

AC	Advisory Circular	CAMP	continuous airworthiness maintenance		
ACARS	Aircraft Communications Addressing		program		
	and Reporting System	CAP	continuous analysis process		
ACS	Airman Certification Standards	CASE	Coordinating Agencies for Suppliers		
AD	Airworthiness Directive		Evaluation		
ADF	automatic direction finder	CASS	Cockpit Access Security System or		
ADI	attitude director indicator	CASS	continuing analysis and surveillance		
ADS-B	Automatic Dependent		system		
	Surveillance–Broadcast	CAST	Commercial Aviation Safety Team		
AFGS	automatic flight guidance system	CDFTRS	Crewmember Duty and Flight Time		
AFM	airplane flight manual		Record System		
ALD	available landing distance	CDL	configuration deviation list		
AMOC	alternative method of compliance	CFM	company flight manual		
AOA	angle of attack	CFR	Code of Federal Regulations		
APU	auxiliary power unit	CL	centerline lights		
AQP	Advanced Qualification Program	CMP	Configuration Maintenance and		
ARC	Aviation Rulemaking Committee		Procedures Document		
ARINC	Aeronautical Radio, Incorporated	CRM	crew resource management		
ARTS	Aircrew Records Tracking System	СТР	Certification Training Program		
ASDA	accelerate/stop distance available	CVR	cockpit voice recorder		
ASR	airport standby reserve (flight crew)	DA/DH	decision altitude/decision height		
ATC	air traffic control	DFDR	digital flight data recorder		
ATD	aviation training device	DHS	Department of Homeland Security		
ATIS	Airport Terminal Information Service	DME	distance measuring equipment		
ATP	Airline Transport Pilot	DMI	deferred maintenance item		
ATP-CTP	Airline Transport Pilot–Certification	DO	director of operations		
	Training Program	DOT	Department of Transportation		
AURTA	Airplane Upset Recovery Training Aid	DRM	dispatcher resource management		
CAA	Civil Aviation Authority	EAD	Emergency Airworthiness Directive		
CAB	Civil Aeronautics Board	EAP	employee assistance program		
		EFB	electronic flight bag		

# INTRODUCTION

Airplane travel is nature's way of making you look like your passport photo. —Vice President Albert Gore

Before we begin our study of air carriers and their governing operations specifications, we need to review the history of the agency that has the authority to regulate and oversee all aspects of American civil aviation.

#### The Federal Aviation Administration (FAA)

#### **Historical Origin**

The modern age of powered flight began in 1903, when Orville Wright made the first sustained, powered flight on December 17 in an airplane he and his brother, Wilbur, built. The next few decades witnessed a flurry of aviation activity as a number of new and improved aircraft designs from around the world entered service.

During World War I, aircraft production increased dramatically to meet the increased demand for airplanes from military air forces on both sides of the conflict. Most significant was the development of more powerful motors, enabling aircraft to reach speeds more than twice the speed of pre-war aircraft. More power made it possible to build ever larger aircraft.

Though the airplane proved its worth as a military weapon during World War I, attempts to turn the airplane into a successful commercial endeavor ended in failure. The single exception was the delivery of mail by air—airmail. The U.S. government pushed to establish a postal airmail service across the continental United States. By the mid-1920s, the U.S. Post Office had a fleet of airplanes flying millions of letters annually. This postal flying proved the economic feasibility of airmail. The U.S. Congress then decided to transfer the delivery of airmail to the private sector.

#### The Contract Air Mail Act of 1925

The Contract Air Mail Act of 1925 was the first step towards the development of an air carrier industry by allowing the postmaster to contract with private airlines to deliver mail. The initial airmail contracts went to small companies that would grow and go on to pioneer developments in the air carrier industry for decades to come. Also in 1925, a presidential board was created to recommend a national aviation policy. The board recommended that the government establish a regulatory authority to set federal safety standards for civil aviation. The need for such an authority had been recognized for years; however, the numerous bills introduced to the United States Congress attempting to create one were unsuccessful. The air carrier industry activity that began because of the Air Mail Act was minimal, yet this activity, along with requests from industry for federal aviation safety regulations, prompted legislative proposals for an Air Commerce Act.

# **CHAPTER 2** OPERATIONS SPECIFICATIONS: DEVELOPMENT AND APPLICATION

Federal Aviation Regulations are worded either by the most stupid lawyers in Washington, or the most brilliant.

-anonymous

In Chapter 1 we saw how, historically, air carriers were held to the highest standard of care and, as a result, a large body of federal regulatory authority developed to ensure that they perform to that high standard. We saw that they are subject to regulation in 14 CFR Parts 110, 117, 119, 121, 135, and others. This chapter will cover the FAA's requirement for carriers to formulate a plan and a document to identify *exactly how* they will comply with a wide variety of regulations. This process results in the creation of an **operations specifications (ops specs)** document. This is simply the document created by the carrier and FAA wherein the carrier specifically explains (or identifies) how it will conduct operation of its aircraft in accordance with the FARs.

# Part 119—Certification: Air Carriers and Commercial Operators

The study of air carrier rules must begin with 14 CFR Part 119. What is the purpose of Part 119 anyway? The FAA instituted Part 119 in 1996 to further bring the air carriers of both Part 121 and Part 135 under the umbrella of "*One Level of Safety*." Prior to that date, regional airlines (19 seats or less) operated under Part 135, which at that point was much less restrictive, while aircraft larger than that were operated under the most restrictive provisions found in Part 121. One Level of Safety was a major effort by the Air Line Pilots Association and other pilot labor groups (unions) that was picked up by the FAA; it sought to have a completely uniform set of operating rules for all scheduled air carriers *regardless of the size of the aircraft*.

We introduced some sections of Part 119 in Chapter 1. Now we will examine the specific requirements for a carrier to obtain, maintain, and conduct its operations in accord with its operations specifications. 14 CFR §119.33 establishes the specific requirement that Part 121 and Part 135 direct air carriers<sup>1</sup> be United States citizens (including corporate "citizens"), obtain an air carrier certificate, and develop and maintain operations specifications. These operations specifications must contain "the authorizations, limitations, and procedures under which each kind of operation must be conducted." Figure 2-1 shows the "decision tree" that is created by 14 CFR Part 110, which sorts common carriage operators and private carriers for hire using large aircraft into Part 121 "airline," Part 125 "commercial operators," or Part 135 commuter and on-demand. (Note: "Commuter" here has a specific, defined meaning that is different from common usage when people say they will seek employment at "a commuter airline" and the like.)

<sup>1</sup> *Direct air carrier* is defined 14 CFR §110.2 as a person who provides or offers to provide air transportation and who has operational control over the functions performed in providing that transportation.



**Figure 2-1.** Applicability of regulations to different types of operators.

#### **Operations Specifications**

Once it has been determined that a proposed operation (or series of operations) requires an air carrier certificate, we must then move our attention to either 14 CFR Part 121 or Part 135. These parts prescribe the rules to be followed by commercial operators, air carriers operating large aircraft (Part 121) or small aircraft (Part 135). These parts of the FARs establish specific rules for air carriers that are substantially more restrictive than 14 CFR Part 91: General Operating and Flight Rules. All operators of all aircraft must comply with the general rules of 14 CFR Part 91. Then, Part 121 or Part 135 adds additional rules that apply exclusively to the certificated, direct air carriers.

Prior to the implementation of Part 119, the FARs recognized the substantially different operating capabilities and environments that existed for large and small aircraft. With the implementation of Part 119, the dividing line between Part 135 and Part 121 operations was moved to considerably smaller aircraft. As seen in Chapter 1, domestic and flag operators must comply with Part 121, while commuter and on-demand operators must comply with Part 135. All of these operators must have operations specifications. In a somewhat similar approach, other non-air carrier operators are required to have documents similar to ops specs. "Fractional share" operations, 14 CFR Part 91 Subpart K, require the operator to have management specifications ("M specs"). Part 141 flight school operators must have training specifications ("training specs"), and certain large airplanes (aircraft with 20 or more seats or a payload of greater than 6,000 pounds) that are not operated under Part 121 or Part 135 are required to have letters of authorization ("LOAs"). (Figure 2-2.)



**Figure 2-2.** Ops specs, management specs, training specs, and letters of authorization (LOA).

As previously discussed, 14 CFR §119.33 states that a person may not operate as a direct air carrier unless that person obtains operations specifications that prescribe the authorizations, limitations, and procedures under which each kind of operation must be conducted. Section 119.7 tells us specifically what the operations specifications must contain:

- (a) Each certificate holder's operations specifications must contain—
  - The authorizations, limitations, and certain procedures under which each kind of operation, if applicable, is to be conducted; and
  - (2) Certain other procedures under which each class and size of aircraft is to be operated.

Since each operator must have a set of operations specifications, what must go into them? The answer to this question is found in 14 CFR §119.49, Contents of Operations Specifications. This provision breaks down the contents of the ops specs into three categories, depending upon what type of carrier is involved. Section 119.49(a) covers domestic, flag, and commuter carriers; Section 119.49(b) covers supplemental carriers; and Section 119.49(c) establishes the requirements for on-demand operations. While these requirements are similar in nature, there are differences between the different classes of carriers.

Let's look at domestic, commuter, and flag carriers as an example.

# 14 CFR §119.49—Contents of operations specifications.

- (a) Each certificate holder conducting domestic, flag or commuter operations must obtain Operations Specifications containing all of the following:
  - (1) The specific location of the certificate holder's principal base of operations...
  - (2) Other business names under which the certificate holder may operate. [DBA or "Doing business as"]
  - (3) Reference to the economic authority issued by the Department of Transportation, if required.

- (4) Type of aircraft, registration markings, and serial numbers of each aircraft authorized for use, each regular and alternate airport to be used in scheduled operations, and, except for commuter operations, each provisional and refueling airport.
  - (i) [All the items in (4) may be kept current on a list, which is incorporated by reference into the ops specs.]
  - (ii) The certificate holder may not conduct any operation using any aircraft or airport not listed.
- (5) Kinds of operations authorized.
- (6) Authorization and limitations for routes and areas of operations.
- (7) Airport limitations.
- (8) Time limitations, or standards for determining time limitations, for overhauling, inspecting and checking airframes, engines, propellers, rotors, appliances and emergency equipment.
- (9) Authorization for the method of controlling weight and balance of aircraft.
- (10) Interline equipment interchange requirements, if relevant.
- (11) Aircraft wet lease information required by §119.53(c).
- (12) Any authorized deviation and exemption granted from any requirement of this chapter.
- (13) An authorization permitting, or a prohibition against, accepting, handling, and transporting materials regulated as hazardous materials in transport under 49 CFR parts 171 through 180.
- (14) Any other item the Administrator determines is necessary.

That summarizes the content of the operations specifications (or ops specs). But, what are ops specs? In a very real sense, they are nothing more than the carrier telling the FAA how it intends to comply with the requirements of the Federal Aviation Regulations. FAA Order 8900.1 of the Flight Standards Information Management System (volume 3, chapter 18, section 1, paragraph 3-678) explains it well:

Within the air transportation industry there is a need to establish and administer safety standards to accommodate many variables. These variables include a wide range of aircraft; varied operator capabilities; the various situations requiring different types of air transportation; and the continual, rapid changes in aviation technology.

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It is impractical to address these variables through the promulgation of safety regulations for each and every type of air transport situation and the varying degrees of operator capabilities. Also, it is impractical to address the rapidly changing aviation technology and environment through the regulatory process. Safety regulations would be extremely complex and unwieldy if all possible variations and situations were addressed by regulation. Instead, the safety standards established by regulation should usually have a broad application that allows varying acceptable methods of compliance. The ops specs provide an effective method for establishing safety standards that address a wide range of variables. In addition, ops specs can be adapted to a specific operator's class and size of aircraft and type and kind of operation. Operations specifications can be tailored to suit an individual operator's needs. Only those authorizations, limitations, standards, and procedures that are applicable to an operator need to be included.

Perhaps the best way to understand the concept of ops specs is to look at a sample template of a Part 121 jet carrier's ops specs outline (for Aeromech Airways Corporation). Specific detailed examples of the provisions will be given in the text.

#### U.S. Department of Transportation Federal Aviation Administration Operations Specifications

#### U.S. Department of Transportation Federal Aviation Administration Operations Specifications

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#### PART A: General

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3.	Airplane Authorization	02/01/12	03/16/13	1
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10.	Aeronautical Weather Data	04/29/13	03/16/14	1
11.	Approved Carry-on Baggage Program	01/11/13	03/16/14	1
12.	Part 121 Domestic Operations to Certain Airports Outside the 48 Contiguous States	01/11/13	03/16/14	2
22.	Approved Exit Seat Program	05/08/11	03/16/14	1
23.	Authorization to Use an Approved Procedure for Determining Operations During Ground Icing Conditions	02/10/12	03/16/14	1
25.	Approved Computer-based Record Keeping System	04/23/11	03/16/14	1
27.	Land and Hold Short Operations	08/11/14	02/16/15	2
30.	Part 121 Supplemental Operations	11/05/14	03/16/15	1
31.	Authorized to Make Arrangements with Training Centers, Air Agencies, and/or Other Organizations for Certificate Holder Training	12/04/14	03/16/15	1
447.	Emergency Airworthiness Directives (AD) Notification Requirements for U.S Registered Aircraft	12/31/11	03/16/15	0
Print Dat CERTIFIC Aeromed	e: 12/13/2014 CATE NO.: YENA761K :h Airways Corporation			

# AIR CARRIER OPERATIONS

FOURTH EDITION MARK J. HOLT AND PHILLIP J. POYNOR

Whether a Part 121 airline or a Part 135 charter operator, a company lives or dies by its compliance with the applicable Federal Aviation Regulations, or FARs (14 CFR). *Air Carrier Operations* introduces students of aviation to the significant Federal Aviation Regulations affecting airline operations. Students and professionals gain an appreciation of the variety of regulatory issues involved in air carrier operations and gather the background information they need to identify and apply the relevant regulations.

This book examines the many regulations governing an air carrier and focuses primarily on Part 121 air carriers; in addition, coverage includes Part 119 and relevant portions of Parts 135, 91, 61 and 25 of the Federal Aviation Regulations. For this fourth edition, the authors update regulations including Part 111 and the Pilot Records Database as well as type ratings, class, and category. The text emphasizes Instrument Flight Rules (IFR) flight operations, particularly useful to instrument-rated pilots and aircraft dispatchers.

The authors collaborated with two seasoned Aircraft Dispatchers, enhancing the content relevant to students preparing for the FAA Aircraft Dispatcher Certificate. In addition, updates and revisions throughout reflect new FAA regulatory changes to provide students, pilots, flight crews, dispatchers, and management professionals with the essential information pertinent to today's air carrier operations.

*Air Carrier Operations* is a college-level text ideal for Air Carrier Flight Operations and Airline Operations courses, is used extensively in Airline Dispatcher Training courses, and is an excellent preparation for airline interviews and initial airline pilot training.



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**Mark J. Holt,** a captain for a major airline, soloed at age sixteen and has logged over 22,000 hours in more than 40 years of flying. He holds an ATP pilot certificate with Boeing 757/767, Airbus 319/320/321, and BAE Jetstream 41 type ratings, as well as a Flight Engineer Turbojet certificate (L1011 aircraft). His professional aviation career includes extensive flight and ground school instruction experience and service as a check airman for a large regional airline. He also co-authored *The Turbine Pilot's Flight Manual*.

**Phillip J. Poynor, J.D.,** holds an ATP certificate, has been captain qualified on Part 135 carriers, has taught courses on air carrier operations, advanced systems, and aviation safety, and is an aviation attorney. His awards include FAA/Industry 2001 National Flight Instructor of the Year, National Air Transportation Association Excellence in Pilot Training Award, and New York State University Chancellor's Award for Excellence in Teaching.