Third Edition

PILOTS IN COMMAND

Your Best Trip, Every Trip

KRISTOFER PIERSON

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AVIATION SUPPLIES & ACADEMICS, INC.
NEWCASTLE, WASHINGTON

Pilots in Command: Your Best Trip, Every Trip
Third Edition
By Kristofer Pierson

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Third edition published 2022 by Aviation Supplies & Academics, Inc. Second edition published 2017. First edition published 2014.

The 4R Model of Leadership discussed in Chapter 14 is used with permission from Dr. Mark McCloskey.

ASA-PIC3
ISBN 978-1-64425-065-5

Additional formats available:
eBook EPUB ISBN 978-1-64425-066-2
eBook PDF ISBN 978-1-64425-067-9

Printed in the United States of America
2026 2025 2024 2023 2022 9 8 7 6 5 4 3 2 1

Library of Congress Cataloging-in-Publication Data:
Names: Pierson, Kristofer, author.
Title: Pilots in command : your best trip, every trip / Kristofer Pierson.
Description: Third edition. | Newcastle, WA : Aviation Supplies & Academics, Inc., 2022.
Identifiers: LCCN 2022021612 (print) | LCCN 2022021613 (ebook) | ISBN 9781644250655 (trade paperback) | ISBN 9781644250662 (epub) | ISBN 9781644250679 (pdf)
Subjects: LCSH: Air pilots—Training of. | Air pilots—Vocational guidance. | Airplanes—Piloting—Human factors. | Leadership—Study and teaching. | Flight training.
Classification: LCC TL712 .P54 2022 (print) | LCC TL712 (ebook) | DDC 629.132/52071—dc23/eng/20220630
LC record available at https://lccn.loc.gov/2022021612
LC ebook record available at https://lccn.loc.gov/2022021613

CONTENTS

PART II: Getting on the Line

PART III: Professional Excellence

ACKNOWLEDGMENTS

When I set out to make a career as an airline pilot, I never imagined I would write a book about how to be a better airline pilot. There are many people who are responsible for inspiring, mentoring, and pushing me to succeed in ways I never dreamed.

Thanks to the loving support of my wife and best friend, Sarah, this project has taken the shape it has. I also thank my children, Evelyn and Oliver, who cheered me on. It is because of my parents, Dave and Julie, that I have my wings. The advice and mentorship of my dear friend Dave Burkum motivated me to take a series of blog posts and make it into this book.

This book is dedicated to friends and colleagues who challenged me to be my best at my job. Dr. Earl C. Benson, my high school band director, took me for my first flight in a small airplane. Above the band room chalkboard in giant yellow letters were the words, "RESULTS NOT ALIBIS!" My profound respect for SOP and standards has been in imitation of Capt. Paul Kolisch (ret.), who made the industry a safer place by pushing for the best in training and standards across the industry. My writing skills, diligence, and vision have been inspired by Ms. Jane Schraft. She has spent her career helping pilots fight for safety and professionalism from within their ranks, and to work with the airline managers who are just trying to keep things on time. There are countless captains and first officers I have flown with who never settled for anything less than the best on every trip, and they all have my gratitude.

Thanks also to Dr. Mark McCloskey, Kristine Tichich, Jackie Spanitz and ASA, and to my airline employers, past and present. Finally, this book is in honor of my father, Dave Pierson, who always was so excited about my flying. He was, and is—even in his passing—my primary mentor, hero, professional role model, and patron saint, inspiring me to make every trip my best trip.

ABOUT THE AUTHOR

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INTRODUCTION

Thanks for reading the latest edition of Pilots in Command: Your Best Trip, Every Trip. This is the third edition, and the biggest expansion of content, for this title. This book was, in its original form, targeted towards airline pilots who were ready to upgrade from First Officer to Captain, taking the role of Pilot in Command (PIC) firmly in grasp. Now, a decade after I started drafting the first chapters of this book, we are experiencing a new era of demand for professional pilots.

We need fresh resources to aid this new influx of professional aviators. Pilots who commit to achieving an airline career—whether coming from a military or a civilian background—will find themselves upon an ever-steepening learning curve. In days past, a pilot would work towards an airline career by attaining their Private Pilot Certificate, Instrument and Multiengine Ratings, followed by their Commercial Pilot Certificate and possibly their Flight Instructor Certificate, and then building flight time experience towards the hiring minimums posted by the carrier. When the FAA changed the standards for pilots at air transport carriers to require at least a "Restricted" Airline Transport Pilot Certificate (R-ATP), the landscape changed significantly.

Prior to those changes, air carriers were hiring pilots with anywhere from the minimum required time experience for a Commercial Pilot Certificate (250 hours) to 1,000 hours or more. Now a pilot will have a minimum of 700 hours (if transitioning from a military flight program), 1,000 hours if graduating from an accredited collegiate four-year degree program, 1,250 hours if graduating from an accredited collegiate two-year degree program, or 1,500 hours. Upon reaching the 1,500-hour mark, a pilot may attain a non-restricted Airline Transport Pilot Certificate (ATP). The gap from 250 hours to 1,500 hours is commonly being filled with flight experience from flight instruction to cargo and charter operations.

On paper, an aspiring pilot can go from zero experience to having an R-ATP—and ready to fly at an airline—in *two years.* Most pilots will end up working for a regional airline (also known as a "fee-for-departure"

carrier) that operates smaller aircraft than the major airlines to gain more experience in order apply to a major. Others will apply to a carrier upon exit or retirement from the military. Some will transition from a general aviation or corporate background. But on any of these pathways there seldom are resources for pilots to learn what their worlds will look like as an airline pilot once they make it to the airlines—regardless if it is flying a regional jet (like the Embraer EMB175) or a widebody (like a Boeing B787). In all cases, they will need valuable information on how to navigate the airline world, particularly when it comes to training as a new hire, and more importantly when they become an airline captain for the first time.

This edition addresses many of the questions and I have fielded from new pilots and is based off of the common experiences and practices new pilots face when entering the airline industry. It keeps intact the knowledge I have shared in the previous editions and expands upon a few areas. Overall, this book will undoubtedly come in handy for a pilot embarking on an airline career and a pilot already onboard and seeking to improve as professional aviator.

Here is some background on how this book even came to be. I have maintained a personal blog and website for more than a decade—since before Facebook, Twitter, and others changed the shape of the World Wide Web into the vast and global Internet we now know. Though the frequency of my blog posts has been sporadic, I have always enjoyed having that outlet for writing and that connection with people who took the time to read what I had to say. My writings meandered between several personal interests—family, fishing, food, religion, politics, and of course, flying.

Early on in my blogging exploits, and only about four years into my airline career, I wrote a blog post about a tire blowout I experienced on landing. It occurred on a midwinter flight in the Dakotas on the Saab SF340, a 34-passenger turboprop and the workhorse of several regional airlines in the early 2000s. I was the First Officer on the flight, which, all things considered, was rather uneventful. We were used to the winter weather challenges posed to crews flying in the upper Midwest on turboprop airliners, hopping between small outstate airports and large city hubs. Snow and ice were a constant battle, especially when the cruise altitude rarely got above 17,000 feet MSL.

Early that morning we preflighted a cold-soaked plane that had been sitting out on the ramp overnight. An area of freezing rain had moved through, glazing the landscape with a thin layer of ice. The Saab had already been sprayed down with Type I deicing fluid—a heated mixture of glycol and water that removed any accumulations of ice, snow, and frost from the plane, and which was viscous enough to remain on the wing to help protect it from further accretions of frozen contaminants. The station agents did a thorough job, as during my preflight I was practically wading through the pink slime as I walked around the plane. There wasn't a trace of ice left anywhere on the aircraft. The skies were overcast, but no precipitation was falling at departure time. However, the band of freezing rain (FZRA) had set up just off to the north of the airport, and we encountered it during the climb out.

Our flight was quick, as we were heading only about 20 minutes north to our next stop to pick up the remainder of our passenger and cargo manifest before heading back to the hub. We picked up a bit of ice along the way, but the Saab's deicing boots handled it just fine. The Automated Surface Observing System (ASOS) indicated arrival weather of low overcast skies, light winds, five miles in mist, and a temperature of around freezing. We set up for the ILS approach to the main runway and headed in. The approach was completely normal. We ran the deicing boots all the way in with one last cycle just inside the final approach fix, and we had plenty of mixed ice piling up on the windshield wipers. I think we gave a PIREP to air traffic control of "moderate mixed" icing on climb and descent.

The Captain was flying this leg, and I was the pilot monitoring. We broke out of the overcast layer about 500 feet AGL, and the captain made a sweet, light-as-a-feather touch on landing. It was a true greaser (which really isn't hard in the mighty Saab with a snow and ice-packed runway). DING! The master caution sounded just as I was complementing his touchdown and calling out "80 knots my tops," taking control of the yoke as the captain transitioned to the nosewheel tiller. "Antiskid," I reported and canceled the master caution. Antiskid cautions were pretty normal occurrences on the SF340 during crosswind landings, with one main gear touching and spinning up before the main on the other side. The indication typically extinguished a few seconds later when the antiskid computer detected wheel speeds that made the logic report, "OK, this is normal."

But this time it didn't extinguish. The captain had already taken notice and said, "Well, the brakes seem to work OK." He was decelerating smoothly down the runway. The passengers were probably still sleeping! We made the turnoff, cleared the runway, and I called Center to report our arrival and cancel IFR. After getting off the radio, while I was doing my after landing flow and checklist, the captain became concerned.

"Something doesn't feel right in the tiller. It's like it wants to pull a bit to the left."

"Even when you are off the brakes?" I queried. (Sometimes pilots would ride the brakes to control taxi speed; in some planes that are light, this is needed due to the excess thrust at idle.)

"I'm not even on them, and I'm in beta on both engines, and she pulls. Then even when I bump up the power she pulls, even asymmetric power," the captain explained.

"Well, maybe the antiskid failed and a brake is dragging or something," I offered. After all, the antiskid caution light was still on, and we hadn't really addressed it yet.

"Nah—if the antiskid failed, its fail-safe is to release the brakes, not engage them, right?" he asked.

I really didn't remember exactly. It sounded right, but what if it was some other brake failure? True enough, part of the antiskid system was "touchdown protection," which ensured the brakes were not locked up on touchdown but then allowed the brakes to engage when a certain wheel speed was sensed. Spin-up of an airplane's wheels to that speed takes less than a second. After that, the system works to prevent lockups and resultant skids between the four main gear wheels on the SF340.

We were continuing down the taxiway to the terminal. Despite the captain's complaints, I really didn't feel any dragging or difference in the smoothness of the taxi compared to normal.

"Well, do you want to run the QRH or anything?" I asked.

"It seems like it's getting better, and the brakes are working fine," he said as he gave a couple demonstrative pumps to the binders. "Let's get parked, and we will run the QRH before we shut down. We've got time."

We did have the time. The flight was over-blocked (scheduled with a longer-than-average flight time) and we often sat at the gate with at least one engine running with the prop in feather just to keep the passengers warm while we killed the time. As it was, we would have about 45 minutes before we would need to head back out, and we were only boarding

five more passengers. The QRH (Quick Reference Handbook) checklist for "ANTISKID" would hopefully resolve our issue, if one existed.

As we pulled into the ramp area we spotted one of our regular station agents headed out to the parking line with wands and chocks in hand. As we approached, he started to marshal us in. Then, very oddly, he got this look on his face as if he was seeing something unexpected and strange. His signaling motion slowed and he was staring at our left main gear. He guided us in to park, gave us the signal to stop, placed the chocks in around the nose gear, gave the chocks-in signal, and then very excitedly started pointing to the left main gear. "What the?! I'm shutting down the left side for now," said the captain as he feathered the props and shut down the number one engine.

As the left side spun down, he popped open the flight deck door and asked the flight attendant to open up the main cabin door. As soon as the main cabin door was opened and airstairs lowered, the agent bounded up them and stuck his head into the flight deck. "Guys, you have got to see this! You have a totally flat tire!!" I guarded the brakes as the captain went outside to see for himself. When he got back, I knew exactly what he was going to say even before he said it.

"We aren't going anywhere for a while."

We shut down the right engine, briefed and deplaned the passengers, and headed inside to call maintenance. Sure enough, the left main outboard tire was completely flat. Surprisingly, the inboard tire was intact, but under some stress from having to carry a bit more of the load. The captain was right: we were stuck for a while. The mechanic arrived with a new tire (three hours later) and changed it out. He called us out from the station office to take a look at what he found. The tire had a hole in it about 3 inches in diameter—a literal hole, not a crack or a slice, but an area where there simply was no more tire. It was a gaping hole from where the tire had been dragged all the way in from touchdown to the gate.

The wheel assembly itself had been locked frozen with ice. The same ice we PIREPed on the way in: moderate mixed ice. Typically, main gear can handle the ice because the impact of landing and wheel spinup breaks any ice accretion. This was not the case for our left main outboard wheel. It had never spun up, and we had been oblivious. We thought the antiskid had failed. Well, it had, but not on its own accord!

To make a long story short, we were on our way to Minneapolis after a four-hour delay. It truly could have been longer, but we worked hard to prevent that from happening. How? We simply took actions that kept the lines of communication open between our resources. The captain focused on coordination with dispatch and maintenance, and he delegated the task of keeping the local station, passengers, and crew scheduling in the loop. When the mechanic arrived, this meant I was also assisting him since he was the only one sent by the airline. I ensured he had what he needed to do his job, including borrowing a forced air heater from the local FBO to get the wheel assembly thawed out.

It was a good example of threat and error management, crew resource management, and overall pilot leadership skills being applied in a rather everyday type of outstation breakdown. It was what we were used to and how we operated at that carrier. I posted this story, or something very close to it, on my blog. I was extremely proud of our actions as a crew, and I thought it was a remarkable story, with the iced-up gear and all. I received great responses from people about it for the few days it was online. Then I was called into my chief pilot's office. The company's CEO evidently had read my post and asked that it be taken down. Back then, social media policy hadn't yet been invented (and, as I said, neither had Facebook or other social media sites). It was an ultimatum against which I didn't have a good argument, since my chief cited that (1) the employee handbook clearly stated that all public and media relations about flight events have to be approved by corporate communications, and (2) the request was coming straight from the top.

Alas, my blogging about flying days seemed numbered. But I always wanted to relate more than just cool stories like "There I was…cheating death again." I wanted to write about crews, captains, and people. I wanted to share experiences with passengers, ramp workers, and gate agents. And I especially wanted to write about the schoolhouse, and relate the good, the bad, and the ugly of airline pilot training. My tact would not be one of an exposé writer, pulling back the curtain to see behind the scenes. Rather, I wanted to share experiences that would help other pilots become better at their jobs. I wanted to take the valuable, non-dramatic, factual, and results-not-alibis type of conversations from the flight levels and the crew rooms and bring them forward.

So a couple of years ago on a long layover, I started drafting a blog post. It was going to be about pilot roles and the responsibility and au-

thority of the PIC. Captain's authority is a subject that has a long legacy of debate—between pilots and management, between management and the FAA, and among scholars and laymen. But the rubber meets the road every day, on every flight, as PICs make decision after decision to ensure the safe operation of their flights. It came to my mind that captain's authority is not just something that can be defined and interpreted from the Federal Aviation Regulations (FARs) and company operating procedures. Instead, it is a vested capacity of pilots to work with their crews and resources to enable the flight operation to take place. The blog post got longer and longer as I drafted it. I started thinking about doing a series of posts. As I worked through my ideas, however, it dawned on me that I didn't have a collection of blog posts so much as I had a book. And, so, *Pilots in Command: Your Best Trip, Every Trip* was born.

I wrote this book with every pilot in mind: the college student working their way through an FAA-approved curriculum to be an airline pilot; a new hire at the regional/express carrier; a new hire at a major/national carrier; a captain upgrade candidate; and pilots who want some extra insight, tips, and tricks of the trade. I also wrote this from the viewpoint I think all pilots share: we all want to be better. We all seek improvement and we want to keep the blade sharp. As I worked through each topic covered in the book, I developed an approach of "best practices" for pilots. From briefings to handling non-normals, and from reviewing a dispatch release to getting a good night's sleep, I have written this book with a practical approach, filled with simple steps to take, mnemonics to remember, and checklists to complete in your everyday efforts to be the safest, most responsible leader you can be both in and out of the flight deck.

Thanks for reading. Fly safe!

1

You Made It! Welcome to the Airlines

Perhaps, like me, you knew at a specific point in time that you wanted to be a professional airline pilot. I have met so many pilots who *just knew* they had to be at the controls, taking to the skies, and challenging the laws of nature. Flying, for many pilots, is the primary attraction. Simply breaking free from the ground, soaring among the clouds, climbing to vantage points known not even to most birds, and then gracefully navigating towards the landing strip, trading off energy for altitude and speed in order to return safely for a full stop.

Then the realization comes that there can be an intersection between the love of flight and a career. It might have been walking through the airport, watching the pilots go about their business. You noted the professionalism, the respect, and the purposefulness they exuded as they went about their duties. Maybe you saw the twinkle in their eyes as they greeted a wide-eyed child into the flight deck, and felt the tug at your heartstrings as another human gets bitten by the aviation bug.

So, you made a decision. You planned, you saved, and you invested. No matter what road you took, it was focused on the future career inspired by your dreams. And as you transition from student pilot to commercial pilot, building time and experience at the controls you knew the day would come where you would join the ranks of thousands to be a Pilot-in-Command at a commercial airline.

Your training, experience, and preparation have been waiting for a payoff. That time has come if you made it through the interview, got a class date, and are ready to step through the classroom door to begin your new-hire training at an airline. No matter the brand or designation of your carrier, the routes you will fly, or the type of airplane you will operate, your experience should be one that looks and feels like nothing else you have experienced in a professional training environment.

The job of an airline pilot is not one that merely works 9 to 5, confined to a cubicle with the exception of regular coffee and lunch breaks.

Your schedule is completely non-traditional, which has definite upsides and downsides. The view is second-to-none, and the office itself is pretty awe-inspiring in all of its technical glory. Your commute will undoubtedly require ground transportation to an airport, but could also mean the use of non-revenue flight privileges to reach your base. At the airport, your uniform, badge, and credentials as a professional pilot will grant you respect and trust unlike your average, everyday passenger—from the security lines to the gate podium, and even on board your flight, you have a job now that people hold in high regard. Although only through the lens of what pop culture has shown them, non-pilots understand it takes years of training and hard work to achieve the career of an airline pilot. Only you and you colleagues know the real truth of those matters, what the years leading up to this point have entailed, and that the years to follow will be so much more.

As a result, embarking on the training process as a new-hire, and becoming a part of the airline pilot world holds the distinction and advantage of being specialized for your job. It involves intense amounts of information, hours of independent and cooperative study with your colleagues, support from knowledgeable training personnel, and a results-driven curriculum that ensures you are fully qualified to take the helm of a transport category aircraft as pilot-in-command. All of this while imparting to you the importance of your position, the role you have in the success of the operation, and the opportunity you have to grow and become a leader from the flight deck.

AIRLINE CULTURE AND YOU

When you interview for an airline job, the panel of people evaluating you will not just be looking for someone who is going to fly the airplane. Their charge is to select individuals who are leaders; pilots who will not just do the basics of the job, but who will take the job to the next level. From working with fellow crewmembers to delivering friendly and genuine customer service, the candidate selection process will find people who are a good fit with the culture of the carrier.

Truly, each carrier's culture has much more to do with shared corporate values across all employee groups. There is a commonality among pilots, however, that our number one value is safety. An appropriate safety-based culture and mindset is anchored in place by pilot-leaders

who set a strong example of how each and every flight is operated with safety and security at top priority.

So, no matter what culture your airline has developed and implemented globally, for flight operations personnel safety culture headlines the operation. During your first few weeks of new-hire training at the airline, the impact of safety culture on your career and how you operate will become clear.

Other aspects of culture indoctrination—customer service, cost control, efficiency, employee standards, and other guidelines and policies—will most definitely be presented and even trained to you. This part of your training gets overlooked by some, as it seems like fluff. However, knowing how varied culture aspects and values including safety work together to make your airline succeed is a vital part of being a respected employee. More importantly, by setting proper examples of your company's culture as you perform your duties as a pilot, you will advance your professionalism and leadership qualities to a higher level.

Over the years, the airlines have leveraged the ability of their employees to cooperate in a way that produces operational results. Becoming familiar with the values that motivate things like on-time performance, missed bag rates, fuel efficiency scores, and even stock price is something that is done almost subconsciously by individuals. For example, an employee might lean into the value of achieving personal bests when it comes to personal metrics. The baggage runner who is able to prevent bags they are responsible for from misconnecting, the gate agent who continuously gets the boarding door closed by a certain target time prior to departure, or the line technician who is able to perform routine maintenance checks under a specified limit fall into this category.

During your first few weeks of training, and certainly during your first few weeks on the actual flight line, you will find that pilots hold a unique position when it comes to meeting or exceeding operational metrics goals. When all other employee groups have done what they can do to get a plane to depart on time, it all comes down to if and when the pilots release the parking brake. The decision to do so includes an affirmation by the pilot-in-command—the captain—that the number one goal and cornerstone of airline culture, safety, has been assured. As it has been said by many before me, "The airplanes don't move without the pilots!"

YOUR JOB: BE A LEADER

Becoming an airline pilot has less to do with the technical aspects and operational skills of flying an airplane than it does with the soft skills of working cooperatively with others. Your training will undoubtedly spend a good chunk of time on this. Some carriers utilize exercises involving personality assessments, team building exercises, and other challenging scenarios to build up people's abilities to work well with one another.

At my first airline, a memorable part of both my new-hire and a few recurrent training sessions involved our Crew Resource Management (CRM) training module. The Human Factors Team at the regional carrier had cherry-picked some of the best course material from executive management training sessions, CRM programs from major airlines, and some leading-edge crisis management exercises for first responders. They were able to put it all together in a single-day session and they made it fun. It wasn't fluffy; it was by no means a charm school. Rather, it was a class that took the realities of interpersonal behaviors, cultural influences, and true-to-life stories and scenarios and applied them in an active, adult education format that taught us to be honest about our strengths and limitations.

Moreover, the course enabled people to tap into their own leadership skillsets. If your airline is doing it right (and under current standards they likely are) your training experience from Day 1 to the end of your new-hire training sequence will be geared in the same way. At every stage—not just in your crew resource management module—you will find opportunities to grow and evolve as a leader. If the feedback I have heard from countless pilots across the industry is accurate, nobody has considered it *work* as much as they have considered it *rewarding*. What's better than that?

Your job in training is not just to learn to fly the plane the way the carrier wants you to fly. Your job is to become the pilot leader they are counting on you to become. That is a big part of what this book, and all of your training throughout your career, will be about.

Let's get started!

7

Initial Qualification—More Than Just Learning a New Airplane

As pilots train and accomplish requirements to gain their Private Pilot and Commercial Pilot Certificates, Instrument and Multiengine Ratings, and even check-out on a new type of airplane that doesn't require a type rating, they are very much in single pilot mode. Part I of this book was written to aid your transition into the crew environment. You will no longer be in single pilot mode. Every aspect of every flight operation will involve working with others cooperatively to ensure a safe flight.

Starting with your first day in BI, all of your training will be done in a crew environment as well, and that certainly includes aircraft training. I introduced you to the basics of AQP in Part I of this book. Here we will look closer at the nuts-and-bolts of how training and evaluation under AQP works, and how you can do your very best to get the most out of the program your carrier has put together.

Let's start by looking at the basic components of an Initial Qualification course under AQP. You will see that each phase of your qualification course will involve different modes of training. This includes classroom lecture, coursework (using either computer-based training, workbooks, or handouts), Flight Training Devices (FTD), and Full Flight Simulators (FFS).[1]

AQP QUALIFICATION SYLLABUS OVERVIEW

This course overview is common among most air carriers utilizing an AQP for aircraft qualification. You will note the lack of the words "checkride," "stage check," or any sort of "check." This is clue number one that you are doing your aircraft qualification under AQP rather than a Subparts N and O syllabus. Rather than being checked along the way, the pilot is being validated or evaluated. In fact, the Line Oriented Evaluation (LOE)—the final assessment of a pilot's ability to safely op-

erate the airplane—is geared to evaluate how the *crew* operated the flight *together*, rather than being a pass/fail of each pilot's airmanship and flying skills. More on this later.

Phase of Training	Mode of Training
Aircraft Systems Training	Coursework, classroom, FTD
Systems Validation (SV)	Written/computerized knowledge test
Flight Deck Procedures Training	Classroom, FTD
Procedures Validation (PV)	Briefing, FTD
Maneuvers Training	FFS
Maneuvers Validation (MV)	Briefing, FFS
Line Oriented Flight Training (LOFT)	FFS
Line Oriented Evaluation (LOE)	Briefing, FFS
Operating Experience	Live flight operations

An AQP training syllabus is designed to allow for the subjective nature of evaluation of aircraft knowledge, airmanship skills, and most importantly crew coordination and proper use of CRM. Grading and performance standards are applied during each flight training device, simulator, and line flying evaluation (where applicable). For data collection and tracking purposes (essential and required under AQP) as well as to grade performance during evaluations, crews and individuals are graded on a numerical scale. More on this later in this chapter.

Each carrier will employ a different mix of training modes and methods for each phase of the qualification course; therefore, I can't get into too much actual detail on how each phase is carried out. Instead, I can give you a general idea of how a qualification course typically runs.

Aircraft Systems Training

When the qualification course kicks off, there are some prerequisites of sorts that carriers typically employ, but they do not necessarily prevent the commencement of the course. Such requirements may include the completion of the BI course, some sort of line familiarization requirements,[2] and perhaps even a flight time or experience requirement. Beyond that, most pilots in the industry will enter a qualification course when newly hired by their carrier, or when transitioning to a new fleet.

Since it is the twenty-first century, it is very common for airlines to utilize computer-based training or distance learning rather than classroom time for much of the coursework required for training programs. The Aircraft Systems Training phase commonly leans on a large portion of the training being done by the pilot on their own via online courses. The benefit of this, primarily, is the reduced cost for the airline to conduct in-person ground schools. But the benefits of a flexible learning schedule and the ability to review on a pilot's own time cannot be overstated.

There are certain things, however, that a computer-based course cannot convey or teach. Therefore, it is especially common in this phase for pilots to attend a handful of lecture sessions that cover more detail on aircraft systems and allow for interaction with instructors that have high levels of technical knowledge.

The Systems Validation (SV) is used in AQP to validate the pilot's knowledge of aircraft systems. Depending upon the design of the course, and the fleet being trained, the SV may be performed upon completion of the online and classroom training. However, many operators have found that reinforcing systems knowledge with sessions in the FTD provides the best mode and method to meet proficiency standards in this phase. FTD lessons at this early stage of the course are driven very much in the direction of familiarization. The use of FTDs that provide functional feedback (being able to push a button or flip a switch and see an actual change in aircraft system state) are required for carriers that have FTD lessons in the systems phase.

I personally enjoy these lessons, both as an instructor and as a student. It's fun to turn on the APU, start an engine, and even see what lights up on the panel when something goes wrong *before* even knowing what the plane feels like to actually fly. As an instructor, I have found students actually saying out loud "Ahhhh," when they see a system run

and cause an indication that they didn't understand completely from the book or computer lesson. The reinforcement is real!

The SV is given by a qualified instructor, and, in this technological age, is typically conducted on a computer testing platform. Like other knowledge tests you have done to achieve certification, a score of 80 percent is typically required. Also like previous knowledge (or "written") tests, scoring less than 80 percent does not mean you have failed the course overall. It does, however, incur more training. Rather than calling it retraining, which implies that the systems phase of the course has to be repeated, a pilot only is required to remediate the questions or subject areas missed to *proficiency*. Some airlines require a full re-take of the SV, and others require only a retest of the subject areas missed; again, it depends on the design of the course.

Flight Deck Procedures Training

After students have completed the SV, more work in the FTD is completed through a set of lessons designed to teach flight deck flows, procedures, checklist usage, and certain flight profiles all while reinforcing the systems knowledge previously learned. At this stage of training, actual time in the FTD is bookended with briefings. Your time in FTDs and FFSs will always start with a briefing that will not only give an overview of the lesson, but also serve to prepare the crew for the elements that will be completed. At the end of the lesson, the instructor will review the lesson, give feedback on what went well, what could be better, what to work on, and what comes next. Briefings are integral to the qualification course, allowing for feedback and providing opportunities to take deeper dives into the topics and elements of the lesson.

During procedures training, every flow and checklist done in a normal flight operation is covered. Aircraft acceptance, flight deck setup, programming and setting of flight management systems, radios, and navigational aids; preflight checklists, engine starts, pre-taxi and takeoff checklists, after takeoff, climb, cruise, descent, approach, and landing checklists; after landing flows and checklists, parking and shutdown procedures, and even some special operational checklists will be covered.

Also in this phase, it is common for airline training departments to reinforce, or perhaps reintroduce, common callouts, flow and checklist standard operating procedures, and other common procedures that are implemented company-wide, regardless of fleet. An example is altitude

Third Edition

PILOTS IN COMMAND

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Airline pilots are looked upon as leaders by passengers, crew, and employers alike. Newly hired pilots, as well as current pilots upgrading to become Captains, are required to have training, experience, and skills that demonstrate practical leadership ability and professionalism. Beyond accumulated experience in the flight deck, pilots need straightforward guidance on how to fulfill the role of pilot-in-command. Pilots know that when things go wrong, everyone looks to the Captain—the pilot-in-command—to make things right.

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TRANSPORTATION USD $19.95
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