Well-trained and well-equipped dispatchers who can help attend to the myriad details of planning and conducting flights are a boon to any busy flight department. Most *ASW* readers are probably familiar with the airline model of operational control, which comprises dispatchers, schedulers, maintenance controllers and pilots working together to direct the intricate ballet of a day's flying.

In a tightly scheduled airline hub system, even the good days can be a running battle against disruption. Besides keeping the system on time, safety and compliance must remain as paramount goals. The same basic issues apply to a similar operation without a fixed schedule, like a large fractional ownership or charter company.

BY PATRICK CHILES

A good dispatch team enhances safety and efficiency while reducing disruptions.

GROUND SUPPORT

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Flight control center personnel provide a 'second set of eyes' for flight crews in NetJets' worldwide operations.

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NetJets' U.S.-based operation, for example, has a fleet of more than 400 aircraft in worldwide service. Each day's schedule is shaped not by an economic analysis of demand between city pairs, but by the personal demands of thousands of individual share owners and charter clients. So, imagine having a route system the size of a major international airline's — and taking a big eraser to the schedule every day, if not every few hours.

This creates enormous challenges across the system. Scheduling, logistics, safety and compliance are put to the test by a constantly evolving demand structure. And the end result — safely delivering exceptional service — has to be as transparent as possible to the passengers. Although passengers generally accept uncontrollable disruptions like weather, everything else is expected to run like clockwork. To stretch the analogy a bit further: How does this happen when nobody knows exactly what the clock may look like from one day to the next? And how is it managed without compromising safety?

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Andrew Wuertzer, dispatch tactical manager, and Aaron Chamberlain, ATC specialist, work out details for an upcoming flight.

Early Challenges

Early in the program's history, many arrangements were delegated to the flight crew. Fleet chief pilots were always available to help with problem solving, a practice that continues today. But, while employees at the Columbus, Ohio, operations center managed schedules and logistics, most operational and safety decisions were left to the pilots.

Route planning and the related calculations were accomplished by individual flight crewmembers before each leg, while the operations center could provide computerized weight-and-balance data and field-length performance calculations. It remained the flight crew's responsibility to check the numbers, in addition to preparing and filing their own flight plans.

As the fractional program grew and daily flight counts continued to rise, it became clear that pilots needed to be unburdened from dispatch-related tasks. The type and quality of ground support had to improve. Implementing an airline-style flight dispatch organization was seen as the best way to simultaneously improve fleet utility and safety.

There were, and still are, many challenges to this approach. Figuring out personnel, licensing and equipment needs was comparatively straightforward — the more amorphous questions of "how" would take years to work out. At the rate the company expanded during the 1990s, any major new programs were likened to changing tires on a moving car.

Shared Responsibility

As Peter V. Agur Jr. pointed out in a previous issue of *ASW* (3/08), one of the biggest hurdles in developing the needed ground support system was indeed "people-related" — the necessary cultural change was not to be taken lightly. With so many pilots coming from corporate or charter aviation, some were reluctant to accept the shared-responsibility concept — as some would say, "No one is about to tell *me* how much fuel to carry!"

Moving beyond this required demonstrable expertise, while making clear that the pilots were getting help and not another layer of management. Having round-the-clock access to chief pilots for each aircraft type helped everyone through this growing pain.

To be fair, it was not merely an ego clash. Responsibilities in the airline world are clearly defined and supported by decades of organizational experience. Beyond any legal requirement, airlines see this relationship as an accepted best practice for managing complex systems, and their crewmembers are generally more amenable toward it. But tailoring this model to fit a general aviation environment created as many questions as

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it answered. For example: How do you grant nearly 50 dispatchers, who technically are not required, the authority to be effective without simultaneously undermining the captain's authority?

Ultimately, the pilot-in-command still has final authority to conduct, cancel or change a flight. How does that work in practice? In our case, decisions to release flights and requests by scheduling or customers for operational diversions must also go through the dispatchers. Any diversions for such matters as aircraft malfunctions, equipment problems or weather are decisions that remain with the crew.

Over time, the dispatcher's second set of eyes has undoubtedly enhanced safety. For every flight, licensed dispatchers create a release package that contains weight-and-balance data, takeoff and landing performance calculations, a computerized flight plan, weather information and notices to airmen (NOTAMs).

As mentioned, crewmembers are still required to check relevant details and calculations before accepting a release, but they no longer have to work it out on the run. This means turn times are more productively spent actually getting the airplane ready to fly. For an operation that is governed by the regulatory requirements for fractional ownership operations, charter operations and supplemental air carrier operations, this has become an absolute necessity.

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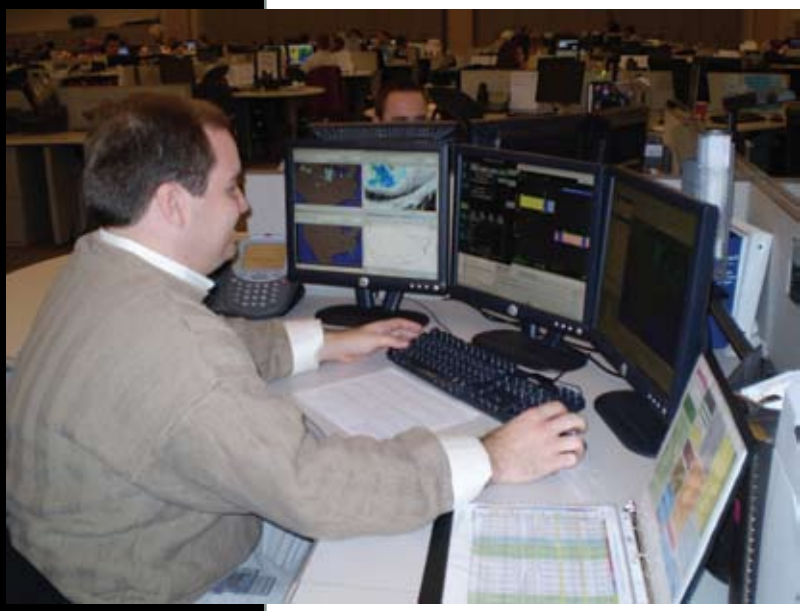

Patrick Chiles

With weather, weight-and-balance and scheduling information at his fingertips, Mike Olson prepares a BBJ flight release.

Pieces in Place

The big picture is managed through a proprietary reservation and flight-following program called IntelliJet II. Anyone in the company with a hand in creating or managing trips uses this as their access point. Every flight goes from initial booking to crew and aircraft scheduling, through airport review, feasibility and logistics, and finally to dispatch and flight following.

The program is also integrated with Jeppesen's flight planning software and UltraNav's takeoff performance tool. Other tools, like Flight Explorer and Jeppview electronic charts, round out the information at the dispatcher's fingertips.

Different teams of specialists have a hand in each trip at different steps along the way. Initial booking of a new flight immediately generates activity through airfield analysis and trip feasibility. Analysts review airport suitability and look for any potential show-stoppers on each trip. By the time a flight makes it to the dispatcher for release, there is usually little question remaining as to whether it can run as planned.

This is not to say that problems never appear — some things just cannot be known until it's time for the rubber to meet the road. NetJets dispatchers have unique value in the customer service arena as creative problem solvers. Coordinating among multiple departments, they have the technical expertise and big-picture view to develop options for trips with go/no-go challenges. This makes the outright canceling of trips a rare occurrence.

Collective Knowledge

Work on an individual flight typically begins several hours ahead of departure. While preparing a flight plan and release, dispatchers are not entirely on their own — supporting them are teams of meteorologists, air traffic control (ATC) coordinators and Jeppesen international handlers.

NetJets participates in the U.S. Federal Aviation Administration's Air Traffic Control System Command Center collaborative decision making program, and most company ATC specialists are former controllers. This enables the dispatchers to have a complete picture of national flow control programs, in addition to access to the company's internal route database. Built over several years of experience, the database includes thousands of preferred routes between common city pairs.

This advance coordination and collective knowledge gives dispatchers the ability to quickly create more accurate flight plans. There are obvious benefits — for example, routes that ATC is more likely to clear as filed mean more predictable arrival times and fuel burns.

While accurate flight plans are the goal, tools like the route database are crucial in enabling dispatchers to manage their workload. And that load can be considerable. Customer demand, crew disconnects, broken airplanes and bad weather may converge — often all at once — to make the flight schedule a constantly moving target. The rapid pace can be both frustrating and exhilarating, testing even the most three-dimensional thinker. One dispatcher can easily release up to 50 flights on a shift, not counting those that end up in the trash bin because of schedule changes.

After the final flight plan is filed and uplinked to the airplane, centers of gravity are checked via a weight-and-balance tool integrated with the flight release program. It is a relatively simple calculation using standard average weights by seat location. A more complex application is the UltraNav takeoff performance tool, which uses

airplane flight manual performance data to determine field-length limits and climb capability.

The dispatcher can input the published climb gradient and minimum safe altitude from a published standard instrument departure, or a controlling obstacle if there is a published departure procedure for avoidance. The exception to this practice is with the Boeing Business Jet fleet, which relies on Boeing's Onboard Performance Tool. Instead of using charted procedures, this tool directly calculates regulatory takeoff performance against a runway and obstacle database. This real-time runway analysis generally allows higher maximum takeoff weights for a given condition.

Off to the Races

Once the flight is airborne, dispatchers are able to monitor its progress using Flight Explorer, a commercially available product. It enables them to view flight plan tracks layered with any number of informational displays. Satellite views, prognostic charts, icing reports and temporary flight restrictions are most commonly used.

Communications are maintained with several tools, including the airborne flight information system (AFIS), aircraft communications addressing and reporting system (ACARS), satellite phones and sometimes even a good old-fashioned ARINC phone patch.

As mentioned before, non-emergency diversions are coordinated through the dispatch team. Many diversions are "self-inflicted," resulting from owners' needs changing in flight. Pilots would agree that dedicated specialists on the ground, evaluating each diversion as it happens, are worth their weight in gold.

The dispatch team also has enabled the company to better manage fuel consumption by using computerized flight planning and by tankering fuel through high-cost locations. Beyond saving money, tracking planned versus actual fuel burn has improved safety by enabling the company to accurately fine-tune the airplane cruise databases.

For example, a thorough analysis of Dassault Falcon 2000 fuel consumption was a key factor in increasing payload on winter flights to Hawaii while keeping a generous reserve margin. A similar fuel-burn study enabled reliable scheduling of nonstop trips between New York and London by the Cessna Citation X with similar safety margins. Actual burns regularly end up well within 1 percent of the flight plan estimates.

Safety Firewall

Ultimately, fuel-burn management is not why this program was started. When the fractional-ownership program took off in the 1990s, flight dispatch was created as a way to deal safely with the increased operating tempo.

The shared responsibility concept creates a firewall against rushed decision making in a rapidly changing environment. These benefits are more difficult to quantify, but anecdotal evidence from employees on both sides of the process have cemented the belief that this model has successfully cut off any number of potential hazards before they could materialize.

Threat and error management has been getting more deserved attention of late, and it is clear that a robust, well-qualified dispatch team mitigates numerous threats before airplanes even leave the ramps. Any flight department with a heavy operational tempo or complex scheduling would be well served to consider the benefits of similar practices.

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Further Reading

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Chiles, Patrick. "VFR in the Himalayas." *ASW* Volume 3 (April 2008): 22–26.

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