University of North Carolina operates a Daher-Socata TBM 850, a TBM 700C2 and 4 Beechcraft Baron 58s. They fly school officials, athletic directors, coaches and medical professionals involved in the UNC Health Care System. (L-R) Dir of UNC Air Ops Gordon Kramon, TBM and Baron Sr Capt Jim Hotelling, Dir of Mx David Eastwood and Air Transportation Coordinator Lotta Peltola-Nelms. Aircraft and staff are based at RDU (Raleigh-Durham NC).
One of the best known college logos in the country today belongs to the University of North Carolina (UNC). The distinctive “Carolina blue” UNC logo appears on clothing, banners and flags, license plates, glasses and cups and all manner of collectibles.

It is also displayed prominently on 6 aircraft that the university operates to support a statewide medical outreach program and to provide transportation for key school officials traveling to conduct the university’s business.

With 17 campuses located across the state, UNC is an extensive operation from the Atlantic coast on the east side to the Appalachian Mountains in the west, serving more than 220,000 students. The school graduates about 30,000 annually from more than 200 academic degree programs.

In 2013 US News & World Report magazine ranked UNC Chapel Hill (the university’s flagship campus) 5th among the nation’s top public colleges and universities. This achievement shows the high academic credentials that UNC has. Chartered in 1789, UNC is one of the oldest public universities in the country.

Today UNC-Chapel Hill is a coeducational public research university which includes the UNC-Chapel Hill School of Medicine and its associated UNC Health Care System (HCS). HCS exists to further the teaching mission of the university and to provide state-of-the-art patient care, creating a key interface between the academics of biomedical research and the day-to-day delivery of health care services.

Also maintaining a world-class collegiate athletics department, the university’s teams have won more than 40 National Collegiate Athletic Association (NCAA) championships in 6 different sports, including men’s and women’s basketball, men’s and women’s soccer, men’s lacrosse and women’s field hockey. Recruiting the top-level athletes necessary to consistently field teams with championship potential requires extensive travel by UNC coaches and the university’s flight department plays an important role.

UNC’s flight department got its start in 1968 when a doctor in Chapel Hill recognized that much of rural North Carolina needed better access to medical care and that aircraft could carry doctors to meet with groups of patients, vastly improving the efficient use of the doctors’ time.

Originally air operation was established under the auspices of the North Carolina Area Health Education Centers, or AHEC, which was part of a then newly-created Federal AHEC program under the US Department of Health and Human Services. A nonprofit foundation called UNC Medical Air Operations, or Medical Air for short, was established to own the aircraft.

Today the flight department still operates on essentially the same model, although its role has expanded to include a wider array of medical educational services as well as additional functions for the university including recruiting and executive transport, using a fleet of 6 aircraft including 2 Daher-Socata single-engine turboprops, a TBM850 and a TBM700C2, and 4 Beechcraft Baron 58s.

The flight department for UNC is based at RDU (Raleigh-Durham NC) in a purpose-built 16,000 sq ft facility that includes a 10,890 sq ft maintenance and storage hangar, plus offices and additional maintenance space. UNC Flight Ops relocated to RDU about 3 years ago from its original location at IGX (Chapel Hill NC).
Flight activity averages 5 to 7 trips daily, typically carrying 1 to 3 passengers. Most operations are in daylight, transporting faculty and resident physicians to clinics around the state. Occasional night flights enable faculty members to conduct evening continuing education classes.

During the 2012-2013 academic year UNC Air Operations carried 1912 passengers to more than 98 destinations, including the state’s 9 AHEC centers and various community hospitals, health departments and universities.

“This service makes it possible for our faculty to reach very remote sites in the state on a daily basis, while still maintaining a full slate of professional activities,” says Nadine O’Malley, UNC’s associate director for administration and finance, who has administrative responsibility for the flight department. “Without our flight department, there’s no way we could offer these services with our current level of staffing.”

Under Kramon the university has modernized its fleet with TBM TPs

Before long, Kramon was authorized to replace one of the Barons with a turbine-powered aircraft. The department demonstrated all of the available candidates: Pilatus, Piper and TBM.
single-engine turboprops as well as Cessna’s Mustang light jet. “We needed speed and we needed efficiency but we didn’t need a big cabin,” he says. In 2011 the department acquired its 1st Daher-Socata TBM. The aircraft quickly proved to be so popular that a 2nd TBM joined the fleet in 2012.

Meanwhile, Kramon was also pushing hard to upgrade his fleet of aging Barons. By 2013 all but the 2001 model were gone, replaced by 3 newer Barons, an 04, an 05 and an 09. With the new aircraft came matching avionics as well. All of the department’s aircraft are equipped with WAAS enabled Garmin 530s, except the newest of the Barons which was a Garmin G1000 panel. All have satellite weather and active traffic avoidance systems and all are certified for flight into known icing.

Because UNC’s airplanes are owned by a nonprofit foundation, the process for acquiring them differs considerably from the way most flight departments buy aircraft. “We don’t buy new airplanes,” Kramon explains. “Instead, we acquire airplanes that are a few years old, using a process called a “bargain sale donation.” We look for wealthy people who have written off their airplanest. We look for wealthy people who have written off their airplanes. We look for wealthy people who have written off their airplanes. We look for wealthy people who have written off their airplanes. The donor gets a tax deduction, plus he or she doesn’t have to recoup as much on the sale because they’ve saved it on taxes. The donor is better off and so are we. It’s a total win/win situation.”

**Revamped fleet expands services for UNC Medical Air**

Kramon explains. “Instead, we acquire airplanes that are a few years old, using a process called a “bargain sale donation.” We look for wealthy people who have written off their airplanes. We look for wealthy people who have written off their airplanes. The donor gets a tax deduction, plus he or she doesn’t have to recoup as much on the sale because they’ve saved it on taxes. The donor is better off and so are we. It’s a total win/win situation.”

With his newly updated fleet, Kramon was well positioned to offer expanded services to the university. The Barons rarely leave the state but the 320-kt speed of the TBM’s makes them excellent midrange transports and Kramon now frequently carries NC coaches on recruiting trips, seeking out top level high school athletes to join the university’s teams. Hall of fame UNC women’s basketball coach Sylvia Hatchell is a regular passenger on UNC’s TBMs.

University officials also periodically need to travel to Washington DC and the UNC flight dept has complied with the complex steps necessary to operate into DCA (National, Washington DC). Kramon described the procedure, which includes creating a dedicated DCA Access Standard Security Program (DASSP) manual that establishes the department’s RDU terminal as an authorized gateway for DCA-bound flights, having background checks on all authorized pilots and having the department’s TBM’s checked and cleared. The departure terminal must also meet requirements for secured access to the ramp. It took 2 years, he says, to comply with all the requirements.

**Flight scheduling under Lotta Nelms**

Lotta Peltola Nelms is the department’s air transportation coordinator, performing the scheduling function in conjunction with assistant coordinator Carolyn Mann. Nelms is a native of Finland. Her father and grandfather were pilots in the Finnish Air Force and she grew up around airplanes.

Too short to qualify for the Air Force at home, she came to the US in 1998 to learn to fly, earning her licenses at North American Institute of Aviation at Myrtle Beach SC. Upon graduation she became an instructor at the school. In 2001 she took a job at Ram Air Freight at RDU, hauling checks in pistol singles and twins. She rose through the ranks at Ram Air and became director of ops there, with responsibility for 55 aircraft, remaining there until the company closed in 2012.

Around the same time UNC’s scheduler was retiring. Nelms had done scheduling work at Ram Air, and was soon hired at UNC. She takes incoming flight requests from doctors, clinics, and administrators, and develops a schedule based on aircraft availability. She also schedules the flightcrews and makes sure duty times and other requirements are met.

Part of her duties include coordinating facility requirements, including inspections for the building’s fire extinguishing system. Kramon says Nelms’ background as an ATP-rated pilot makes her especially valuable as a scheduler and general trouble shooter. “She understands our operation in ways a non-pilot simply couldn’t,” he says.
For this compendium we selected 8 TPs that have proven their mettle and earn the respect of their pilots and mx providers by flying in and out of unprepared fields, carrying needed supplies or serving isolated communities where they deliver foodstuffs or medicines. They are the ubiquitous Beech King Air in ISR mode, the Bombardier Dash 8 Q400 Nextgen as a firefighter, Cessna’s ever-popular Caravan as a military supply plane and paradrop aircraft, Daher-Socata’s TBM carrying officers serving in the French Army, the Piaggio P.180 Avanti II as a marine surveillance aircraft, the Pilatus PC12 Spectre for reconnaissance missions, the Quest Kodiak as a rough field outpost supply aircraft and the Viking Twin Otter 400 for border patrol service.
Beechcraft King Air 350iER
303 ktas, 2340 nm, FL350  $8.5 million

Technical Specifications
This is the extended range variant of King Air 350.

CABIN
Seats (standard/max) .................................. 9/11
Volume .................................................. 355 ft³
Sea-level cabin ............................................. 15,293 ft

WEIGHTS
BOW .................................................. 10,385 lbs
MTOW ................................................ 16,500 lbs
MLW .................................................. 15,675 lbs
Payload w/max fuel ............................................. 1023 lbs

PERFORMANCE
Cruise, long range/high speed ........... 238/303 ktas
Range, ferry (100 nm alternate) ............ 2340 nm

MISSION PERFORMANCE (time/flight level)
300 nm ............................................ 1h05/FL350
600 nm ............................................ 2h07/FL250
1000 nm .......................................... 3h36/FL330

AIRFIELD PERFORMANCE (SL, ISA)
Field Length (MTOW/MLW) .......... 4473/2728 ft

POWERPLANT(S)
Manufacturer.................... Pratt & Whitney Canada
Type .................................................. PT6A-60A
Output/Flat rating ..................... 1050 shp/ISA+10°C

AVIONICS
Manufacturer/Suite............... Rockwell Collins Pro Line 21

Cabin. The square-oval fuselage design offers more head and shoulder room. Selected seats are reversible/removable.

Pressurization/ECS. A 10,380 ft cabin altitude is maintained at maximum cruising altitude of FL350. Dual-zone cabin climate controlled automatically with little input from pilot.

Ice/rain protection. Bleed air used to protect brakes, wing and horizontal stabilizer leading edges, and engine inlets.

Cockpit. Pro Line 21 avionics includes 3 8 x 10-in PFD/MFD/EICAS LCDs to complement complete digital CNS suite.

Bombardier Q400 Nextgen
349 ktas, 1125 nm, FL350  $21 million

Technical Specifications
Q400 a/c features reduced costs for fuel and mx.

CABIN
Seats (business standard/max) .............. 28/40
Volume ............................................. 2740 ft³
Sea-level cabin ............................................. NA

WEIGHTS
BOW .................................................. 38,986 lbs
MTOW ................................................ 65,200 lbs
MLW .................................................. 62,000 lbs
Payload w/max fuel ............................................. NA

PERFORMANCE
Cruise, long range/high speed ........... 349/360 ktas
Range (100 nm alternate) ............ 1125 nm

MISSION PERFORMANCE (time/flight level)
300 nm ............................................. NA
600 nm ............................................. NA
1000 nm ............................................. NA

AIRFIELD PERFORMANCE (SL, ISA)
Field Length (MTOW/MLW) .......... 4819/4232 ft

POWERPLANT(S)
Manufacturer.................... Pratt & Whitney Canada
Type .................................................. PT6A-150A
Output/Flat rating ..................... 5071 shp/NA

AVIONICS
Manufacturer/Suite............... Thales Avionics

Cabin. Updated cabin, LED lighting, windows and overhead bins with active noise and vibration suppression.

Pressurization/ECS. Maximum cabin pressure is 5.5 psid.

Ice/rain protection. Conventional boots protect wing and horizontal stabilizer leading edges, and engine inlets.

Cockpit. Avionics suite includes 5-LCD PFD / MFD / EICAS displays to complement complete digital CNS suite and optional CAT IIIA with HGS, RNP 0.3, WAAS/LPV, steep approach and datalink.
Cessna Grand Caravan EX
195 ktas, 865 nm, FL276  $2.5 million

Technical Specifications
EX model offers enhanced performance compared to the venerable Grand Caravan.

CABIN
Seats (standard/max)..........................9/14
Volume...........................................254 ft³
Sea-level cabin..................................NA

WEIGHTS
BOW.............................................5305 lbs
MTOW...........................................8807 lbs
MLW.............................................8509 lbs
Payload w/max fuel..............................1291 lbs

PERFORMANCE
Cruise, long range/high speed...........238/303 ktas
Range, ferry (100 nm alternate)........2340 nm

MISSION PERFORMANCE (time/flight level)
300 nm........................................1h37/FL100
600 nm........................................3h09/FL100
1000 nm........................................NA

AIRFIELD PERFORMANCE (SL, ISA)
Field Length (MTOW/MLW)...............2160/NA ft

POWERPLANT(S)
Manufacturer..........................Pratt & Whitney Canada
Type..............................................PT6A-140
Output/Flat rating..........................867 shp/NA

AVIONICS
Manufacturer/Suite......................Garmin G1000
Cabin. Cabin can accommodate handling of large, bulky items. Additional cargo volume is available with optional cargo pod. Pressurization/ECS. Aircraft is not pressurized. Cabin climate maintained by the pilot.

Ice/rain protection. Aircraft has limited ice protection and is not certified for flight into icing conditions.

Cockpit. G1000 features 3 PFD/MFD/EICAS LCDs complementing CNS suite. Also equipped with an IR port to accommodate data entry via handheld Garmin PDAs.

Daher-Socata TBM 850
320 ktas, 1452 nm, FL310  900: $3.7 million

Technical Specifications
At press time TBM 900 was unveiled as successor to the TBM 850. TBM 900 has winglets and offers longer range (1730 nm) and faster cruising speed (330 ktas). TBM 850 production will cease.

CABIN
Seats (standard/max).........................5/6
Volume...........................................123 ft³
Sea-level cabin................................14,390 ft

WEIGHTS
BOW.............................................4780 lbs
MTOW...........................................7394 lbs
MLW.............................................7024 lbs
Payload w/max fuel..............................633 lbs

PERFORMANCE
Cruise, long range/high speed...........255/320 ktas
Range, ferry (100 nm alternate)........1452 nm

MISSION PERFORMANCE (time/flight level)
300 nm........................................1h01/FL260
600 nm........................................3h09/FL280
1000 nm..........................................NA

AIRFIELD PERFORMANCE (SL, ISA)
Field Length (MTOW/MLW)...............2840/2430 ft

POWERPLANT(S)
Manufacturer..........................Pratt & Whitney Canada
Type..............................................PT6A-66D
Output/Flat rating.........................850 shp/ISA+49°C

AVIONICS
Manufacturer/Suite......................Garmin G1000
Cabin. Cabin can accommodate a wide range of configurations.

Pressurization/ECS. Aircraft is pressurized. Cabin climate is automatically maintained.

Ice/rain protection. Aircraft is certified for flight into known icing conditions.

Cockpit. G1000 uses 3 PFD/MFD/EICAS LCDs to support CNS suite. IR port allows data entry via handheld Garmin PDAs.

Note: Drawings and photos in this writeup feature the TBM 850.
Piaggio P.180 Avanti II
402 ktas, 1530 nm, FL410  $7.2 million

Technical Specifications
Avanti II is a versatile, high-performance aircraft used in a wide range of public services.

CABIN
Seats (standard/max)...........................7/9
Volume.............................................375 ft³
Sea-level cabin.................................24,000 ft

WEIGHTS
BOW..................................................8375 lbs
MTOW..............................................12,150 lbs
MLW.................................................11,500 lbs
Payload w/max fuel...........................973 lbs

PERFORMANCE
Cruise, long range/high speed.......318/402 ktas
Range, ferry (100 nm alternate)......1530 nm

MISSION PERFORMANCE (time/flight level)
300 nm...........................................0h53/FL310
600 nm...........................................1h44/FL350
1000 nm.......................................3h02/FL390

AVIONICS
Manufacturer/Suit.........................Rockwell Collins Pro Line 21

Cockpit. Avionics suite features 3 10.8 PFD/MFD/EICAS LCDs, Pro Line radios, 1 FMS AHRS, TCAS, TAWS, and numerous options.

Pilatus PC12 Spectre
280 ktas, 1582 nm, FL300  $4.6 million

Technical Specifications
Spectre is a multi-purpose variant of the PC12 line with enhanced avionics and performance.

CABIN
Seats (standard/max)..........................7/10
Volume.............................................330 ft³
Sea-level cabin.................................13,100 ft

WEIGHTS
BOW..................................................6782 lbs
MTOW..............................................10,450 lbs
MLW.................................................9921 lbs
Payload w/max fuel...........................1456 lbs

PERFORMANCE
Cruise, long range/high speed.......208/280 ktas
Range, ferry (100 nm alternate)......1582 nm

MISSION PERFORMANCE (time/flight level)
300 nm...........................................1h11/FL260
600 nm...........................................2h18/FL270
1000 nm.......................................3h49/FL280

AVIONICS
Manufacturer/Suit......................Honeywell Primus Apex

Cockpit. Four large LCDs PFD/MFD/EICAS integrate flight information, aircraft configuration, pressurization, and environmental controls. SmartView displays a natural 3D rendering of terrain.
Quest Kodiak 100
171 ktas, 1181 nm, FL250  $2.2 million

Technical Specifications

This aircraft is a high-performance STOL utility TP designed for rough and rugged operations.

CABIN
Seats (standard/max)..............................5/9
Volume.............................................248 ft³
Sea-level cabin.....................................NA

WEIGHTS
BOW..................................................4428 lbs
MTOW..............................................7255 lbs
MLW................................................6690 lbs
Payload w/max fuel.............................733 lbs

PERFORMANCE
Cruise, long range/high speed..............139/171 ktas
Range, ferry (100 nm alternate)..............1181 nm

MISSION PERFORMANCE (time/flight level)
300 nm...........................................1h49/FL100
600 nm...........................................3h38/FL100
1000 nm.........................................5h54/FL100

AIRFIELD PERFORMANCE (SL, ISA)
Field Length (MTOW/MLW)..............1468/1050 ft

POWERPLANT(S)
Manufacturer..............................Pratt & Whitney Canada
Type.............................................PT6A-34
Output/Flat rating......................750 shp/ISA+7°C

AVIONICS
Manufacturer/Suite........................Garmin G1000

Cabin. Cabin can accommodate a wide range of configurations. Optional external pod affords additional 63 cu ft capacity.

Pressurization/ECS. Aircraft is not pressurized. Cabin climate control is maintained by the pilot.

Ice/rain protection. Flight into known icing conditions is permitted with optional TKS ice protection system installed.

Cockpit. G1000 features 2 TFT PFD and 1 MFD/EICAS LCDs complementing CNS suite. Options include radar, Stormscope, synthetic vision system (SVS), and TCAS.

Viking Twin Otter 400
182 ktas, 799 nm, FL250  $5.9 million

Technical Specifications

Twin Otter can operate at remote, unimproved airfields and in challenging environments.

CABIN
Seats (standard/max)..............................NA/19
Volume.............................................384 ft³
Sea-level cabin.....................................NA

WEIGHTS
BOW..................................................7100 lbs
MTOW..............................................12,500 lbs
MLW................................................12,300 lbs
Payload w/max fuel.............................NA

PERFORMANCE
Cruise, long range/high speed..............142/182 ktas
Range, ferry (100 nm alternate)..............799 nm

MISSION PERFORMANCE (time/flight level)
300 nm...........................................NA
600 nm...........................................NA
1000 nm.........................................NA

AIRFIELD PERFORMANCE (SL, ISA)
Field Length (MTOW/MLW)..............1200/1050 ft

POWERPLANT(S)
Manufacturer..............................Pratt & Whitney Canada
Type.............................................PT6A-34
Output/Flat rating......................750 shp/ISA+7°C

AVIONICS
Manufacturer/Suite........................Honeywell Primus Apex

Cabin. Interior features multiple quick-change configurations and accommodate handling of bulky items and equipment.

Pressurization/ECS. Cabin not pressurized. Cabin climate is maintained by the pilot.

Ice/rain protection. Optional full airframe de-ice package, propeller de-icing, heated windshields.

Cockpit. Avionics features 2 large LCD PFD and 1 MFD/EICAS to integrate and display flight, configuration, and environmental information.
330 kts
The fastest New certified single-engine turboprop

MAX RANGE
1730 NM
CLIMB TO FL310
18 min 45

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