JETNET IQ PULSE

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Rollie Vincent JETNET iQ Creator/Director

I Found Myself Some Wings

The 1970s were a period of unprecedented innovation in the business and general aviation industry, witness to the introduction of the earliest turbofan-powered business jets, including the iconic Cessna Citation 500-Series, Learjet 35/36, and Falcon 10 light jets. In the music world, Canadian rock band The Guess Who had a big hit with *No Time*, a song that speaks to the importance of moving on towards better days and bigger goals. Much to their delight, early adopters of business jets found themselves some wings in Wichita, Mérignac, and Savannah, and later in Montréal, São José dos Campos, Greensboro, Duluth, and Stans.

As the Year of the Asterisk quickly ends, there are some very good signals of change that we are closely monitoring. Amongst the most encouraging are reports of new customers coming into the business and general aviation industry for the first time.

"...Amongst the most encouraging are reports of new customers coming into the business and general aviation industry for the first time."

Some of them are apparently euphoric, seeking to make up for time and opportunities

already lost during the COVID-19 pandemic. While the early stages of vaccine distribution are now underway across the world, widespread inoculations and the relaxation of travel and work/life restrictions that have pummeled our industry will be a story to be told in 2021.

If there is anything left that we can all agree on after the upside-down year that was 2020, surely it is the inherent value of a Tim Tam Slam and a superbly researched aircraft appraisal report from a master practitioner. In this our 19th issue of JETNET iQ PULSE - and the last of this Year of the Asterisk – David Crick, Managing Director of Davair Group, contributes his musings on the different year that was 2020, and some thought-provoking perspectives regarding 2021. A master practitioner of the skills of transportation equipment appraisal, David is the only person we know who puts in pretty hard yakka all week, can navigate to Wagga Wagga to confidently value a 1965 Erickson S-64F Air-Crane and whatever it happens to be hoisting, and be home in time to feast on barbecued snags - all without having a nanna's.

To you and your families, all of us at JETNET iQ send our best wishes for a splendid and meaningful holiday period with family and friends, however you choose to celebrate it. Here's hoping that 2021 arrives at Mach 0.925 - or maybe even a little faster.

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Outlook

One year ago, business aircraft passenger considerations were undoubtedly quite different than they are today. Staying in touch with evolving customer requirements, and wherever possible anticipating their needs before customers are even able to articulate them, is an ever-evolving challenge in our COVID-19 and always-connected world. From an operational perspective, some of the most innovative solutions are being made in the aircraft cabin environment, where customers spend the majority of their time interacting with the aircraft. Innovations in more ergonomic seat design, circadian cabin lighting, fresh air circulation, and Ka-band satellite internet connectivity continue to transform the customer experience.

Our Q4 2020 JETNET iQ Survey of business aircraft owners / operators is currently in the field and includes a question on the concerns of

passengers during the COVID-19 pandemic. With the Survey now more than 80% complete, some clear patterns have emerged. Beyond the cost of the flight (which is of paramount concern), passengers consider aircraft cleaning procedures and cabin air circulation as most important. From an operational perspective, passengers are concerned about exposure to the coronavirus through crew contact and unnecessary overnight stays away from home. While the nature of the question is such that we do not have similar metrics for a prior period, it is difficult to believe that customer concerns as expressed in the Q4 2020 Survey will diminish anytime soon. OEMs and their suppliers, FBOs, MROs, charter and fractional operators, corporate flight departments, and other stakeholders are already taking note of these marketplace changes and considering how to evolve their product and services to better address these concerns.





JETNET iQ Q4 2020 Global Business Aviation Survey Business Aircraft Passenger Concerns (Excluding Cost of Flight)

In the midst of the COVID-19 pandemic, please rank your passengers / customers biggest concerns:

Passengers' Concerns During COVID-19 Pandemic



Source: JETNET iQ

Q4 2020 Survey in progress (408 responses from 61 countries to date)



The Year of Living Differently



David Crick Managing Director DavAir Group

Considering content for the last JETNET iQ PULSE release for 2020 is quite an onslaught of mixed thoughts and emotions.

If we cast our minds back 12 months, it would be reasonable to suggest that no one had the forecasting prowess to foresee the year we are just emerging from.

My recollection of the end of 2019 with respect to the world of business aviation and corporate jets was somewhat buoyant. It included anticipation of new sales growth, with future sales expected to break records, the release of new products and aircraft into the marketplace, development of sustainable fuels, avionics advances and generally a very upbeat vibe that reflected a continuation of the upward trends that had occurred throughout all of last year.

Then, after January and February propelled us into 2020, we needed to instead change focus to ensure we had enough toilet paper and trying to work out how to survive our sixth Zoom meeting of the day, making sure the Mute button was not on - and all while attempting a new bread recipe. All of our cherished industry events were cancelled, including the JETNET IQ Summit, NBAA-BACE, CJI, EBACE, NAFA, OEM events, and the list goes on... not the year we anticipated.

Many of our colleagues and friends in the industry have had to reinvent themselves and change their mindsets to one of survival mode. Beginning in March, sales were scarce for a few months as we learned to deal with the new global realities. The logistics of inspections, ferry flights and sale completions became very complex, particularly for those across multiple jurisdictions.

There have also been quite a few positive surprises. The dynamics of a global pandemic seem very different to other recent global events. With commercial aviation hibernating and international borders closing for extended times, business aviation acted differently. In 2008/9 during the Global Financial Crisis, we saw business aviation impacted, however large cabin business aircraft were quite quick to transact whereas mid- and small-cabin business jets took some time to show signs of recovery. Today, where commercial flights have been limited both in number and appeal, and with borders closed, larger intercontinental corporate jets seem to have taken the brunt of the market impact as far as the number of transactions and a reduction in sale prices are concerned. Mid-sized and smaller aircraft appear less impacted with respect to value and transactions.

Another noticeable difference was that legacy aircraft seemed to have gained momentum more obviously than newer, higher cost aircraft. As appraisers we saw many more transactions and requests for older aircraft values as well as for smaller aircraft. As an aside, from January to June 2020 there were just three pre-owned G650ERs sold. Since then, 7 or 8 have transacted with several more under contract. They've come down in price enough to "hit the sweet spot".

Once we overlay the global pandemic with the obvious political turmoil and unrest, with Brexit uncertainty, with American election cycles, with record wildfire seasons in California, Australia, South America and Greece, this has been the year of living differently. If 2020 were a morning alarm clock, you would want to smash it, roll over and wake up again in 2021.

However, hearing from many of our colleagues and friends in the corporate jet sales and transactions world, 2020 (particularly the second half) is working out to have a bumper finish with more transactions in the last quarter than the rest of the year combined. This in itself is not unusual however is very welcome when we reflect on how the year could have finished. Many business aircraft brokers, appraisers, lawyers, financiers, insurers and escrow facilities that we interact with have been completely swamped with secondary market transactions and are looking forward to a big year end. Logistics and completions are still a challenge however as an industry, we seem to have a 'let's get through it' attitude. By and large, we really want to see everyone having some success.

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The Year of Living Differently (cont.)

What will we see in 2021?

To have any sense of accuracy in forecasting we really need a good baseline of assumptions on which to evaluate our estimates. And even then, our statisticians will remind us of a statement to the effect that 'past performance is no guarantee of future results...'

Issues that will have impact on 2021 include:

- Will there be a vaccine to the pandemic and how effective will it be? How fast can it be rolled out?
- Will international borders be opened? If so, when?
- Will we still have to quarantine? For how long?
- Will commercial flights start to rebound?
- When will consumer confidence return?

These questions all seem to have a bearing on what we would refer to as 'the resumption of normal'. At the risk of sounding resigned, I think that we are in the 'normal'. Any improvement on current circumstances should be perceived as a bonus.

As far as business aviation goes, we are seeing asking prices stabilize, inventories of secondary aircraft either plateau or fall, and demand rise as entities identify a better way through the circumstances. Year on year, the market for secondary transactions is improving......

The general consensus among industry participants is that 2021 will be a continuation of the second half of 2020 with respect to secondary market transactions and values. The main issue that would halt that progress, or indeed retard it, would be further waves of infections of the pandemic when border lockdowns and restraints are put in place, again stifling the logistics of transaction completions.

What we haven't seen too much of to date in 2020 are sales of new business aircraft. Yes, there are pre-existing orders being fulfilled. However, indications from GAMA are that business aircraft manufacturers are down 30+% in general terms on their forecasts for 2020. Roughly 800 new jet deliveries were forecast for the industry this year; through Q3 2020, the number delivered is around 380, on our way to ~575-600 shipments for the year.

As an industry, we measure the success of the business by the number of new aircraft sales and, as we have seen, many of these will continue to be sold to first-time buyers. In a sense, the lower output of 2020 is like nature's correction from previous periods of overproduction when whitetails were more commonplace, and the solution appeared to be that the salespeople needed to simply sell more aircraft. In more recent times, sanity appears to have prevailed and in the main, production numbers have been adjusted to be more in line with the capacity of the market to absorb the offerings.

Each of the major business jet manufacturers is currently releasing new aircraft models and variants - Bombardier, Dassault, Embraer, Gulfstream and Textron - with very exciting advances and inclusions. The market is eager to see them released to service and taken up by the operators and owners. Now that secondary inventories are beginning to stabilize, the level of balance appears to be returning to a reasonable equilibrium. As secondary inventories decline, demand for new aircraft will rise.

For 2021, it would be terrific to see a measured and considered approach by the OEMs that captures the imagination, desire, and capacity of the marketplace to absorb the advances.

For many of us, 2008 was the turning point in an industry that had gone from a very strong market, with long lead times and value stability, to an incredibly soft market, with cancelled orders and plummeting values.... all within less than a year. In the case of this year, the uncertainty that was dominant in the 2nd quarter has been replaced with the recent optimism that 2020 had been but a temporary "speed-bump" in the market, not the abyss suffered 12 years ago, a low point from which the industry took too many years to recover.

So to get ready for 2021, perhaps the best way to prepare is to make sure that after the craziness of this year is done, we all take a deep breath before launching into a great new year... just make sure we have enough toilet paper!!!





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Business Conditions





The Fall and Rise of Customer Sentiment

Fixed-Wing Turbine Aircraft Owners / Operators - Worldwide

The rebound in the mood of the market continues, as measured by our quarterly JETNET iQ Surveys of aircraft owners and operators. Results from the in-field Q4 2020 Survey, which is ~80% complete as of mid-December, point to an improvement in the current and near-term outlook.

We estimate an overall "Net Optimism" index along a scale from -100% to +100%, with the calculated value representing

the difference between the percentages of respondents who believe that we are past the low point in the current business cycle (Optimists) and the percentage of respondents indicating that we have not yet reached the low point (Pessimists).

Net Optimism to date in Q4 2020 suggests that market conditions have returned to the levels last seen in H1 2019, well before the onset of the coronavirus.



JETNET iQ Market Sentiment Index – Net Optimism Since the Beginning of 2020



Q4 2020 Survey in progress (408 responses from 61 countries to date)



U.S. Business Jet Utilization

Stratifications by Size Category and Type of Operation Q4 2020 Versus Q4 2019 (Quarter To Date: October 1 – December 14)

While cycles have rebounded for U.S. Part 91K fractional program and Part 135 on-demand flying, average flight legs for Small and Medium Jets are also up, as customers evaluate value propositions of various business aviation service in the

COVID-19 era. While we expect this situation to change with the eventual re-opening of international borders and relaxation / elimination of quarantine rules, this is something we will be analyzing on an on-going basis.





Ups and Downs of Business Jet Inventory

Business Jet Inventory For Sale and Days on Market – Worldwide January 2007 – Late 2020

In sharp contrast to the marketplace reaction to the 2008/2009 Global Financial Crisis, business jets today do not reflect an asset class that has fallen from favor with customers. If anything, demand indicators are mostly quite robust, including the volume of pre-owned transactions, the percentage of the fleet for sale, and the number of days that inventory stays on market before transacting to a retail customer. While softness in asking and transaction prices has been apparent this year versus 2019, this is to be expected given the shocks introduced to economies and societies, and the loss of personal wealth, corporate income, and overall GDP. At the end of October 2020, JETNET databases indicated that 9.4% of the business jet fleet was for sale, which contrasts with a peak of almost 18% in late summer 2009, about 11 months after the bankruptcy filing of Lehman Brothers that set off panic in global financial markets. Early indications suggest that inventory for sale slipped to 9.1% at the end of November, and to 8.8% in mid-December, as buyers continue to flock to the market to take full advantage of year-end "deals" and U.S. tax rules allowing accelerated depreciation.

Although much attention is on the comparative "softness" of the large cabin segment in the COVID-19 era (particularly regarding flight activity), an assessment of inventory for sale suggests that popular models remain in strong demand, and that the market is in fact tightening. With % for sale ranging from 4-7% for the popular Gulfstream G650 / 650ER, Bombardier Global 6500, and Dassault Falcon 7X, there are only handfuls of aircraft available that were delivered new in 2016 or later.



Source: JETNET iQ



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Small is Beautiful

Pre-Owned Business Jet Retail Sales and Leases of Whole Aircraft 2018-2020: January 1 – November 30

While pre-owned business jet retail sales and leases have declined since reaching a recent peak in 2018, transaction volumes in the first 11 months of 2020 have reached 2,061 total aircraft, based on preliminary data for November. We expect the November 2020 results to continue to increase as transaction paperwork is finalized over the next days and weeks. While overall pre-owned jet transactions are down about 6% YTD versus 2019, results are stratified to some extent by size category. The Small Jet segment, including aircraft

ranging in size from the Cirrus Vision Jet to the Phenom 300 and Pilatus PC-24, has been holding its own in 2020, off in volume by less than 4% YTD. Pre-owned Medium Jet sales and leases have slipped 6% YTD, while the Large Jet segment is down by 10% YTD, no doubt impacted hardest by the introduction and continuation of border restrictions, quarantine requirements, and caution regarding big-ticket purchases at corporations and within the HNWI community.





For aircraft size category definitions, please refer to the Appendix



Jet Deliveries and the Year of the Asterisk

When COVID-19 was proclaimed a worldwide pandemic in March 2020, the lift that had been building after a long, slow recovery came out of the industry's wings. While Q4 2020 will mark a busy delivery quarter for the 8 primary OEMs who currently offer new-build jets, we forecast that overall output will be off by about 29% when year-end results are tallied. This represents output levels not seen since 2003 / 2004. Through the end of Q3 2020, we estimate that firm order backlogs for the five OEMs that regularly report on these types of results - Bombardier, Dassault, Embraer, Gulfstream, and Textron Aviation – have slipped ~14% in value since the beginning of 2020, at the same time as some customers have negotiated to defer planned deliveries for this year into 2021 or beyond in some cases. To put 2020 into some historical perspective, the delivery drop-off this year is similar in magnitude to that of 2008-2009. In contrast to that situation – when deliveries fell for two consecutive years - we expect total new business jet shipments to be up in 2021, at this point by approximately 7%.



Business Jet Deliveries (Units)

Sources: GAMA; regulatory filings; JETNET iQ Q4 2020 Forecast; Dassault deliveries are estimated for Q3 2020 only; excludes Eclipse



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12 Seconds That Launched An Industry

December 17, 1903 – Kill Devil Hills, North Carolina, USA

On a windswept sand dune 117 years ago, brothers Orville and Wilbur Wright achieved the first powered, controlled, sustained airplane flight in history with their 700-lbs. Wright Flyer. At a speed of 6.8 mph, the inauspicious 120' flight was barely longer

than the span of one of today's ultra long-range business jets. According to Orville, the 12-second flight was the culmination of "24 years of hard work."





About JETNET iQ

JETNET IQ is a business aviation market research, analysis and forecasting service consisting of three main elements:

- JETNET iQ Reports are the definitive analytical reference for business aviation, incorporating quarterly state-of-the-industry analyses, owner / operator surveys, and detailed delivery and fleet forecasts;
- JETNET IQ Summits are annual industry conferences providing unique data, insights and networking opportunities; and
- JETNET iQ Consulting provides customized research and analysis for clients on a project-by-project basis.

JETNET iQ Reports are available in various formats on a subscription basis, and are published regularly by JETNET LLC, 101 First Street, Utica, NY 13501 - currently offered at 8 different levels. JETNET iQ is a partnership between JETNET LLC of Utica, New York and Rolland Vincent Associates, LLC, of Plano, Texas.

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Since late 2010, JETNET has conducted quarterly surveys of the worldwide community of business aircraft owners and operators in order to gauge customer sentiment, brand perceptions, aircraft purchase, selling, and utilization expectations, and other factors. JETNET iQ Global Business Aviation Surveys are password-protected and by invitation-only. Potential respondents are drawn randomly from the JETNET worldwide database of business jet and business turboprop owners and operators; they are initially contacted by telephone and/or e-mail by JETNET's team of multilingual researchers. Target respondents include chief pilots, directors of aviation, and senior management. Each survey includes at least 500 respondents in 50 or more countries each quarter, and respondents closely reflect the worldwide distribution of the business jet and turboprop community.

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Appendix

Data sources:

Real GDP growth forecasts, Unemployment Rates, Exchange Rates (2020): The Economist – November 28, 2020 https://www.economist.com/economic-and-financial-indicators/2020/11/28/economic-data-commodities-and-markets Stock Markets:

Dow Jones Industrial Average: http://ca.spindices.com/indices/equity/dow-jones-industrial-average London Stock Exchange (FTSE 100) : https://www.londonstockexchange.com/indices/ftse-100 **Unemployment**: Bureau of Labor Statistics (U.S.); https://www.dol.gov/ui/data.pdf; "SA" = seasonally adjusted **Consumer Confidence:** University of Michigan Survey of Consumers (U.S.); http://www.sca.isr.umich.edu European Commission (Euro Area) – Economic Sentiment Indicator; https://ec.europa.eu/info/sites/info/files/full_bcs_2020_09_en.pdf **Business Confidence:** U.S. ISM Manufacturing PMI (U.S.) https://www.instituteforsupplymanagement.org/about/MediaRoom/newsreleasedetail.cfm?ltemNumber=31182 Eurostat (Euro Area); https://ec.europa.eu/eurostat/databrowser/view/teibs010/default/table?lang=en

https://ec.europa.eu/eurostat/databrowser/view/ei_bsci_m_r2/default/table?lang=en

Business aircraft fleet, deliveries, transactions, days-on-market (DOM), utilization: JETNET; DOM refers to aircraft that were sold / leased Survey results: JETNET iQ Global Business Aviation Surveys (Quarterly)

Photo credits: Page 2: Pfizer Inc. (press release image); Page 3: Jet Perspectives; Page 8: Textron Aviation; Page 9 (LHS): Stefan Sonnenberg - www.airliners.net; Page 9 (RHS): Textron Aviation; Page 10: Textron Aviation; All other photos: Rolland Vincent Associates, LLC / JETNET iQ

Definitions and Abbreviations:

For the purposes of these Reports, business aircraft may be classified into 4 primary categories, reflecting propulsion, price, performance, and weight class differences. These categories are: Turboprops (Single-Engine Turboprops - SETP and Multi-Engine Turboprops - METP), Small Jets (Personal Jets, Very Light Jets, Light Jets), Medium Jets (Super-Light Jet, Mid-Size Jet, Super Mid-Size Jet), and Large Jets (Large Jet, Large Long-Range Jet, Large Ultra Long-Range Jet, Airline Business Jet). The "Personal Jet" category includes single-engine turbofan-powered models, today represented by the Cirrus Vision Jet.

B&GA: Business & General Aviation EIS: Entry in Service FBO: Fixed Base Operator (private air terminal) GAMA: General Aviation Manufacturers Association GDP: Gross Domestic Product FTSE: Financial Times Stock Exchange (London) MTOW: Maximum Takeoff Weight NGO: Non-Governmental Organization OEM: Original Equipment Manufacturer QOQ: Quarter over Quarter QTD: Quarter to Date S&P: Standard & Poor's TTM: Trailing Twelve Months YOY: Year over Year YTD: Year to Date

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