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LEADING EDGE

VOLUME 05 | EDITION 01 | 2015

LIFESTYLE MAGAZINE

THE
DUBAI
MALL

THOMAS KELLER'S
DELICIOUS
EMPIRE

ALASKAN
IRON DOG

COVER STORY
BIKING THE VINEYARDS
OF ARGENTINA & CHILE

THE QUAD CITY ARTS
FESTIVAL OF
TREES

MAKE IT SO,
3D PRINTING

FORD
F-650-750

IOWA
SCIENCE
CENTER

ST. PAUL
WINTER
CARNIVAL

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VOLUME 05 | EDITION 01 | 2015

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FORD F-650-750

Work Hard, Play Harder

by Jaimie Pfeiffer

There's a time and a place for a Mini Cooper; they're unmatched when it comes to nudging into undersized parking spaces in downtown Chicago or trying to break a Guinness world record for most clowns in a tiny car. But if you need a serious vehicle for work and play, one of the 10 models in Ford's F-650-750 series may be just what you're looking for.

Ford's F-650 and F-750 trucks are two steps up from the standard F-150 pickup truck range, which sells half a million or more a year. F-650-750 sales are much more exclusive, numbering in the thousands. While an F-150 pickup truck weighs in at less than 8,500 pounds, an F-750 can have a gross vehicle weight up to 37,000 pounds. Designed and built for industrial use, the F-650-F-750 models make great tow trucks, marine haulers, livestock transport vehicles, tankers, and flat beds. But they also have the potential for incredible recreational conversions to temporary or permanent

motorhome configurations for traveling coast-to-coast in comfort and style. Custom shops around the country will happily trick out this top-of-the line beast with high-end leather seats, entertainment system, and a multitude of accessories for an impressively luxurious and powerful ride.

Meet the Starting Lineup

The 2015 F-650-750 series comprises 10 models – 4 with gas engines and 6 with diesel – ranging in price from \$55,595 to \$70,075 starting MSRP.

The Stats

The gas models have the advantage of a lower cost; the purchase price can be several thousand dollars less than the diesel models, and both gasoline and service costs tend to be less over the life of the vehicle. While saving money by choosing a gas-powered commercial truck normally comes at the cost of reduced power, the F-650-750 series gas models sport a Ford-built high-performance 6.8L Triton V10 engine with 362 horsepower and 457 lb.-ft of torque as well as a Ford-built 6-speed automatic transmission, specially engineered for high-torque performance and dependability. (Ford is the only medium-duty truck manufacturer that makes its own engines and transmissions.).



This combination makes even the gas models sturdy and powerful enough to use with a snowplow, aerial lift, hydraulic hoist, or other power equipment. Indulge your inner child with a life-size Tonka truck! As a promotion for its 2016 lineup, Ford souped up a top-of-the-line F-750 to look and feel like a real-life Tonka dump truck (just one of the many easy conversions possible). You can see it on display at major work truck, commercial, and vocational trade shows through the end of the year.

The diesel models come with your choice of Cummins® 6.7L ISB engine, available in 11 horsepower and torque ratings, from a baseline 270 hp and 675 lb-ft up to 325

hp/725 lb-ft for non-emergency vehicles, paired with Allison 2500RDS/WR 6-speed automatic overdrive transmissions. All models boast the latest high-tech engines, including 24-valve design and the patented VGT turbocharger for greatest power and efficiency. 2015 models include GM's second-generation on-board engine diagnostics (OBD2) with greater memory capacity.

Future Prospects

Ford has high hopes and big plans for the future of its F-650-750 series. The 2016 versions made their debuts at the 2014 National Truck Equipment Association Work Truck Show. Among the new features, buyers will

models with a straight-frame, dock-height or tractor-towing frame, making this fleet of trucks customizable for virtually any towing or hauling application. Ford boasts that this lineup is more work-ready than ever before, sporting an “all-new, upfit-friendly chassis developed in cooperation with leading industry body makers, [a] clean chassis capable of accommodating vocational bodies with little to no modification, and all-new dedicated tractor model for heavy trailering.”

The 2016 models are significantly quieter – 25% quieter inside the cabin at 60 mph and as much as 45% quieter inside the cabin and 35% quieter in front of the grille when at idle than the previous models. At the same time, they’ll be even more powerful: “Newly available for F-650-F-750 is the Ford-built and proven 6.7-liter Power Stroke V8 diesel paired with a commercial-grade six-speed 6R140 automatic transmission with available power takeoff provision to run accessories in the field, a dump body, crane or other vocational equipment.”

The updated interior has practical additions like a 110-volt outlet and multifunction steering wheel to put everything you need at your fingertips. A rapid-heat, supplemental cab heater for the roomy 2- or 4-door SuperCab and remote starting capability keep you comfortable in all conditions. Improvements to the brakes (including choice of hydraulic or air), a completely redesigned frame and suspension, and longer leaf springs also aspire to improve driver comfort, which has always been one of the biggest shortcomings of the Ford F-650-750 series.

Improved engine design features also enhance driver comfort while advancing performance. The ingenious “reverse-flow layout” reconfigures the exhaust inside the engine's V-shape to improve turbo responsiveness. Shortening the airflow from the exhaust system to the turbocharger between the engine's cylinder banks helps to isolate the engine's hottest temperatures, improve performance and efficiency, and reduce noise, vibration, and harshness.





The Special Teams

Ford is working hard to keep its brawny trucks relevant and innovative in today's environmentally-conscious landscape. Although regular models are reported to average between 8-13 mpg in actual use depending on the carried load, exciting new advances are improving the vehicles' environmental impact.

The CNG/LPG Gaseous Engine Prep Package is a factory option that converts gas models to cost-efficient and emissions-friendly compressed natural gas (CNG) or liquid propane gas (LPG). Both options can be cheaper to fuel, operate, and maintain than diesel or gasoline systems, and their engine combustion is comparably cleaner, reducing emissions of particulates and nitrogen oxides.

A more radical option is a complete after-market conversion of the truck into a hybrid vehicle through partnership with Odyne Systems, a private company specializing in commercial vehicle hybrid conversions. Odyne can install one or two 14.2-kWh liquid-cooled 346V lithium-ion batteries. The plug-in hybrid powertrain provides launch assist, recaptures energy through regenerative braking, and can also power the

truck's electronics. A full charge takes under 5 hours and can save up to 1,750 gallons of fuel per year. While the conversion cost totals about \$100,000, it could potentially pay for itself in reduced fuel costs over the life of the vehicle. Federal and state tax incentives can also significantly offset the cost of conversion; Odyne advises that under the Department of Energy Clean Cities program, incentives can (under certain circumstances) total as much as \$100,000.

Ford is demonstrating a growing dedication to American auto manufacturing. Although from 2000-2014, assembly took place only at Ford/Navistar's Mexico facilities, all new F-650-F-750s, going forward, will be built at Ford's Ohio-based assembly plant.

Comparable vehicles like the Chevy 3500, the Hummer H2, or the GMC 5500 can't match the versatility of the F-650-750 lineup. The 2016 improvements will make Ford's lineup even more competitive, increasing comfort, efficiency, and style. If you're looking for a versatile, powerful, and downright impressive truck for serious business (or serious play), look no farther than Ford.

Make it So:

3D

PRINTING

Advances at Warp Speed

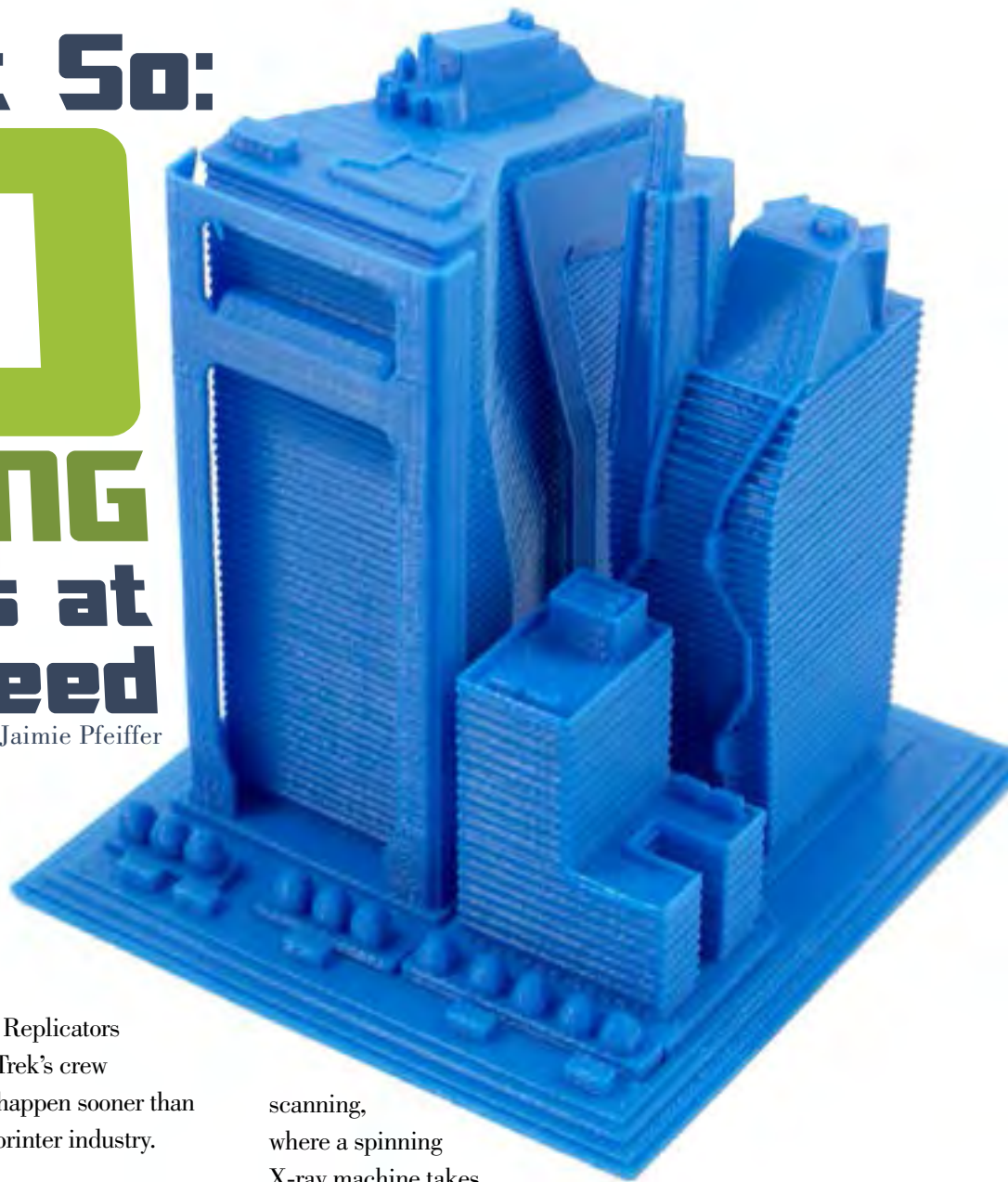
by Jaimie Pfeiffer

**“Tea.
Earl Grey.
Hot.”**

At the touch of a button or command, the Replicators materialized whatever food or drink Star Trek’s crew requested. 24th-century technology may happen sooner than you think, thanks to the blossoming 3-D printer industry.

3-D printing, also known as “additive manufacturing,” is a process of compiling three-dimensional solid objects from thin layers of material, using a digital file as a map. The material itself can be anything from edible substances to precious metals. An object’s virtual design is uploaded to the 3-D “printer” in a computer-aided design (CAD) file. If the goal is to create a totally new object, designers use a 3-D modeling program to build the specifications to program the printer.

If the goal is to copy an existing object, a 3-D scanner can be used to input the source material’s exact characteristics. These scanners use a number of different technologies to read information about characteristics such as density, volume, aerodynamics, and color and incorporate it into programming data. Current scanners use technology similar to 3-D CT



scanning, where a spinning X-ray machine takes images from many angles and uses computer processing to amalgamate the cross-sectional slices into a three-dimensional image. In the future, handheld scanners just like those used by the USS Enterprise’s crew will likely become cheap, easy ways to input an object’s information into a CAD file for potential replication. (Your future smartphone may even have one!)

Beam Me Up, Scotty: Jets and Lasers Make It Happen

At its most basic level, 3-D printing involves a printing tool that applies very thin successive horizontal layers of a material to create a 3-D version of the CAD design. At present, there are seven different categories of recognized “additive manufacturing processes.” In some, like

stereolithography (SLA), ultraviolet lasers are used to harden applied layers of material one at a time while the object grows, immersed in liquid. Others, like “material jetting” and “binder jetting,” build drop by drop and are hardened without structures or immersion. In other methods, called “material extrusion,” objects are produced by pushing melted material out of a heated nozzle. The nozzle moves horizontally and vertically, and the material hardens as soon as it is extruded. Other methods fuse together small particles or sheets of material using heat, lasers, or external force.

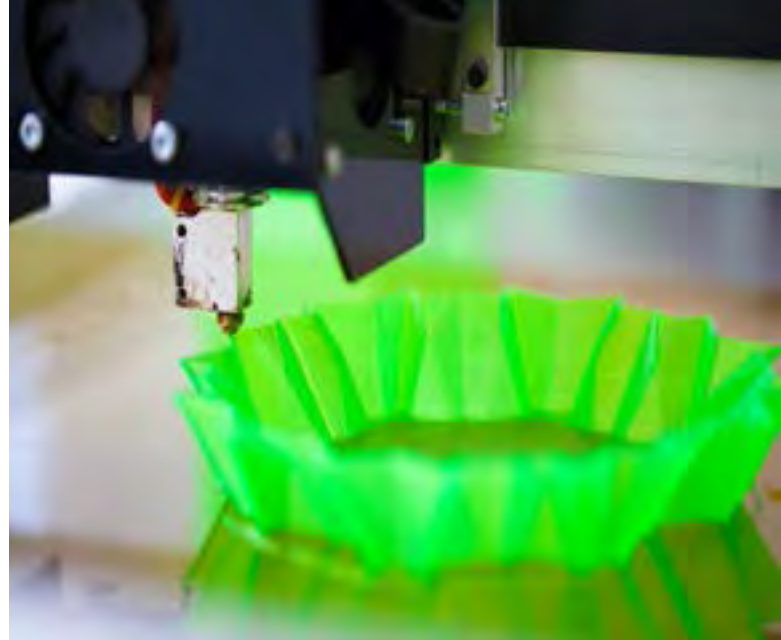
Each of these processes is patented by an individual company, and all continue to refine their own methods. So far, none has emerged as a distinct leader; each has advantages and drawbacks and is better suited to some applications than others. The simplest of these printers and technologies are designed to print with plastic materials, but more advanced machines use metals and even organic matter.

I’m a Doctor, Not a Magician: 3D’s Myriad Medical Miracles

These exciting technologies open up infinite possibilities for 3-D printing to touch all aspects of modern life, from the smallest human cells to the farthest reaches of the galaxy.

Medical uses already abound, including creating implants that are exactly tailored to each patient. A CAD rendering can be built from CT scan information of a patient’s unique body, and 3-D print technology can then construct a perfect replacement implant to fit her needs. Building a 3-D model of a patient before surgery also can allow a surgeon to practice a difficult procedure on an identical model before the patient is on the table. These implants – stents, prosthetics, even segments of human skull – fit the recipients perfectly and minimize the discomfort of adjusting to the foreign objects.

Studies are also being conducted to engineer the printing of living tissue using layers of living cells, deposited and grown on a gel medium, enabling the creation of living tissues, nerves, ligaments, or organs. 3-D printing can also help build better external medical devices, such as a new, revolutionary spinal brace made of nylon powder that looks and feels like a form-fitting tank top. The brace is “light, breathable, and customized to the wearer’s body and medical needs, and could be easily worn under clothing.”



Live Long and Prosper: 3D Technology Improves More Than Medicine

3-D printing is being used in a variety of non-medical situations in which it is valuable to have an exact replica of something. It’s useful, for example, in reconstructing bones or heavily damaged evidence in forensic pathology and crime scene investigations or for reconstructing fossils and ancient artifacts in paleontology and archaeology. A 3-D printer’s technical precision makes it an efficient vehicle for creating perfectly identical mechanical parts, such as those used in automobiles, aviation, and aeronautics. NASA currently prints combustion chamber liners using selective laser melting. In March 2015, the FAA cleared GE Aviation’s first 3D-printed jet engine part for use in commercial flight.

Portability also could allow 3-D printers to build things in space – on board a space shuttle, space station, or remote human outpost. For instance, if the International Space Station needed to replace a broken machine part, a 3-D printer may eventually be able to create a new part from a CAD directly transmitted from earth, rather than having a new part delivered by shuttle. Mastering this technology could enable humans to establish colonies in areas or conditions that don’t support traditional manufacturing or easy supply channels.

3-D printing is a revolution in product design and innovation. Nike, for example, uses the technology to quickly make testable prototypes of new design models for a fraction of the cost of traditional prototype fabrication and is experimenting



with developing products that are customizable to each individual customer. It also opens up limitless possibilities for the creation of lifelike, innovative film props and the execution of novel and breathtaking movie effects.

And of course, there's Star Trek's original fantasy: food. Pastry artists are using 3D printing technology to fabricate elaborate filigreed sugar cake decorations and other desserts. Machines like the Genie are making this a reality already, turning tiny ingredient "pods" into complete meals like soufflés and ramen using variations of 3D printing technology programmed by a remote application. At present, devices are doing a passable (and even impressive) job of handling single-food items like sculpted chocolate and sugar or preparing flour-based items like cakes, but they aren't successfully mastering more complex foods like meats and vegetables. Eventually, however, technology to "make" food using a 3-D printer could enable quality food production in remote, inhospitable locations, from third-world countries to outer-space colonies, that is as nutritionally balanced as it is tasty.

Resistance is Futile: How to Make 3-D Printing Work for You

You can own a 3-D printer for as little as a few hundred dollars (like the bare-bones Printbot Simple, available unassembled for \$299), but most home models, like the Makerbot Replicator 2 line, retail for about \$2000. Generally included is basic design software that allows you to design your own printable items, but schematics of many pre-designed items are also available online (and sometimes included with the printers).

Even top-of-the-line home models have significant limitations, however. Also, unless you are already relatively technologically-savvy, home models can have a steep learning curve. Commercial 3-D printing companies that allow consumers to contract with them to develop 3-D production of original designs on much larger, more technologically-advanced machines have begun to spring up. Similar to how online publishing made self-publishing a book attainable for a much wider audience, the ability to cheaply and easily contract for a short run of fabrication encourages new product development and invention.

If you'd like to try out the technology for yourself without investing a significant amount of time, effort, or money, you can visit a 3-D printing café. Just like the Internet cafés of the 1990s, these businesses provide access to consumer-scale printers on a pay-per-minute basis (starting at around \$8.50 per half-hour). Cafés are currently open in cities like Berlin, Barcelona, London, and Tokyo, and plans are in the works for the first U.S. 3-D printing café in Manhattan. Customers can print small trinkets from pre-programmed designs, some of which are customizable and, of course, enjoy a cup of Earl Grey – which may or may not have been fabricated with a 3-D printer.



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THE MIDNIGHT SUN & THE AURORA BOREALIS

Lapland, the northern part of Scandinavia (primarily north of the Arctic Circle), is one of the best places on Earth to view the northern lights. The aurora borealis appears around 200 nights a year in this part of the world, and the best time to spot it is when skies are clear and dark... really dark, making winter the best time to visit. The lights appear most

brilliantly around 10pm–2am, and once they do, they could last anywhere from a few seconds to several hours before diminishing.

During the summer in the northernmost parts of Lapland, from about mid-May to late July, the sun hangs in the sky for a full 24 hours, never sinking below the horizon. This natural phenomenon is known as the midnight sun. It only occurs in very small portions of the earth: north of the Arctic Circle and south of the Antarctic Circle.

The eternal sunshine during the summer may be stunning, but winter is what brings in the majority of the tourists and why Lapland is renowned across the globe. Watching the northern lights is an experience of a lifetime, and the locals know it. Tourists can choose from an abundance of unique and unforgettable ways to seek out the lights during their stay. Skiing, snowmobiling, snowshoeing, sled dog touring, riding the rail, staying in a luxury hotel, and sleeping out under the stars in a glass igloo are all viable options.

Circle

by Rail

BY MICAH HARTMANN

EXPLORING NORWAY AND SWEDISH LAPLAND BY RAIL - THE NORTHERN LIGHTS & LAPLAND GREAT RAIL TOUR

DAY 1 - TRAVELING FROM LONDON TO OSLO

The adventure begins in London, England, where travelers will board a plane and head north to Oslo, Norway. There, they spend two nights at the Thon Hotel Opera, located near the Oslo Opera House. The opera house is a modernly designed edifice made of glass, oak, white granite, white marble, and aluminum. This prestigious harborside venue is the home of the Norwegian National Opera and Ballet. Its angled surfaces, including the roof, create a vast walkway that appears to ascend directly out of the water, rising up toward the sky.

DAY 2 - EXPLORING OSLO AT LEISURE

Oslo is full of fascinating attractions, such as the Royal

Palace, home of the Norwegian royal family, and Oslo City Hall, which hosts Nobel Peace Prize ceremonies. Other sights worth seeing include the Folk Museum, the Edvard Munch Museum, and the Vigeland Sculpture Park.

DAYS 3 & 4 - TRAVELING FROM OSLO TO TRONDHEIM

On day 3, travelers board a train and head north on the Dovre Railway, passing through Dovrefjell along the way. Dovrefjell is a mountain range dividing southern and central Norway and is also part of Dovrefjell-Sundalsfjella National Park. This park is a protected, sustainable development filled with rare plant, bird, and animal species like the golden eagle and musk ox—a 225–400 pound animal that was initially imported into this region and now thrives here.

The next stop will be Trondheim, a city founded by the Vikings over a thousand years ago, where travellers stay for two nights at the Radisson Blue Royal Garden Hotel.



Cityscape of Trondheim, Norway

The next day is devoted to leisurely exploration of one of the country's oldest cities. Duck into a local shop or restaurant, roam around the Ringve Music Museum, or take a stroll through Baklandet, a picturesque neighborhood full of small, colorful 17th-century wooden houses along narrow cobblestone streets.

DAY 5 – TRAVELING FROM TRONDHEIM TO BODØ

Next, passengers board a train on the Nordland Railway, “the train to the midnight sun,” and head toward Bodø in northern Norway. This route traverses majestic scenery: mountains, hills, lakes, fjords, forests, glaciers, the rocky coastline, open sea, and small islands on the horizon. The train travels north over the Arctic Circle and then west until it reaches its destination, where travelers spend the night at the Clarion Collection Hotel Grand Bodø. Once the sun sets, sightseers will want to keep an eye on the sky for their first chance to glimpse the northern lights.

DAY 6 – TOURING BODØ AND THE LOFOTEN ISLANDS

In the morning, travelers can leisurely roam the city; in the afternoon, all board the Hurtigruten Ship for an excursion out to sea. The ship stops at Svolvær, the capital of the Lofoten Islands, where visitors enjoy the hospitality of the Thon Hotel Svolvær.

DAY 7 – EXPLORING THE LOFOTEN ISLANDS

Day 7 starts off as a free day, so travelers can explore the tranquil archipelago as they please. The Lofoten Islands

have been home to many small fishing villages for hundreds of years. These islands are known for more than their fisheries, though. They also house the densest population of sea eagles in the world, as well as the most Minke (26–27-foot-long, 10-ton) whales in the area. The grandeur of the winding fjords surrounded by 3000-foot-high cliffs towering majestically overhead is enough to take one's breath away. In 2010, National Geographic named Lofoten one of the top five island destinations in the world.

DAY 7 – VIEWING THE NORTHERN LIGHTS

Later in the day, the group will reconvene then travel together to Høv, a placid part of the island with minimal light pollution. On the way over, a guide speaks about the history, culture, and significance of the Lofoten Islands. Once in Høv, tourists get a lesson on how to best capture the northern lights on camera, before heading outside to watch and photograph the dancing lights in the sky.

DAY 8 – TRAVELING FROM SVOLVAER TO NARVIK

The first part of day 8 consists of travelling across a network of bridges that connect several of the stunning islands from Svolvær to Narvik, a seaport on Norway's mainland. Here, travelers check into the Rica Hotel Narvik and have the opportunity to spend the afternoon however they like. Some tourist attractions in the city include the Red Cross War Memorial Museum, documenting German occupation in Narvik during WWII, and the Ofoten Museum, an exhibition inside an old railway building that showcases Ofoten Railway's history and construction. Another option



Oslo Opera House

is to take a trip into the mountains. Narvik’s famous gondola cable car system can transport skiers and tourists to 656 meters above sea level in merely 7 minutes.

DAY 9 – TRAVELING FROM NARVIK TO KIRUNA

In Narvik, passengers board a train and ride the historic Ofoten Railway, one of the northernmost railways in the world, into Kiruna in Swedish Lapland. Kiruna is the most northerly city in all of Sweden. The train route cuts straight through the mountains, crossing over and passing through more breathtaking scenery. Upon arrival, travelers have the opportunity to visit and explore the Ice Hotel, a hotel and art exhibition created from natural river ice and snow, before spending the next two nights in town at the Scandic Ferrum Hotel.

Kiruna offers several Husky dog sled tours for people of all experience levels. Tours can range from a short morning ride guided by a professional musher to a 7-day expedition where you can lead your own dog team into the mountains.

DAYS 10 & 11 – EXPLORING KIRUNA & DEPARTURE

On day 10, travelers are free to explore Kiruna in the morning. Later in the day comes the opportunity to visit an indigenous village and mingle with the local Sami. The Sami speak their own language and have unique customs and culture. Reindeer are an important part of the Sami lifestyle. When in the Sami village, visitors can meet and feed the reindeer, hear and learn about local history and

folklore, and eat dinner in an authentic lavvu, which is much like a Native American tipi (only much sturdier).

After the evening’s unique cultural experience, the group then heads out of town into the wilderness to view the northern lights one last time. In the morning, the journey comes to an end as guests board a flight back to London.

GUEST SPEAKER – JIM WILD

Travelers on tours that depart January 29, February 19, and March 4 will have the privilege of listening to and conversing with a distinguished guest speaker. Jim Wild is a Professor of Space Physics at Lancaster University. He is also a scientist and an expert in outer space environments, the relationships between the sun and the planets in our solar system, and the aurora borealis. On day 2, Wild will share his knowledge on the northern lights, including the mythology, history, and science behind them.

SIGN UP

To sign up for a tour, go to [greatrail.com/tours/northern-lights-lapland-tour](https://www.greatrail.com/tours/northern-lights-lapland-tour). Prices may vary depending on your departure date. This web page includes information about locations and hotels featured throughout the journey as well as details on the three participating railways.

Thomas Keller's Delicious Empire

by Jaimie Pfeiffer

"When you acknowledge, as you must, that there is no such thing as perfect food, only the idea of it, then the real purpose of striving toward perfection becomes clear: to make people happy, that is what cooking is all about."

—Thomas Keller

Unlike many “celebrity chefs,” Thomas Keller has carefully curated his empire’s treasures and elegantly displays his collection of choice gems rather than flashing around a lot of showy baubles. His flagship Napa restaurant, The French Laundry, still maintains a waiting list which, over ten years after its opening, is often months long. *The New York Times* dubbed his 2003 venture, Per Se, the “best restaurant in New York City.” Both showcase the most coveted jewel to adorn a restaurant: three Michelin stars. His restaurants remain sparkling and relevant despite changing food trends, and his success grows despite his refusal to offer watered-down knockoff products to appeal to a broader market.

A Chef is Born

Thomas Keller holds an unlikely position of prominence, considering his minimal formal culinary training. Growing up in Florida, he helped his mother run a Palm Beach restaurant, filling in when cooks were out sick. As a teenager, he worked in restaurants from Florida through New England during his summer holidays, each building to his culinary skills and stoking his dedication to the art of food. Eventually, Keller became head cook at a small Hudson Valley, New York restaurant specializing in rustic French cuisine.

Thomas Keller’s three years of experience at La Rive led him to develop his cornerstone philosophy, which has driven his empire’s success: locally-sourced ingredients prepared in innovative ways and inspired by traditional techniques.

Keller developed relationships directly with the farmers and ranchers who supplied the restaurant’s produce and meats and learned to place a high value farm-to-table, morally and environmentally responsible cuisine, including practices such as using all parts of humanely-raised animals, sourcing local produce in season, and emphasizing quality, small-batch ingredients.

When he left the Catskills, Keller traveled and worked under Michelin-starred chefs in New York City and Paris, honing his techniques and creativity in the best-of-the-best establishments. After a few years at Rakel, an upscale NYC French restaurant catering to the ethos of 1980s Wall Street excess, Keller headed west to reclaim a more down-to-earth philosophy of cuisine. California had long since embraced the farm-to-table movement, pioneered by Alice Waters at Berkeley’s Chez Panisse over two decades before.

Landing as a chef at the Checkers Hotel in Los Angeles, Keller’s first California enterprise was a startup artisan olive oil company (EVO, inc.). Its success encouraged him to dream bigger, and he set his sights on acquiring a local restaurant in a uniquely historied property: a building in Napa Valley that had previously been first a brothel, then a steam laundry. Two years, 18 investors, and more than \$1 million worth of transformations later, The French Laundry opened its doors.

The French Laundry Changes Everything

1994 found Napa Valley at the tail end of a crisis: from the late ’80s to mid-’90s, vermin called phylloxera had forced winegrowers in the valley to replant more than two thirds of the valley’s historically rich vineyards, pitching the hugely wine-dependent economy into an unsteady future. As the vineyards replanted and vintners adapted, new players in the local restaurant scene emerged, including The French Laundry.

Keller’s dedication to detail has been frequently described as “obsessive” – a fitting takeaway from his upscale New York City and Paris culinary experience. But The French Laundry changed the interpretation of the upscale dining experience, marrying the California cuisine emphasis on in-season, locally sourced ingredients with the urbane attentiveness to service, presentation, and creativity. Rather than serving rare,

exotic signature dishes, The French Laundry's menu changes daily, depending on what's lusciously in season. There are no "à la carte" selections; meals are offered in various prix fixe options. A full tasting menu can encompass dozens of courses over several hours of dining. At the time, this was a revolution in American fine dining – a marked departure from the usual appetizer/entrée/dessert narrative.

Dishes like "oysters and pearls," a sabayon of pearl tapioca with poached oysters and caviar and "tongue in cheek" (braised beef cheek and veal tongue served with horseradish cream, baby leeks, and garden greens) make regular appearances on the menu, demonstrating Keller's

clever creativity and extraordinary craftsmanship. Cheeses, honey, meats, vegetables, chocolates, and most other dining accoutrements are sourced locally or house made. Diners go home with goodie bags containing not only shortbread and sweets but also menus and an informational brochure on the restaurant's sourcing farms and producers.

Both the public and the media enthusiastically embraced Keller's new interpretation. In 1997, Ruth Reichl, the food critic at that time for *The New York Times*, called the French Laundry "the most exciting restaurant in America," noting that other restaurateurs were beginning to adopt Keller's multicourse approach.



"Strawberry Tea" photo courtesy of Deborah Jones



1. Thomas Keller photo: Deborah Jones | 2. PerSe Biscuit Box photo: Deborah Jones | 3. Profiterole from The French Laundry photo: Deborah Jones | 4. PerSe Restaurant exterior photo: Deborah Jones | 5. The French Laundry exterior photo: Drew Altizer | 6. PerSe Elysian Fields Suckling Lamb photo: Deborah Jones

Expansion of the Empire

Elaborate, decadent meals aren't for everyone, and The French Laundry's 17 tables and three-hour dining experiences preclude "everyone" from getting a table anyway. Eventually, however, Keller expanded his empire. In 1998, he opened Bouchon, a French bistro and bakery not far from The French Laundry. Bouchon's approachable food and more down-to-earth prices made it an instant success; outposts have since opened in Las Vegas, New York City, and Beverly Hills.

Meanwhile, The French Laundry cookbook became an award-winner and bestseller, inspiring home cooks and providing visual fodder for foodies of all ages to dream of visiting the farmhouse itself.

Keller's next step was to return whence he came, bringing his high-end locavore philosophy with him. A decade after his departure, he swept onto the New York stage with a flourish: Per Se was fine dining at its best, on his terms. Gone were the fussy, exotic city dishes; replacing them were multicourse showcases of seasonal ingredients prepared with French panache. Per Se opened in 2003, and ever since, its ratings (and waitlist) have never faltered. In pre-opening interviews,

Keller was often quoted as saying, "It's not The French Laundry, per se...", inspiring its name. It is, however, every bit as good.

With two of the best high-end restaurants in America bookending the coasts, Keller returned to Napa in 2006 to open Ad Hoc, a family-style restaurant serving fixed-price comfort food menus. As in his other ventures, the offerings change daily, although there are some house specialties like the fried chicken, which he serves every other Monday. Sundays regularly feature a three-course brunch.

Along the way, Keller has been noticed and lauded by the highest authorities in the culinary universe. His awards fill volumes and include some of the most coveted decorations; he is the only American chef to ever have two restaurants simultaneously earn three Michelin stars (The French Laundry annually since 2006 and Per Se annually since 2007). He has won James Beard awards in virtually all categories, and both Per Se and The French Laundry consistently top "best of" lists.

In 2001, *TIME Magazine* named Keller "America's Best Chef." In 2003, Johnson & Wales University conferred upon



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6



him the honorary degree of Doctor of Culinary Arts for his contributions to the profession. The Culinary Institute of America (CIA) honored him in 2013 with “TK Day at the CIA,” and in 2010, he was elected to the CIA’s Board of Trustees. In 2011, Keller was named as a Chevalier of The French Legion of Honor, in tribute to his “lifelong commitment to the traditions of French cuisine and his role in elevating cooking in America.”

The Future of the Keller Empire

The French Laundry celebrated its 20th anniversary with a complete renovation of the kitchen and dining room, updating the ambiance to keep pace with the constantly changing cuisine. In addition to continually refining his signature brand, Keller has served as food consultant on hit movies *Ratatouille* and *Spanglish*, helped to develop a gluten-free flour blend, publishes a bi-annual lifestyle magazine, has his own Napa Valley wine label, and has just opened his first retail store selling cookware, silverware, cocktail accessories, and other home goods.

Keller is also ensuring the future of his art and philosophy: in 2008, along with two other prominent chefs, Daniel

Boulud and Jerome Bocuse, he established the Bocuse d’Or USA Foundation. He currently serves as president of the organization, which is “devoted to inspiring culinary excellence in young professionals and preserving the traditions and quality of classic cuisine in America.”

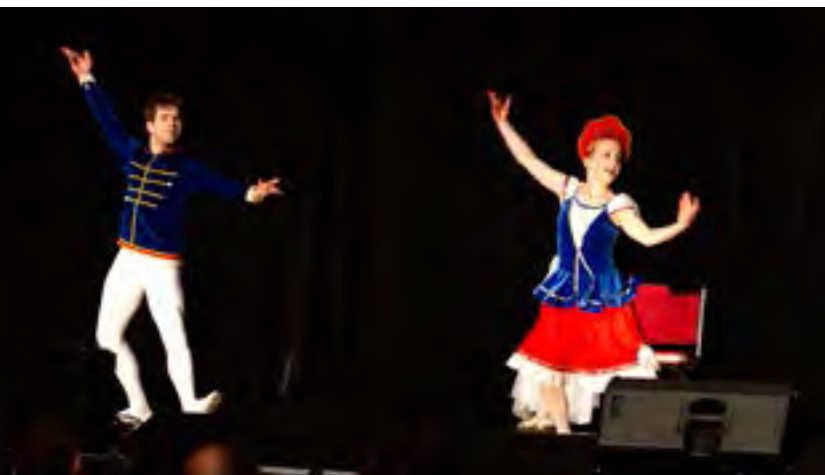
Unlike many elite chefs, in addition to being deeply respected, Keller is also liked by his peers. A letter and James Beard medal from Charlie Trotter hangs on one wall of the office. The legendary chef sent it to Keller when his eponymous cookbook defeated *The French Laundry* cookbook because he felt Keller was more deserving of the honor.

Thomas Keller is culinary royalty and a living legend, artist and innovator. Most of all, he believes that the experience of eating, sharing, preparing, and sourcing food should be one filled with joy. Reichl noted in her *New York Times* review, “Mr. Keller’s ultimate genius is in understanding that people will only participate in his fantasy so long as he keeps them happy to the very last bite.” In the 18 years since those words were written, Keller has continued to do so and seems likely to continue for easily 18 more...but that’s no reason to wait even one more day to experience the fantasy for yourself.



The Quad City Arts Festival of Trees

by Andrew Evans



The aim of art is to represent not the outward appearance of things, but their inward significance.
-Aristotle

This year marks the 30th annual Festival of Trees in the Quad Cities area. This event, held every November, attracts more than 100,000 visitors each year, brings \$2.5 million into our community, and is recognized as one of the top events of its kind in North America. The holiday event is the work of more than 3,500 volunteers, 650 designers, 3,500 center stage entertainers, and 150 sponsors.



History

In the 1930s, American farmers faced their biggest economic crisis since the Great Depression. Falling land values, unpaid loans, and disappearing businesses devastated Midwestern agricultural communities. As a worldwide center of agricultural activity, including equipment manufacturing, the Quad Cities were hit especially hard.

The depression led many of the area's largest employers to drastically reduce their workforces or to leave the area altogether. International Harvester Company closed a

plant in Rock Island; J.I. Case Company closed plants in Bettendorf and Rock Island; Caterpillar closed a 2.4 million-square-foot facility in Davenport; and Deere & Company cut its workforce by half.

In 1986, amidst the crisis, local art groups that had been sponsoring artist visits for area schools since the 1970s created the Festival of Trees to bring the community together and provide an opportunity for artistic expression while raising funds to keep their popular visiting artist series funded.

The generosity of the community and the creativity of the artists involved made the festival such a success that it became an annual event. Since its inception, the Festival of Trees has raised more than \$5 million in support of local arts. The festival now spans 10 days packed with events and includes over 175 decorated trees.

Attractions

Art Exhibit In the original spirit of growing and preserving the arts in the Quad City area, the art exhibit displays the artistic talents of local high school students. Several categories of visual art are on display, including both two-dimensional and three-dimensional disciplines, from painting to pottery.

Book Tree Located in the North Pole Children's Activity Center, the book tree is 20 feet tall and filled with books generously donated by community members. At the end of each Festival of Trees, these books are distributed to needy children in the Quad Cities area.

Celebrity Baskets Area celebrities such as local dignitaries, shop owners, and radio and television personalities design each of these baskets based on a unique theme. Themes might revolve around a celebrity's claim to fame, a hobby, an aspect of the festival, or anything else their imaginations may devise. Festivalgoers can purchase raffle tickets for \$1 per chance to win one of these celebrity baskets.

CenterStage CenterStage, located in the Great Hall, showcases diverse local talent, including dancers, singers, bands, and choirs. More than 3,200 people of all ages entertain audiences at this Festival of Trees favorite each year.

Budding Designers Local elementary, middle, and high school students get the opportunity to display their creative talents at the Budding Designers exhibit. Attendees can stroll through the display of 4-foot trees that these talented local students contribute to the festival.

Designer Displays At the heart of Festival of Trees are the Designer Displays, featuring original creations by the area's most talented designers. These designs are donations to the festival and are available both for viewing and for purchase. Thousands of individuals gather annually to view the many design categories, including trees, doors, hearth & home, and rooms.

Festival Express Each year, employees from the local engineering firm KJWW create Festival Express, a toy train exhibit set in a magical winter wonderland. A \$1 ticket allows children to play engineer as they navigate the train through the display.





Gift Shop Unique gifts for any taste and price range are available in the Festival of Trees' Tinsel Treasures gift shop, including local favorites like Isabel Bloom's festival exclusives as well as items not easily found in the area or online.

Gingerbread Village Amateur, professional, youth, and senior bakers all come together to create a gingerbread village right out of a storybook. Each delicious design is available for purchase.

Honor Trees Whether you are honoring someone's birthday, anniversary, honor roll, a soldier serving our country, or someone who has departed, the Honor Trees exhibit gives you a beautiful way to honor someone during the holiday season. Personalized ornaments are displayed throughout the festival and mailed to buyers before December 25th. The exhibit includes benches on which to rest and reflect upon the true meaning of the holiday season.

North Pole Children's Activity Center and Santa's Throne Santa's North Pole features games and activities for children of all ages. Decorate cookies in Mrs. Claus' Kitchen, win prizes at the Snow Bowl, and play golf at Prancer's Putt Putt. Santa's Throne sits in the heart of the North Pole Children's Activity Center.

Talking Tree Located at the entrance to the Great Hall is the Talking Tree. It gives directions, tells stories and jokes, and even answers questions.

Toy Tree Standing over 20 feet tall, the Toy Tree is

filled bottom to top with new toys donated by community members. After Festival of Trees, all of the donated toys are delivered to Toys for Tots.

TreatShoppe Located inside the Great Hall, TreatShoppe serves up holiday and local favorite treats like hard candies, brownies, fudge, cotton candy, popcorn and Whitey's Ice Cream.

Events

In addition to these attractions, the 30th annual Festival of Trees hosts several events throughout its 10 days.

Santa's Special Stars On Thursday, November 19th from 9am to 12pm, Festival of Trees is available for a free private tour exclusively for persons with disabilities. Not open to the public, this event includes access to the attractions and entertainment on CenterStage.

Cheers to 30 Years Craft beer and wine fans will love this event, running from 5:30-9:00pm on Thursday, November 19th. The tasting event features local breweries and wineries as well as a DJ spinning tunes from the 80's and 90's.

Silver Bell Social

Dedicated to those 55 years and better, the Silver Bell Social includes CenterStage musical entertainment, free coffee beverages and cookies, other snacks available for purchase, designer displays, and a visit from the most

senior festivalgoer of all – Santa. The Silver Bell Social takes place Friday, November 20 from 9am-12pm.

Grand Premier Party Serving as the grand kickoff on Friday November 20th from 6:30-10pm, the Grand Premier Party features hors d'oeuvres and desserts by chef Chris Carton as well as a cash bar offering premium selections and holiday drinks.

Holiday Parade One of the largest events of the festival is the Holiday Parade, which begins at 10:15am on Saturday, November 21st. This parade is the largest helium-balloon parade in the Midwest, featuring over 20 large helium balloons, pageant queens, dance groups, bands, clowns, floats, tractors, and antique cars.

Military Day On Sunday, November 22nd from 10am to 7pm, the festival offers \$2 off admission for military members and their immediate families. The Great Hall features a variety of patriotic touches during this event.

Afternoon Adventure Recommended for children ages 2-12, Afternoon Adventure features a fun selection of raffle baskets and provides a free collectable ornament and goodie bag to each young participant. Photography packages are also available for purchase during this event, which takes place Sunday, November 22nd. Doors open at 2pm.

Sizzlin' Soiree On Monday, November 23rd from 6:00-8:30pm, the Sizzlin' Soiree is one of the most luxurious ladies' night events in the Quad Cities and features libations and shopping with the festival's exclusive vendors.

Sugar Plum Ball On Tuesday, November 24th from 6:00pm-9:00pm, Festival of Trees hosts a very special formal father-daughter dinner dance with a DJ and raffle prizes. Circa '21 Dinner Playhouse's Youth Theater Musical series will present a special performance for this event.

Celebrity Lunch Wednesday, November 25th from 11:30am-1:30pm, local celebrities wait tables and entertain guests by showcasing their outrageous talents to raise money for the arts.

Jingle Jam Wednesday, November 25th from 8:00-11:30pm, the night before Thanksgiving, is the hottest holiday dance in town. Jingle Jam is a drug- and alcohol-free teen dance with chaperones and security monitors. Teens must provide a high school ID at the entry doors.

Family Day Saturday, November 28th is family day, featuring many costumed characters roaming the floor for photo opportunities. There will also be a special raffle with prizes geared toward family entertainment.

Regardless of your holiday traditions, the Festival of Trees has something for you. From formal and fancy to casual and fun, the 10 days of events are a great way to spend time with family and friends or just to experience on your own. Don't forget, all proceeds go to supporting the arts of the Quad Cities area!

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KEITH PERRY

Chief Pilot for Lamarque Motor Co.,
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The DUBAI MALL *Just a bit bigger than reality*

by Micah Hartmann

The largest mall on Earth, the tallest building in the world, and the world's brightest fountain are just a few of the dozens of magnificent structures that you can find in Dubai. In 2014, the Dubai Mall, "the world's most visited shopping and leisure destination," attracted nearly 80 million guests.

Dubai, UAE

Located along the southeast coast of the Persian Gulf in the Arabian Desert, Dubai is the most populous city in the United Arab Emirates (UAE). Almost 70% of its nearly 2.4 million residents are male, largely due to the high number of foreign construction workers currently employed. The racial diversity in this country is incredible. Only 11% of its current population is Emirati; the rest of the population consists of expatriates from India, Iran, the Philippines,

Pakistan, Egypt, Nepal, Bangladesh, and hundreds of other countries. A large number of business professionals from the US, the UK, South Africa, Canada, France, and Australia also live and work in Dubai.

Over the last half century, Dubai's growth and development have skyrocketed in an uncommonly short period of time. Long-term residents have seen an astonishing degree of advancement and change over the last several decades...

"...think of Dubai as a trip into the future, but also into the past. Here, amid the glass and steel spires, are folks who remember living in goatskin tents with rugs on sand floors."





Emiratis have had to adapt to an abruptly changing society. Learning to balance their traditional beliefs and culture with a new, modern lifestyle in a city that is constantly evolving has not been easy for everyone. While many of the natives are proud to call the new Dubai their home, some feel they are being overcome by foreigners and alienated in their own city.

Dubai's rapid growth has also raised concerns about its economic stability and sustainability. Dubai's desire to gain international recognition and attract business and capital has pushed it past what many consider to be a wise limit. Whether Dubai will have the ability to continue progressing at its current pace or thrive over the long term in its present state, only time will tell. As for now, Dubai is a place of wonder and discovery. Its modern architecture, futuristic designs, and magnificent advancements in technology have propelled the city ahead of the rest of the world in many ways.

“Dubai is a city in which a culture rooted in conservative tradition ambitiously took on a movement that strove toward radical modernity, pushing the limits of building technology and the vocabulary of excess.”

The Dubai Mall

This enormous, contemporary shopping mall was constructed over the course of four years. 13,800 tons of structural steel (more than was used in the Eiffel Tower) went into the construction of the Dubai Mall. The shopping center has four levels with 95 elevators, 150 escalators, and a total area of 12 million square feet (nearly equivalent to 200 football fields). Compare that to the U.S.'s largest shopping mall, the Mall of America, with a gross building area of 4.87 million square feet.

Not only is The Dubai Mall the biggest in area; it also contains the world's largest collection of fashion brands under a single roof. Fashion Avenue is filled with almost every shopping item imaginable. The 1200 retail outlets include nearly every mid- and high-fashion brand in existence and showcase the finest designer lines in the region. Numerous celebrities have shopped at the mall over the years, including Kim Kardashian, who visited in 2011 to promote the opening of Millions of Milkshakes in the mall and debut her own shake. Around 10,000 roaring fans were there to welcome her.



DubaiDino

DubaiDino, an 80-foot long, 25-foot tall Diplodocus, commonly referred to as a “long-neck” dinosaur, is on display in the Souk Dome. This enormous skeleton was found in Wyoming in 2008 and is believed to be over 150 million years old. Nearly all of its bones were found still intact at the excavation site, which is extremely rare, and close to 90% of its bones on display are authentic.

Aquarium and Underwater Zoo

Dubai Aquarium, located on the ground level of The Dubai Mall, is one of the largest in the world at over 390,000 cubic feet. It has an enormous front viewing panel along with a 270-degree walkthrough tunnel, where visitors can watch sharks, stingrays, and fish swim beside them and overhead. This 10 million-liter tank contains over 140 species of sea animals, including more than 300 sharks and stingrays.

The Underwater Zoo is located on the Dubai Mall’s second level and comprises three separate ecological environments for visitors to explore. The Rocky Shore, Living Ocean, and Rainforest displays are filled with

hundreds of fascinating creatures, including penguins, lionfish, otters, seahorses, eels, water rats, and piranhas.

The Underwater Zoo is also home to King Croc, one of the largest protected reptiles in the world. At age 40, he currently weighs 1653 pounds and is expected to grow much larger over the next several decades. King Croc is an Australian saltwater crocodile and known for being highly aggressive. As the saltwater crocodile has the greatest known bite force in the animal kingdom, this protected environment is likely the only place you will want to meet one.

Cage Snorkeling and Shark Diving

The Dubai Aquarium offers unique experiences for those who are brave enough to indulge. Cage snorkeling allows visitors to dive into the giant fish tank and come face to face with hundreds of fish and sharks with only the bars of a cage between them. Ultimate thrill seekers may choose a shark dive *without* the cage. A short course is available to prepare non-certified divers for scuba adventures. If you are certified diver and plan to dive during your visit, bring your certification to skip right to the fun.

Burj Khalifa

Dubai Mall is located at the base of the Burj Khalifa, the world's tallest freestanding man-made structure. This enormous 160-story building reaches 2,722 feet (over half a mile!) into the sky. To put its size in perspective, the Burj Khalifa is taller than the Empire State Building and the Willis (Sears) Tower *combined*. The second tallest freestanding structure, Tokyo Skytree, falls nearly 650 feet short (2,080 feet).

The Burj Khalifa defies gravity. It defies logic. It rips into the sky in the middle of a city surrounded by desert. Skyscrapers have generally been built in congested cities where building outward just isn't possible. They are a practical way to fit a lot of interior space into a densely populated area. This is still the case for most European and American cities; however, the purpose behind building some of the tallest structures in the world has changed in many places, including Dubai. The desire for worldly recognition, modernity, and symbolic capitalism has seemed to replace the drive for functionality. Dubai is surrounded by an expansive desert with plenty of space for outward development, but that fact did not prevent it from creating an impractical but world-renowned piece of art right in the middle of the city.

Tourists may step into one of the world's fastest elevators and rise to the 124th floor of Burj Khalifa at a speed of nearly 33 feet per second (over 22 mph). Upon arrival, visitors experience a sweeping 360-degree view of the city. For those who are not deathly afraid of heights, stepping out onto the world's highest public outdoor observation terrace offers an extraordinary view of the skyline. On floor 122 is At.mosphere, an observatory deck featuring a luxurious lounge and fine dining, billed as "The Centre of Now."

The Dubai Fountain

The largest dancing fountain on the planet is located just outside the mall on Burj Khalifa Lake. The Dubai Fountain was designed by WET Design, an American-based business that also created the famous Fountains of Bellagio in Las Vegas and numerous other fascinating and unique fountains around the world.

Several powerful jets shoot water 500 feet into the air, equivalent in height to a 50-story building. The fountain itself is 900 feet long with five separate circular jets that shoot over

22,000 gallons of water each day into the air. Light enhances the spectacle of dancing water across the serpentine coils of this giant fountain. 1.5 million lumens light up the sky to make the Dubai Mall area the brightest spot in the Middle East during the show. Lights from the fount can be seen from over 20 miles away on the earth's surface as well as from outer space! The fountain's choreography is arranged to Arabic, classical, and world music, and spectators can view performances at regular times each day.

"The fountain takes to the stage in a luminous performance of light, sound, and liquid sculpture. Nearly 1500 individually choreographed water jets and over 1000 fog jets shape a three-dimensional canvas with continuous gestures...like an invisible hand having its way with the elements." -WET

Visiting Dubai

Dubai is generally very welcoming to tourists, but it is home to a very conservative culture. If you visit, be sure to do some research beforehand to grasp what the residents deem respectful and acceptable. What may be normal behavior in the states may be offensive to local residents. Be smart, dress modestly, act respectfully, and you should receive a warm, friendly welcome in this unusual and captivating city. Yvette Cardozo of the *Miami Herald* reminisces on her recent visit:

"Think Vegas without the sin, Disney without the mouse. Dubai, one of the seven Emirates ... is just a bit bigger than reality."





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Seventeen People in a King Air?

**By Adam Doyle – *Pant and Interior Sales Manager
for Elliott Aviation***

While it may seem impossible, you can fit 17 people in a King Air 350 or 350i by modifying it from an executive layout to a 15-passenger commuter plus crew. When making this change, you will lose about a fifth to a quarter of your aircraft range, depending on the weight of the passengers and the luggage.

When transforming a 350 or 350i from an executive layout to a commuter style layout, there are many obstacles that will need to be taken into consideration. The first thing to consider would be to eliminate all cabinets mounted to the

seat tracks aft of the forward dividers. Next, whether it's a 350 or 350i you are retrofitting, relocation of the lavatory from the standard location across from the entry door to the left handed aft baggage area is the next step, similar to a King Air 90. Along with doing this, you will need to incorporate an “L”-shaped curtain to provide the user some type of privacy, although it will be minimal.

When retrofitting a 350i in this manner, there are obstacles that you wouldn't face on a 350. The 350i's redesign of the drink ledge and lower side panel area affect what seats can be placed in the aircraft. At all table locations, the table housings and side panels arch inboard. The arch will not allow a commuter style seat to be placed in the tracks since

they do not track inboard on the frame. On a typical King Air 350, this would not be an issue as the drink ledge and side panel area are flat and non-intrusive.

The preferred seating option would be AvFab's Traveler Seat. These seats are engineered to be lightweight, durable, and affordable. The Traveler Seat's enhanced design creates increased leg, knee, and foot room as well as ease of getting in and out for passenger comfort. Since you lose some of your range in this modification, keeping the seating as lightweight as possible will be to your benefit.

Oxygen requirements will need to be evaluated unless the aircraft was previously outfitted with dual aft jump seats. Placarding now becomes mandatory since both aft dividers and stub wall will be removed to accommodate the seating.

Considering the floor plan change, opting for alternative flooring designed for heavy use may be necessary. If you intend to retrofit a 350i and still want the look, there are options available to consumers looking for this solution. One of the biggest benefits is upgrading to LED downwash lighting instead of the fluorescent bulb/power supply issue.

Other modifications to consider include options for baggage. You lose the interior baggage area by eliminating the left handed aft baggage area to accommodate the new toilet location. However, there are still alternatives available. By adding wing lockers, you would gain 34 cubic feet total of baggage area.

Another topic to discuss is aesthetics. Are you considering function or appeal? You can always have closeouts fabricated to cover up the structure where items have been removed, though taking the next step to make your aircraft appear as if it came from the factory may be appealing. You may choose to have the drink ledges and lower side panels added onto and recovered, or gain a unique and seamless look by choosing to have all new fabrications. Fabricating new may sound over the top, but taking into consideration the fact that you won't have to strip, prep, and recover, some of the labor will be absorbed.

Seventeen people in a King Air? It is possible and a good shop that works on a lot of King Airs can do it. Knowing all of your options is the first step to knowing what modifications will fit your needs.

Adam Doyle joined Elliott Aviation in 2000 as an interior technician after graduating from Wyoming Technical Institute. While at Elliott Aviation, Adam has earned many different promotions on the shop floor, including Install Team Lead, Soft Goods Team Lead, Assistant Interior Shop Manager, and Seat Shop Manager. Adam's most recent promotion has been to Paint and Interior Sales Representative for Elliott Aviation. He uses his experience with various vendors, products and processes to educate our clients by providing direction and helping plan for future investment with realistic and accurate figures.



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As the last of the leaves are swept away and the chilly air starts to smell like snow, it's the perfect time to curl up in front of a fire with a glass of earthy cabernet. It's even better if that fire is welcoming the beginning of summer, right at the birthplace of that bottle – the rich wine regions of Chile and Argentina.

With strong traditional European winemaking influences, unusual diversity in the terrain and climate of the vineyards, and a widespread adaptation of modern winemaking technology, the wines of Chile and Argentina have something for every palate.

History

Spanish conquistadors arrived in Chile and Argentina in the early 16th century, after settling much of Central America and establishing Spanish old-vine vineyards in the soil of the new world. Legends say that the conquistador Francisco de Aguirre personally planted the original Chilean vines, and whether true or not, it

is undisputed that winemaking has been a tradition since the first Spanish settlers arrived in both countries. Jesuit priests were responsible for much of the original horticulture and winemaking for use in religious ceremonies; as wealthy families settled the area, they established their own vineyards and estates.

One of these, the Echenique family, of Basque origin, planted vineyards in the Peralillo area of the Chilean province of Colchagua around 1750, and their estate has flourished ever since. Around 1850, an influx of French settlers brought their own grapevines and winemaking traditions, planting new vines from old-world cuttings. This sparked a rapid expansion across the industry. By 1900, there were almost 100,000 acres of vineyards in Chile and 520,000 acres in Argentina. When phylloxera, a grapevine infestation, ate through Europe's vines in the late 19th century, winemakers increased their South American production exponentially to make up the deficiency and began shipping overseas.



NEW WINE

Biking the Vineyards of Argentina and Chile

by Jaimie Pfeiffer

The prevailing model for Chilean and Argentinian wine production, however, remained largely focused on producing large volumes of table-quality wines for domestic consumption – drinkable, but not distinctive, wines. In the 1970s, however, the economies collapsed, taking the winemaking industries down with them, as soft drink and other beverage consumption smothered domestic wine sales. Overseas investors, including established European winemakers, saw investment opportunities. They shifted the focus of the region’s production, uprooting more than a third of the existing vineyards and replanting them with grapes from European vineyards. By the early 1990s, a new era of winemaking was born in the region, focused on smaller volumes of high-quality and mid-priced wines for export. Ever since, Chile and Argentina’s wine industries have flourished, largely due to a perfect blend of old-world techniques and methods with cutting-edge new-world technologies, growing systems, grape selection techniques, and marketing systems. Innovations include new vineyard trellising methods, drip irrigation, clone selection, mechanical harvesting and frost protection,

more efficient bladder-style grape presses, temperature-controlled stainless steel tanks and fermenters, and sophisticated bottling lines.

Terrain & Geography

The bustling, modern cities of Santiago in Chile and Buenos Aires in Argentina make perfect entry and exit points to the region. Outside the cities, the geography is wild and diverse, cresting to majestic peaks along the mountainous border between the countries. One of the best ways to explore both the cities and the wine country is by bicycle.

Whether you’re looking for a recreational day trip or a rugged, multi-day backpacking challenge, you can find opportunities perfectly suited to your abilities and vacation style. For the casual rider, there are numerous day trips leaving from Santiago to the vineyards that ring the edges of the city. There are also multi-day tours led by guides who plan routes and accompany riders. Many

include not only tour guides and tastings but also vehicle transportation of luggage, luxury accommodations each night, and gourmet meals both en route and at each stopover.

Biking allows you to see the grapes up close on the vines and explore many areas that are unpaved and impassable for most vehicles. Touring by bike is a unique way to experience the countryside from a different perspective and get some exercise to balance out the indulgent food and wine tastings. For the very adventurous, find a company that specializes in mountain biking up to some of the most remote vineyards; most others are located in placid, rolling hills that are easily manageable for recreational cyclists.

Where to Go in Chile

Chile is only 100 miles wide but features an incredible variation in climate because of the geographic transition from coast to mountains. As a result, within bikeable distance of the country's capital in the central region of Chile, you can find regions growing Carménère, Pinot Noir, Cabernet Sauvignon, and Sauvignon Blanc grapes, along with other lesser-known varieties like Carignan, País, and Petit Verdot. Chile's signature grape variety is Carménère, once widely grown in Bordeaux. It was thought to be extinct following the European phylloxera infestation of the 19th century, but the wine-loving world rejoiced when a strain was discovered in Chile in the 1990s; it has flourished and been celebrated ever since.

Just south of Santiago, the Maipo Valley boasts elegant, age-worthy Bordeaux blends. One of the oldest wineries in the country, Santa Rita, celebrates not only its classic wines but also its historical importance. According to legend, in 1814, 120 exhausted fighters in the Chilean war for independence took refuge in the estate's cellars after a hard-fought and critical battle, recuperating and raising their glasses to the birth of an independent nation. Its modern estate boasts a historic church and park, gourmet dining at Doña Paula Restaurant, and the Andean Museum, which houses 1,800 pieces of pre-Colombian art. Santa Rita offers bike tour and tasting packages of its property, including pickup in and return to Santiago, as well as a "winemaker experience" introduction to both traditional and ultra-modern wine production techniques.

Or stay on the estate at the Casa Real, one of the most prestigious hotels in Chile; its 16 guest rooms occupy the original estate home, sumptuously restored to its Pompeian-style elegance.

Head just a few miles southwest to the San Antonio Valley for some of the best biking terrain in the valley and some of the most environmentally-conscious facilities in the country. The geographical features of the narrow valley – protected on the west by the Pacific Ocean and the east by the Andes mountains – make it inhospitable to most pests and diseases, enabling vineyards free of agrochemical products and pesticides to thrive. One of these, Matetic Vineyards, is one of Chile's premier organic and biodynamic wineries. On its approximately 415 acres, instead of using synthetic chemical products, it uses organic, natural methods such as crop rotation, natural fertilizers, applying compost, and favoring predator-prey animal and insect relations for control of weeds, insects, and other plagues.

Matetic Vineyards also practices biodynamic agriculture, a philosophy in which the whole farm (including the crops, soil, other plant life, and animal inhabitants) is seen as one single "organism" and treated as a closed system. In addition to using organic growing practices, biodynamics endorses a number of esoteric practices such as planting and harvesting according to phases of the moon and sun and applying homeopathic preparations to the crops. The controversial practices have been embraced by many prominent vineyards worldwide, and many biodynamic wines have scored very well in reputable taste tests, despite the lack of scientific evidence supporting any benefit to applying preparations such as "the manure of a cow buried in the ground at the autumnal equinox, then exhumed on the vernal equinox [and] made into a tea" to the growing crops. What is undisputed is that Matetic was one of Food & Wine's 2014 "Wineries of the Year." In addition to award-winning wine, its estate boasts tours of the vineyards by horseback or mountain bike, gourmet dining, and luxury hotel accommodations.

Chile's premier upscale winemaking region is the Colchagua Valley, about 110 miles south of Santiago. Explore the best of the region, including Viu Manent, maker of super-premium Malbec, along the Colchagua Valley Wine Route. Viu Manent hosts tours of its winery



A group of wine oak barrels in the cave of Salentein Vineyard, Mendoza, Argentina



Vineyard in Colchagua Valley, Chile

and manor house and antique horse-drawn carriage rides through its expansive vineyards. It also offers guests the opportunity to try winemaking for a day. Nearby, Via MontGras is one of the most modern winemaking facilities in Chile, from its vineyard design (including pioneering drip irrigation and trellis systems) to its innovative winery architecture, which enables a minimal amount of handling and movement of the grapes. Its wines are consistently top-ranked, and in addition to horseback riding and bike tours of the estate, it hosts wine master classes, traditional Chilean barbecues, and sing-alongs by starlight in the vineyards.

Where to Go in Argentina

Argentina is the fifth-most-prominent wine-producing country in the world, following France, Italy, Spain, and the USA. Two-thirds of Argentina's wine production comes from the Mendoza region, in the arid soil of the east Andes foothills. The region's high elevation (as high as 5000 ft. above sea level) and desert-like conditions produces grapes that create aromatic, balanced, intensely flavored wines, including Malbec (Argentina's signature wine), Cabernet Sauvignon, Chardonnay, and Bonarda.

Mendoza is Argentina's primary tourist destination, hosting events like the annual "Queen of the Wine Harvest pageant," as well as a novel project called Clos de los Siete. One of the world's most renowned and controversial

winemakers, Michel Rolland, and five partner families have created this enormous collaborative vineyard complex; the partners each contribute grapes to a million-bottle blend, and each has built its own facilities in the midst of the 2100 acres to produce proprietary brands.

Nearby is the Bodega Vistalba winery, renowned for being the home of famous expatriate French chef Jean-Paul Bondoux, and the Cheval des Andes, a sister estate to the celebrated Bordeaux château Cheval Blanc. Mendoza is also home to Bodega Catena Zapata, which has pioneered advances in grape cultivation, particularly in extremely high altitudes. Years of research and study of the different microclimates led this winemaker to determine that the same varietal, and even the same clone, presented distinct aromatic and flavor profiles when cultivated in each of Argentina's unique microclimates.

Just south, in the Uco Valley, sprawls the nearly 5000-acre Bodegas Salentein, a winery founded by a Dutch tycoon on an estate originally cultivated by the Jesuit priests. It includes three vineyards of varying microclimates and altitudes, a lavish art museum with rotating traveling exhibitions, and thoroughly modern wine production and cellaring facilities. Stay at the peaceful, 16-room hotel and tour the estate by horseback or bicycle before relaxing by a pool in the heart of the mountain vineyards.

North of Mendoza, the regions of Salta and Catamarca are home to the highest-altitude vineyards in Argentina;

they have cold, high desert climate profiles. Argentina's signature white grape, Torrontes, is grown here and lends its characteristics to aromatic, floral white wines. Bodega Colome lays claim to the highest vineyard in the world, some 9900ft (3000m) above sea level. Its estate encompasses rustic old vineyards, a state-of-the-art winery, a visitors' center, and a huge museum showcasing the American postmodern artist James Turrell. Nearby is the modest estate of San Pedro de Yacochuya, which makes world-renowned Malbecs in the French style from its 60-year-old vineyard 6,700 feet above sea level. Its wines, aged in French oak barrels, were the first to be barrel-fermented in Argentina and are intensely flavorful.

Outside the traditional mountainous regions, up-and-coming new vineyards and producers are emerging closer to the Atlantic coast. In the south, the Rio Negro and Neuquen have cooler conditions that are suited to creating wines made from Pinot Noir. Biodynamic farming has also begun to catch on in Argentinian wineries, although not to the degree it has proliferated in Chile. As in Chile, Argentinian winemakers are flourishing by combining traditional European methods with modern technological advances and innovations.

Making Plans

Many tour companies offer packages to see wineries across Chile, Argentina, or both, including transportation between major regions by van or private plane. Make sure you choose a company with a wide variety of bikes, unless you'll be bringing your own, and guides who are knowledgeable about both the geography and the wineries. Tours are customizable to include luxury accommodations both on and off the vineyard estates, gourmet meals, and private tours and tastings at the wineries.

The tour company should provide a skilled support team for on-the-go repairs, meal and snack breaks, first aid, and other emergency situations that may arise. Above all, make sure you remember what kind of biker you are, and communicate to the tour company whether you'd like relaxing rides or 100k days. After days full of biking through picturesque mountain landscapes, touring historic estates, and learning about ultramodern winery technology, uncorking South America's fine wines by a smoldering fire will be a delicious end to each idyllic evening.

If You Go...

- It's best to visit the wine country of Chile and Argentina from October to February (peak growing season) or from March to May during the harvest season.
- Because of the vast diversity of climates, temperatures vary greatly by region and over the course of each day. Winter temperatures (June-August) can hover around freezing. Summer highs can be in the 80s, but desert conditions can make summer nights chilly.
- Chile's Colchagua Valley has an excellent tourism resource association; browse at www.rutadelvino.cl/en/.
- Find hotels from luxurious to simply charming in the Mendoza region of Argentina, as well as the best dining and vineyard information, at www.experiencemendoza.com.
- Tour companies offering excellent luxury bicycling packages in Chile and Argentina's wine countries for all abilities and travel personalities include Upscape Travel (www.upscapetravel.com), BK Wine Tours (www.bkwinetours.com), and Paseos en Bicicleta (www.biketours.cl).



Vineyards in Payogasta along famous Route 40 in its section through the northern province of Salta, Argentina



ECONOMIC & FUNCTIONAL OBSOLESCENCE

Should you scrap or upgrade your older aircraft?

What is involved in a decision to upgrade or scrap an older aircraft? Aircraft appraiser Jim Becker notes there are more than the usual aspects of avionics, equipment, records, and condition to consider where deciding on an older aircraft's economic worth is concerned...

This article originally ran in the July issue of AvBuyer and is part one of a three-part series.

An aircraft has both a physical life and an economically useful life. Generally defined, the **physical life** is the number of years or hours that the aircraft can be operated

before functional or economic obsolescence is considered. The **economically useful life** is the number of hours or years that the aircraft may be profitably operated for the purpose intended.

These two definitions may present different circumstances for operators of older aircraft.

As defined, **economic obsolescence** is a form of depreciation where the loss in value of a property is caused by factors external to the property; it may include passage of new legislation, changes in ordinances, and reduced demand for the product.

Functional obsolescence, on the other hand, is a form of depreciation in which the loss of value or usefulness of a property is caused by inefficiencies or inadequacies of

the property itself, when compared to a more efficient or less costly replacement property that new technology has developed. Some of the symptoms suggesting the presence of functional obsolescence are excess operating cost and lack of utility.

It is easy to imagine how these two definitions would affect a piece of equipment such as a copy machine or a tractor. But how does it affect our aging corporate aircraft fleet?

Keep in mind that the peak production year for corporate aircraft was in 1981, and there are thousands of 30+ year-old aircraft still in operation. Obviously, just because an aircraft is old doesn't mean that it can't be operated safely, but in some cases, it cannot be operated economically.

There are several issues that will affect the continued operation of these older aircraft.

Investment Issues

Are there times when it makes economic sense to invest an amount in your aircraft that exceeds its actual market value?

Although the values of older aircraft have plummeted, cost of operation tends to go up the older an aircraft gets - and in some cases, it can be double or triple the cost per hour of a younger aircraft. For some aircraft, a major maintenance inspection can cost upwards of \$250,000, with engine overhauls nearing \$500,000+, per engine. Considering that the value of the aircraft may be a half to a third of that amount, it is a difficult decision to decide whether to invest two or three times the aircraft's market value just to keep it operational.

In many cases, making upgrades can still be beneficial to you by extending the life of an aircraft that may already fit your mission profile. For instance, if you are going to spend over a million dollars on an aircraft that is worth \$700,000, it still may be less than finding a replacement aircraft of equal utility. In addition, you do not have to spend the time and money in finding a suitable replacement aircraft; training crew members; understanding new maintenance programs; and potentially finding a new maintenance facility.

Regulatory Issues

Next, what are the regulatory matters that may affect older aircraft? As an example, there is a December 2015 deadline for aircraft to be stage 3 noise-compliant in order to be operated in the US. This affects the older generation of turbojet engines (such as those powering the Learjet 24/25 series, Hawker 600, and Gulfstream GII/GIII). The key question for these operators is, do they want to spend thousands of dollars for a noise suppression system to become compliant, or does it make more sense not to invest?

An even larger upcoming regulatory issue is the Automatic Dependent Surveillance – Broadcast (ADS-B) Out mandate, which takes effect in 2020. Part of the FAA's NextGen System, this will affect all aircraft operated in the US for flight in most controlled airspace. Even though ADS-B is only five years away from being mandated, there is still a lot of uncertainty regarding when particular, less-popular legacy aircraft will have a solution and what the actual cost will be. As with most avionics upgrades, the older aircraft can be expensive to modify.





Something else to consider is the functional obsolescence of the Cathode Ray Tube (CRT) type Electronic Flight Instrument Systems (EFIS). This affects not only some older aircraft but many that are as new as ten years old. The problem is that the CRT EFIS tubes have a finite service life. Although there are still replacement tubes to be had, there are no companies manufacturing new tubes anymore.

When the inventory currently in the suppliers' hands is depleted, there will be no more replacements. As of today, many models do not have a LCD panel replacement option, and those that do will be forced to upgrade.

Cocktail of Factors

For those who still operate older aircraft, just because some element of functional or economic obsolescence affects you doesn't mean that your aircraft is necessarily ready for the scrap yard. There really isn't any one issue that will render an aircraft obsolete. Many factors will ultimately determine whether you will still be able, or even desire, to operate your aircraft ongoing.

Each flight department must weigh the pros and cons of replacing a legacy aircraft, giving consideration to their flight budget and specific flight missions. As long as parts are still available and the aircraft can be made compliant to the upcoming regulatory mandates, there is no reason that an older aircraft cannot be operated safely for the foreseeable future, although it may not always make economic sense to do so.

In the next issue, we will continue our discussion of older aircraft and the issue of economic obsolescence by considering the typical owner/operator who may be in the market to buy an older jet.

Jim Becker is a valued and respected Accredited Senior Appraiser with the American Society of Appraisers. He also holds an FAA Airframe & Power Plant Mechanic license. With nearly 25 years in the aviation industry, 20 of those years have been with Elliott Aviation in the capacity of valuing aircraft.

SCIENCE CENTER

OF IOWA



Where Lifelong Learning Happens

by Ginny Zink

The Science Center of Iowa has carried out its mission to engage and inspire Iowans along their journey of lifelong science learning for the past 45 years. After decades of growth and evolution, the center continues to delight visitors of all ages with its many marvelous spectacles and adventures.

HISTORY

The museum first opened in October 1970 as Des Moines Center of Science and Industry in Greenwood-Ashworth Park. What started as a Junior League of Des Moines project became one of the world's first interactive science centers, featuring innovative exhibits and interactive learning programs. Its reputation grew, and the center attracted a growing audience. In 1986, the museum expanded and changed its name to Science Center of Iowa (SCI) to better reflect its statewide mission. By 2000, the community's changing needs made it clear that further expansion was needed. This was accomplished in 2005, when the Science Center of Iowa moved into its current spacious location in downtown Des Moines. Just within its first five years, this expanded facility attracted over two million visitors.

THE EXPERIENCE

BLANK IMAX DOME THEATER You can really see and hear the wonderful worlds presented in their Blank IMAX Dome Theater, which features a 6-story dome-shaped screen, 12,000-watt surround sound system and seating for 216 people. Recently, their riveting presentations have included "Living In The Age

Of Airplanes," "Journey to Space," "Great White Shark," "Jerusalem," and "Island Of Lemurs: Madagascar." You can see what's playing now by visiting the Science Center of Iowa website.

JOHN DEERE ADVENTURE THEATER

At the John Deere Adventure Theater, visitors can see live science in action using state-of-the-art equipment. I don't know about you, but I would love to see their Deep Freeze performance, which uses dry ice and liquid nitrogen to chill and thrill or the Crazy Chemistry program, which allows the audience to check out all kinds of colorful and fun experiments. SCI's live programs also include Cold-Blooded Critters, where you can meet and greet the center's resident reptiles, and Meet Stuffee, which explores the human body with the help of a large doll.

STAR THEATER The Star Theater is the 360-degree dome screen that lets you explore and discover planets, the sun, the Milky Way, and the far reaches of outer space. This theater features 20- to 30-minute programs such as "Iowa Skies Tonight," "Martian Rock," "One World, One Sky: Big Bird's Adventure," and "Black Holes: The Other Side of Infinity." In addition, the "Why the Sky" room is full of even more information about space. You can see a space suit and learn about an Iowa-born NASA astronaut. Both these exhibits were kindly donated by NASA.



PERMANENT EXHIBITS

After looking into the wondrous universe in the Star Theater, you may start asking yourself some big questions. If that's the case, then try asking while visiting *The Big Questions*, a giant sculpted grass question mark designed by artists Mags Harries and Lajos Heder. Though it can't answer questions for you, the serene space may inspire your own answers.

The Pendulum Foyer features a 235-pound, 17-inch brass ball on a 41-foot cable that perpetually swings by a circular electro-magnet, demonstrating the counter-clockwise motion of the earth under the invariable swing of the pendulum. Watch as the pendulum shows the turning of the earth by knocking down two of the 427 steel pegs that surround its frame every five minutes.

On the upper level, experience *When Things Get Moving*. In this hands-on exhibit, aptly themed, "Toying With Science," kids of all ages can actively discover the laws of physics by building and launching rocket ships, setting up elaborate domino obstacle courses, maneuvering a ball through a series of gears, levers, and pulleys, or building a freestanding arch of blocks.

Nano is an interactive mini-exhibit housed in the *Eureka!* lab. *Nano* engages people of all ages in nanoscience, enabling a wide range of visitors to interact with this complex topic in an accessible way. The Science Center of Iowa's first permanent bilingual exhibit, *Nano* is also accessible to vision- and hearing-impaired visitors.





While wandering around each exhibit, keep an eye out for the cart demonstrations that are stationed throughout the building. Make your hair stand up with electricity with the Van de Graaff generator; find out why one nail hurts but many don't at the "Chair of Nails" demonstration; or create paper helicopters that can fly amazing distances or vortex-creating tornado tubes that demonstrate the forces of nature. Don't overlook these engaging exhibits as you make your way through the center.

If you bring little ones aged 3 to 5, check out *Pint Size Science* during your visit. From September to May, the center holds a variety of themed classes at 10:00am on the second Tuesday and Saturday of each month. Inspire your children with the wonders of science in these hands-on classes. In November, "Spooky Science" features bubbling potions and visual illusions; in December, little ones can find out what it takes to go into space and try real astronaut food in "Train Like an Astronaut"; and in January, they can look into the science behind superpowers and create their own alter egos and superhero gadgets in "Superhero Science."

TRAVELING EXHIBITS

The Makers Studio has been a big hit this summer. The exhibit featured all sorts of opportunities to create using a variety of resources and materials. Participants built forts, turned trash into treasure, designed their own zip lines, built their own musical instruments, and had many other engaging adventures. To add an extra element of challenge, SCI held the Des Moines Mini Maker Faire on September 7, 2015 where over 30 exhibitors from across the state showed off their work. *The Des Moines Register* noted, "The faire is part of the larger 'maker movement' that revolves around promoting individuals to build, create and embrace do-it-yourself projects. Organizers hope it serves as a way to foster Iowa's own maker community."



SCI features two traveling exhibits this fall. *RACE: Are We So Different?*, running October 10-April 3, explores the science of variation in the human species and the sociology of race. *Geometry Playground* allows visitors to experience math in a new and engaging way with fast-paced, hands-on activities and climbable structures inspired by geometric principles. *Geometry Playground* runs October 31-May 30.

FUNDRAISING

The Science Center of Iowa partners with businesses to present their exhibits and events and hold annual fundraisers throughout the year. Contributions are critical to the Science Center of Iowa's ability to carry out its mission. They have many generous sponsors who support their efforts and a list can be located on SCI's website. In addition, each year SCI holds their annual fundraising event and auction. This year it was held on August 26, 2015.

The Science Center of Iowa recognizes donors in an exhibit modeled after the Periodic Table of Elements, titled "The Essential Element Is Yu." Donors' names are

attached to the various elements, grouped according to donation level. Donors can also support SCI's operations through their endowment fund, gifts of stock, or by purchasing items on its Amazon Wish List.

EVENTS

STAR PARTY AT SCI

Saturday, October 17, 7:00pm

Join in the fun to observe the stars, planets, moon, and other celestial objects. The Science Center of Iowa will have several telescopes set up for public use!

1 MILLION CUPS

Wednesdays, 8-9:00am

Iowa entrepreneurs inspire and connect with each other at this innovative and community-driven networking experience. Free coffee and complimentary parking are provided.

MIXOLOGY NIGHT

First Friday of every month, 5:30-9pm

"Mix. Mingle. Music. Science." Specially designed for the 21+ crowd, this night of drinks, mingling, science, and entertainment includes live local bands and adult-themed presentations and programming. Visit sciowa.org/mixology for more information.

BATTLE OF THE BRIDGES

Saturday, November 7, all day beginning at 9:00am

Kids and families will have the opportunity to show off their building skills. Teams of 1-4 people will design and

prototype a bridge using provided materials within 2½ hours, which will then be judged on structure, strength, and style. Student entries are categorized by grade level, and family entries are in a category of their own. Pre-registration is required and free of charge.

\$5 FAMILY NIGHT

Second Friday of each month, 5:00pm

Enjoy Family Night at SCI at a discounted rate for general admission, documentary IMAX films, and Food Chain Cafe specials!

STAR PARTY AT EWING PARK

Saturday, December 12, 10:00pm

SCI takes its star party on the road. Ewing Park is located at 5300 Indianola Road, Des Moines.

The Science Center of Iowa has plenty of facility rentals for hosting your own events as well. Both traditional and unique rental experiences are available for meetings, weddings, holiday parties, receptions, and other gatherings. SCI offers professional, full-service catering and flexible menu options.

There are many events, exhibits, and wonders to be explored and discovered at the Science Center of Iowa. SCI continues to update and innovate to create unique experiences that engage and inspire visitors of all ages.

See more at:

WWW.SCIOWA.ORG





St. Paul Winter Carnival

by Carol Ewoldt

“People don’t notice whether it’s winter or summer when they’re happy.”

-Anton Chekhov

In the Land of 10,000 Lakes and two seasons (winter and road construction), who would have thought it would be fun to celebrate cold and ice? That is exactly what thousands of hearty folks do in midwinter at the St. Paul Winter Carnival. Each year, over 250,000 visitors flock to St. Paul, bringing \$3.5-5 million into the city.

History

In 1886, some thin-blooded newspaper correspondents from New York visited St. Paul and reported that Minnesota was basically “another Siberia, unfit for human habitation.”

Local businessmen took umbrage to this notion and came up with the idea of celebrating rather than bemoaning the season; thus the Winter Carnival was born. The city hosted several of these events between 1886 and 1942,

with long breaks around the turn of the century and during the U.S. involvement in World War II, and Winter Carnival has been a fixed annual event in St. Paul since 1946. The non-profit St. Paul Festival and Heritage Foundation puts on the Carnival every year with the mission, “to foster a sense of community, pride, belonging and connectedness by celebrating Saint Paul’s unique history and emerging heritage through fun and educational experiences.”

The 129th Winter Carnival will take place January 28 – February 7, 2016 at Rice Park in downtown St. Paul. As usual, King Boreas and Aurora, his Queen of the Snows, will rule over the festivities with their royal family, including Boreas’ brothers, Titan, Euros, Zephyrus, and Notos. But lurking in the shadows is Vulcanus Rex, the god of Fire, and his Vulcan Krewe, ever plotting to defeat the “King of the Winds.”

As Legend Has It

King Boreas, “King of the Winds,” bestowed control of the winds to his brothers: the blustery North Wind to Titan; the

irresponsible East Wind to Eros; the bountiful West Wind to Zephyrus; and to Notis, the balmy but unstable South Wind. During his travels around the world, Boreas came upon a winter wonderland of hills surrounding a beautiful city, St. Paul. He decided to make St. Paul the winter playground of the Realm of Boreas. Vulcanus Rex, the god of Fire and ruthless enemy of Boreas, is vehemently opposed to this idea and each year plots the overthrow of Boreas to allow warm weather to return.

The Royal Family is chosen annually through its characters' specific fraternal organizations and includes the king and queen, the king's four brothers, their princesses, and others. Klondike Kate adds to the festivities with songs and merriment. The Order of Fire and Brimstone interviews hopefuls to fill the roles of Vulcanus Rex and the Vulcan Krewe. Only those who have served for at least five years on the Vulcan Krewe are eligible to become Vulcanus Rex.

Ice Palaces

Full-sized ice palaces have adorned the Winter Carnival 36 times. Although always spectacular, a few examples stand out in the carnival's history:

Built in 1886, the first ice palace was also one of the first buildings in St. Paul to incorporate electric lighting, using colored globes to bring an otherworldly illumination to the structure at night.

The 1986 ice palace, built for the Winter Carnival's 100th anniversary was, at the time, the tallest ever erected as well as the first to be illuminated by a computerized lighting system.

Harriet Island was the scene of Vulcan's volcano and King Boreas' ice palace in 1988, with Vulcan coming out of the top of the volcano several times each day.

In 1992, when the Twin Cities hosted the Super Bowl, that year's magnificent ice palace and other iconic landmarks served as backdrop to the game's telecast.

In 2004, to coincide with the NHL All-Star Game, the carnival featured the first ice palace since 1941 through which patrons could walk.

Treasure Hunt

In 1952, the Winter Carnival started a new tradition – the annual treasure hunt. The *Saint Paul Pioneer Press* publishes daily clues during the 12 days of the event. Excitement mounts as participants scrutinize the sometimes-cryptic clues in search of the medallion that is hidden on public land somewhere in Ramsey County. The finder wins up to \$10,000 and the privilege of riding in the closing Torchlight Parade.





Parades

The Winter Carnival is home to three parades. The first is the Moon Glow Pedestrian Parade, which kicks off the first day of the Carnival. During the 6 p.m. walk from the St. Paul Chamber of Commerce offices to Rice Park, participants illuminate the way with an array of different kinds of lights. The King Boreas Grande Day Parade takes place the first Saturday of Winter Carnival. Accompanied by floats and marching bands, the newly crowned King Boreas and his royal family lead the way from the Smith High Bridge down West Seventh Street to Rice Park. Finally, the Vulcan Victory Torchlight Parade is held the last night of the event. Winding through downtown St. Paul, the parade ends with Vulcan heading to the steps of the St. Paul Library for the traditional Overthrow of Boreas and an incredible fireworks show. Since the parade route follows downtown streets, it is possible to watch from various locations in the extensive skyway system.

Ice Carving & Snow Sculptures

Ice carving competitions bring skilled artisans from around the country. Weather challenges contestants as they work to get their intricate designs completed in time. Several methods of ice carving (using knives, chainsaws, and other tools) are judged and left on display, free of charge, in Rice Park for the 10 days of the carnival.



Photo by Joe Christenson

The carnival's snow sculptures are sometimes huge and always impressive. Sponsored by the St. Paul Vulcans and held at the Snow Park at the Fair, sculptures include Minnesota State Snow Sculpting Competition entries and exhibition pieces. Three-member teams use only hand tools to carve 8-foot cubes of snow during the three-day competition. Ice carvings and snow sculptures are lit at night, providing great opportunities for photos!

Many other family friendly activities are also scheduled during the run of the Snow Park, which is located on the Minnesota State Fairgrounds.

Events

Over the years, events have evolved from ice horseracing with sled carts to snowmobile races to the Red Bull Crashed Ice downhill competition, which Twin Cities has held for the past three years. In 2015, the track was built down the hill in front of the iconic Cathedral of St. Paul, with riders starting out by being propelled over a bridge. Not for the faint of heart, teams of four racers at a time delighted a crowd of over 100,000, rushing by at almost blinding speeds and frequently coming to a sudden halt with dramatic collisions and crashes.

Craft Brewers

If drinking beer is more your speed, the Annual Beer Dabbler Winter Carnival, held January 30 this year, should be right up your alley. Over 120 craft breweries will bring their specialties; local food trucks will ply their wares; and live music will be in the air.

Self-Driving Snowplows

Autonomous Snowplow Competition provides a real challenge for the technologically gifted. From January 28-31, teams work to create autonomous snowplows capable of clearing a path in the snow that mimics a sidewalk and/or driveway. Judging is based on how much snow is cleared, how quickly it's cleared, and how the plow handles the obstacles it encounters. Designers incorporate technologies such as GPS, laser navigation, and optical navigation in hopes of winning the honor and significant cash prizes bestowed upon the victorious team.

Working Up a Sweat

What outdoor event is complete without a good run! Securian Financial Group sponsors three races: a half marathon, a 10K, and a 5K. Be sure you wear your long johns; it can be cold out there! For those who don't run, you can try your hand at a 28-hole round of disc golf in the Annual Gotta Go Gotta Throw Ice Bowl. Held at Como Park, this event is free for spectators, but donations of nonperishable food are accepted.

Come January, pack up your warm clothes and head to St. Paul for the best time of the winter! Full details are available at www.wintercarnival.com.

If you go...

Dates: Thursday, January 28 – Sunday, February 7, 2016

Location: Rice Park, 109 4th Street W, St. Paul MN

Best places to stay:

The Saint Paul Hotel, 350 Market St, St. Paul, MN.

Crowne Plaza St. Paul-Riverfront, 11 E Kellogg Blvd, St. Paul, MN.

Hotel 340, 340 Cedar St, St. Paul, MN.



Photo by Joe Christenson

Alaskan IRON DOG



2,000-Mile Snowmobile Race
Through the Heart of Alaska

by Micah Hartmann

**“We’re a whole different breed of people up here.
There’s tough, and then there’s Alaskan.” –Todd Minnick**



February 20, 2016 will mark the beginning of the 32nd Iron Dog, an off-road snowmobile race straight through the heart of Alaska. Riders will travel hundreds of miles a day after officially starting the timed portion of the race on February 21 in Big Lake. From there, teams of two will work together, striving to traverse 2,031 miles of rugged expanse in attempt to reach Fairbanks, their final destination, ahead of their competitors. Known as the world's longest, toughest snowmobile race, the Iron Dog requires technical know-how, expert survival skills, and true grit. Any racer missing a single one of these elements simply won't make it to the finish line.

The First Iron Dog

1984 marked the beginning of what would soon become a legendary Alaskan event. The Iron Dog Iditarod was a 1049-mile race from Wasilla to Nome along the Iditarod National Historic Trail. In 1994, the race was lengthened to 2000 miles, and in 2001, women entered the race for the first time. That was the first and last year an all-women's team finished the Iron Dog Professional Class race. Today, the race is known as The Alaska National Guard Iron Dog, named after its title sponsor.

John Faeo won that first race back in 1984 at the age of 28, and since then, he has competed in 23 of these races. He is currently tied with Scott Davis as the record holder for the greatest number of Iron Dog victories—seven. He didn't retire until 2007 at the age of 52. His son, Scott Faeo, is following in his footsteps and keeping the winning legacy in the family with his first Iron Dog victory in 2015.

Riding Through the Heart of Alaska

The Course The course is broken up into four legs with checkpoints along the way where riders can refuel and take shelter if necessary. Distances between checkpoints are usually less than 100 miles. The shortest distance in the 2015 race was 17 miles, between Skwentna and Shell Lake on leg 1. The longest stretch between checkpoints was 120 miles, from Ruby in leg 2 to Tanana, at the start of leg 3.

Before the competition begins, a ceremonial start will take place on February 20th in Downtown Anchorage, where

fans can watch riders depart. This “false start” is held to raise awareness for the event and praise the sport, the riders, and the machine, a major means of transportation for many Alaskans. “Snowmachining is the way to get around in the state,” said John Bahnke, a five-time Iron Dog racer who grew up in Nome. “It's the way of life for basically everywhere but the big cities.”

The competitive portion of the race begins in Big Lake on February 21st. From there, athletes take off toward McGrath to finish leg 1, which many consider the toughest portion of the entire race.

“The first day is almost survival, like get through it.” –Cory Davis

“The most difficult part of the trail is that first day, from Big Lake to McGrath—360 miles of rough terrain.” –Ashley Wood

Leg 2 is a 750-mile-long stretch from McGrath to Nome. Nome is considered the halfway point and hosts a celebration where fans can participate in various events and cheer on the remaining riders. Leg 3 extends from Nome to Tanana, 630 miles, and the fourth and final leg is approximately 290 miles, from Tanana to Fairbanks.

All riders are required to stop at a minimum number of checkpoints and rest for a total of 50 hours along the route. They must strategically plan when and where to stop for breaks, and failure to plan appropriately could cost them a trophy or even the ability to cross the finish line. The team that is fast enough, tough enough, and fortunate enough to finish with the shortest course time will win the \$50,000 purse and earn the right to call themselves the best at their sport.

On average, around 30 teams participate in the Pro Class competition. Each team is made up of two individuals who work together to make it through harsh, unpredictable weather conditions and across rough Alaskan terrain. Some teams ride to win, while others hope to simply make it all the way to the finish line.... a feat that is anything but simple. In fact, typically only half of the teams that set out at the start of the race actually finish it.



Climate The lowest temperature recorded by an athlete during the Iron Dog was -57°F ; many racers claim to have experienced even lower temperatures near rivers and valleys, and when factoring wind chill into the equation, temperatures can drop well below -100°F .

Trail Conditions Alaska's landscape is diverse, and riders can experience extreme variations in weather and topography. Riders must navigate through densely forested areas covered in snow as well as cross wide, open plains with little or no snow cover. They can also encounter ice slides, frozen, slushy, and unfrozen lakes, and, of course, hundreds of miles of open expanse with bitter, whipping winds. Participants need to keep a constant awareness of their machines' condition, or their only means of transportation could overheat, melt, and break down, pulling them out of the competition.

Not only is the trail exceptionally diverse, but the weather can also change abruptly, catching riders completely off guard. According to Iron Dog, storms can hit like a

wall, giving racers no time at all to find shelter. When this happens, visibility becomes nonexistent, and the only option is to immediately make camp wherever they are and wait out the storm. Several teams have reported being stuck in storms like this, unable to even set up their tents. At night, machines left exposed to the elements often become packed with ice and snow, both outside and underneath the hood around the engine, that they must chip away in the morning before departing again.

Attempting to Stay Warm... or Cool?

Any uncovered skin will succumb to frostbite, so riders must cover every inch of themselves with lots of protective layers. These layers so effectively keep body heat inside that riders sometimes get too hot and need to shed a layer or two. Most riders also wear seamless gloves (to avoid blisters) that are waterproof, durable, and heavily insulated. To keep their feet warm, participants are shod with Bunny Boots. These big, white boots are composed of two layers of rubber with insulation in between. Since the insulation is sealed inside the rubbery layers, it cannot get wet. Racers' feet can, however, and once they do, these non-breathable boots keep them that way... soggy, but warm.

At night, temperatures can plummet dangerously. As a result, racers cannot leave their bivy (bivouac) sacks for any reason, not even to use a restroom, or their body temperatures could drop to critical levels. To accommodate inconvenient calls of nature, racers use a chemical invented by the military that sanitizes urine and converts it into a biodegradable gel-like substance that they can easily dispose of.

One of the most common mistakes riders make is failing to drink enough water. Although riding a snowmobile may not sound extremely rigorous, it is, in fact, exhausting, and riders are extremely active throughout the entire race. Their bodies expel a lot of water through sweating, and this loss must be replaced, or they can become dehydrated; in Alaska, this often leads to very painful frostbite.

A Close Call

During the 2015 Iron Dog race, Randy Gravatt and Dieter Strobel had quite an experience crossing (what they thought to be) a frozen lagoon. They were halfway across (five miles out), traveling at 93 miles per hour when the ice suddenly disappeared from under them. They made it about a mile on top of the water, battling choppy, foot-high waves, when their machines started to go under. “I’ve done a lot of dumb things before, but I honestly thought this was the last,” Strobel said, thinking back on that moment.

Their sleds sank. Fortunately, the water at this point was only waist high, and it was 15°F outside, much warmer than it could have been. Unfortunately, it was early, and the sun was still down, which made it very difficult to make out where the water ended and the land began. The men felt as if they were in the middle of an ocean, but they began to walk in the shore’s direction, hoping it wasn’t far. Luckily, a woman in Golovin, a nearby village, noticed something unusual out in the water. Soon after, a search and rescue team was by their sides to carry them the rest of the way.

“Thank God. If she didn’t look, we had a long ways to go, and at that point my hips were locked up,” said Strobel. “The people of Golovin were amazing.”

Two hours later, Strobel and Gravatt went out to inspect their \$13,000 machines, which were two feet deeper than when they had left them. That was the end of the race for Team 22.

If You Go...

Interested in heading out to the beautiful state of Alaska to join the excitement and cheer on these hardy athletes? Here are some quick facts to get you to the right places at the right times.

Pro Class Race Dates: February 20–27, 2016

Best Places to Watch: The best locations for participating in Iron Dog sponsored events and watching riders in action include:

- **Anchorage** (2/20), the ceremonial start location (and also where the snowmobile freestyle show, *Flying Iron*, takes place)
- **Big Lake** (2/21), the official start location
- **Skwentna**, a checkpoint along the route where visitors can ride into town (via snowmobile) or fly into Alaska to watch riders as they pass through the city
- **Nome** (2/24)—the halfway point (which hosts a celebration of the remaining teams and includes a free communal dinner)
- **Fairbanks** (2/27), where you can view and experience the exhilarating finish

What to Pack


- Layers to keep you warm: a wool or synthetic base layer, a fleece (middle) layer, and a down or synthetic down parka
- Waterproof snow pants and long underwear
- Warm winter boots and toe warmers
- Mittens and hand warmers
- Hat, balaclava, and/or headband
- Camera and extra batteries
- Sunglasses
- Lip balm

For More Information: You can find dates of specific events and Alaskan airline and lodging information on the website: IRONDOG.ORG.

Iron Dog Alaska is an extreme sporting event without parallel. It’s an exacting test of riders’ fortitude, resourcefulness, endurance, and skill, both in snowmobiling and extreme-weather outdoor survival.

“People just look at us like we’re just crazy. Why would you want to spend money to go out and beat the hell out of your body... possibly get killed and go bankrupt over it... why would you want to do something like that?” –Ryan Sottosanti

Why indeed.



“ As a virtual DOM representing many aircraft, customers trust me to make sure their aircraft are properly taken care of. Elliott Aviation has impressed me on many major Hawker inspections and complete refurbishments. I recently had a Hawker in their facility for an eight-year inspection with structurals and new paint and interior. Their extensive mechanical knowledge of the airframe is impressive and attention to detail on the paint process is unlike anything I have ever seen. Throughout the process, I was kept informed of even the most minor issues. This led to the aircraft being delivered squawk-free and on time. It's an impressive feat to make an eight-year old aircraft look and perform as new but Elliott Aviation did it. ”

J. DAVID WOOD
PRESIDENT, BKT AVIATION
STRATEGIC PARTNER FOR 88 WEST, WWW.88WESTJETSALLES.COM



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Market Reports Fourth Quarter 2015

Citation	Hawker	Challenger	Phenom
Bravo	800XP	300	100
Ultra	850XP	604	300
Encore	900XP	605	
Encore+			

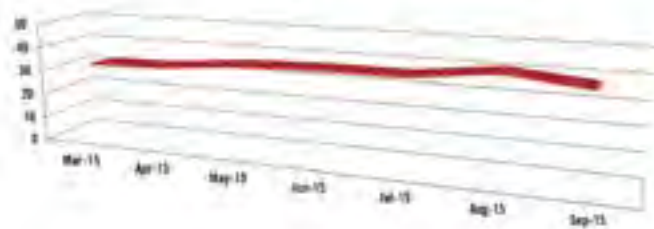
Market Snapshot for the Citation Bravo

On Market: 38
 Fleet Size: 332
 % on market: 12
 Average asking price: \$1.8MM
 Avg. Days on Market (sold in 2015): 222
 Average TT of aircraft currently for sale: 3,586
 Transactions in 2015: 32



CITATION BRAVO

Citation Bravos For Sale

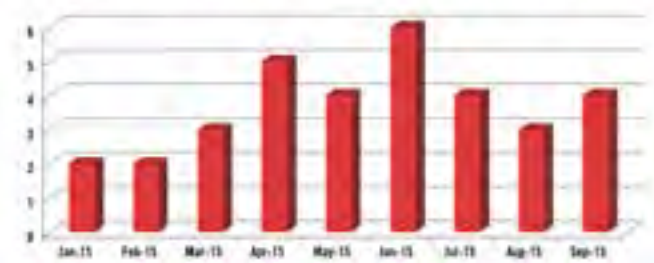


Current State of the Cessna Citation Bravo Market

In 2014, the Bravo was one of the stronger Citations on the market; not so this year. The overall sales activity is not as robust as 2014. Currently, there are 38 Bravos available for sale, 12% of the aircraft produced. Thirteen of those aircraft are located outside of North America. There have been 32 retail sales transactions since the first of the year. Last year, there were 57 retail transactions in the Bravo market. The sales activity will have to pick up to add 25 more retail closings in 2015. Sales prices have dropped over the last two quarters. The other interesting items are more buyers want Bravos with engine programs. The Bravo market still has decent activity but the days on market have increased substantially. The demand rating for the Bravo is C+.



Citation Bravo Transactions



Citation Bravo Performance

Range (NM):	1,720
Seating:	7/9
Cabin Volume (CuFt):	292
Max Speed (Kts):	405
Cruise Speed (Kts):	405
Rate of climb (f/s):	3,190
Balanced field length/Landing (feet):	4,160/2,577
Baggage:	28/46
Ceiling (feet):	45,000
Direct Operating Cost (per hour)	\$1,452
Direct Operating Cost (per NM)	\$4.16

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Market Snapshot for the Citation Ultra

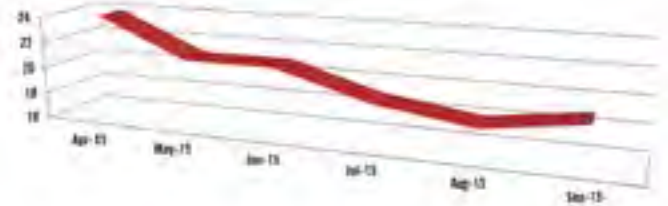
On Market: 19
 Fleet Size: 279
 % on market: 6.8
 Average asking price:\$1.5MM
 Avg. Days on Market (sold in 2015): 285
 Average TT of aircraft currently for sale: 8,055
 Transactions in 2015:20

CITATION ULTRA

Current State of the Cessna Citation Ultra Market

The inventory levels of Citation Ultras are lower than at the beginning of the year. Today there is just under 7% of the Ultra aircraft for sale with 19 available. Nine of the Ultras for sale are based internationally. There are still a number fractional aircraft for sale with over 10,000 hours. The choices for a U.S. based, lower time Ultra are limited. There have been 20 retail transactions since the first of the year. Last year, more Ultra aircraft changed ownership. Part of that decline could be a lack of good aircraft. Citation Ultra sale prices have remained fairly steady over the last few quarters. The demand rating for the Citation Ultra is a B-

Citation Ultras For Sale

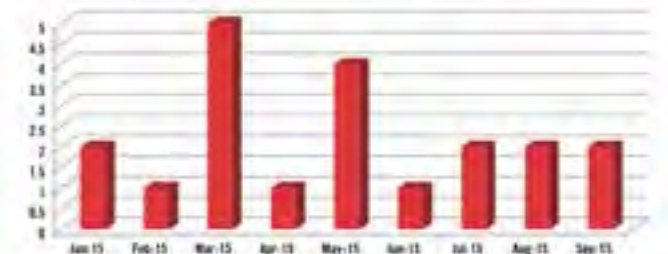


Citation Ultra Performance

Range (NM):	1,651
Seating:	7/9
Cabin Volume (CuFt):	310
Max Speed (Kts):	430
Cruise Speed (Kts):	430
Rate of climb (f/s):	4,230
Balanced field length/Landing (feet):	3,510/2,300
Baggage:	26/41
Ceiling (feet):	45,000
Direct Operating Cost (per hour)	\$1,924
Direct Operating Cost (per NM)	\$4.97

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Citation Ultra Transactions



Market Snapshot for the Citation Encore

On Market: 7
 Fleet Size: 156
 % on market: 4.8
 Average asking price:\$3.7MM
 Avg. Days on Market (sold in 2015): 327
 Average TT of aircraft currently for sale: 2,507
 Transactions in 2015:6

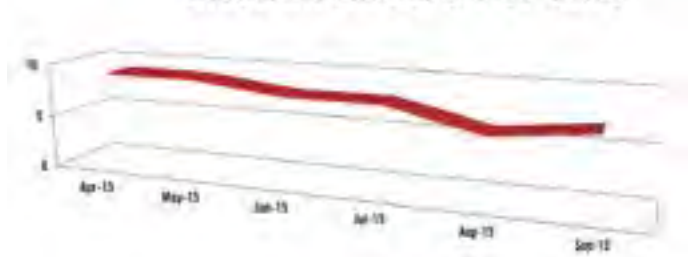


CITATION ENCORE

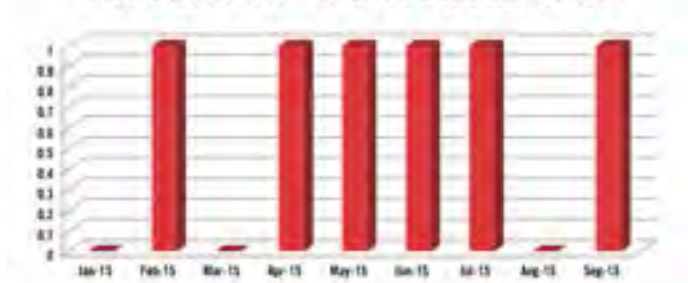
Current State of the Cessna Citation Encore Market

The Encore market has been interesting this year. So far in 2015, there have been six retail transactions. Last year, there were 21 changes of ownership. You would think there would be excess inventory but that is not the case. There are currently seven Encores listed for sale which is under 5% of the available aircraft. Five of those aircraft are US based. Over the last few quarters, the average days on market has increased for Encore aircraft. Sales prices have been steady but, if the demand does not increase, we could see inventory levels climb. The Encore market traditionally is a small segment of the overall used Citation sales activity. The demand rating for the Encore is a C.

Citation Encore For Sale



Citation Encore Transactions



Citation Encore Performance

Range (NM):	1,736
Seating:	7/9
Cabin Volume (CuFt):	341
Max Speed (Kts):	430
Cruise Speed (Kts):	430
Rate of climb (f/s):	4,740
Balanced field length/Landing (feet):	3,920/2,517
Baggage:	28/43
Ceiling (feet):	45,000
Direct Operating Cost (per hour)	\$1,716
Direct Operating Cost (per NM)	\$4.36

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CITATION ENCORE+

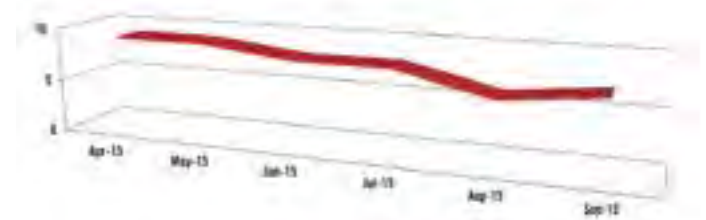
Current State of the Cessna Citation Encore+ Market

There have been three retail transactions in the Encore+ market since the first of the year. Currently there are four Encore+ aircraft for sale. The number of Encore+ aircraft for sale holds right around three to four as the owners upgrade to bigger and better jets. Encore+ values seem to be holding steady but there are not enough transactions to know for sure. The demand for the Encore+ is a B.

Market Snapshot for the Citation Encore+

- # On Market: 4
- Fleet Size: 66
- % on market: 6
- Average asking price:\$4.8MM
- Avg. Days on Market (sold in 2015): 145
- Average TT of aircraft currently for sale: 1,185
- Transactions in 2015:3

Citation Encore For Sale

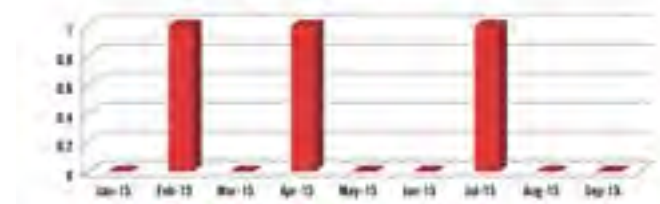


Citation Encore+ Performance

Range (NM):	1,494
Seating:	2/7
Cabin Volume (CuFt):	314
Max Speed (Kts):	430
Cruise Speed (Kts):	372
Rate of climb (f/s):	4,620
Balanced field length/Landing (feet):	3,920/2,509
Baggage:	28/43
Ceiling (feet):	45,000
Direct Operating Cost (per hour)	\$1,672
Direct Operating Cost (per NM)	\$4.25

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Citation Encore+ Transactions



Current State of the Hawker 800XP Market

The Hawker 800XP market historically falls off a bit during the second and third quarters and we are seeing that trend repeat itself for 2015. Prices are remaining steady but the nine transactions in the second quarter were down from the 15 that sold during the first quarter. At this point last year, 32 aircraft had sold on the used market so the total of 24 aircraft sold so far in 2015 is something to take note of.

Prices, however, are remaining steady, with upcoming major inspections and landing gear overhauls accounting for most of the pricing variations. As we mentioned in the Q2 market report, most 2003 model 800XP's are coming due for their third 48 month inspection along with landing gear overhauls this year. Proline 21 equipped 800XP's are still bringing well into the \$3MM's.

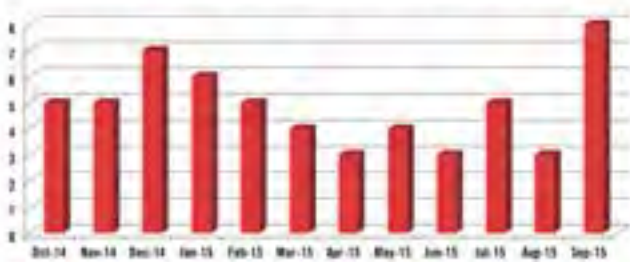


HAWKER 800XP

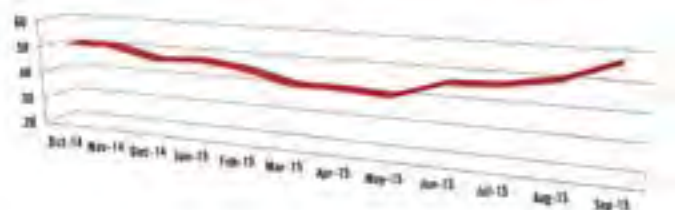
Market Snapshot for the Hawker 800XP

On Market: 58
 Fleet Size: 472
 % On Market: 12%
 Avg. Asking Price: \$2,570,000
 Avg. Days On Market (Sold): 274
 Avg. TT of Aircraft Currently For Sale: 5,476
 Transactions in 2015: 41
 Transactions in Q3: 16

Hawker 800XP Transactions



Hawker 800XP For Sale



Hawker 800XP Performance

Range (NM):	2,539
Seating:	8/10
Cabin Volume (CuFt):	2
Max Speed (kts):	449
Cruise Speed (kts):	430
Rate of climb (f/s):	3,415
Balanced field length/Landing (feet):	5,640/2,282
Baggage:	48/-
Ceiling (feet):	41,000
Direct Operating Cost (per hour)	\$2,935
Direct Operating Cost (per NM)	\$7.28

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HAWKER 850XP

Market Snapshot for the Hawker 850XP

On Market: 6
 Fleet Size: 99
 % On Market: 6%
 Avg. Asking Price: \$4,200,000
 Avg. Days On Market (Sold): 383
 Avg. TT of Aircraft Currently For Sale: 2,379
 Transactions in 2015: 16
 Transactions in Q3: 6

Hawker 850XP Performance

Range (NM):	2,710
Seating:	8/10
Cabin Volume (CuFt):	551
Max Speed (kts):	452
Cruise Speed (kts):	430
Rate of climb (f/s):	3,415
Balanced field length/Landing (feet):	5,641/2,286
Baggage:	50/-
Ceiling (feet):	41,000
Direct Operating Cost (per hour)	\$2,937
Direct Operating Cost (per NM)	\$7.20

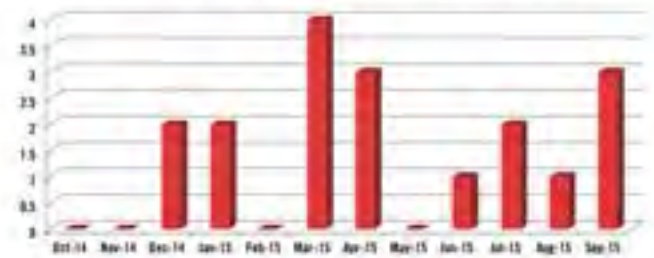
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Current State of the Hawker 850XP Market

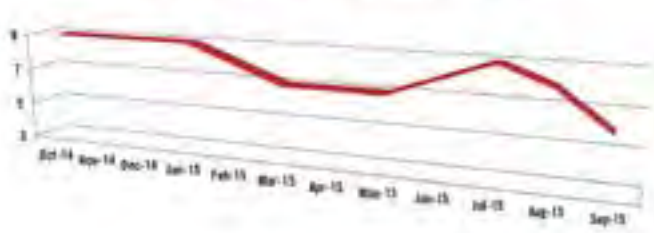
The 850XP market has been marked by good activity and low inventory through the first half of 2015. The 10 retail transactions so far this year has already bested 2014's total number of eight. Prices have remained steady with a few examples of US based aircraft bringing a premium. US sellers must have recognized this as a good opportunity to sell because a number of US based aircraft have now hit the market.

This means that 850XP buyers may be able to find a desirable aircraft on US soil and can avoid purchasing in Europe, if they so choose. Prices still start above \$4MM for a 2006 850XP, but with a slight increase in inventory since our last report, it wouldn't be surprising if we see prices begin to soften. Most 2007 models are due for their 96 month inspection this year, something that requires consideration by both buyers and sellers.

Hawker 850XP Transactions



Hawker 850XP For Sale



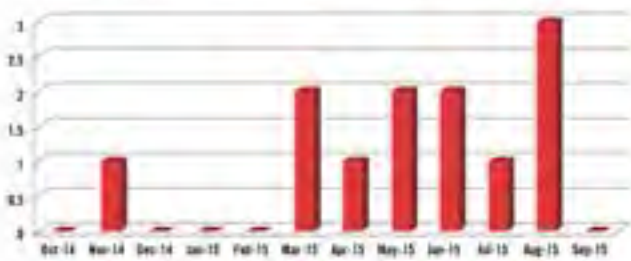
Current State of the Hawker 900XP Market

All eyes were on the 900XP market in early 2015 after values had actually increased a bit over 2014. There was a noticeable lack of inventory through the first quarter and plenty of buyers looking. Fast forward to the end of the second quarter and inventory levels have doubled, with a number of desirable US based aircraft available for sale.

Five used 900XP's sold in the second quarter, which is a good amount of activity considering that 2014's total transactions totaled 19, but those sales are being outpaced by aircraft being added to the market. While we haven't seen evidence of prices weakening yet, the market is currently set up for some decent buying opportunities.



Hawker 900XP Transactions



Market Snapshot for the Hawker 900XP

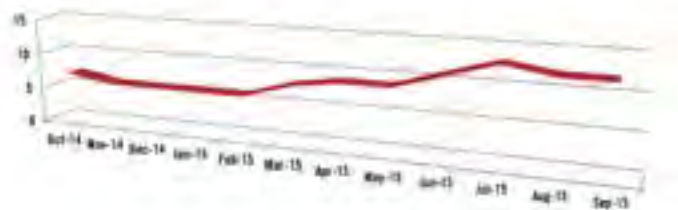
- # On Market: 12
- Fleet Size: 183
- % On Market: 7%
- Avg. Asking Price: \$7,050,000
- Avg. Days On Market (Sold): 147
- Avg. TT of Aircraft Currently For Sale: 2,229
- Transactions in 2015: 11
- Transactions in Q3: 4

Hawker 900XP Performance

Range (NM):	2,825
Seating:	8/10
Cabin Volume (CuFt):	2
Max Speed (kts):	452
Cruise Speed (kts):	430
Rate of climb (f/s):	3,415
Balanced field length/Landing (feet):	5,258/2,283
Baggage:	50/-
Ceiling (feet):	41,000
Direct Operating Cost (per hour)	\$2,656
Direct Operating Cost (per NM)	\$6.54

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Hawker 900XP For Sale



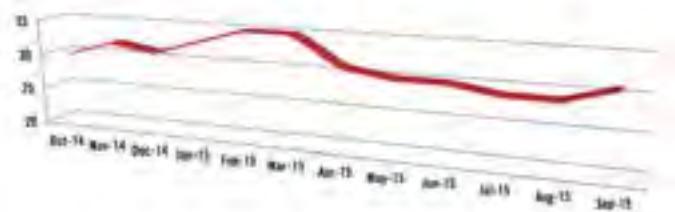
Current State of the Challenger 300 Market

The Bombardier Challenger 300 entered service in 2004 and was upgraded and replaced with the Challenger 350 in 2014. To date, there have been more than 450 of the models produced. Owners and operators choose this aircraft for its excellent performance and all around capability. Along with other aircraft in its class, the Challenger 300 has suffered from a declining used aircraft market. Prices continue to fall for this model. In fact, overall Challenger 300 pricing has fallen approximately nine percent in the past year. Expect to pay between \$7,500,000 and \$17,000,000 for a used Challenger 300, depending on availability. So far in 2015, 31 Challenger 300's have sold. This compares to only 23 that sold during the same period in 2014. Inventory levels of used 300's have been fairly stable at about 30 units (about seven percent of the fleet) since early in the second quarter. Issues to consider when buying or selling a Challenger 300 include a possibly expensive 96 month inspection and landing gear inspection. Older units are also coming up on their third 48 month inspection and could need a costly modification for the upcoming FANS update, something to consider if you plan on traveling to Europe.

Market Snapshot for the Challenger 300

- # On Market: 31
- Fleet Size: 454
- % On Market: 7%
- Avg. Asking Price: \$11,405,000
- Avg. Days On Market (Sold): 247
- Avg. TT of Aircraft Currently For Sale: 2,736
- Transactions in 2015: 31
- Transactions in Q3: 9

Challenger 300 For Sale



CHALLENGER 300

Challenger 300 Transactions



Challenger 300 Performance

Range (NM):	3,340
Seating:	8/11
Cabin Volume (CuFt):	930
Max Speed (Kts):	470
Cruise Speed (Kts):	459
Rate of climb (f/s):	4,240
Balanced field length/Landing (feet):	4,810/2,300
Baggage:	106/-
Ceiling (feet):	45,000
Direct Operating Cost (per hour)	\$3,113
Direct Operating Cost (per NM)	\$7.43

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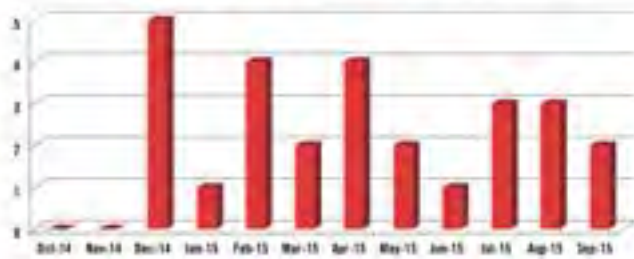


CHALLENGER 604

Current State of the Challenger 604 Market

The fourth iteration of Bombardier's Challenger line, the Challenger 604 was first introduced in 1996. As a major upgrade over the Challenger 601, the Challenger 604 features many updates including more advanced GE CF34-3B engines, increased fuel capacity, Rockwell Collins ProLine 4 avionics, a new undercarriage for higher takeoff and landing weight, and structural improvements to the wings and tail. Bombardier produced the Challenger 604 until 2007 with a total of 347 total aircraft delivered. However, Challenger 604's placed on the market have increased and have been slow to sell. Eventually, buyers will recognize an attractive buying opportunity and start snatching them up but we will need to start seeing inventory levels drop and transaction activity pick up before prices can be expected to stabilize. Like other aircraft in its class, the Challenger 604 market is softening from both pricing and the number on the market. In fact, the average asking price has fallen nearly 16 percent in the last year. In addition to declining prices, the number of Challenger 604's on the market has increased from 21 last September to 44 this year. Right now, depending on the aircraft, you can expect to pay between \$5,000,000 and \$9,000,000. So far in 2015, 22 Challenger 604's have sold. This compares to 36 sold during the same time in 2014. Inventory levels have been stable through the third quarter there are currently 44 604's for sale, representing 12% of the fleet.

Challenger 604 Transactions



Market Snapshot for the Challenger 604

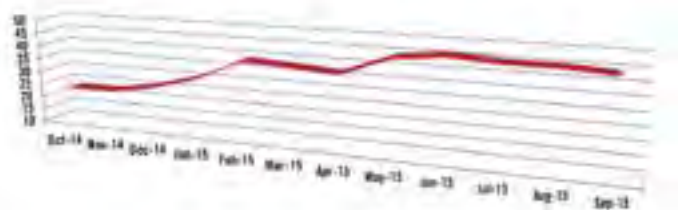
- # On Market: 44
- Fleet Size: 363
- % On Market: 12%
- Avg. Asking Price: \$6,845,000
- Avg. Days On Market (Sold): 150
- Avg. TT of Aircraft Currently For Sale: 5,320
- Transactions in 2015: 22
- Transactions in Q3: 8

Challenger 604 Performance

Range (NM):	4,119
Seating:	10/13
Cabin Volume (CuFt):	1,146
Max Speed (Kts):	488
Cruise Speed (Kts):	459
Rate of climb (f/s):	4,345
Balanced field length/Landing (feet):	5,765/2,300
Baggage:	115/-
Ceiling (feet):	41,000
Direct Operating Cost (per hour)	\$3,627
Direct Operating Cost (per NM)	\$8.76

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Challenger 604 For Sale





CHALLENGER 605

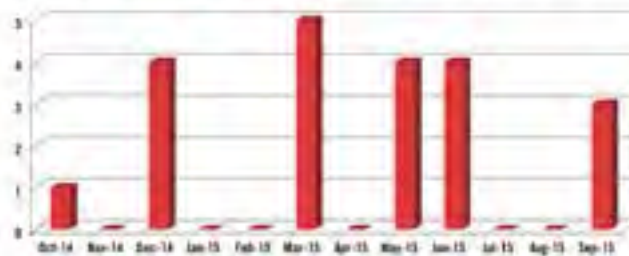
Current State of the Challenger 605 Market

The Challenger 604's upgrade, the Challenger 605 was introduced in 2007 to replace the 604. It includes larger cabin windows, better LED cabin lighting, a new cabin management system and a Collins Pro Line 21 integrated avionics suite. To date, Bombardier has delivered over 260 units. While not as soft as its competitors, the Challenger 605 market is fairly flat. From a pricing standpoint, the average price has fallen a little over two percent from the prior year. Prices start at about \$11,500,000 and go up depending on the aircraft. Activity is up slightly year to date as 16 have sold since the beginning of the year compared to 14 units for the same period in 2014. Inventory is up slightly as well with 24 Challenger 605's on the market.

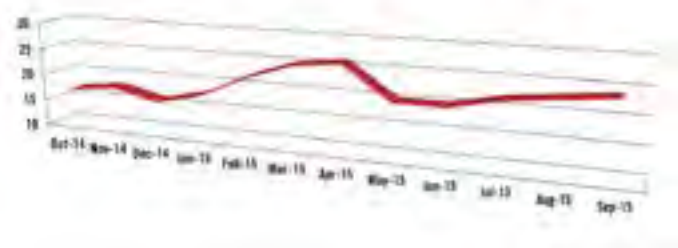
Market Snapshot for the Challenger 605

- # On Market: 24
- Fleet Size: 282
- % On Market: 8.5%
- Avg. Asking Price: \$13,758
- Avg. Days On Market (Sold): 139
- Avg. TT of Aircraft Currently For Sale: 1,537
- Transactions in 2015: 16
- Transactions in Q3: 3

Challenger 605 Transactions



Challenger 605 For Sale



Challenger 605 Performance

Range (NM):	4,123
Seating:	10/13
Cabin Volume (CuFt):	1,146
Max Speed (Kts):	488
Cruise Speed (Kts):	459
Rate of climb (f/s):	4,345
Balanced field length/Landing (feet):	5,840/2,300
Baggage:	115/-
Ceiling (feet):	41,000
Direct Operating Cost (per hour)	\$3,375
Direct Operating Cost (per NM)	\$8.15

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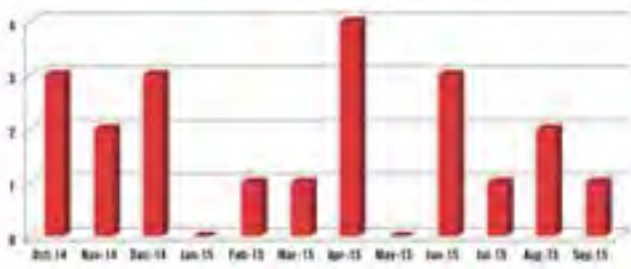
Current State of the Phenom 100 Market

The Phenom 100 market has been fairly slow for much of 2015 with activity peaking at seven transactions in the second quarter. There were four transactions recorded in the third quarter. Inventory levels have stayed somewhat steady through the year at 23-26 aircraft available at any given time. The latest trend, however, has been a reduction in inventory from 26 at the start of the third quarter to 23 as we move into the fourth quarter. That represents seven percent of the total fleet. It's interesting to note that of the 23 Phenom 100's currently available for sale, over half are located outside of the US with the majority of those in Brazil, providing further evidence of a weakening Brazilian economy. Early 2009 models have been trading in the low \$2,000,000's and prices go up from there for later model aircraft.

Market Snapshot for the Phenom 100

- # On Market: 23
- Fleet Size: 322
- % On Market: 7%
- Avg. Asking Price: \$3,038,000
- Avg. Days On Market (Sold): 366
- Avg. TT of Aircraft Currently For Sale: 1,002
- Transactions in 2015: 13
- Transactions in Q3: 4

Phenom 100 Transactions



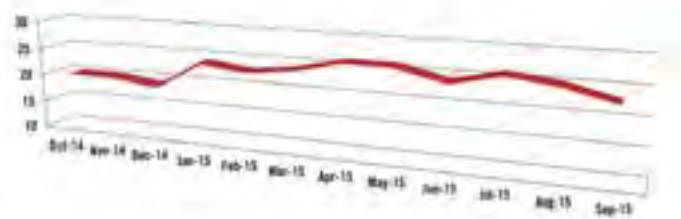
Phenom 100 Performance

Fuel Capacity:	2,804 Lb
Range (NM):	1,178
Seating:	4/7
Cabin Volume (CuFt):	212
Max Speed (Kts):	390
Cruise Speed (Kts):	333
Rate of climb (f/s):	3,061
Balanced field length/Landing (feet):	3,040/2,448
Baggage:	18/53
Ceiling (feet):	41,000
Direct Operating Cost (per hour)	\$1,211.28
Direct Operating Cost (per NM)	\$3.76

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Phenom 100 For Sale



Current State of the Phenom 300 Market

The Phenom 300 continues to be not only Embraer's bestselling aircraft but also the most delivered light jet in the industry. Sales activity in the used Phenom 300 market was slow throughout the first half of 2015 and that trend continued with only one aircraft trading in the third quarter. Five Phenom 300's have sold so far in 2015 which is just under the six that sold in the first three quarters of 2014. Even with the lack of activity in the used market, inventory levels remain low. There are only 13 used Phenom 300's on the market, representing just over four percent of the fleet. Buyers can expect to pay in the low to mid \$6,000,000's for an early Phenom 300 on an engine program.

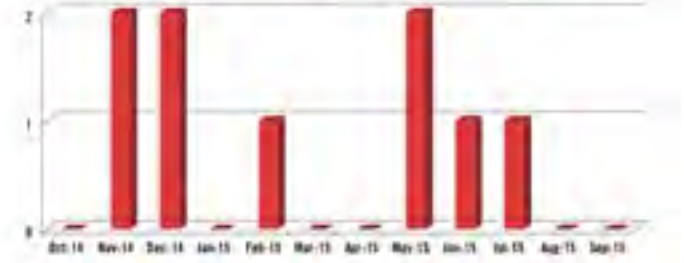


Market Snapshot for the Phenom 300

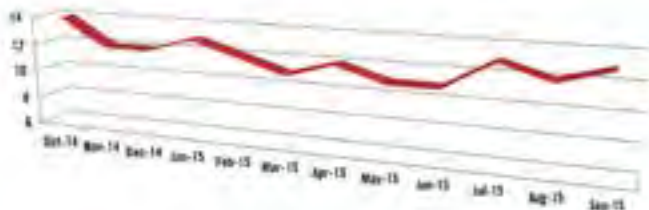
- # On Market: 13
- Fleet Size: 288
- % On Market: 4.5%
- Avg. Asking Price: \$7,500,000
- Avg. Days On Market (Sold): 262
- Avg. TT of Aircraft Currently For Sale: 941
- Transactions in 2015: 5
- Transactions in Q3: 1



Phenom 300 Transactions



Phenom 300 For Sale



Phenom 300 Performance

Fuel Capacity (gallons):	5,353 Lb
Range (NM):	1,900
Seating:	7/9
Cabin Volume (CuFt):	324
Max Speed (NM):	444
Cruise Speed (NM):	383
Rate of climb (f/s):	3,335
Balanced field length/Landing (feet):	3,138/2,229
Baggage:	19/66
Ceiling (feet):	45,000
Direct Operating Cost (per hour)	\$1,857.57
Direct Operating Cost (per NM)	\$4.59

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