

# King Air

## One Aircraft, Many Missions

On the sidelines of Dubai Air Show, Roger Hubble, Special Mission Product Manager, Hawker Beechcraft Corporation, spoke about the capabilities of the King Air 350ER. Excerpts of the interview:

**SP's Aviation (SP's): Can you tell us about the King Air 350ER?**

**Roger Hubble (Roger):** The ER in King Air 350ER stands for extended range. When Hawker Beechcraft Corporation (HBC) makes the ER, it adds 236 gallons more useable fuel (total 775 gallons of useable fuel). This provides a range of 2,560 nautical miles, allowing our customers to go worldwide without having to install additional ferry fuel tanks. HBC also increased the maximum gross takeoff weight from 15,000 lbs. to 16,500 lbs. Because the airplane operates at heavier weights, we also installed significantly stronger main landing gear. The wheels, tires and brakes are very similar

changing the landing gear, HBC also made a minor change in the rudder and rudder trim gearing to make the rudder more effective at the higher weights. Lastly, we changed the software in the Rockwell Collins Pro Line 21 glass cockpit to reflect the appropriate speeds for operations at the heavier operating weights.

The airplane has two fully functional medical stations and medical storage cabinet in the Air Ambulance configuration. The medical station equipment is provided by Spectrum Aeromed of Fargo, North Dakota. Spectrum Aeromed owns the installation Supplemental Type Certificate (STC). There are a number of different companies offering Air Ambulance equipment – and HBC purposely selected Spectrum Aeromed because of their competitive pricing and, perhaps more importantly, because they are a very responsive and flexible company who has demonstrated themselves to be nimble in the marketplace.

While some aircraft OEMs install mockups for certification purposes, HBC purposefully installed fully functioning medical stations – which has resulted in a fully functional Air Ambulance capability in this aircraft. This allows us to use the Air Ambulance configured airplane for emergency/disaster relief – such as during an earthquake or a tsunami. Additionally, the configuration is quickly convertible. If we were operating in an airline seating configuration with 11 forward facing chairs (five along the left hand/port side of the cabin and six along the right hand starboard side of the cabin), HBC removes the six right hand chairs and installs the medical cabinet and the two self-contained Spectrum Aeromed medical stations in about 30 minutes with three experienced mechanics. This is possible because everything in the cabin is attached to the seat tracks. HBC also covers the floor and interior sidewalls with materials that are easily cleaned. In a normal VIP configuration, the floor would be covered in durable, light weight carpet and the sidewalls would be covered in cloth, but most governments and Air Ambulance operators need something which is easily cleanable.

All of the current production King Airs are equipped with the Rockwell Collins Pro Line 21 avionics. Because this demonstrator King Air 350ER is also configured to show a potential search and rescue (SAR) or surveillance mission configuration, HBC has included the optional search pattern software in the flight management system (FMS). With these search patterns, it is very easy (and very quick) for the



**Roger Hubble,**  
Special Mission Product  
Manager,  
Hawker Beechcraft  
Corporation

to those which were installed on the Beechcraft 1900D Commuter aircraft, which has a ramp weight of more than 17,000 pounds resulting in plenty of stopping power. Besides adding more fuel and



**CLOSE-UP:**  
INTERIOR VIEW OF THE SPECIAL MISSION KING AIR 350ER SHOWN WITH MEDEVAC AND HIGH DENSITY SEATING; (INSET) IN FLIGHT



flight crew to orbit over a GPS position, tangent to a GPS position or select other search patterns appropriate for the mission immediately at hand. For example, if the mission was to search the ocean for a ship wreck, and the crew has the last known position of the ship, they might use the “search ladder” pattern in the FMS and search an area appropriate when considering the suspected ocean currents. The point is to use the latest technology navigation sensors available to keep the aircraft in an area with the highest potential to locate the target, because quite literally, lives can be held in the balance.

To show the SAR / surveillance potential of the Beechcraft King Air 350ER Special Mission demonstrator, HBC installed a FAA certified (also EASA certified) large belly-mounted radome and camera lift system. The radome has been installed on many aircraft operating in Europe, Northern Africa and

the Middle East. Indeed, many of these are also operating with high technology camera systems such as the Flir Systems Inc Safire or HD cameras or the L-3 MX-15 series cameras.

When we talk about ground surveillance (often referred to as intelligence, surveillance and reconnaissance - ISR) some customers think about Unmanned Aerial Vehicles (UAVs). While UAVs may be preferable in high-risk environments (small arms ground fire or man-portable shoulder fired threats), they are typically a tactical asset rather than a strategic asset. A UAV is typically sent to survey a specific area – and will have all its sensors looking in that area. With a manned aircraft, the sensor operator performs the same tactical role (of looking at a particular surveillance area) while the flight crew is able to see the entire ISR theatre. The flight crew might see a column of smoke 80 km away from the surveillance area, which might present an even more interesting or higher priority target than the mission sensor operator may be seeking. Additionally, manned

aircraft can operate in virtually any airspace, where in contrast UAVs often require far more coordination with air traffic control (ATC) and other regulatory authorities. Lastly, there are thousands of King Airs operating around the world. A UAV will always draw attention to its mission, however there are so many King Airs routinely operating from commercial and military fields that they rarely raise any suspicion.

**SP's: But this must be a very old vintage type car that has evolved with time.**

**Roger:** Yes, it is a very well proven aircraft. While the outside of the aircraft may look like your grandfather's King Air, we have made many improvements. HBC has added winglets to make the wing more effective. The benefits are twofold, the winglets not only make the wing more efficient, they also yield a bit more wingspan. The Rockwell Collins Pro Line 21 avionics package is certainly as good as (and likely more capable than) the airline that flew you here. Pilots who fly new King Airs with the Pro Line 21 modern glass cockpit find it relatively easy to transition into flying the high performance jets such as the Premier IA or Hawker 900XP – because the information displayed on the avionics is similar. So, while the outside of the aircraft looks similar to your grandfather's King Air – the updated aircraft systems, powerplants and avionics in the current production versions make them far more efficient and capable.

**SP's: Does it need very well prepared infrastructure to land and takeoff?**

**Roger:** The Beechcraft King Air 250 and 350/350ER airplanes have dual tyres on each of the main landing gears. The result of that is that there are more inches of tyre touching the runway surface – hence the weight of the aircraft is spread over a larger area – thus enabling the aircraft to land on softer surfaces. The ability of the King Air 250 and 350 to operate from unimproved surfaces is a significant benefit of the aircraft. Sometimes in an Air Ambulance mission you need to land in a small or unimproved runway, which might be very close to a hospital in a very large city. The ability to land at the short or unimproved runway might enable a ground ambulance to transport the critical patient to a hospital in 20 minutes – rather than a three-hour ground ambulance ride from a larger airport.

**SP's: How much shorter?**

**Roger:** The Beechcraft King Air 350 operating at 15,000 pounds maximum gross weight (ISA day, sea level) has a balance field length of 3,300 feet (1,000 metres). Some of the smaller King Airs, like the 250 and King Air 90, are capable of operating from shorter runways, well under 3,000 feet.

**SP's: Are they robust enough to handle the challenges?**

**Roger:** Reliability, capability and speed are all important to aircraft operators. But reliability is particularly important, especially to Air Ambulance operators where every mission is perishable. Clearly there are airplanes that are faster than the King Air, but few are as reliable. As an example of reliability, the US Air Force (USAF) selected the King Air 350ER as the ISR aircraft of choice because the USAF has experience with the aircraft and knows it will be able to launch the airplanes whenever necessary to survey the targets.

While reliability allows us to launch the mission, “capability” allows us to complete the mission. The state-of-the-art Rockwell Collins Pro Line 21 is a big part of that capability. As an example, most weather radars sense moisture in the air (clouds and rain), however the Pro Line 21 weather radar does that, plus more. It also incorporates Doppler technology to detect potential for hail and very turbulent weather. We also use a data link system to show us weather that is hundreds (or thousands) of miles away at the destination. The sooner the flight crew knows weather conditions at the destination airport, the more options they have – hence the safer and more fuel-efficient (cost effective) the flight.

**SP's: India has a lot of problem related to fog during winters. Do you have a solution?**

**Roger:** It is important to be able to see the runway environment. Clearly, fog is a limiting factor in airfield operations. While fog is a problem for all aircraft, there have been some new technology improvements providing significantly more capability for operations with other visual detractors. There is a system called Max-Viz EVS-1500 enhanced vision system (EVS) available in the King Air, which has an infrared camera to help the pilot land at an airport obscured by smoke, sand storm or low light conditions at night.

**SP's: In terms of medevac operations which countries are making use of this aircraft?**

**Roger:** There are many King Airs operating as Air Ambulance from every continent, save Antarctica. There are large fleets of King Airs operating in Scotland, Norway, Turkey, Saudi Arabia, Argentina, Colombia, Mexico, South Africa, Australia, United States, Canada and many other countries. Indeed, 38 percent of the aircraft registered to Air Ambulance operators that are in the JetNet database, are Hawker Beechcraft products. The most popular Hawker Beechcraft aircraft for Air Ambulance would be the King Air series, followed by the Hawker 900XP. The Hawker 900XP is particularly popular with Air Ambulance operators because it has very high speed, large cabin and has a range as high as 2,900 nautical miles. ■ SP

