



# Major Avionics Upgrade for ISJ Completed by Hawker Pacific at Ardmore

**HAWKER PACIFIC** at Ardmore has just completed a major avionics and cabin upgrade for ISJ, the Northland Emergency Services Trust (NEST) Sikorsky S-76. The work was undertaken over the last few months and also included a variety of inspections and overhauls that had become due on the aircraft.

ISJ had been flying with an avionics suite, which although extensive and fully IFR, dated in many cases back to the helicopter's original build. This equipment was starting to have reliability problems and was becoming more difficult to maintain. There were also issues with having the older equipment cooperate properly with its modern counterparts such as terrain avoidance, traffic advisory, GPS systems, as well as seven different communication systems. Replacement parts for some of the older equipment were disproportionately expensive to acquire and the dated wiring in the aircraft was also becoming a concern.

With all of this in mind, a logical decision was taken by the Trust to upgrade the aircraft's avionics in a project timed to coincide with other major maintenance requirements and the installation of a new interior.

### An STC and a team effort

After consultation between NEST, the Civil Aviation Authority and local Part 146 design organisation Techair, it was decided to create an STC (Supplementary Type Certificate) for the avionics design. The aim of this STC being to have the modification prepared and ready when the time comes to undertake the same installation in NEST's second S-76A, IAL. Acquiring the STC proved to be a project in itself, with considerable inputs to the end designs from all parties involved.

The avionics team at Hawker Pacific who completed the project consisted of Harry van der Hoeven, Ryan Toyne, Rens Molenaar, Joe Bagrie, Chris Rampling and Paul Chapman. Mechanical support was provided by Michael Couchman and Gareth McCurdy who also oversaw the other major mechanical overhauls and inspections of the project.

### Out with the old

The entire cockpit was stripped of avionics with many of the items removed



ISJ taxiing from Hawker Pacific's hangar at Ardmore for its first post installation test flight.



The old instrument panel was full of dated analogue instruments that were becoming expensive to maintain.



The new panel including EADI, EHSI, AHARS, TAS, GPS and Digital Comms. A H-TAWS is yet to be fitted.

being destined either for the spare parts shelf or disposal. From the nose avionics compartments came the old Collins VHF Communication, Navigation and Transponder systems together with the C14 Directional Gyro/Flux Valve Compass.

The cockpit lost the dated mechanical Attitude Direction Indicators (ADI), Horizontal Situation Indicators (HSI), Audio Panels, DME indicator, left hand Radio Altimeter Indicator, KLN90B GPS, ARNAV Multi Function Display, VHF

Comm and NAV control panels, cell phone and several switches/annunciators.

Removal of this chunky hardware and the obsolete wiring associated with it contributed to a net weight saving at the end of the exercise of around 50 pounds.

### In with the new

A comprehensive suite of new avionics was installed in the aircraft, all of which is ready for IFR and Night Vision operations.

Sandel Avionics supplied the Electronic Attitude Direction Indicators (EADI), Electronic Horizontal Situation Indicators (EHSI), Attitude Heading and Reference System (AHARS) and Magnetic Transducer (MT).

If required, the EHSI's can be changed to an EADI via a press on the "rev" switch.

A brand new Helicopter TAWS is also manufactured by Sandel.

A Garmin suite of products was also installed, including GNS530W, GNS430W (GPS plus Communication/Navigation) and a GTX327 Transponder.

Traffic Advisory information is supplied by the Avidyne TAS 610 and displayed on the EHSI and GNS530W.

ISJ has a total of seven communications systems installed, these being two VHF Comm's, two VHF FM's, two Police Radios and a cell phone. A new NAT Digital Audio Communication System was fitted to integrate these via a central audio management unit that collects all the audio signals and directs it to the 3 audio panels on board. The new cell phone interface is by a Nokia/Parrot combination.

The Becker Direction Finder and Honeywell Weather Radar remained in the aircraft as previously installed.

### Additional improvements

During the upgrade, a variety of additional improvements were made to the aircraft, not the least of which was a complete cabin refurbishment. This was performed in accordance with an existing Supplemental Type Certificate, along with some minor local additions such as enhanced cabin lighting.

ISJ's time in the hangar also included the completion of a substantial number of inspections and routine maintenance. These included 25, 50, 100, 150, 300, 500, and 750 hour inspections, 1500 hour zone 2 and zone 4 airframe inspections, 3, 6, 12, 24 and 36 month airframe inspections, 150 and 300 hour engine inspections, tail rotor servo overhaul, as well as the due replacement of tail rotor cables, landing gear blow down bottle and fire bottle squibs.

### Return to service

ISJ was returned to service at the end of July. Chief Pilot Peter Turnbull completed a short test flying programme with virtually no remedial action required and says that NEST are very pleased with the results achieved. Fund raising is already underway with a view to bringing NEST's second S-76, IAL, up to the same standard as soon as possible.

### For more information

For more information on this upgrade or Hawker Pacific's avionics capabilities, contact Harry van der Hoeven at Hawker Pacific Ardmore on (09) 295 0665, email: [harry.vanderhoeven@hawkerpacific.com](mailto:harry.vanderhoeven@hawkerpacific.com) For maintenance enquiries contact Peter McCarty on (09) 295 0665, or email: [peter.mccarty@hawkerpacific.com](mailto:peter.mccarty@hawkerpacific.com)



The completed circuit breaker panel, looking a lot tidier than the one it replaced.



Miles of new wiring were installed, though the aircraft was 50lb lighter once finished.



Part of the stripped cabin during work in progress.



ISJ off the coast of Whangarei following its major upgrades.