

logical standpoint, however, there is universal praise for the system. "It has exceeded all of our expectations and run to an almost flawless schedule," says Weiss. "The automatic dependent-surveillance system has worked beyond our wildest dreams — and we have proved that this technology is both reliable and foolproof." Weiss adds that cargo pilots became so used to meeting their day- or night-time schedules that they were disappointed if they were as much as 20s late. "These were highly professional pilots, who all said they have enjoyed working on the project. After two or three days, they had it nailed and they want to see some of this new technology implemented into the real world."

Weiss feels that, in the near term, the avionics equipment which made the ASTS possible will be certificated without restriction. For now, the Arnav display supplying information such as local-area maps, weather and the positions of other aircraft can only be installed where it cannot be seen by the pilot. Therefore, each ASTS helicopter carried an observer who watched the display and received or sent text messages from or to the ground station. Initial observations of the equipment in operation indicate that the display is not an undue distraction for the pilot and will improve his situational awareness.

CIRRUS PARTICIPATED

A prototype Cirrus SR20 four-seat light aircraft, which is being developed by Minnesota-based Cirrus Design and equipped with a large Arnav ICDS 2000 display and datalink receivers to relay GPS position data, was also used in the ASTS. Company test pilot Dean Vogel flew the SR20 over the Atlanta area during the Games, receiving information such as weather reports from the ground-control site, and feels that such detailed, easy-to view, data are a safety enhancement, as they provide situational awareness.

Frank Jensen, chairman of the HAI, flew as an observer on some of the ASTS helicopters and was impressed with the reliability and strength of the datalink signals. Jensen, however, would like to see some changes to the symbology — he says that parts of the display were sometimes difficult to see, especially in bright sunlight — and he would like an easier mechanism for sending text messages. ASTS flightcrews had to construct messages by punching a single key until they reached the desired letter of the alphabet, then repeat the process for the next letter. Jensen and Vogel found this a slow and frustrating procedure and suggest that some form of compact keyboard — similar to that of a modern laptop computer — would be preferable.

At the ground control-station, at Georgia Tech in Marietta, each of the 90 aircraft in the system, including fixed-wing aircraft, was assigned a code with which it was tagged for every flight during the project. Once airborne, the aircraft and its identifying tag number appeared on the main screen along with details of its altitude and speed. Using that informa-



Arnav datalink boxes saved the day for helicopter operations over Olympic venues

tion, controllers could also ask the computer to predict the aircraft's path and future position over a given number of minutes.

It was this highly detailed and accurate tracking information which finally convinced security officials that approved aircraft, equipped with Arnav boxes which broadcast automatically information on their identities and positions, could be allowed into the areas directly above Olympic venues, where security concerns were most prevalent. The majority of aircraft needing this access were provided by Textron which, as an official sponsor, supplied the resources of three of its major divisions — Bell Helicopter, Cessna and E-Z-Go — for television-camera and VIP-transport services.

Bell hired Helicopters Inc of St Louis, Missouri, to provide flightcrew and ground staff and made a temporarily leased hangar at Peachtree Dekalb Airport, just north of Atlanta, its headquarters. The original plan was for Helicopters Inc to provide crews for the camera ships, with those aircraft equipped with Wescam cameras, and for Bell to provide crews for transportation of VIPs. The FAA, however, ruled that the transportation role was a full Part 135 operation — for which Bell was not qualified — so all flights were put under Helicopter Inc's 135 licence and Bell put its participating pilots through 135 ground school and had its helicopters — mostly 230s and 206s — checked out to Part 135 standard.

O K Moore, Bell's co-ordinator of the

Olympics' project, emphasizes that his company's support of the ASTS was total, but that the roles were different. "Ours is a sponsorship programme in which we have provided value-in-kind as a transportation sponsor," says Moore. "You cannot put a dollar value on that, but we viewed this as a tremendous opportunity for the helicopter. We feel that we have done a very professional job and, by working with the ASTS, have also helped the helicopter industry as a whole," he adds.

FEASIBILITY PROVED

Tom Marlow, chairman of the HAI's Olympic Support Committee, says that all data gathered throughout the exercise will be analysed over the next few months.

He feels that among the main lessons already learned are that a scheduled helicopter service within an urban area is technologically feasible and that responsible flying keeps noise complaints to a minimum. Most of the complaints received during HeliStar were tracked to US Customs and law-enforcement-agency helicopters, which were flown into residential areas more often, and at lower altitudes, than the Bell or PHI helicopters.

The ASTS tracking technology, however, enabled controllers to pinpoint the source of any complaints and provide an explanation to the caller — often solving the problem because the caller was impressed with the detailed information supplied. □



Official Olympics sponsor Bell provided helicopters for VIPs and cameras