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“UK Civil air charts”

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The Charles Close Society was founded in 1980 to bring together all those with an interest in the maps and history of the Ordnance Survey of Great Britain and its counterparts in the island of Ireland. The Society takes its name from Colonel Sir Charles Arden-Close, OS Director General from 1911 to 1922, and initiator of many of the maps now sought after by collectors.

The Society publishes a wide range of books and booklets on historic OS map series and its journal, *Sheetlines*, is recognised internationally for its specialist articles on Ordnance Survey-related topics.

UK civil air charts

Chris Higley

The International Civil Aviation Organization requires each member state to produce an Aeronautical Information Publication (AIP). Within the UK this is a responsibility of the Civil Aviation Authority, housed in a tower block in Kingsway, right in the heart of London.

The AIP lists the constantly updated regulations and navigational information for all civil flying in the country and, at the start of the Society's visit to the CAA Aeronautical Charts and Data Section on 4 March our hosts, Jo Suter and Rick Davidson, explained how this 'bible' is used to generate the information appearing on the Visual Flight Rules charts used by the general aviation community.

The country is covered by eight 1:250,000 and three 1:500,000 VFR charts, each consisting of a specially generated Ordnance Survey base map on which the CAA superimposes aeronautical information – the navigational aids and facilities of aerodromes, obstructions, restricted airspace, air traffic control boundaries and so on. The charts themselves are then printed by OS as conventional laminated flat sheets. A separate 1:50,000 *London helicopter chart* is also produced using OS *Landranger* base mapping.

The information on these charts is safety critical and rapidly changing. The changes are noted in *notices to airmen* (NOTAMS) and in monthly amendments to the AIP; new editions of each chart are produced at approximately yearly intervals. Although all VFR charts must conform to an overall ICAO specification, some national variation is allowed. Until now, the UK VFR charts have been produced on an aging Laserscan system. The comparatively small number of individual sheets does not justify the cost of an 'all-singing, all-dancing' automated approach to their production and, instead, Anne Edwards demonstrated how the work was now being transferred to a PC, making effective use of a standard software package, Adobe Illustrator, supplemented by her own traditional cartographic skill in positioning symbols and captions, to produce a clear and visually attractive product.

Scheduled, commercial flights are routed along recognised airways and their pilots do not have a need for VFR charts. However, all pilots do require detailed information about the airfields that they use. Regular surveys are commissioned by each airfield and the information from these goes to provide a range of local charts, all produced by the CAA and included in the AIP.

We had already begun to realise that the three-dimensional view of an aeronautical chart was different to the two-dimensional surface view of a conventional map. How different became apparent when Mike Viney and Bill Rose introduced us to the instrument approach charts and ICAO standard plans of individual airfields – the latter now being produced to a new specification resulting in a detailed plan of great clarity for everything within the airport

perimeter but totally ignoring everything outside the boundary, which is of no relevance to the pilot and cannot be checked from the airfield surveys.

There is mounting pressure to introduce charts for GPS based navigation. Adoption of GPS could remove the need for expensive instrument approach systems and other radio navigation aids at airfields, but has a hidden danger. By default a GPS receiver will show altitude above a particular ellipsoid designed to be a best fit to the whole Earth.¹ This ellipsoid surface can differ significantly from Ordnance Datum Newlyn (mean sea level). Altimeters are currently calibrated to show heights above mean sea level, and these are the altitudes used on aeronautical charts. An aircraft measuring its height with a GPS, and not taking this into account, may find itself a lot closer to the land surface than it expects.

The overriding need to keep clear of anything into which the aircraft can crash was emphasised by Ian Cox initiating us into the concept of frangible and non-frangible obstacles and 'Type A' charts, which are produced for each airfield showing the minimum safe angle of climb and any obstructions which could be a danger to an aircraft during takeoff. Nervous flyers should not look at the chart for London City Airport! The required angle of climb is also a significant commercial consideration since it is an important factor in calculating the maximum permitted payload for the aircraft.

A common theme in several of our recent visits is that modern technology now enables a very small team to produce professional quality maps. The eight current staff of the Aeronautical Charts and Data Section of the CAA are housed in a single open plan office; their productivity is remarkable. This was a most instructive visit and a fascinating glimpse of a very different view of the world. We can only regret that not all the members of the Society who wished to attend could be accommodated. Our thanks go to all the staff at the CAA for their very friendly welcome and great generosity with their time.

VFR charts cost £13.99 each and are available from a number of stockists listed on the CAA website at www.caa.co.uk, the main agent being Airplan Flight Equipment, www.afeonline.com/shop. 'Type A' obstacle charts will also be found on the CAA website. The full AIP, including downloadable copies of the other charts for individual airfields, is available online from the NATS Aeronautical Information Service website at www.ais.org.uk. There is no charge for access but it is necessary to complete a simple registration procedure.

Jeppesen and other commercial publishers also use the information from the various national AIPs to produce their own charts. UK charts for military aviation are the responsibility of No 1 AIDU, RAF Northolt.

¹ *Sheetlines* 57, 27.