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CHICHESTER
THE WESTWARD COVERAGE

'HOME IS THE SAILOR' was the live broadcast made of the approach and arrival of Sir Francis Chichester in Plymouth on the 28th of May 1967 after his epic, single-handed voyage around the world. The last two days of the voyage were also covered live, and the composite programme routed from the main control centre at Westward Television's Studio One, via ITN in London to the Independent Television network.

CAMERA POSITIONS

The picture sources were sited as follows:

M.V Albert V: The Rediffusion-equipped vessel transmitted the first live pictures from D-2 at 180 miles out, via a Dove aircraft, to Goonhilly at Lizard Point, from where the signals were fed, over a 90-mile GPO microwave link, to Westward Television.

M.V Southerner. Southern Television's converted motor torpedo boat met *Gipsy Moth IV* 30 miles out and continuously transmitted via a microwave link sited on Staddon Heights, closely following the ketch to the landing point.

The Royal Citadel. The camera sited on the battlements covered the ten-gun welcoming salute and the armada of small boats clustered around *Gipsy Moth IV* on the final approach. The signal was routed to Westward over GPO equalized pairs.

The Landing Point. At the Royal Western Yacht Club, Westward Television's four-camera, Marconi O.B unit and a hand-held camera covered the crowd scenes, taking up the story from the moment Sir Francis stepped ashore until he left for the press conference. The signal was again routed to Westward over GPO equalized pairs.

The Guildhall. A four-camera O.B unit, sited at the Guildhall, covered the motorcade as it drove past the crowds lining Royal Parade. The final shots of the programme were from inside the Guildhall, showing close-ups of the press conference.

At various stages in the 4 or 5 days during which television coverage of Sir Francis was required, programme material was either fed live to ITN in London for network transmission or video-tape recorded to be used as flash-back inserts in later programmes.

THE O.B CONTROL POINT AT WESTWARD

Communications

The success of a broadcast of this type depends on its communications. For this reason every site to which a wire could be run was equipped with an 'instant talk in' unit which was originally designed by Rediffusion for use during General Election coverage.

At the O.B sites, this unit consisted of a loudspeaker/telephone with the loudspeaker muted when the handset was lifted, transferring the received sound to the earpiece. Any O.B director could instantly communicate with the co-ordinating director at the O.B control point. Each unit was fed with 'keyed omni-talkback' from the co-ordinating director over a two-wire circuit. The output from the telephone microphone was carried over another two-wire circuit to a combining unit into which all other 'instant talk in' circuits were connected. The output of the combining unit was coupled to a loudspeaker in the director's box with a second output to the 'omni-talkback' mixer so that remote sites could hear both

sides of every conversation. The r.t circuits from *Southerner* were also fed into the combining unit, while the director's microphone 'omni-talkback' switch in Studio One enabled him to talk over the r.t system to both vessels.

When the *Albert V* was out of r.t range, a private wire from Westward was provided for communication via Land's End Radio.

Engineering control lines from all sites were terminated on a switchboard in Westward's master control room where all sources were monitored.

Vision Switching

Westward's Studio One, normally equipped for three-camera operation and using a Marconi eight-channel mixer, handled twice the normal number of sources. In addition to the usual complement of seven picture monitors, a further five 12-in monitors were installed to provide continuous preview of all O.B signals.

The existing eight-channel mixer capacity was doubled for remote source switching, using solid-state switching modules, and to provide a similar system for preview in the camera control room.

All the non-synchronous sources were confined to a submixer with a second output for genlock. The station pulses were split, and normal daily programming through the master control room was left unaffected to allow commercials, feature films, daily local news and feature programmes to continue normally.

Vision and sound from the remote O.B sites were routed via the master control room as well as the composite programme from Studio One, thus an engineer could monitor every source and quickly deal with problems that might arise. Field phasing of sources was an essential part played by the MCR engineer and all remote sites were aligned except for *Albert V* and *Southerner*, whose synchronizing generators ran on crystal lock.

Sound

The studio sound facilities were extended with a twelve-channel Marconi O.B mixer, accepting inputs from the five O.B sites as well as v.t.r, telecine, tape, gramophone and microphone sources in the studio for 'live linking'.

THE O.B SITES

The 'Albert V'

After an initial set-back to the unfortunate *M.V Braemar*, which was towed, with engine rooms swamped by heavy seas, into Penzance, the exhausted technicians hurriedly transferred the equipment overnight to the Dutch coaster *Albert V*. With time running short and equipment literally lashed to the deck, *Albert V* set out to find *Gipsy Moth IV*. The equipment on board consisted of a 4½-in Marconi Mark III image orthicon camera equipped with a Varotal III zoom lens and a hand-held Marconi Vidicon camera using a 4 : 1 Angenieux zoom lens with a through-the-lens optical view-finder.

A 2-in helical scan video-tape recorder was

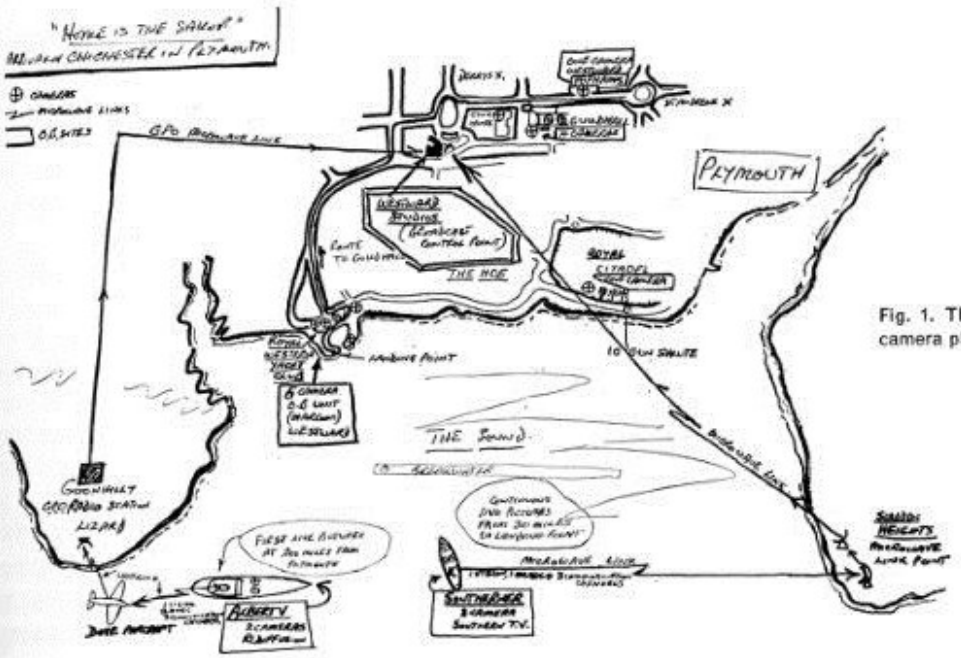

Fig. 1. The author's original sketch showing camera placings and radio links.

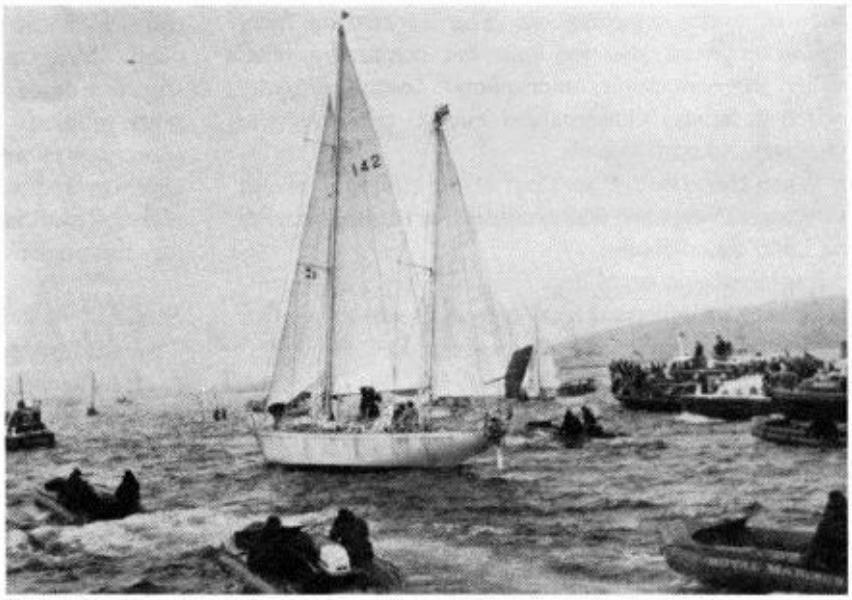

Fig. 2. *Gipsy Moth IV* nearing the landing point surrounded by a protecting cordon of Royal Marine 'Gemini'.

installed to record programme material if the ship was out of range or the Dove aircraft was being refuelled. Vision and music were transmitted, frequency-modulated at 532 MHz, using a directional antenna. For communication with the O.B control point via Land's End Radio, a Kestrel Mark III radio was used. The u.h.f transmitting dipole antennae were mounted within corner reflectors, gravity stabilized against pitch and roll on a gymbal mounting.

The u.h.f antenna was aimed manually at the Dove aircraft, which maintained a continuous course for approximately 30 min and then made a return run breaking communication for a few minutes on the turn while switching from nose to tail antennae.

The Dove Aircraft

The aircraft, which was based at St. Mawgan, had a maximum flying time of 5 hours, so, with a minimum 'on station' time of 1 hour, this gave a flying time of 2 hours each way and thus a range of 300 miles. The programme material received from *Albert V* was relayed from the Dove to the shore station at Goonhilly on 492 MHz for vision and 86 MHz for sound.

For the vision link, the Dove's antenna system consisted of three u.h.f antennae. Two directional single-dipole and reflector arrays mounted in the nose and tail pointing fore and aft respectively and an omni-directional belly antenna lowered on an 8-ft rod. These antennae could be connected to either the receiver or the transmitter.

An Ampex 2-in helical video-tape recorder was also provided so that should *Gipsy Moth IV* be out of range of the v.h.f link to shore, the Dove could record the programme material then fly to within receiving distance of Goonhilly and transmit the taped programme.

The most efficient operational height for the Dove was 8,000 ft, but, at that altitude, a secondary music link receiver in the aircraft on 76 MHz picked up stations on the same frequency sited in Britain and on the Continent, causing interference which would have been out of range at ground level. Music from ship to aircraft, therefore, was passed via the u.h.f link, but the v.h.f air-to-shore system on 86 MHz was found to be satisfactory.

At Goonhilly a 10-ft parabola was used as a directional receiving antenna for the u.h.f signals with receiving and r.t equipment similar to that fitted in the aircraft. The 'links' engineers at Goonhilly were in continuous contact with the Dove on r.t and also in contact with Westward via the 'instant talk in' system.

The 'Southerner'

Southern Television's converted motor torpedo boat covered the final approach of *Gipsy Moth IV*. By virtue of her comparatively small size, *Southerner* was able to maintain a very close station throughout the final stages of the approach up to the point where Sir Francis stepped ashore.

'I want to see the whites of his eyes' was the instruction from John Phillips, the co-ordinating director, at the final briefing before the broadcast; it is to the credit of *Southerner's* pilot and crew that they

achieved just this effect, maintaining good-quality pictures in failing light conditions.

Mounted on *Southerner's* deck and cabin roof were three 4½-in image orthicon cameras and a 50-ft mast mounting the microwave link antenna radiating at 7 GHz. The position of the antenna was controlled manually in azimuth from the microwave link receiver a.g.c readings which were being read out over the r.t by the link engineer at Staddon Heights. This antenna panning procedure was carried out continuously, from when *Southerner* put to sea, in order to maintain antenna alignment, which if lost, would be difficult to regain quickly, especially at longer ranges. Four-feet diameter parabolic dish antennae were used at the shore link sites.

The music channel was transmitted on 76 MHz, while the r.t panning instructions were transmitted on 161·05 MHz.

ROYAL WESTERN YACHT CLUB SITE

The climax of the programme was when 'the Sailor' stood again on dry land, and the vital camera positions were on and around the jetty. Four cameras were set up to obtain the shots of Sir Francis as he stepped ashore, as well as to capture the excitement of the crowds thronging the Hoe.

For the close-up shots, it was necessary to view the seaward side of the jetty and the stone steps leading up from the water, so a special cantilever rostrum was erected to suspend a camera and operator 8ft out from the jetty, 20 ft above the water.

Only one camera was allowed on the roof of the yacht club to save the excessive load of film and television cameras from many organizations as well as the crowd of sightseers. Further camera positions were on the roof of an ice-cream kiosk covering the exit from the yacht club, and on the roof of an O.B unit to cover the procession from the jetty towards the press conference.

PROBLEMS

It is impossible to mention all the problems associated with a project of this kind, some administrative, some technical and some downright unprintable. Difficulties caused by the lack of an accurate forecast of Chichester's arrival caused the biggest organizational headache and it was as well that time and tide were on our side.

Equipment was borrowed or hired in quantities, while special units for communications and vision switching extension banks were hurriedly manufactured in the maintenance workshop.

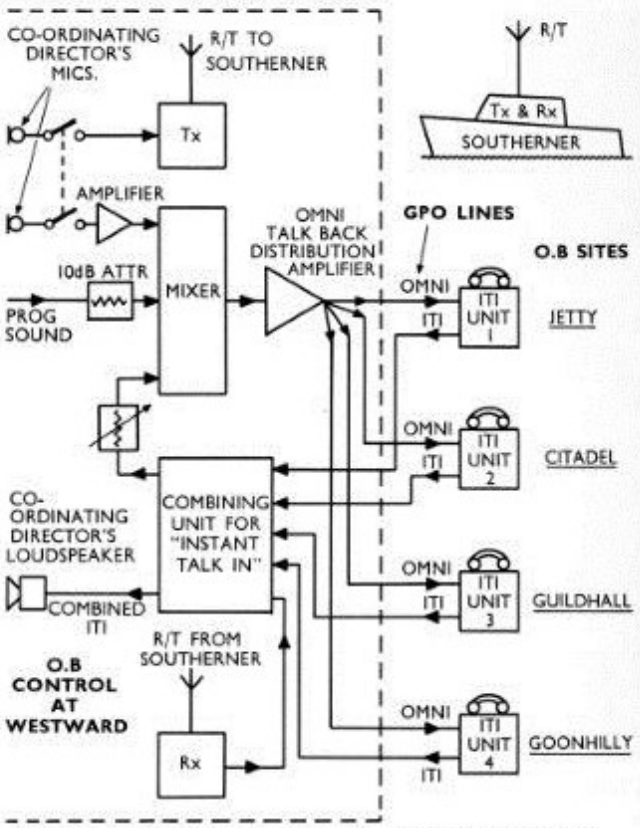

Fig. 3. The instant talk-in system used during the Chichester O.B.

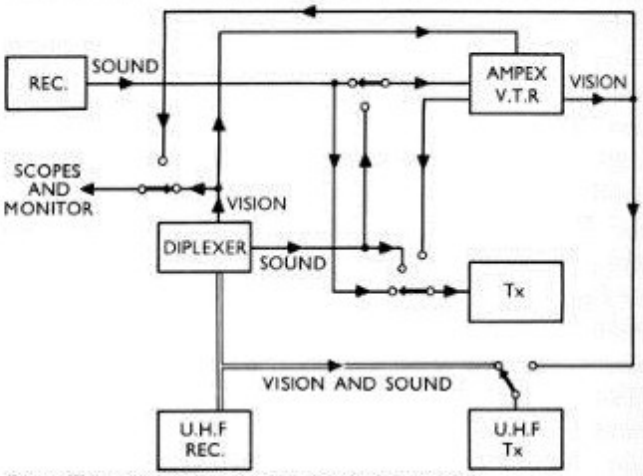

Fig. 4. The transmitter switching system in the Dove.

Rediffusion Television had to install a hitherto-untried system into a ship and an aircraft, then carry out field trials as quickly as possible before leaving to seek *Gipsy Moth IV*. Although disaster befell the first ship *Braemar*, the teething troubles of the system were mostly eradicated before bad weather swamped the engine room some 20 miles off the Scilly Isles. Luckily the equipment was able to be transferred to the hastily appropriated Dutch coaster *Albert V*, but tragically one of the team, who had suffered from the effects of the ordeal, died later in a Penzance hospital.