PORTISHEADRADIO - GKA

GKA - World's Busiest Maratime Station Greets SOWP

GKA

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THE STATION HEARD AROUND THE WORLD

POST OFFICE

Please address any reply to
The Officer-in-Charge
and quote:
Your reference:

Post Office Radio Station
HIGHBRIDGE
Somerset
TA9 3JY
2 October 1978
Telephone:
Burnham-on-Sea 783291
(STD code 0278)
Telex: 46111 (PORTISHEAD RADIO)

The Society of Wireless Pioneers
P.O. Box 530
Santa Rosa, California 95402

Dear Editor Breniman:

Greetings from GKA - the world's busiest maritime radio coast station.

Vol 1 No 4 of the Sparks Journal reached here today after relay through the post office in London and our transmitter site at Portishead. We have been reading your Journal for many years, and I thought that now was an opportune time to give you our correct address.

1978 marks an important stage in the history of Portishead Radio in that the original transmitter site at Portishead goes out of service. Meanwhile we have been providing for an expanded maritime communication system and have increased to 50 transmitter services at Rugby, Dorchester, Ongar and Leafield. We think we are the busiest radio station in the world and have a staff of 243 radio officers, so your Journal gets well thumbed.

In the event that you would wish to know a little about us, I have included a couple of enclosures; make of them what you will.

Yours Sincerely,

S/ Don Mulholland

Don Mulholland
Officer in Charge

REPORTED BY DON MULHOLLAND

The complex known as PORTISHEADRADIO is controlled from a receiving centre at Burnham-on-Sea in Somerset. The station takes its name from the transmitter site at Portishead, near Bristol, which has been devoted to the maritime service since 1925. Over the years it has been necessary to supplement the transmitters at Portishead by others at post office radio stations operating in the point-to-point service with other countries. This latter service is declining as more land cable routes and satellite circuits are provided; it has been convenient for the maritime service that the decline has occurred during a period of maritime growth. We are currently using 50 transmitters at Dorchester, Leafield in Oxfordshire, Ongar in Essex and Rugby. To cater for maritime expansion in the most efficient manner it has been decided to concentrate maritime services at Rugby, Leafield and Ongar, and to close the stations at Dorchester and Portishead. This programme is already in course. It is providing a modern facility in regard to both transmitters and aerials which are especially suited to the maritime service.

In the financial year ended March 1978, the complex handled 810,000 radiotelegrams, 110,000 and 40,000 calls by radiotelephone and radiotelex respectively. This compares with 3 million words by morse in 1938 and a few thousand when the station first started in operation.

Consequent upon the first International Radio Convention in 1906, it became evident that Government would have to take a hand in the development of maritime communication. This resulted in the construction of several radio stations and the purchase from Lloyds and Marconi Company of stations operated by them. All these stations provided communication by morse and had a working range of a few hundred miles in the medium wave band.

GKA - ONE OF 3 WIRELESS/TELEGRAPH OPERATING ROOMS
(Photo by Chris Hammond Studios)

Early Experiments

It may be interesting to recall some of the early experiments in radio communication, notably by Marconi and Franklin. Morse signals bridged the Atlantic in 1901 and the first speech followed in 1915; three years later the first morse message was sent from England to Australia. In those early days it was the common belief that long distance communication was possible on long waves; the longer the wave, the greater the power, the higher the aerial, the greater was the range of working. It became common practice to use wavelengths of thousands of metres. This then was the form of communication in the 1920's. Back in 1916, Marconi and Franklin had experimented on short waves using 2 metres for line of sight communication. Meanwhile, radio amateurs had been allocated chunks of the spectrum thought to be of little use for long distance working; reports of transatlantic contacts below 200 metres resulted in further experiments by Marconi and Franklin and enabled them to work

Australia on radiotelephone in 1924; these experiments confirmed the 1920 theories of Appleton about reflecting layers in the ionosphere.

It was against this background that the post office established two long wave stations for maritime communication. One at Devizes in Wiltshire was designed to provide two-way communication with ships at ranges of up to 2000 miles in the band 110-160 kilohertz; this was provided in 1920. The other was at Rugby which was provided with high power, used longer waves and higher masts this provided one-way communication to ships. Publicity material available at the time quoted:

> Rugby Radio to ships on all seas at 1s/6d per word - Devizes Radio and other land stations for ships up to five days from a British port, 11d a word; facilities also available from ship to shore.

It rapidly became apparent that the facilities at the Devizes station were inadequate and that it would be necessary to separate the transmitting and receiving stations. In January 1925 the Devizes station was closed and a new complex was opened in Somerset with receivers and control at Burnham-on-Sea and transmitters at Portishead. The same type of communication, as at Devizes, was provided and it concentrated upon the passenger liner trade in the Atlantic.

Meanwhile, taking note of the Marconi and Franklin experiments in short wave working, the post office inaugurated an experiment in 1926 from the Burnham/Portishead stations, using one transmitter and one receiver in the short wave bands, with the liners Carinthia and Olympic. It was immediately successful and from this small beginning, fifty years ago, maritime long distance two-way communication developed.

Concurrent with the post office maritime developments, Marconi and Franklin pushed ahead with their short wave experiments; this resulted in a projected plan for long wave communication within the British Empire to be abandoned. Inventing valves suitable for the job, aerials and coaxial feeders, they built a short wave communication between Empire governments using directional aerials; this was known as the beam system. Some of these experiments were in use forty years later. The first link was introduced between Britain and Canada in 1926. Thus, the point-to-point service on short wave developed at the same time as the maritime short wave service.

GKA - CONTROL ROOM AREA SHOWING SHIPS BUREAU (TO SHIP ROUTING TRAFFIC) IN FOREGROUND. TRAFFIC LIST AND INTERCOM CONTACT POINT WITH W/T, R/T & RADIO TELEX OPERATING POSITIONS (IN BACKGROUND). THROUGH GLASS SCREEN A SECTION OF THE LANDLINE ROOM. Pix by Douglas Allen.

PART OF THE RADIO TELEX ROOM - Chris Hammond Studios Picture.

From the early beginning at Burnham/Portishead (Portishead Radio) we rapidly developed, using frequencies in the range 4 to 22 Megahertz. By 1939, fifteen receivers and six transmitters were in use, handling about 3½ million paid words in each year. Then with the war came the cessation of commercial working, to be replaced by naval communications which included the landings in North Africa, the sinking of the Scharnhorst, distress calls and enemy reports.

WW 2 Spawns Need to Expand Wireless

The demand for an increase in world-wide maritime communication, immediately after World War Two, gave rise to a major reconstruction and requipment programme in 1948, and since then further additions and modifications have been made. This introduced a new era for morse communication which was to last until 1971. Radio stations in the British Commonwealth agreed to participate in a world-wide link-up and with each station responsible for working with ships in their own area. The Royal Navy provided a link between the land stations. This system catered for British ships only and avoided the need for extreme long distance communication between ships and shore; ships were able to receive messages from Britain through their own local Commonwealth station and to transmit messages for Britain through the same station. Portishead Radio acted as the coordinator and maintained a vast file index on the movements of all British ships so that messages for them could be routed to the appropriate station. At this period Portishead Radio had 38 positions for operating world-wide in the 4 to 22 Megahertz bands and 4 positions for operating in the long wave band (110 to 160 kilohertz). But by 1957 the need for long wave working had ceased and the equipment was changed for short wave equipment; thus 37 years of long wave working came to an end. All communication with ships was by morse.

Meanwhile, as an offshoot of the short wave beam service to other countries operated through Rugby Radio, a radiotelephone service with ships had also been developed. Transmitters at Rugby, and receivers at Baldock, were linked in a London Terminal.

Telex Takes Over Landwire

At this stage it is of interest to note the changes that had occurred in landline communications. Within this country the post office had used, traditionally, morse code on sounder circuits, and this was how the original maritime stations developed. Messages to ships were tendered at post offices and transmitted to the coast stations and in the reverse direction messages from ships were delivered through the appropriate post office. There were also links with other countries through London Central Telegraph Office. Then came the age of the teleprinter and Portishead was equipped with teleprinters working directly into the Central Telegraph Office in London through which all messages were routed. In course of time the post office developed a system of manually operated teleprinter exchanges where calls from one post office could be connected to another; again, Portishead Radio was included in this system. Manually operated exchanges gave way in course of time to automatic exchanges with facilities at the terminals to directly dial the wanted post office or coast radio station. Then followed the telex system where private subscribers were able to dial and deliver their own messages. The rapid growth of the system has made it uneconomic for the post office to continue with its own internal system and now all traffic between post offices and Portishead Radio is dealt with by telex. At the same time, Portishead Radio deals directly on telex with individual subscribers. It also maintains private circuits with some subscribers who for one reason or another are prepared to pay more; this includes the Meteorological Office and over this

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'G K A' PortisheadRadio

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circuit are sent meteorological observations from ships at seas, weather routing messages and weather bulletins to ships at sea.

Maritime Radiotelephone

Transferred to Portishead Radio

In 1970 it was decided to transfer maritime radiotelephone work to Portishead Radio and this change produced a remarkable growth in such traffic. It has entailed the provision of additional receivers and transmitters.

With the general growth in radiocommunication it has become necessary to use transmitters at several other locations and we currently control such equipment from Burnham at Portishead, Dorchester, Rugby, Leafield and Ongar. Many of these equipments were used in the point to point service with other countries. They became spare because of the transfer of such services to cables and to satellite circuits. Thus HF radiocommunication in the fixed service has declined while the maritime HF service has increased.

Demise of Morse

In 1971 the Commonwealth Area system of communication by morse met its demise, mainly because overseas administrations felt unable to support it further. So British ships had to revert to the direct method of communication with Portishead Radio, at all distances, in common with foreign flag vessels who had continued with this method throughout. This caused a further increase in the number of equipment at Portishead Radio but introduced some difficulties. British ships had generally been able to fit fairly low power equipment to maintain contact with local Commonwealth Area stations, but now they had to fit more sophisticated gear. This change was aided by changes in the International Radio Regulations which called for better stability; manufacturers, in providing for this, also produced equipment of greater power. It was in the North Pacific that difficulties arose because ships with the lower power equipment had difficulty in communicating with Britain. This is a natural phenomenon which affects the area 140 degrees West to 170 degrees East approximately. So we introduced a special system for dealing with the area; this included high power equipment and directional transmitting aerials. It was an immediate success and the system has been extended to other parts of the world. Such facilities were not exactly new because, before the war, a rotating beam system had been available for both transmitters and receivers. Since the war the Portishead reception system has used directional facilities on all circuits from ships.

Radiotelex Expanded

Communication by radiotelex has been used off and on for some years and during the sixties a tanker company made special use of the facilities; it was a contract service rather than a public service with all ships. Some development in this field was initially retarded while administrations awaited International decision on the performance specifications for such equipment but, in due course, a Dutch design was accepted as the world standard. This enabled Portishead Radio to embark on a public service in January 1974. The system provides a means of connecting a ship and any telex subscriber; in effect the interface operation at the coast station may be compared with that of a telephone exchange operator who connects one subscriber to another. The service has been developed on a semi-automatic basis and the success obtained indicates that it may be possible to completely automate subscriber through dialing. At present however, it is possible to set up a circuit between the ship and shore by automatic means and then to connect in the landline subscriber on his telex machine. Intelligence can be placed aboard the ship without the need for any action by the ships Radio Officer. A somewhat similar system of machine telegraphy has been developed for placing aboard a ship intelligence which can be used to automatically produce a daily newspaper and this has been in regular use for some years. It may be that this system of communication will replace the morse system because it is faster and more accurate.

Broad Coverage of Services

At this stage it may be of interest to describe the various services. The cheapest form of communication is by Ship Letter Telegram which is in the form of radio transmission from the ship and postal delivery from the coast station. It embraces social and business communication, but caters especially for Agency services such as Interflora, Kays Mail Order, Vernons Football Pools. The most commonly used form of written communication is by radiotelegram; it operates in both directions with speed transit. Radiotelex, also providing for written communication, actually connects the two parties by teleprinter, but is available only to shore customers fitted with telex equipment. Radiotelephone enables parties to be connected by telephone.

GKA - 1 OF 3 RADIO W/T OPERATING ROOMS AT PORTISHEAD RADIO

While most written communication is handled by morse, it is also possible to use either the radiotelephone or radiotelex facilities. Various broadcast services are provided to all ships and these include daily weather bulletins, navigational warnings and press bulletins; these are effected on morse circuits. The liner QE2 is provided with a special newspaper service whereby signals from the shore are received aboard ship and used to set up a tabloid newspaper. A free medical service allows a ship to obtain advice from the Royal Naval Hospital in Plymouth, using either morse or speech, or to obtain assistance through the auspices of the Coastguard and the Air Sea Rescue authorities or by Portishead Radio alerting other ships with Doctors aboard. Facsimile is provided and pictures or documents can be exchanged by this method. Quite some use was made of this service when pictures taken at sea during the Cod War were transmitted from ships to the news media.

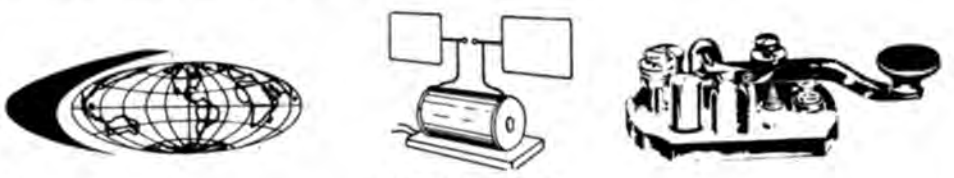
Traffic Alerts

The method of alerting ships to the presence of traffic at the coast station depends to some extent upon the equipment available aboard ship. The traditional method is to include the ship's radio call sign in a traffic list which is emitted at scheduled times on pre-arranged frequencies. If the ship is fitted with radiotelephone only, she is called in the radiotelephone traffic list, but in all other cases she is called in a morse traffic list. The receipt of this information aboard ship is a requirement to establish communication and to obtain the traffic on hand. An automatic system of alerting can also be used with suitably equipped ships. Each ship is allocated an identity code which, when transmitted by the coast station, allows the identity code of the coast station to be presented in the form of a visual display. If the ship is fitted with radiotelex, a similar system of automatic alerting is used, but in this case the system automatically sets up a two-way circuit with the ship.

A ship wishing to establish communication will decide which coast station is required and then the mode of communication and the frequency band. If the communication is to be by morse, the ship's receiver is tuned to the nominated coast station frequency and the transmitter is adjusted to a calling frequency. At the coast station a search operator scans the ship station calling frequencies and answers any ship heard calling, thus contact is established. Much the same procedure is used on radiotelephone. After contact, it is a requisite for the ship and coast station to move from the initial contact frequencies so as to leave them clear for other ships.

The Present and Future of Radio telegraph

The present service is provided by 46 transitters and 50 receivers. Plans for the next few years envisage considerable expansion with a new station at Burnham on Sea. This is planned to cope with the general growth anticipated in the HF Service. This paper has covered fifty years of HF communication and we are now at the beginning of an era in maritime satellite communication which, in course of time, will cause HF communication to die. Now that we have become so used to technological change, I doubt whether the story of the next fifty years will be as inspiring as could be told by those early experimenters who pushed back the frontiers of knowledge.



Hertzian Oscillator