

THE USA'S SHORTWAVE VOICE IN SPAIN

THE INTERNATIONAL BROADCASTING BUREAU'S TRANSMITTING STATION AT PALS

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(All times UTC)

INTRODUCTION. The US Government owns and operates several overseas shortwave relays, one of which is located at Playa-de-Pals, in Spain.

Pals is a coastal resort, on the extreme north-easterly part of the country some 40 km south of the French border, in a tourist area known as the Costa Brava. It is about 120 km north of the city of Barcelona, just off the main highway to Marseilles. It has many villas, holiday apartments, guest houses, and hotels, surrounded by pine tree forests, and looks out on the Mediterranean sea. The transmitting station is situated adjacent to the residential areas, right on the beach, at geographical coordinates 41N59.21, 3E12.06.

The station occupies an area of some 82 acres of unobstructed beachfront property. The facilities there include the Office of Spain manager, Administration, Transmitter Operations, Power Plant, Apartment, Motor Pool, Antenna Maintenance Shop, Carpentry, Paint and Masonry Shops, sundry other minor buildings housing the RF-line switch bay, dummy-load, and water system.

TRANSMITTERS. The station operates six transmitters each of 250 kW. Four identically matched units provide excellent flexibility from which to choose various power-output combinations as broadcasting situations require.

The station can operate in the following modes:

1. Six single units of 250 kW
2. Four single units operating at 250 kW, and two matched units combined into a single transmitter running at 500 kW
3. Two single units operating at 250 kW, and four matched units combined into two separate transmitters, each operating at 500 kW
4. Two single units operating at 250 kW, and four matching units combined into single unit operating as a super-powered million Watt transmitter.

Output is routed via a computer-driven antenna switch matrix to four groups of curtain arrays of nine antennas.

These are situated ideally for first-hop coverage of audiences in the principal population areas of the Community of Independent States, in the adjacent Baltic area, and gratuitous second/third hop coverage of the remainder of the former USSR.

SIS. The Satellite Interconnect System "SIS" delivers the US Government's non-military International radio programs to broadcasting stations worldwide. Overseas stations and

affiliates de-multiplex and decode the T1 carriers into individual programs and distribute these to broadcasting facilities for regional audiences.

The satellite connection system is based on geostationary INTELSAT satellites named AOR and IRO (Atlantic Ocean Region and Indian Ocean Region). These satellites transmit three T1 carriers and each one is based on time multiplex (TIMEPLEX).

The main carriers are T1-1 which contain 12 high quality audio channels and 768 kb/s Prague. The main satellite is the AOR and incoming signals are received by the local dish antenna, which are fed through low noise amplifiers. The carriers are in C-band and incoming signals are changed from 4GHz to 70 MHz within a down converter. The modem converts the intermediate frequency of 70 MHz to a high-speed data stream for the multiplexer.

The TIMEPLEX system separates the high-speed data stream into individual program signals. The COMSTRAMS receivers decode the program signals (96 kb/s) into audio output (two channels). The audio outputs are amplified and fed to the patch bay, where they connect to the audio broadcasting systems.

Program feeds:

T1-1 12 channels, 768 kb/s Prague 12 channels
Nodes: NOD-70 and NOD-71

IBB can also distribute audio programming to many stations through telephone dial-up lines as backup.

ANTENNAS. The antenna system consists of HF broadcast antennas with supporting towers and counter-weights, tower lighting, antenna beam control switches, RF transmission lines, and a safety interlock system.

Antenna control is either manual or automatic. The antenna PLC receives the commands from the antenna computer and transmits information back to it. The all-antenna PLC system has eight input modules (250 inputs) and there output modules (96 outputs).

Power is routed via a computer-driven antenna switch matrix to four groups of curtain arrays comprising nine antennas, which are designed to operate in adjacent frequency bands.

Four of the multiple arrays can operate in duplex mode. All antennas are rated at 250 kW except the D group, which can handle up to 500 kW. Output from eight arrays is variously slewable in the vertical and/or horizontal planes.

The antenna matrix and antenna slew is driven by PKC automation.

There are three antenna groups consisting 20 towers and nine antennas:

Group A: two 79 metre towers and one 51 metre tower, in service since 1960, capable of operating on 9, 11, 15 and 17 MHz

Group B: Four 136 metre towers and two 73 metre towers, in service since 1961, capable of 6, 7, 11, and 15 MHz (This is the only antenna group capable of 6 Mhz operation)

Group C: Two 79 metre towers and one 51 metre tower, in

service since 1961, capable of 9, 11, 15, and 17 MHz

Group D: Four 166 metre towers, two 109 metre towers and two 95 metre towers, in service since 1964, capable of 9, 11, 15, and 17 MHz

OPERATIONS. Pals transmits programs of Radio Free Europe, Voice of America and Radio Liberty; it does not broadcast Radio Free Asia services.

Output is targeted on azimuths ranging from 41 degrees to 63 degrees, essentially in a north easterly direction from Pals. The station does not have the capability at present of transmitting on the 21 or 26 Mhz bands due to antenna limitations, and neither does it work in the new 13 or 18 MHz bands.

Daily output (as at the time of the visit in October 2000) comprises programs from:

VOA: 5.5 hours

RFE: 3 hours

RL: 20.5 hours

The station is on the air from 0900-0930, 1000-1300, 1400-0800, and is silent from 0800-0900, 0930-1000, and 1300-1400.

During the local midday period, between 1000-1300, only one transmitter is in use: 1000-1100 Radio Liberty Russian 15115, 1100-1300 Radio Liberty Russian 15205. IBB services to Eastern Europe at that time on lower frequencies are carried by the other IBB stations in Germany (Biblis, Holzkirchen, and Lampertheim)

Maximum transmitter usage occurs at 1700-1800, and 1900-2000, with five transmitters on the air simultaneously.

MY VISIT. I visited the station in October 2000, as an excursion arranged by the Barcelona DX Association, as part of the European DX Council's 2000 Conference, held in Barcelona. Entry to the site is subject to very strict security clearance, with all visitors requiring day-passes and obligated to provide passport numbers and nationality status. The station is under the control of Mr Valenti Carbonell Cumaleras, Telecommunications Engineer, who gave an interesting presentation of the station's operations and history.

Our party was divided into two subgroups, each being guided by a station technical manager, with ample time being allocated to an inspection of the transmitter halls, halls, alarm systems, antennas, maintenance areas, feeders, the main control room, and the antenna switching computer room. We were also shown inside one off-line transmitter, with particular reference to cooling and ventilation, and safety interlock mechanisms.

Some of the transmitters are quite old, dating back to 1959, being Continental, and General Electric units. There is a newish Continental unit, installed in 1997, which was relocated from Gloria, Portugal.

I was impressed not only by the efficiency of the facility, but also at the compliance with safety standards and maintenance procedures, and the professionalism and skills of the technical staff. Housekeeping was first class, and carrier frequency

deviation on all transmitters is maintained to within 10 Hertz. The station is an unusual mix of old and new technology, with some of the equipment being 40 years old, adjacent to 21st century hi-tech computerised switching gear, satellite antennas /links, and state-of-the-art transmitter monitoring and control facilities. Digital frequency readout displays are rack-mounted on the newer transmitters, and other indicators reveal various parameters such as modulation depth and swing, antenna current, RF antenna input power, and overall power consumption.

The master control room contains rack-mounted low noise amplifiers and demultiplexing equipment.

The main transmitting hall has large multi-coloured, wall mounted illuminated maps of Europe and North Africa, showing coverage of the various antenna lobes.

ENVIRONMENTAL ISSUES. I asked about the siting of the station so close to a residential area and was told that the local community "tolerates it"! As far as I know there have been no environmental complaints about radio frequency radiation. However, about 1 km to the north-east is an "optional dress" camping area and beach, which I understand is very popular during the height of summer, and which is easily visible from some of the towers!

The Pals station clearly serves a vital role in the global network of IBB facilities, providing coverage into the former USSR area, and with six high powered transmitters, it obviously is regarded by the US Government as a strategically important and crucial mission. It remains to be seen whether this facility will continue to be permitted by the Spanish Government.

THANKS. Special thanks to the Barcelona DX Association for their excellent work in arranging the tour, and to the station's staff for taking time off from their normal duties to host a group of 40 visitors around this interesting broadcasting facility. Furthermore, there were no security restrictions on what we could photograph, whether digital, video, or conventional.

Additional acknowledgments to Mr Valenti Carbonell Cumaleras (Manager, Spain Station), and to Mr. Arto Mujunen (Manager, IBB Monitoring, Helsinki, Finland) for their help in making available the technical data used in this article.

Good listening to Pals!

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APPENDIX

Languages broadcast by the Pals station are as follows:

Albanian(VOA)
Belorussian (RL)
English(VOA)
Kazakh (RL)
Latvian (RFE)
Lithuanian (RFE)
Russian (RL)
Serbo-Croatian (RFE)
Tajik (RL)
Tatar-Bashkir (RL)
Turkmen (RL)
Ukrainian (RL)
Ukrainian(VOA)
Uzbek (RL)