



## Bolinas High Power,

from the Archives of the Society of Wireless Pioneers  
(n.d.; W.A. Breniman was the SoWP principal)

### EXCERPTS FROM ENGINEERING PAPER

Written by - Alexander Seidl, Engineer in Charge

Re - Trans-Pacific High Power Stations

Extracted by - W. A. Breniman

Very little, if anything, has appeared in the SOCIETY OF WIRELESS PIONEERS publications about the dawn of communication across the vast Pacific by way of Hawaii. The early modes and their time span are indicated on the map with the specific locations of stations being given in following paragraphs.

Philbrick left Kahuku in 1920 to become Engineer-in-Charge at Bolinas, California. In 1926 he became District Operating Engineer and in 1943, became District Engineer for the Hawaiian Islands. He returned to Bolinas in 1945 and retired in 1946.

Construction of the American stations in California and Hawaii got underway in 1913, with the test and tune stage being scheduled for September 1914. The J. G. White Engineering Corporation of New York were the constructors. The California transmitting station was located at Bolinas, about 20 miles north of San Francisco, and the receiving station at Marshalls, about 38 miles north of San Francisco.

The Hawaiian transmitting station was located at Kahuku, about 30 miles north-westerly of Honolulu, and the receiving station at Koko Head, about 12 miles southwesterly of Honolulu.

At Bolinas two transmitters, each with an input rating of 300 KW, were installed to operate on 6,700 meters (44.77 KHz) with the two transmitters being alternated in service using the call KET. The antenna was 600 feet in width and 2,700 feet in length and supported on 325 foot masts.

The California antenna, directionally oriented, was 5,000 feet in length with its 2 conductors supported on a single line of five 325 foot guyed, cylindrical section, steel masts.

The antenna at Marshalls was of the order of 10 miles in length, and no data is available on the length of the Koko Head antenna. As previously stated, the antenna used at Tomioka, Japan was 10.54 miles in length.

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## Archivist's Note:

California Historical Radio Society Deputy Archivist Bob Rydzewski found this document in the archives, as a one-page typed “carbon” (paper).

The Bolinas, California transmitter was known as the Rock Crusher. Marconi engineer A.A. Isbell had charge of its construction. Isbell, in 1908, had effected the first wireless telegraphy contact from Hawaii to California (with Larry Malarin at KPH). About 1923 two Alexanderson alternators, with some indications that they operated as KET and KEI, superseded the Marconi spark system. They operated at 22.9 KHz, an even longer wavelength than the spark system, about twice as long, *i.e.*, 13 kilometers. All operated from building BL1 (still standing; also see below) at the Bolinas Marconi, then RCA, radio station. The National Park Service now operates the site as a historical technology park. Volunteers including Chief Radio Operator Richard Dillman work the facility and operate a more modern station, still “vintage” by any measure.

The Marconi company sited the receiving station at Marshall, California, some miles north of Bolinas.



Photo from the Point Reyes National Seashore Museum, US NPS

A comparable Marconi rotary spark system operated from Poldhu, in Cornwall, UK in August 1914 (below). Marconi had sent his famous “S” (three clicks) across the Atlantic from Poldhu in 1901. This historic photograph shows the large rotary spark gap in operation, at around 300 kilowatts, at station ZZ at Poldhu. Note the brick-encased spark-gap room. The arc light from the sparks could blind a careless operator. The sound was deafening. But the traffic got through — in this case, a British Admiralty signal to all British vessels that war with Germany had broken out.



From: <http://www.marconiheritage.org/fww.html>



Title	British Marconi 300kw spark transmitter at Bolinas
Description	"Part of power supply for British Marconi 300kw timed spark transmitter, installed in Bolinas 1913, per T.L. Mayes 7-1977. Picture probably taken 1913." From Ivan Nielsen.

From the Perham Foundation Collection now at History San José (2003-1)

This photograph shows much of the interior of building BL1 *circa* 1913 upon construction. The actual (and quite large, perhaps more than a meter in diameter) rotary spark gap sat in an insulated room as in station ZZ. Nonetheless, its sound – a roar, really – could be heard at a great distance when in operation. Its radio waves reached Hawaii and beyond. From Hawaii, traffic could go on to Japan.

(Archivist's note by Bart Lee, K6VK, 08 III '22) ##