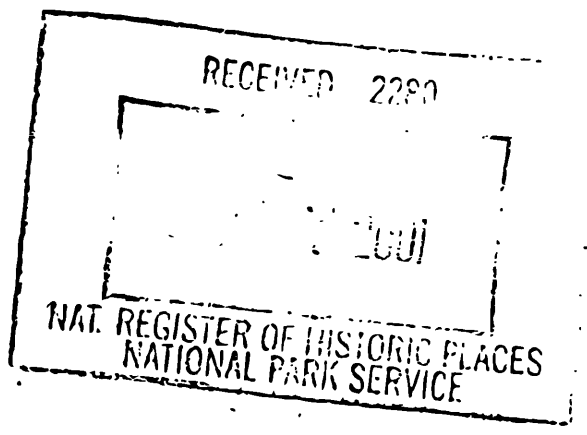
NPS Form 10-900

(Rev. 8-86)

OMB No. 1024-0018



1157

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

1. Name of Property

historic name: Massie Wireless Station

other name/site number: ''PJ''

2. Location

street & number: 1300 Frenchtown Road

not for publication: N/A

city/town: East Greenwich vicinity: N/A

state: RI county: Kent code: 003 zip code: 02818

3. Classification

Ownership of Property: Private

Category of Property: Building

Number of Resources within Property:

Contributing	Noncontributing	
1		buildings
		sites
		structures
		objects
1	0	Total

Number of contributing resources previously listed in the National Register: 1

Name of related multiple property listing: N/A

Property name Massie Wireless Station, Kent Cty., East Greenwich, RI

4. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this _X_ nomination ____ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property ___X meets ____ does not meet the National Register Criteria.

____ See continuation sheet.

Frederick C. Williamsen — 30 Aug 2001

Signature of certifying official — Date

State or Federal agency and bureau _____

In my opinion, the property ____ meets ____ does not meet the National Register criteria.

____ See continuation sheet.

Signature of commenting or other official _____ Date _____

State or Federal agency and bureau _____

5. National Park Service Certification

I hereby certify that this property is:

_✓_ entered in the National Register
_____ See continuation sheet.

_____ determined eligible for the National Register
_____ See continuation sheet.

_____ determined not eligible for the National Register

_____ removed from the National Register

_____ other (explain): _____

Entered in the National Register

Signature of Keeper

Oct 22, 2001

Date of Action

6. Function or Use

Historic: INDUSTRY/PROCESSING/ EXTRACTION

Sub: communications facility

Current: RECREATION/CULTURE/MUSEUM

Sub:

Property name Massie Wireless Station, Kent Cty., East Greenwich, RI

7. Description

Architectural Classification: NO STYLE

Other Description:

Materials: foundation CONCRETE roof ASPHALT

walls WOOD/shingle other

Describe present and historic physical appearance.

X See continuation sheet.

8. Statement of Significance

Certifying official has considered the significance of this property in relation to other properties: nationally

Applicable National Register Criteria: A

Criteria Considerations (Exceptions: B

Areas of Significance: COMMUNICATIONS

Period(s) of Significance: 1907-1912

Significant Dates: 1907

Significant Person(s):

Cultural Affiliation: N/A

Architect/Builder:

State significance of property, and justify criteria, criteria considerations, and areas and periods of significance noted above.

X See continuation sheet.

Property name Massie Wireless Station, Kent Cty., East Greenwich, RI

9. Major Bibliographical References

X See continuation sheet.

Previous documentation on file (NPS):

____ preliminary determination of individual listing (36 CFR 67) has been requested.
____ previously listed in the National Register
____ previously determined eligible by the National Register
____ designated a National Historic Landmark
____ recorded by Historic American Buildings Survey #
____ recorded by Historic American Engineering Record #

Primary Location of Additional Data:

____ State historic preservation office
____ Other state agency
____ Federal agency
____ Local government
____ University
_X_ Other -- Specify Repository: New England Wireless & Steam Museum, 1300 Frenchtown Road, East Greenwich, RI 02818

10. Geographical Data

Acreage of Property: less than one

UTM References: Zone Easting Northing Zone Easting Northing

A 19 290690 4611070 B
C _____ _____ _____ D

____ See continuation sheet.

Verbal Boundary Description: ____ See continuation sheet.

The nominated acreage is the land on which Massie Station sits, part of Assessor's Plat 19C, lot 71, Town of East Greenwich.

Boundary Justification: ____ See continuation sheet.

A moved building, Massie Station no longer retains integrity of setting. Now surrounded by a mown field and other museum buildings in a suburban location, Massie Station's setting is no longer related to its significance. Thus, only the land on which the building sits is nominated.

11. Form Prepared By

Name/Title: Robert Merriam, Director

Organization: New England Wireless & Steam Museum Date: March, 2001

Street & Number: 1300 Frenchtown Road Telephone: 401-885-0545

City or Town: East Greenwich State: RI ZIP: 02818

Description

Massie Station (1907) is a simple, small 2-story wood frame building, covered in weathered shingles, with a gable roof and a gable-roof observation tower at the roof's peak on the north end. Originally constructed on the beach at Point Judith facing Rhode Island Sound, it is now located on the grounds of the New England Wireless and Steam Museum, some twenty miles north in suburban East Greenwich.

The principal elevations are the flank-gable sides, facing east and west; each elevation is three bays wide, with a slightly off-center door. The building is only one bay deep. The east and west side entries have single-leaf, paneled doors, surrounded by flat board trim. The window sash is double-hung, 2/2 (except in the tower where the panes are fixed), and the window and door frames are trimmed with flat boards. The windows are paired in the south elevation; a triple window is located on the second story of the west elevation. The building originally sat on wood pilings on beach sand; it now rests on a concrete foundation.

The interior is divided into four rooms, two up and two down. The building is divided by a stairhall that can be reached through either door. The narrow single-run stair, with plain balusters and rail, runs from east to west and ends in a small landing. The interior is finished simply; varnished pine matched-board siding covers walls and ceilings; flat boards surround doors and windows. The tower is reached through a ceiling hatch (with a drop-down ladder) in the second-floor south room.

The south end of the building was heated by a stove on the ground floor; a cast iron register in the ceiling allowed the warm air to move to the second floor. The two northern rooms were unheated.

The second-floor south room contains the complete complement of the operating equipment of an early 20th-century wireless radio station in its documented original location and configuration. The room is well lit, with windows on all three exterior sides and would have afforded a sweeping view for the radio operator.

The radio equipment is set on and near a plain wooden early 20th-century table in the northwest corner of the room. It includes the operator call box, Resonaphone receiver, change-over switch, and pump handle key, all on the table. Mounted on the wall above the table is the key relay. To the left of the table is the condenser cabinet (with 70 of its eventual 100 glass plate

condensers installed). Set on top of the condenser cabinet are the helix and the straight spark gap. Mounted on the wall above the helix are a hot wire ammeter and anchor gap. The transmitter operates at about 350KHz. The station is operational, but it is not now connected to an antenna.

The other three rooms are finished similarly. They were originally living quarters for the operator and now house museum collections.

The Massie Station is presently listed in the National Register of Historic Places as a non-contributing component of the Tillinghast Road Historic District, a linear district which includes a number of early houses and small industrial sites, set along a nearby road in western East Greenwich.

Photographs

Photo #1
Photographer: Pamela A. Kennedy
Date: May 2001
Negative: RIHPHC, 150 Benefit Street, Providence, RI

View: North and east elevation.

Photo #2.
Photographer: Robert Merriam
Date: November 2000
Negative: RIHPHC, 150 Benefit Street, Providence, RI

View: Second floor, south room, northwest corner. The table and adjacent cabinet (on the left) contain the complement of Massie's equipment. On the table (from right to left) are the pump handle key, change-over switch, receiver, and operator call box. At left is the condensor, its glass plates mounted vertically. On top of the cabinet is the helix and the straight spark gap.

Massie Building

East Elevation

0 ft 10 ft

mcl 02.04.01

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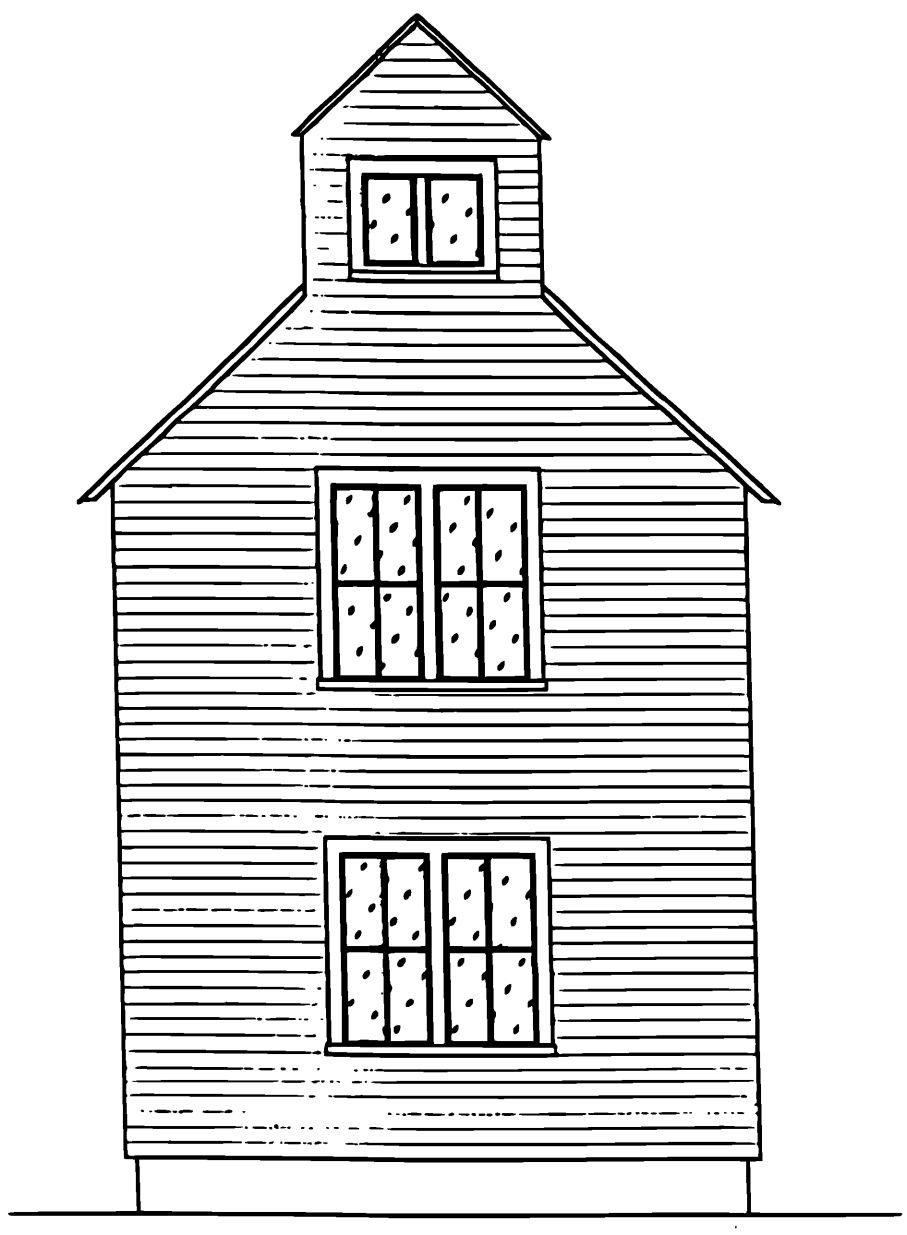
Massie Building

West Elevation

0 ft 10 ft

mcl 02.04.01



Massie Building

North Elevation

0 ft 10 ft

mcl 02.04.01

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National Park Service

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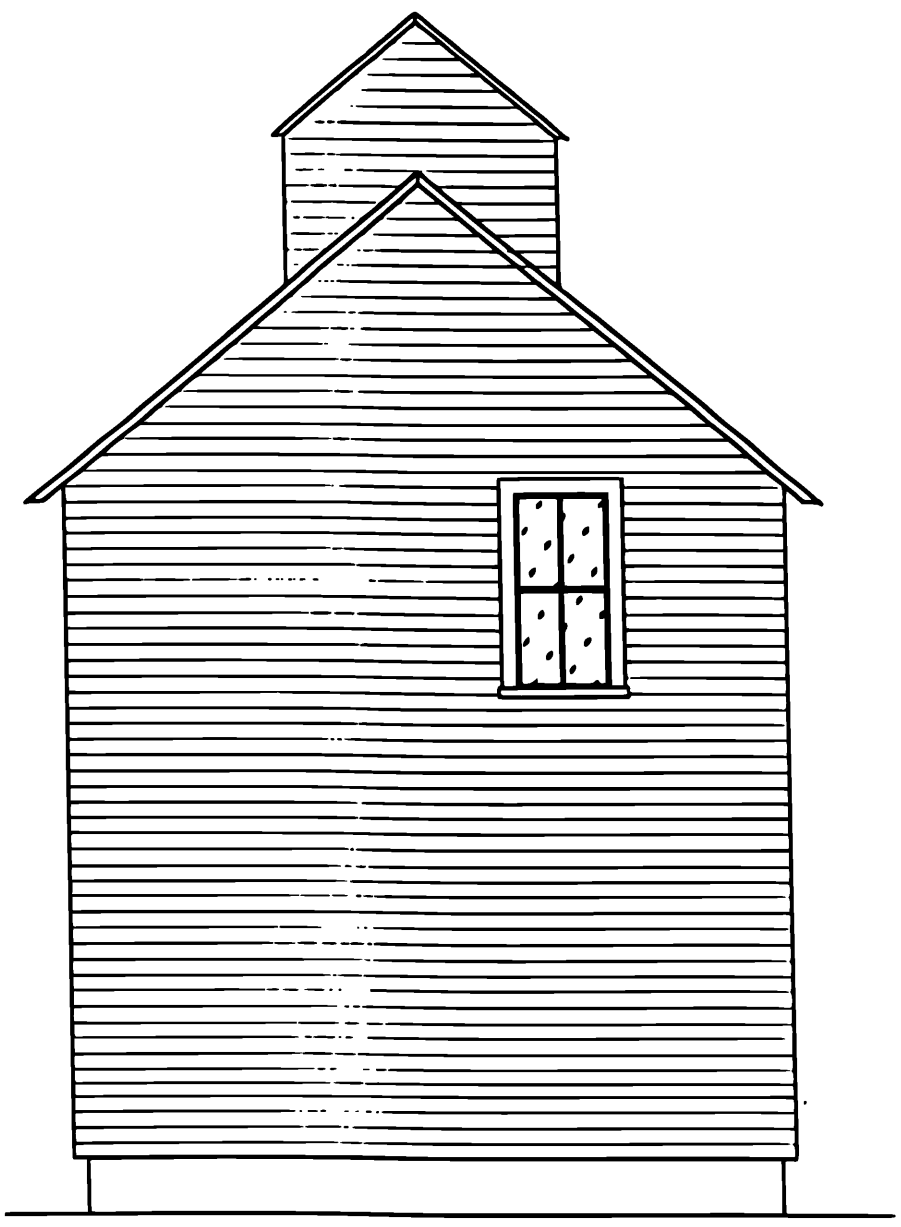

Massie Building

South Elevation

0 ft 10 ft

mcl 02.04.01

Significance

Massie Station (1907) is significant as an unusually early and complete example of an early 20th-century radio station. The station was built by Walter Wentworth Massie, a pioneer in the development of radio both as a technological innovation and as a commercial enterprise. Constructed on the beach at Point Judith, Massie Station was one of a series of coastal radio stations designed to create a comprehensive system of ship-to-shore communication, one of the earliest successful attempts to make commercial use of radio. Though moved and now located on the grounds of the New England Wireless and Steam Museum, the building is remarkably well preserved. Further, it contains the full complement of Massie's radio equipment in its original locations and configuration, on its original table. This may be the oldest working wireless station extant. It is an extraordinary assemblage and an irreplaceable document for the history of communications.

Walter Wentworth Massie began experimenting with radio before the turn of the century during the decades that produced a burst of creativity in engineering for transportation and communication, a period when the development of radio was dominated by individuals who were both technological innovators and also entrepreneurs.

Massie (1874-1941) was a native of Providence, RI, the son of a banker. His experiments began in 1895. The existence of wireless effects had been known since 1877 when Thomas Edison discovered "etheric force." Edison's wireless work was widely reported, as was the work of other pioneers such as Dolbear, Lodge, Hertz, Tesla, Popoff, and (after 1896) Marconi. Massie attended Mowry and Goff's School in Providence and studied engineering at Brown University and Tufts University.

In 1896, Massie joined the Providence City Engineer's office. At his house on Public Street, he continued to carry out experiments with wireless communication. His interest and competence in wireless were locally known, and he often gave lectures and demonstrations. It was a lecture in 1903 that led to Massie's move into radio as an entrepreneur. In March, Massie held a public demonstration of radio communication—he received messages in a lecture hall from a wireless set installed in an automobile outside the hall. His partners in the demonstration were employees of Lee deForest of New York. On the basis of the demonstration, de Forest was engaged by the management of the *Providence Journal* to provide radio communication between mainland Rhode Island and Block Island, so that a summer edition of their newspaper could be

printed with up-to-the-minute news and the latest shipping observations. DeForest set up stations at Point Judith (in an existing house) and on Block Island (near South East Lighthouse), and in the summer of 1903 the *Providence Journal* published 49 issues of the *Block Island Wireless*, a small paper whose news was supplied via deForest's connection across Rhode Island Sound.

After a single season, however, the *Journal* was unhappy with deForest and abandoned the *Block Island Wireless*. Seeking to recover some of its investment, the *Journal* offered the management of the two stations to Massie. In the fall of 1903, Massie resigned from the City Engineer's office and began his career as a full-time "wireless man." Operating the Massie Wireless Company as a sole proprietor, he was now matched against other competing groups of stations, known as "systems," each headed by an entrepreneur who was often, like Massie, also an inventor and innovator, adapting and altering the stock of equipment necessary to send and receive messages. During the years between 1904 and 1912, Massie was a significant competitor.

Massie intended the two *Journal* stations to be the first of a network of stations that would provide ship-to-shore communications for coastal vessels. By early 1904, he had signed up the Fall River Steamship Line as his first client—he equipped their steamship *Plymouth* with wireless in March 1904. His installation on the *Plymouth* was located in a specially insulated stateroom, the sending and receiving apparatus arranged along a double shelf on two sides of the room, and including a recently patented oscillaphone detector. Establishing a pattern which he followed for the life of his company, Massie leased (rather than sold) the ship-board installations and hired the wireless operators who operated the radios.

As the *Plymouth* plied its daily passage between Fall River, MA, and New York, it passed well within the range of the Point Judith station, now identified by its call letters as "PJ," and operated by the Massie Wireless Company. The other shore stations within the *Plymouth's* reach were the U.S. Navy's Telefunken station on Goat Island, near Newport, RI, and the Stone Wireless Company's station ("PT") at the Brooklyn Navy Yard.

The *Plymouth* was not allowed to communicate with Massie's strongest competition, the coastal stations operated by Marconi, as this competitor maintained exclusivity, communicating only with ships with which he had contracts (a policy that was later abandoned.) In 1903, Marconi had purchased Edison's patent for wireless communication and had added additional patented innovations. But Massie was also making innovations to the standard equipment.

Following the success of the *Plymouth* installation, the Fall River Line contracted with Massie in 1904 to equip all of the line's ships with wireless, the first steamship line to radio-equip every one of its vessels. With Massie's initial success, other contracts followed, including the Enterprise Line and the New England Steamship Company (whose *Pilgrim* was the first radio-equipped vessel to steam from Providence.)[1]

The first Massie shore stations were the Block Island and Point Judith stations installed by deForest for the *Providence Journal*. The next to open in June 1904 was "WN," at Wilson's Point, South Norwalk, CT. Originally housed in a railroad signal shanty, "WN" was rebuilt in 1907. It was substantially more powerful than the first two stations and could communicate with the U.S. Navy's station in Key West. Massie installed station "HG" in Providence, on the roof of the Narragansett Hotel. Eventually Massie owned and operated several land stations (located, for the most part, near the busy northeast shipping lanes) and dozens of ship-board installations.

In 1907 Massie upgraded "PJ." To replace the house in which the station had originally been installed, he constructed the small building which is here nominated. Ruggedly built, it provided for living quarters for an operator and a radio room with views to the ocean on three sides. Its antenna tower was constructed of wood lattice, four feet square and 300 feet high; the original scale model of the antenna is still housed at "PJ." As there was no commercial electricity available at Point Judith, the station was powered by a bank of Edison LaLande primary cells of 600 ampere hour capacity; in 1909, the station was run by a gasoline engine, and its power was listed as 2KW.

The first Massie station on the west coast, "IAA," was installed in 1908. The Massie Company had been contracted to install wireless on the Pacific Steamship Company's *President* as it was constructed in Philadelphia. Arthur A. Isbell conducted the installation, then served as operator when the *President* made its way around Cape Horn to San Francisco, to become the first Pacific coast commercial vessel outfitted with radio. On arrival, Isbell built Massie's first western station.

Apart from the operation of its own system of stations, the Massie Wireless Company made radio equipment and entire stations for contract clients, including the military. In 1905, Massie supplied eight sets of radio equipment to the U.S. Navy which installed them in stations on both the east and west coasts. In 1906, Massie had contracts with the U.S. Army Signal Corps, the Coastal and Geodetic Survey, and the U.S. Navy.[2] He outfitted a number of stations

in Alaska for the Signal Corps.[3]

The company's manufacturing and management facilities were both located at 4 Market Square in Providence. Massie was an accomplished machinist, but the company's machine work was performed by German-born Rudolf Demler. He worked at a four-sided bench, using an Ames lathe, a Burke drill press, and a Burke milling machine, all flat belt driven from a common AC motor. Cabinet work was made by a man named Goddard.

Massie made a number of innovations in radio technology; he was granted 20 patents between 1904 and 1909. Among the notable inventions was his Resonophone receiver, which incorporates a butterfly condenser and two variable taps on the inductor. One of his most influential innovations was a patent combining a variable inductor and a variable capacitor, both activated with a single control. The arrangement produced an exceptionally wide tuning range. (In an apparent oversight, the U.S. Patent Office reissued a patent using this concept to Allen B. Dumont in the 1940s; in the same decade General Radio of Cambridge, MA—now Genrad—used the concept in a series of UHF wavemeters.)

In his methods of operation, Massie contributed to the development of operating standards in his fledgling industry. He published several articles on his special interest—the necessity for accuracy in measurement, especially in the determination of wavelength. In 1908, he co-authored (with Charles R. Underhill) *Wireless Telegraphy and Telephony*. He was one of the founding members of several professional organizations, including the Society of Wireless Telegraph Engineers and the Institute of Radio Engineers (now the Institute of Electric and Electronic Engineers).

In addition to the development of professional standards for the radio industry, Massie was a strong proponent of conservative and legitimate business practices. The early years of the industry were characterized, at least in part, by intense competition and get-rich-quick schemes featuring watered stock and decoy stations designed to attract capital and sell stock. Always conservative in his business, Massie incorporated his company in 1905; capitalized at $100,000 (later raised to $300,000), the company's stock was closely held.[4]

By comparison, Massie's strongest competition, the United Wireless Company was capitalized at $15,000,000, and issued stock freely. Purchasing small wireless companies, United bought up a number of small companies and cut prices ruthlessly. In 1910 United went into receivership; new management sold off the unproductive stations and raised rates, but the

industry as a whole had been damaged by the entire episode. Several of the company's officers were jailed for federal mail fraud, and the company's assets were purchased in 1912 for a mere $700,000.

But while it operated, United posed a serious threat to small conservative companies such as Massie's. In 1909, Massie merged his company with three other small radio systems to form the Continental Wireless Company; he was named vice-president and chief engineer. But Continental operated only briefly before it too became the focus of a federal investigation. Massie was cleared and held blameless, but at least one of his new partners went to prison. He finally closed operations in 1912 and allowed his company to be absorbed by the American Marconi Company, which had just won a series of critical patent cases. Massie was apparently offered a position by Marconi, but declined and accepted an unknown amount for the assets of the Massie Wireless Telegraph Company.

With his business now gone, Massie became a noted yachtsman; he sailed a Rhode Island-built cruiser named *Maurence*, served as commodore of the Rhode Island Yacht Club, and as admiral of all Narragansett Bay yacht clubs in 1913. During World War I he was commissioned as a U.S. Navy officer, organized and commanded the Navy's radio school on Goat Island off Newport, and prepared the texts used at the school. Following the war, Massie became city engineer for Cranston and did consulting as a radio engeneer. He eventually retired to his son's farm in Massachusetts and died in 1941.

Massie's "PJ" station at Point Judith ceased wireless operations before the first World War. The building was purchased by a Mrs. Cunningham who used it as a Western Union land line telegraph station, handling market information for the nearby fishing village of Galilee until just before the second World War. The building was sold and used for several decades as a summer house. In 1982 it was given to the New England Wireless and Steam Museum, which moved it from the beach at Point Judith (where coastal zone regulations now prohibited structures) to its present location. The museum has installed Massie's equipment (the gift of his daughter-in-law and grandson) and table in the locations documented by early photographs and by physical evidence at the station.

The move of Massie Station was accomplished with minimal impact on the building itself. The building was re-oriented—its observation tower originally faced south to Rhode Island Sound; it now faces north. Chief engineer for the project Richard B. Hanson oversaw the move which was performed by museum volunteers. Although the setting and orientation has

been changed, Massie Station remains an important document in the history of wireless communication. Its unique circumstance allows original wireless equipment to be seen in the context in which it was created. This may well be the oldest operating set of radio equipment extant and is a remarkable testament of the earliest days of the telecommunications industry.

Endnotes:

[1] Massie ship installations

Boston
Bunker Hill
Chester
City of Lowell
City of Pueblo
City of Taunton
Commonwealth
Enterprise
Fearless
George W. Elder
Goliah
Governor
Gypsum King
Humboldt
Iroquois
Kennebec
Lurline
Maine
Massachusetts
New Hampshire
Old Colony
Paul Jones
Pendleton
Pequonnock
Pilgrim
Plymouth
President
Priscilla
Private Hugh L. Willoughby
Providence
Puritan
Queen
Roanoke
Rose City
St. Croix
Tasco
Tatoosch

Massie land stations:

Point Judith, Rhode Island (PJ)
Block Island, Rhode Island (BI)
Providence, Rhode Island (HG)
Wilson's Point, Connecticut (NN)
Chatham, Massachusetts (??)
Lewes, Delaware (??)
San Francisco, California (IAA)

[2] U.S. Navy stations with Massie radio equipment:

Navy Yard, Washington, DC
Cape Blanco, Denmark, Oregon
Malabang, P.I.
Point Loma, San Diego
Table Bluff, Loleto, California
Beaufort, North Carolina
Charleston, South Carolina
Jacksonville, Florida
Newport, Oregon
Port Townsend, Washington
Tacoma, Washington

[3] Signal Corps stations with Massie radio equipment:

Circle City
Fairbanks
Fort Gibbon
Juneau
Nome
Petersburg
Wrangel
Yukon River

[4] Stockholders, Massie Wireless Telegraph Company:

Walter Wentworth Massie
Mrs. Walter Wentworth Massie
John Gardner Massie
Francis A. Cranston
James S. Kenyon
Edward H. Everson
W.R. Arnold, Jr.

Major Bibliographical References

Published Sources:

Half A Century with The Providence Journal. Providence. 1904.

Howeth, Capt. L. S., USN (Ret). *History of Communications-Electronics in the United States Navy*. Washington, D. C. 1963.

Laughter, Victor H. *Operator's Wireless Telegraph and Telephone Handbook.* Chicago. 1909.

Massie, Walter W. and Underhill, Charles R. *Wireless Telegraphy and Telephony*. New York. 1909.

Mayes, Thorn L. *Wireless Communication in the United States*. East Greenwich, R.I. 1989.

Nesper, Eugen. *Handbuch der Drahtlosen Telegraphie und Telephonie.* Berlin. 1921.

Robison, Lt Cdr. S.S. *Manual of Wireless Telegraphy for Use of Naval Electricians* (various issues). Washington, D. C. 1906-1911.

Newspapers

Providence Journal, March 18, 1903.

Block Island Wireless, July 9–August 29, 1903.

Providence Journal, October 2, 1903.

Providence Journal, March 29, 1904.

Providence Evening Bulletin, Saturday following March 29, 1904.

Providence Sunday Journal, April 3, 1904.

Providence Journal, April 24, 1904.

Providence Journal, April 26, 1904.

Boston Globe, May 11, 1904.

Boston Transcript, May 23, 1904.

Providence Journal, June 1, 1904.

South Norwalk Sentinel, July 1, 1904.

New York Tribune, December 16, 1905.

Boston Evening Transcript, December 20, 1905.

Seattle Morning Times, May 17, 1907.

New York Evening Sun, March 13, 1908.

Narragansett Times, August 7, 1908.

New London Telegram, January 21, 1909.

Providence Evening Bulletin, May 5, 1910.

Providence Evening Bulletin, June 10, 1911.

Providence Evening Bulletin, September 26, 1911.

Providence Evening Bulletin, March 8, 1925.

Providence Evening Bulletin, October 13, 1929.

Magazines

American Shipbuilder, May 4, 1905.

Scientific American Supplement, #1533, May 20, 1905.

Board of Trade Journal, April, 1905.

Electrical World and Engineer, July 29, 1905.

Electrical World, Vol. #7, 1906.

Railway Marine News, Page 8, September, 1908.

Electrician and Mechanic, September, 1908.

Telegraph Age, September 16, 1908.

Collins Wireless Bulletin, Vol. 3, #6, 1910.

The Antique Radio Gazette, Fall, 1983.

NMEA News, Journal of the National Marine Electronic Association, May-June, 1984.

Old Timers Bulletin, Journal of the Antique Wireless Association, Vol. 26, #3, 1985.

Post Cards

Cape Henlopen Wireless Station
#1173 Wireless Telegraph Station, Point Loma, San Diego, CA, Edward Mitchell Publisher, San Francisco, CA

Steamer *President*

Steamer *Priscilla*, #7383, Metropolitan News, Boston and Germany

Steamer *Pilgrim*

Steamer *Puritan*, equipped by Massie Wireless Telegraph Co., Providence, RI

Steamer *Plymouth*, September 20, 1904, Brooklyn, NY

Other Publications and Documents

Massie Wireless System, 1908 catalog in the New England Wireless & Steam Museum (NEWSM) Archives.

Minutes of the Massie Wireless System Corporation in the NEWSM Archives.

Unpublished Memoirs of Ed Gage, former Massie employee, in the NEWSM Archives.

Patents

Canadian	98,221	Condenser	March 27, 1906
	101,345	Oscillaphone	October 2, 1905
British	4221-06	Oscillaphone	February 20, 1906
	4220-06	Improvements in condenser	February 20, 1906
French	363,371	Oscillaphone	May 1, 1906
	363,372	Glass plate condenser	May 1, 1906
United States	769,005	Oscillaphone	August 30, 1904
	775,113	Coherers	November 15, 1904

786,578	Condenser and leak coil	April 4, 1905
769,780	Wireless Telegraph System	April, 1905
787,780	Change over switch	April 18, 1905
800,119	Coherer	September 19, 1905
820,363	Condenser	May 8, 1906
819,779	Oscillaphone	May, 1906
853,929	Improvements on Magnetic Detectors	May 14, 1907
859,092	Spark gap apparatus	July, 1907
886,302	Tuning coil and condenser	April, 1908
886,303	Spark gap apparatus, self air blasts	April 28, 1908
932,799	Coherer	August 31, 1909
935,386	Movable magnet in magnetic detector	September 28, 1909

Drawings

30 Engineering drawings of the Massie Wireless Telegraph System in the NEWSM Archives.