

Emergency Fleet Corporation Ship Construction in World War I in the Pacific Northwest

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In September 1922 George D. Perry, a California lawyer representing the Western Marine and Salvage Co., purchased 233 wooden vessels of the World War I emergency fleet for \$750,000, or approximately \$3300 per craft. Lying idle in the James River, the ships were taken to Alexandria, Virginia, stripped of their engines, and towed downriver to be burned so that the iron and steel could be salvaged.¹ Eventually 152 wood and composite vessels were hauled into Mallow's Bay on the Maryland side of the Potomac, about six miles downstream from Quantico, Virginia, until the poor scrap market in the late 1920s halted the process.² Thereafter the hulks remained beached in the shoal waters of Mallow's Bay until early in World War II, when there was a renewed demand for steel and iron scrap. Once again they became important, but the cost of salvage soon ended the project.³

What does this have to do with wooden shipbuilding in the Pacific Northwest during World War I? In 1992 the Potomac River Museum sponsored an archaeological survey of the Mallow's Bay site. A related archival search unearthed a survey map, dated 11 August 1929 and drawn by the Corps of Engineers, which gave the positions and names of 152 hulls in the bay.⁴ While researching the vital statistics of each, it was noted that eighty-five were built in either Washington or Oregon and seven in California. Of the fifty-eight shipyards represented among the hulls at Mallow's Bay, twenty-one were in the Pacific Northwest and four in California.⁵ The preponderance of Pacific Northwest hulls stirred my interest in the efforts of the Emergency Fleet Corporation (EFC) to construct a transatlantic bridge of vessels to France during World War I.

In August 1916, while the US was still at peace, Congress passed a bill creating a United States Shipping Board (USSB) to regulate and promote American water transport. On 20 March 1917, F. Huntington Clark and Frederick A. Eustis proposed that the USSB create a company to construct between 500 and 1000 wooden vessels to offset losses to unlimited German submarine warfare. The next month, the EFC was created.⁶ Even before the EFC was approved, Theodore Brent, a USSB Commissioner, toured the west coast to investigate the ability of its shipyards to produce wooden vessels. Brent even took it upon himself to place trial orders for about a dozen wooden craft.⁷

While the EFC was being organized, officers of the Foundation Company of New York were called to Washington to discuss the feasibility of having engineering and construction firms build wooden vessels. As a result, the company was commissioned to

The Northern Mariner/Le Marin du nord, IV, No. 4 (October 1994), 15-22.

build a shipyard in New Jersey. It also acquired an order from the United Kingdom's Imperial Munitions Board (IMB) to construct the hulls for five 2800-ton wooden cargo steamers. The Foundation Company selected Victoria, BC, as the site for a yard to supply these hulls. Four ways were laid, with enough property purchased for an additional seven. On 27 July 1917, the first keel was laid and the initial hull was launched exactly five months later. Although the IMB had contracted with other west coast yards, the launching of the *War Songhee* occurred a month ahead of the nearest competitor. A French contract for forty 3000-ton wooden auxiliary schooners to be delivered by December 1918 was also received in July 1917.

The Foundation Company decided to build two entirely new ten-slipway yards on the Pacific coast because of favourable labour conditions and local availability of suitable timber. Portland was selected for one yard. Located in the city centre on the Willamette River, the yard adjoined the area's two largest lumber mills. The second was located on tidal flats northeast of Tacoma, Washington, facing east along the Hylabos waterway. The Portland and Tacoma yards were almost identical, except that Tacoma needed a planing facility while timber could be delivered already planed at Portland.⁸

By December 1917 the EFC had established a number of divisions to oversee ship construction. Districts seven, eight, and eleven were the west coast districts. District seven, the Southern Pacific, included ten steel and ten wooden shipyards, all in California except the Kruse and Banks wooden yards in North Bend, Oregon, and Coos Bay Shipbuilding in Marshfield, Oregon. District eight, the Northern Pacific, included ten steel and fifteen wooden shipyards in Washington, while district eleven administered twelve wooden yards in Oregon and the G. M. Standifer yard in Vancouver, Washington.⁹

In 1917 Theodore E. Ferris, the chief naval architect, designed a 3500-deadweight ton (dwt) wooden steamship that became the EFC's model. Soon others entered the field and eventually nine other designs — Hough, Allen, Dougherty, Grays Harbor, McClelland, Pacific American Fisheries, Peninsula, Seattle, and Supple and Ballin — were built.¹⁰ At Mallow's Bay the distribution of Pacific Northwest-built types is as follows:

Ferris	63
Hough	14
Supple and Ballin	4
Grays Harbor	3
Peninsula	4
Pacific American Fisheries	4
	92

It should be noted that some Supples and Ballins, and all the McClellands, were composites with iron or steel frames and wood planking. The cost of a wooden cargo ship averaged \$676,703. The contract value was \$533,786 plus \$74,981 for overhead and administration, \$6100 for a wireless, \$7500 for finishing lumber, \$25,000 for the

installation of machinery; and \$29,336 for miscellaneous materials. Using the same cost factors, a steel cargo vessel's average cost was \$1,287,547."

The sudden demand for wooden ships led to a spate of shipyard construction. On 1 November 1917, the EFC's Wood Ship Division reported fifty-one yards building wooden vessels. By 1 September 1918, there were 130, twenty-eight of which (with 122 slipways) were in districts eight and eleven. In addition there were ten steel shipyards, all in district eight, with forty-nine slipways. The demand, especially for wooden vessels, attracted many inexperienced firms.¹² One was Grant Smith-Porter, with sites at Aberdeen, Washington, and Portland, Oregon, which became the most prolific producer of Ferris and Hough-type wooden cargo vessels on the Pacific coast. The Portland yard launched twenty-five complete ships between 17 February and 21 November 1918, plus eight more keels. The yard's initial launch was *Wasco* on 17 February 1918. EFC records show that Grant Smith-Porter accounted for 26.6% of all keels laid, 38.8% of all vessels launched, and 57.7% of all deliveries by the thirteen wooden yards in district eight, exclusive of the eleven cargo vessels turned out in Aberdeen between 17 March and 5 November 1918.

In early July 1917, the future site of the Grant Smith-Porter yard in Portland was still a tidal swamp. Within a year, twenty feet of water had been eliminated from a 2.6 million square foot area and 400,000 cubic yards of mud had been dredged from the river. Some 200,000 piles were driven, over which planking was laid to form the base for the mould loft and office buildings. Finally eight sheds were constructed over the slipways. All this was achieved under the direction of Grant Smith and Eric V. Hauser of the Grant Smith Company and Andrew Porter of the Porter Company. Neither firm had any shipbuilding expertise but were internationally recognized in railway work. The actual construction was overseen by Paul N. Carlson and George Teufel, both still under thirty years of age. Almost as great a problem as building the yard was the task of obtaining skilled shipworkers. In order to resolve the problem, Grant Smith-Porter opened a training school. By June 1918 the yard employed nearly 6000 men. Unlike the Portland yard, the Aberdeen works did not begin from scratch. Instead, in June 1917 Grant Smith-Porter bought the Peterson Shipbuilding Company. The five commercial vessels then on the ways were completed and four additional ways added for EFC vessels. On 17 March 1918 the first contracted hull, *Manado*, was launched; by 5 November ten additional ships had been launched. The Aberdeen yard eventually employed 1600 workers. Morale was maintained by a company band, baseball and football teams, and a bowling league.

By the winter of 1918 Grant Smith-Porter was the most prolific company in the EFC wooden ship program. When the United States entered WWI, Grant Smith-Porter offered its entire resources for any government service. The offer was accepted by the EFC and former international railroad construction was directed into the shipbuilding program. Several conditions enabled Grant Smith-Porter to achieve amazing success in a field in which it had little experience. Grant Smith-Porter did not exactly begin from scratch. The company's initial action was to purchase the Peterson Shipbuilding Company of Aberdeen, Washington, thereby acquiring a functioning yard and the nucleus of experienced yard workers. In constructing the company's major yard in Portland, Oregon,

Grant Smith-Porter was most likely the beneficiary of organizational and financial practices developed over the years as a major international railway construction firm. A total of fifty hulls — twelve Hough and thirty-eight Ferris — were turned out by Grant Smith-Porter. The Aberdeen yard specialized in Ferris designs; while for the period of February to May of 1918, the Portland yard specialized in Hough designs. Both types were designed with as few curves as possible to accommodate carpenters with the limited shipbuilding experience. With standardized hull designs the Grant Smith-Porter supervisors organized a force of 1500 mechanics each with a specific skill who in teams passed from hull to hull in a preplanned sequence completing the required tasks as needed. This novel operation replaced the traditional building method where one gang with many skills worked in a hull from start finish. Workers unfamiliar with shipbuilding needed to learn only one skill. To aid in this "human assembly line," Grant Smith-Porter established its own on-site training school to transform unskilled workers into a team member. In order to improve worker responsibility and morale, Grant Smith-Porter instituted regularly scheduled meetings between workers and supervisors to discuss problems of hull construction. Morale was also kept high by availability of extensive leisure activities.¹³

The twenty-five years before World War I saw the growth of the wooden ship construction on the Pacific Coast. Although there had always been a great supply of Douglas fir in large sizes and lengths, it was not until the late 1870s that the San Francisco underwriters sanctioned its use. A lack of skilled workers also impeded the growth of the industry. By the late 1890s, however, barkentines and great schooners from 800 to 1600 gross tons were being constructed for the lumber trade. The wooden sailing ships industry centered in the Puget Sound area where seven or eight yards between 1900 and 1910 turned out seventy-three four-masted schooners, four five-masted schooners and fifteen four-masted barkentines all under 1300 tons. Between 1910 and 1915 no four- or five-masted vessels were built and the industry appeared to be in decline. The demand for vessels brought on by the outbreak of hostilities soon increased the number of wooden yards to over thirty. Between 1916 and 1919, 125 barkentines and schooners were constructed. These same yards then converted to the construction of wooden steamers for the EFC. Prior to World War I steel shipbuilding activity in the Pacific Northwest had not been extensive due to the distance from the steel producing centres. Between 1900 and 1909, Oregon and Washington each reported only one shipyard capable of launching a steel vessel of 2000 gross tons. During the years of 1910-1914, Washington increased its steel shipyard count to three while Oregon still reported only one. By the 1915-1921 period the demand for steel vessels saw nineteen yards in Washington — mostly Seattle — and eleven in Oregon — mostly Portland.¹⁴

What impact did shipbuilding have on the cities of the Northwest? Portland was home not only to Grant Smith-Porter but also to four steel and sixteen more wooden shipyards. On 22 May 1918, the local Chamber of Commerce reported that between 10 December 1916 and 22 May 1918 the number of steel shipyards increased from three to four while wooden yards grew from six to seventeen. The number of employees soared

from 4200 to 29,750 and monthly payrolls rose from \$302,400 to \$3,213,000. The value of contracts escalated from \$22,250,000 to \$175,300,000.¹⁵ In April 1918 Seattle published a study of the impact of shipbuilding for the year ending in February. In 1917 the four steel and three wooden shipyards built twenty-nine ocean-going vessels. Between November 1917 and February 1918, Seattle yards launched sixteen steel steamships of more than 7500 dwt and four wooden vessels of over 2600 dwt, worth more than \$200 million. Seattle prided itself on being the steel shipbuilding centre of the region. In April 1918, the city reported four operating steel ship construction plants, with two additional yards about to be completed: the Patterson-MacDonald yard (five steel and five wooden ways) and the Erickson Engineering Company (five steel ways). As the steel slipways increased, so did the wooden ways — from five in 1917 to forty-seven by early 1918. Shipbuilding plus its auxiliary industries employed an estimated 27,000 men by 1918.

The pride of the Seattle steel shipbuilding fraternity were the Skinner and Eddy yards, which on 24 November 1917 launched the 8800-ton *Seattle* in the record time of seventy-eight working days. One month later the similar *Absaroka* was launched from the same yard. Although *Seattle* was the eighty-fourth contract awarded by the USSB, it was the first directly contracted EFC vessel launched in the US. Credit was due to Skinner and Eddy's General Manager, David Rodgers, who developed a system of fabrication and was able to minimize worker dissatisfaction. Rodgers' fabrication system overcame the disadvantage that the nearest source of steel production was half a continent away. Another Seattle steel shipyard was Seattle Construction and Dry Dock Company, the first steel yard in the region and the builder in 1905 of USS *Nebraska*, the only battleship ever launched on the coast north of San Francisco. Employing over 5000 workers, in 1917 Seattle Construction and Dry Dock launched the 12,000-ton steel steamer *Walter A. Luckenback*, the largest steel vessel ever built in the Pacific Northwest. The remaining two steel yards in Seattle were J.F. Duthie and Company and Ames Shipbuilding and Dry Dock. Supporting these four yards was a complete steel forging plant, the only one west of the Mississippi, which sent steel frames to yards from Oregon to California.¹⁶

In addition to steel and wooden slipways, the other need was for both skilled and unskilled workers. The shortage was exacerbated by an estimated national deficit of 250,000 skilled workmen. Each state was assigned a quota. Washington was to recruit 5906 workers; Oregon, 3204; and California, 11,310.

The quotas were based on a formula which took into consideration a *states'* population and its war related industries. The states assigned the largest quotas were New York, 39,526; Pennsylvania, 32,771; and Illinois, 23,662.¹⁷ In Seattle and other Pacific Northwest cities and towns the challenge was to provide housing and transportation for these workers. In Seattle, letter carriers canvassed available housing, including vacant buildings that could be converted into dormitories. The Standifer Yards in Vancouver, Washington, also needed on-site housing. By August 1918 a modern hotel for 500-600 persons was under construction plus 100 cottages and bungalows. The hotel was 150 feet wide, 300 feet deep and three stories high. Each room was to have steam heat and hot and cold running water. Special features included a library, billiard room, and dining hall. The

cottages came in six different styles and were erected on forty-six by 110-foot lots. The cost of the housing project came to \$350,000. The construction tally showed 107 houses for 214 men, 210 apartments for 315 men, and one hotel housing 237.¹⁸ Since many new workers were not unskilled Seattle, following the lead of Tacoma, opened a school under the supervision Captain W. W. Varney to train 500 carpenters.¹⁹ Funds for transportation were allotted to various communities to the sum of \$12 million nationwide. Tacoma received \$232,000 for transportation to Todd Dry Dock, while Portland was allocated \$167,250 to build a railroad to the Northwest Steel Company. In Seattle \$377,000 went for transportation to serve the steel shipyards. In addition special train service was inaugurated for the Standifer yards in Vancouver, Washington, and Seattle.²⁰

By 1922 EFC construction had ended. The Skinner and Eddy Yard #2 in Seattle had closed and been sold. In Portland the Columbia River Shipbuilding Yard for steel vessels was closed, but the USSB could find no buyers for the \$465,000 facility, which was abandoned after the salvageable property had been removed.²¹ In Vancouver, Washington, twenty homes and one hotel were unsold and their mortgages were turned over to the G. M. Standifer Company.²² The public railways built for workers in Portland and Tacoma were a matter of dispute between the USSB and city fathers; eventually both cities authorized bond issues to purchase the systems.²³ By 1927 the EFC was defunct and its remaining assets transferred to the new Merchant Fleet Corporation.²⁴

Several "firsts" came out of the Pacific Northwest shipbuilding effort. For example, the first wooden cargo vessel delivered to the EFC was the Hough-class *North Bend*, built by Kruse and Banks at North Bend, Oregon, and launched on 1 December 1917.²⁵ The record for the construction of a wooden cargo vessel was set by Gray's Harbor Motor Ship Corporation of Gray's Harbor, Washington. The keel for *Aberdeen*, a Gray's Harbor-type, was laid on 9 September 1918 and delivery was consummated only twenty-seven days later.²⁶ Two new mechanical devices were introduced at Pacific Northwest yards. At G. M. Standifer in Vancouver, Washington, a pneumatic caulking gun driven by compressed air was displayed in the spring of 1918. A time test showed that the two-man gun could drive thirty-five feet of one-seam caulking in 3.5 minutes. Built on the same principle as a sewing machine, it was estimated the gun would lower the cost of larger wooden hulls by one-tenth.²⁷ Meanwhile, at the St. Helens yards in Oregon, Johannes Emil Christensen invented a compressed air planer. When the prototype weighed 150 pounds, George L. Kraber of Portland reduced it to a sixteen-inch model weighing only ten pounds. In a test one workman used it to plane 355 square feet of lumber in five hours. In comparison eight men working by hand planed only 275 square feet in seven hours. It was estimated that the power planer would release 2000 men for other work.²⁸ During the early months of 1918, the first female shipbuilder appeared at the Elliot Bay Shipbuilding Company near Seattle. This distinction went to nineteen year-old Marguerite Gothe of Wisconsin, who worked as a planer.²⁹

The final national tally for vessels requisitioned by, or constructed for, the EFC, including cargo and passenger vessels, tankers, tugs, barges and even sailing vessels was 2247 vessels. The final tally by construction material was as follows:³⁰

Contract steel	1307
Requisitioned	389
Wood	521
Composite	18
Concrete	12

Of this total, Oregon supplied twenty-five requisitioned steel vessels, sixty-four contract steel vessels (of which fifty-seven were cargo types), and 125 wooden vessels (ninety-eight cargo). Washington contributed forty-five requisitioned steel ships, 126 contract steel vessels (all cargo), and 134 wooden vessels (eighty-five cargo).³¹

There is a common belief that the wooden fleet did little for the war effort. By the Armistice shipyards had delivered eighty-seven wooden and nine composite vessels. Of these, fifty-five wooden and seven composite vessels had sailed, mostly in the coastal or Hawaiian trades. In 1919, 167 wood and composite vessels sailed to Europe and back, while forty-nine carried cargoes along the east coast.³² By 1920, however, the decline in demand brought on the massive lay-up which eventually led to the scrapping activities at Mallow's Bay.

As the EFC hulks rotted in Mallow's Bay, American wood and steel shipyards also sank into disrepair. The return to normal routings and the decline of military demand for shipping caused a severe over-supply of tonnage. The wood yards closed with the Armistice and the cancelling of the EFC contracts. The steel yards could not compete with foreign yards where vessels could be built from thirty to sixty percent less than American yards. In the period of 1922-29, Washington reported only four steel yards while in Oregon only two yards remained operational. The wood yards would never recover and not until 1940 would the Pacific Northwest see a revival of steel shipbuilding.³³

NOTES

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1. United States Shipping Board (USSB), *Seventh Annual Report* (Washington, 1923), 147.

2. National Archives Annex, Suitland, MD, Civil Works, Records of the Chief of Engineers, Record Group (RG) 77, Bonds to Insure Removal of Dismantled Vessels, Brigadier General Edgar Jadwin, Corps of Engineers, 27 April 1925, Box

1401, Folder 7175, Part I, Rivers and Harbors File, 1923-1942.

3. National Archives, Washington, Records of the Reconstruction Finance Corporation, 1940-1945, XXXI-XXXVI, Civil Reference Branch, RG 234, Minutes of the Metals Reserve Corporation.

4. United States Corps of Engineers, Baltimore, MD, Survey of Grounding Area, Potomac River at Mallow's Bay, 11 August 1929.

5. American Bureau of Shipping, *Record of American and Foreign Shipping* (New York,

1921); and Department of Commerce, Bureau of Navigation, *Merchant Vessels of the U.S.* (Washington, 1921-1925).

6. William J. Williams, *The Wilson Administration and the Shipbuilding Crisis of 1917* (Lewiston, NY, 1992), 91-92.

7. *Ibid.*, 73-74.

8. In April 1918, a record was set at the Portland yard when the keel of a 3000-ton vessel was laid eleven seconds after the launching of another vessel from the same ways. "The Foundation Company-Shipbuilders," *International Marine Engineering*, XXIII (July 1918), 387-396.

9. USSB, *Second Annual Report* (Washington, 1918), 127-128. At Mallow's Bay the distribution of wooden hulls is six from district seven, eleven from district eight and seven from district eleven.

10. William Joe Webb, "The United States Wooden Steamship Program During World War I," *American Neptune*, XXXV (October 1975), 279-280.

11. USSB, *Second Annual Report*, 102-106.

12. *Ibid.*, 139.

13. *Emergency Fleet News*, 28 November 1918; 1 January 1919. The Grant Smith-Porter Company is represented at the Mallow's Bay site with a total of twenty Ferris and four Hough-type hulls.

14. F. G. Fassett, Jr., *The Shipbuilding Business in the United States of America* (2 vols., New York, 1948), I, 40-53 and 157-158.

15. *Ibid.*, 11 July 1918.

16. "Seattle Speeds Up Shipbuilding" and "Seattle's New War Industries," *International Marine Engineering*, XXm (April 1918), 210-214.

17. *Emergency Fleet News*, 28 February 1918.

18. *Ibid.*, 15 August 1918.

19. "Seattle's New War Industries," 213-214.

20. USSB, *Second Annual Report*, 192-193.

21. USSB, *Fourth Annual Report* (Washington, 1920), 85.

22. USSB, *Seventh Annual Report*, 203.

23. *Ibid.*, 207

24. USSB, *Eleventh Annual Report* (Washington, 1927), 4.

25. *Emergency Fleet News*, 27 May 1918 and 10 June 1918. Webb, "United States Wooden Steamship Program," 286. *North Bend's* maiden voyage to Hawaii was in June 1918; its hulk now rests in Mallow's Bay on the Potomac.

26. W.C. Mattox, *Building the Emergency Fleet* (Cleveland, 1920), 108.

27. *Emergency Fleet News*, 13 May 1918.

28. *Ibid.*, 17 October 1918.

29. *Ibid.*, 25 March 1918.

30. Mattox, *Building*, 102-103.

31. USSB, *Fifth Annual Report* (Washington, 1921), 244.

32. Webb, "United States Wooden Steamship Program," 283-285.

33. Fassett, *Shipbuilding*, I, 53-55.