

CALIFORNIA STATE PARKS
OFFICE OF HISTORIC PRESERVATION

WARNING

NORLINA shipwreck and remains Jenner vicinity, Sonoma County

**THIS NATIONAL REGISTER OF HISTORIC PLACES
NOMINATION CONTAINS RESTRICTED INFORMATION**

ARCHAEOLOGICAL AND TRADITIONAL PROPERTY
LOCATIONS ARE CONSIDERED CONFIDENTIAL AND
PUBLIC ACCESS TO SUCH INFORMATION IS
RESTRICTED BY LAW (SECTION 304 OF THE NATIONAL
HISTORIC PRESERVATION ACT; SECTION 9(a) OF THE
ARCHAEOLOGICAL RESOURCES PROTECTION ACT;
EXECUTIVE ORDER 13007; SECTION 6254.10 OF THE
CALIFORNIA STATE GOVERNMENT CODE).

WHEN PHOTOCOPYING OR OTHERWISE
REPRODUCING THIS DOCUMENT, COVER ALL
LOCATION INFORMATION, INCLUDING THE ADDRESS
BLOCKS, VERBAL BOUNDARY DESCRIPTIONS, UTM OR
LATITUDE/LONGITUDE COORDINATES, MAPS, AND ANY
SECTIONS IN THE TEXT DESCRIBING LOCATION.

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in National Register Bulletin, *How to Complete the National Register of Historic Places Registration Form*. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions.

1. Name of Property

DRAFT

Historic name: NORLINA (shipwreck and remains)

Other names/site number: HARFLEUR, GEORGIANA, USS NORLINA

Name of related multiple property listing: N/A

(Enter "N/A" if property is not part of a multiple property listing)

2. Location

Street & number: Salt Point State Park

City or town: Jenner State: CA County: Sonoma

Not For Publication: Vicinity:

3. State/Federal Agency Certification

I hereby certify that this ___ 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 ___ meets ___ does not meet the National Register Criteria. I recommend that this property be considered significant at the following level(s) of significance:

___ national ___ statewide ___ local

Applicable National Register Criteria:

___A ___B ___C ___D

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

4. National Park Service Certification

I hereby certify that this property is:

- entered in the National Register
- determined eligible for the National Register
- determined not eligible for the National Register
- removed from the National Register
- other (explain:) _____

Signature of the Keeper

Date of Action

5. Classification

Ownership of Property

(Check as many boxes as apply.)

- Private:
- Public – Local
- Public – State
- Public – Federal

Category of Property

(Check only **one** box.)

- Building(s)
- District
- Site
- Structure
- Object

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

Number of Resources within Property

(Do not include previously listed resources in the count)

Contributing	Noncontributing	
_____	_____	buildings
<u>1</u>	_____	sites
_____	_____	structures
_____	_____	objects
<u>1</u>	<u>0</u>	Total

Number of contributing resources previously listed in the National Register 0

6. Function or Use

Historic Functions

(Enter categories from instructions.)

TRANSPORTATION: water-related

COMMERCE: business

Current Functions

(Enter categories from instructions.)

RECREATION AND CULTURE: outdoor recreation

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

7. Description

Architectural Classification

(Enter categories from instructions.)

N/A

Materials: (enter categories from instructions.)

Principal exterior materials of the property: METAL, WOOD

Narrative Description

(Describe the historic and current physical appearance and condition of the property. Describe contributing and noncontributing resources if applicable. Begin with a **summary paragraph** that briefly describes the general characteristics of the property, such as its location, type, style, method of construction, setting, size, and significant features. Indicate whether the property has historic integrity.)

Summary Paragraph

NORLINA (shipwreck and remains) is the submerged archaeological site of the steel-hulled tramp steamship NORLINA (1908-1926) located in Gerstle Cove, Sonoma County. NORLINA—also known historically as HARFLEUR, GEORGIANA, and USS NORLINA—was built in 1908 in West Hartlepool, England, at the William Gray and Company shipyard as HARFLEUR. J. & C. Harrison and Company ordered hull number 759 for service as a tramp steamship carrying bulk cargo. The steel-hulled single-screw vessel had two decks and measured 385 feet long, 51 feet 1.0 inches wide, with a hold depth of 26 feet 4.0 inches. Central Marine Engineering Company of West Hartlepool equipped HARFLEUR with a single reciprocating inverted direct action triple expansion condensing marine steam engine and two steel boilers. Between 1909 and 1926 the vessel served as a cargo steamship under several ownerships and nationalities including service during World War I under charter to the United States government. In August 1926, while enroute from San Francisco to Puget Sound with the Garland Steamship Corporation, NORLINA struck the jagged shoals south of Horseshoe Point and came to rest in Gerstle Cove near Salt Point. The steamship was a total loss and heavily salvaged before breaking up and sinking. There are no other historically reported losses of any other large metal-hulled steamship at Salt Point or within Gerstle Cove, therefore the archaeological remains

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

are those of NORLINA. The remains also contain features consistent with NORLINA's known construction specifics including engine type, hull material, and deck winches. The site contains a large amount of structural material from NORLINA's steel hull along with its steam engine, boilers, propeller blades, drive train, copper alloy piping, and cargo handling machinery. Fieldwork combined with archival documentation provided evidence of NORLINA's construction, use and wrecking providing a comprehensive study of a tramp cargo steamship operating in the early twentieth century. NORLINA retains all aspects of historic integrity.

Narrative Description

Historical Description

On November 9, 1908, HARFLEUR slid down the ways into the water and began its fitting out for service. The vessel was one of seven cargo screw steamships built by William Gray and Company in 1909. HARFLEUR was registered in London and received official number 125753. The Lloyd's of London class +100 A1 rated spar deck steel-hulled single screw steamship measured 385 feet long, 51 feet 1.0 inch wide, with a 26-foot 4.0-inch depth of hold. The steamship's gross tonnage was 4,596 and registered tonnage 2,846. HARFLEUR had two decks, a 35-foot-long poop, a center bridge house on a 111-foot-long bridge deck, and top-gallant forecandle on a 35-foot-long forecandle deck. The main deck was constructed of steel and the spar deck constructed of iron and steel. HARFLEUR was a purpose-built cargo steamship with a strong hull containing a straight stem, elliptical stern, cellular framework, deep (bulb angle) framing, a cellular double bottom, clear holds, six watertight bulkheads, seven water ballast tanks including aft and forward peak tanks (**Figure 1**) (*Mechanical World* November 20, 1908; Lloyd's Register Foundation 1908; Thomas 1992a).

HARFLEUR's main cargo space was forward and aft of the engine space with a depth of 21 feet to the main deck. A second smaller cargo space sat above that between the main deck and spar deck. The lower larger cargo hold was suitable for heavy bulk items like coal while the upper cargo hold was for lighter general cargo that may have been in boxes, sacks, or crates. Having two separate holds permitted HARFLEUR to carry more than bulk items and diversify its cargo carrying capabilities for charter managers. Ten cargo hatches, half on the main deck and half directly under those on the spar deck allowed openings for cargo holds access. The steamship's construction profile plan shows eight areas in the lower hold with steel shifting boards to prevent cargo from moving and compromising the vessel's stability. The shifting boards are a removable board that could be placed along a vessel's centerline to form a bulkhead when carrying loose cargoes such as grain. To prevent oxidation, the hull's inner side was painted and covered in cement and the outer hull was painted. The captain, officer, and engineer staterooms were located on the bridge deck and crew's berthing in the forecandle. Electric lighting was fitted throughout, a requirement of a first class steamship, making HARFLUR a working vessel with modern conveniences (*Mechanical World* November 20, 1908; Lloyd's Register Foundation 1908; Thomas 1992a).

NORLINA (shipwreck and remains)

Name of Property

Sonoma, California

County and State

Central Marine Engineering Company of West Hartlepool equipped HARFLEUR with a single reciprocating inverted direct action triple expansion condensing marine steam engine with cylinders measuring 26 inches, 42 inches, and 70 inches in width and a 48-inch stroke. William Gray and Company established the Central Marine Engineering Company on site at their shipyard to reduce the costs of engine and boiler manufacturing. The triple expansion engine was the preferred engine type for many tramps due to its economy, reliability, and crew familiarity with its operation. One smokestack extended up from the engine room space at the aft end of the bridge house. The 48-foot long engine room, located at the vessel's center, also housed two single-ended steel coal fired boilers 17 feet long by 11 feet 3.0 inches high with a working pressure of 180 pounds per square inch. The boilers supplied steam for the engine driving it to an average of 9 to 12 knots. The steamship had coal bunkers to hold 398 tons. A steel steam donkey boiler, with a working pressure of 90 pounds per square inch, powered a steam steering gear amidships, with a backup hand screw gear aft, and nine steam winches for cargo handling. On deck, HARFLEUR had two telescopic masts fitted with a fore and aft [schooner] rig, and small boats for going ashore or emergencies (*Hartlepool Northern Daily Mail* November 1908; *Hartlepool Northern Daily Mail* January 5, 1909).

NORLINA was modified during World War I to address the threat to merchant and naval shipping from German U-boats in the Atlantic Ocean. In 1917, while still operating as a civilian merchant vessel, NORLINA was armed with two 4⁷/₄₀ mounts, one each at the bow and the stern (NavSource Naval History 2022). NORLINA also had onboard a naval armed guard and U.S. naval reserve forces to operate the gun and provide defensive support. The government provided these measures to merchant vessels because mariners understood the threats to shipping and undertook actions to protect American lives and property, even when the United States was a neutral nation. Historical documents do not indicate where those deck guns sat and if there were changes to the deck to support the gun mount and ammunition storage. Since NORLINA was not built for passenger service, it is unknown if the interior arrangements were altered to fit the additional men besides the normal crew complement. The United States government acquired NORLINA in April 1918 under a charter agreement for cargo transport and underwent a conversion for naval service and manning by a Navy crew for its service during World War I. What changes were done to operate under military standards and specifications were not completely captured in historical records. There were likely adjustments to support officer and crew quarters and additional armament, magazines, bunkers, and equipment. In 1919, NORLINA was returned to its owners and reverted to civilian service. NORLINA continued to operate as a tramp cargo steamship until its loss in 1926.

Setting

NORLINA is located in the southern portion of Gerstle Cove, 0.34 miles southeast of Salt Point and 0.23 miles northwest of South Gerstle Point in 15 to 30 feet of water (**Photo 1**). At very low tides a part of the wreckage can be observed above the water (**Photo 2**). The main concentration of vessel material is 350 feet from shore with underwater visibility ranging from 5.0 to 20 feet. The nearest accessible point for water access is a small rocky beach south of where the park road dead ends with a turnout for day use. The shoreline's rocky landscape includes steep cliffs and

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

exposed rocky reefs with seasonal kelp forests. NORLINA's remains lie in a dynamic underwater environment comprised of large urchin covered boulders and rocks intermixed with patches of gradually sloping sandy seafloor. The cold coastal waters are subject to large swells and wind driven waves as well as tidal changes and surface currents. The shipwreck's structure serves as hard substrate for encrusting marine organisms and provides shelter for many species of marine life.

Gerstle Cove is an indentation located along the Sonoma County coastline that was part of Salt Point Landing, a historically important doghole port. The landing shipped out stone, lumber, railroad ties, and produce between 1853 and 1917. Salt Point Landing is one of fifty-seven doghole ports developed in Sonoma and Mendocino Counties and subsequently used to support the timber trade focused on the redwood and tan oak trees. These landings used a chute system, employing either a trough or wire or a combination of both to sling materials to and from the coastal bluffs to the decks of waiting ships. Salt Point Landing's two trough chutes sat on Salt Point along the western side of Gerstle Cove with a system of mooring hardware set within the surrounding rocks and at least two submerged anchors. By the time NORLINA wrecked near Salt Point Landing the local timber production and chute operations had closed. The area was still inhabited for ranching and agricultural businesses.

During Salt Point Landing's operation there were at least nine vessels lost in the cove. An additional two shipwrecks, including NORLINA, occurred after the doghole port's period of significance, still important historic resources that contribute to the area's maritime heritage landscape. The small rock filled cove at Salt Point where vessels navigated and contended with unpredictable weather resulted in vessels breaking from their moorings and being driven ashore while under the chute. Other vessels struck submerged rocks and compromised their hulls leading to a sinking and declaration of a total loss.

Not all vessels that came into trouble at Salt Point ended up wrecked and sunk. Many were pulled off after being grounded or had strong enough pumps to clear water from a breached hull. These vessels continued their trip sometimes leaving no trace of their incident or sometimes leaving remnants of their troubles like an anchor that was cut free or a rudder that broke off. Three such incidents are known to occur at Salt Point. As with the shipwrecks, archaeological remains may be present at Salt Point Landing of vessels coming into trouble and not leading to a full wrecking. The materials associated with these events contribute to the archaeological records and historical significance of Salt Point Landing as a busy doghole port which saw considerable vessel traffic supporting the timber and associated industries.

Archaeological Remains

NORLINA's remains consist of a main concentration of wreckage associated with the aft half of the vessel (see **Sketch Map**). The 130-foot-long drive shaft is the site's centerline and primary identifiable feature with a larger debris field encircling the main concentration of remains due to salvage efforts and natural site formation processes. The site's longitudinal axis is oriented nearly northeast by southwest with the vessel's bow end at the southwest and stern end at the

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

northeast both easily identified by the location of associated features. The shipwreck site measures 400 feet long by 200 feet wide with variable vertical relief of 5.0 to 15 feet. Historical photos and newspaper accounts of NORLINA breaking up indicate its bow section separated from the main hull and broke apart closer to the surf zone. The archaeological remains are consistent with those reports as there are scattered features associated with the bow in shallow water and no substantially intact forward hull sections. The stern section settled faster and stayed more intact as the vessel sank further offshore due to the weight of the machinery and reinforced hull construction. The steamship remains are largely covered with marine growth making it hard to distinguish smaller components from the surrounding natural rocky environment. Larger more obvious components are easily identifiable such as boilers and hull plates.

NORLINA's triple expansion steam engine is intact and lies slightly to starboard at the site's southwestern end. Components that are still in place include the three cylinders (low, medium, and high pressure) valve chests, piston rods, crosshead joints, steam chest, and associated eccentric rods (**Photo 3**). Additional engine parts identified are steam relief valves, condensing tubes and the steam pipe connecting the high and intermediate pressure cylinders. The connecting rods are attached to the crank shaft which runs towards shore to the northeast. The engine assembly, supports, and bedplate can help determine at what point NORLINA's forward section broke off. The engine measures 17 feet long by 16 feet high from top of the cylinder heads to the bottom of the crank shaft. The distance between the bottom of the cylinders near the stuffing box and crank shaft is 9.8 feet. The crank shaft connects to the drive shaft with a thrust bearing and its support mounted just aft of the engine.

The entire cylindrical drive shaft is made up of eight sections with a coupling in between each section to connect them together (**Photo 4**). The drive shaft is 1.5 feet in diameter and runs 130 feet in length indicating NORLINA's centerline and approximate keel position. The driveshaft's end stops abruptly at a coupling at the shoreside end. Near the drive shaft on the seafloor are several supports that held the drive shaft in place and centered within the vessel's lower hull. Besides the drive shaft there are two additional shorter drive shaft segments toward shore. One segment is 19 feet in length and by itself with a coupling at the end. The other segment, also with a coupling at the end, is 15 feet long. The shorter segment is next to a smaller diameter shaft segment. The paired shafts are near two broken propeller blades measuring 6.0 feet long. The shafts may be associated with the shaft that passes through the stuffing box and secures the propeller (**Photo 7**). As NORLINA broke up, its propeller and stern assembly may have struck the rocks and broke apart, impacting the propeller and drive train assembly.

The two steel boilers that provided steam for the engine, which historically were bolted down just forward of the engine, are located over 300 feet from the engine towards shore (**Photos 5, 6**). One boiler is approximately 120 feet from shore on its end and the second is 180 feet from shore also on its end. Both measure 17 feet in diameter by 11 feet high. Both boilers are partially intact with portions of the outer plating and access doors eroded away exposing the stay bolts, internal water tubes and fire boxes. Each boiler had three fire boxes that once held an oil burner and blower, those components are not present. Several of the water tubes have fallen out of the boilers and are on the seafloor.

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

There are at least eighty steel hull or deck sections scattered across the entire wreck site and one section of NORLINA's cellular double bottom including the keel (**Photos 8, 9**). The sections vary in size from small fragments to larger pieces measuring 15 feet long. There are single sections by themselves and other areas with concentrations of several sections near each other. Most of the sections are straight and some are curved. The curved sections may be from the turn of the bilge or stern. NORLINA was constructed entirely of steel pieces riveted together. Steel pieces make up NORLINA's hull and internal arrangements. Hull sections documented on site could come from the outer hull plates, frames, floors, girders, beams, stringers, bulkheads, cargo holds, decks, and deck houses. Some sections include plates and a series of parallel frames while others also have perpendicular pieces that may be stringers. The presence of so many hull sections over a large area is consistent with a vessel that slowly broke up and was affected by storms and waves. The hull plates start near the engine and run towards shore in a northeast direction, the same direction as incoming swells and waves. Most of the material divers observed and cataloged are those associated with the steel hull.

NORLINA was outfitted with nine steam-powered deck winches. The deck winches assisted with loading and unloading cargo in the holds and moving deck cargo loads in conjunction with the masts and derricks booms. As NORLINA broke up, the deck winches parted from the main deck and dispersed on the seafloor. There are ten winch features located on the site along with thirteen other components associated with structures that have axels or wheels (**Photo 10**). The features have a drum or several drums and a gypsy head or warping drum at the end. One of the features has wire rope attached to it. Each of the features has an axel running through the center allowing it to turn. As with the deck sections, winch parts are scattered across the wreck site with two small concentrations off the southeastern side of the drivetrain 60 feet shoreside of the engine containing most of the associated features. Surveys have also identified two additional features associated with cargo handling structures, a mast and a kingpost or vertical post(s) to support the derricks and booms with a cross piece. A larger piece of hull plating lies next to the kingpost fragment that might contain a support base. Additional items from NORLINA's deck are six bitts that have been located on the site (**Photo 11**). The bitts were positioned along both sides of the steamship's hull on the highest deck level to secure NORLINA to the dock. One possible fairlead and one possible hawsepipe are also present. A fairlead guides a mooring line to prevent the line from moving laterally across the hull edge. A hawsepipe is an iron or steel tube running through the bow for the anchor chain to run from the anchor to the windlass. The additional identifiable features on the NORLINA shipwreck site includes nine small boat davit pieces, a large amount of copper alloy pipes of various diameter and lengths, and a section of white and gray tiled floor (**Photo 12**).

Current and Past Impacts

After NORLINA came to rest in Gerstle Cove the vessel was subject to historic salvage activities in combination with the natural sea conditions along the coast slowly breaking the steamship apart and pushing the hull towards shore. Historical accounts do not indicate in detail what was salvaged, for example if the cargo was wholly or partially salvaged and/or if or what vessel

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

components were removed. Historical accounts did not also record how the salvage was conducted other than a line was fixed between NORLINA and shore and assisted with a donkey engine. It is not known if salvage tugs or other wrecking vessels were employed for removing larger items and the methods used. While salvors worked on NORLINA, the steamship's hull weakened from storms and broke in half within two months, sending the bow shoreward and the stern sinking in deeper water. These weather driven impacts can be observed from the scatter of remains over a large area and broken hull sections. The distribution and number of hull fragments indicate the vessel was subject to repeated impacts causing the hull to come apart and be dispersed toward shore, the direction of prevailing winds, waves, and swells.

More recent impacts may be associated with anthropogenic activities such as skin diving or SCUBA diving. While NORLINA is situated in an area not frequently visited due to its remote location and challenging conditions, divers do visit the site by swimming from shore. There is no information available to know how many divers annually explore the shipwreck site. In 1968, Salt Point State Park was established and then in 1971 the boundary was extended out to cover the waters within Gerstle Cove. Since 1971, there have been regulations in place prohibiting the removal of historical material from NORLINA. Surveys have observed some, not a lot, of smaller cultural material and the lack of that material type may indicate divers have potentially removed easily transportable items as souvenirs. Site monitoring will assist with determining the extent of human impacts to the site. Lastly, NORLINA is subject to unavoidable and unintentional natural impacts from storms. Turbulent sea conditions may move smaller lightweight items or possibly roll the two boilers. Other features are much heavier and secured in place amongst the rocks. Despite these impacts NORLINA retains integrity and still represents a steel-hulled cargo steamship dating from the early twentieth century.

Integrity

NORLINA's isolated location within Salt Point State Park has provided protection from commercial and residential development in the immediate area and a reduction in artifact collection and overall site disturbance due to park regulations and enforcement presence. The property conveys its significance through NORLINA's archaeological remains within Gerstle Cove.

Location [partially redacted]

The property retains integrity of location.

Design

NORLINA reflects the historic design of a steel-hulled cargo steamship. The vessel's archaeological remains contain a well preserved steel hull fragmented in several pieces still due to salvage and its wrecking location with visible construction details associated with a keel, hull plates, frames, stringers, decks, keel, and associated riveting and angle iron. The shipwreck site also includes an intact triple expansion engine, two boilers, and substantial amount of the drive

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

train, an important item to conclude the vessel type and use. The presence of several winches also indicates the nature of the vessel being that of a cargo steamship where those types of machinery are essential for cargo handling. Archaeological remains convey the essential design characteristics of early twentieth century cargo steamship. The combination of these elements, documented on the NORLINA site, lead back to the naval architects that designed and built a steamship with a strong durable hull capable of transporting large bulk cargo of a diverse nature around the world to ports with variable levels of infrastructure. The property retains integrity of design.

Setting

The setting of Gerstle Cove and the surrounding area at Salt Point has not changed much since 1926 when NORLINA wrecked, mostly due to the establishment of Salt Point State Park, which prevented development. In 1926, Salt Point Landing, a well-known and busy doghole port, had stopped operating its lumber chutes and the land was being used for ranching and farming. The coastal terraces surrounding Gerstle Cove in 1926 are extant, undeveloped with open grasslands with wooded areas further inland. A road follows the coastline and connects Salt Point with neighboring communities. Historic photos of NORLINA from 1926 show visitors picnicking and standing on the cliffs with the steamship in the background. The present view is unchanged other than NORLINA lies submerged. The property retains integrity of setting.

Materials

NORLINA retains the physical elements used in its construction and during its use. There are no modern materials represented in the property, only those from the steamship's construction, maintenance, and historic modifications associated with its career. Archaeological remains provide information on the type and grade of materials used. Due to the vessel's wrecking and loss within Gerstle Cove, the integrity of NORLINA's materials is intact and have been maintained. The property's materials largely exists as they did when NORLINA sank and was then salvaged. The only impacts to the materials have been the natural process of deterioration when manmade materials are deposited in salt water and subject to ocean conditions. As concretions develop over time, particularly around the metal components, as has been done on the NORLINA site, the degradation slows considerably, and materials will last hundreds of years underwater in a stable state. The property retains integrity of materials.

Workmanship

Integrity of workmanship is preserved as NORLINA retains its original hull, engine, and associated machinery through archaeological evidence. The only known changes to the steamship during its career was the replacement of the two coal fired boilers to oil fired ones and modifications during World War I for wartime service which included adding deck guns and a compliment of naval crew. NORLINA's shipbuilder, William Gray and Company, was well known for building strong cargo steamships, evidenced by the steamship's adaptability and long career. Workmanship is especially evidenced by the hull design with its cellular double bottom

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

and water ballast system specifically constructed to be robust and supportive for the large machinery positioned within the lower hull. Another example of workmanship is the triple expansion steam engine built by Central Marine Engineering Company, a subsidiary of William Gray and Company. The archaeological remains of the engine demonstrate the workmanship of its builder to produce a technologically advanced engine capable of operating for eighteen years. The high skill in naval architecture and ship construction possessed by NORLINA's builders launched a steamship able to successfully compete in the tramp and intercoastal trade along with being chosen by the United States government to be under charter for naval duties during World War I. The property retains integrity of workmanship.

Feeling

NORLINA's archaeological remains have the physical characteristics and qualities of a historic steel-hulled cargo steamship as built and then wrecked. A skin diver or SCUBA diver exploring the site will recognize key features that make the vessel a large steamship such as the triple expansion engine, boilers, cargo winches, and hull fragments. The site also conveys how salvage and the power of the ocean broke up the steamship and deposited material over a very large area on the seafloor. The distribution of identifiable items, such as the two boilers located far away from their historical location within the hull, and fragmented hull sections gives a feel for how the site formation process impacted the vessel. The surrounding coastal bluffs around Gerstle Cove are undeveloped and largely unchanged from 1926 giving a sense of isolation and historic sense of the past. The property retains integrity of feeling.

Association

NORLINA retains integrity of association as a steel-hulled cargo steamship, conveyed through the archaeological evidence combined with historic photographs and archival sources of information. The property retains integrity of association.

Comparative Analysis

NORLINA represents an English-built freighter that functioned as tramp cargo steamship during its career between 1908 and 1926. After a few years under British registry, NORLINA was sold to United States shipping interests where the vessel continued to be under American flag for the rest of its service including participating in merchant and military shipping during World War I. There are no properties categorized as an ocean going freighter listed on the National Register that were built around the same time, share similar design specifications, or had comparable merchant marine career activities. NORLINA is an important example of a vessel type common during the early nineteenth century that transported freight around the globe based on market supply and demand along with being under the United States Naval Overseas Transport Service during World War I.

There are twenty-four individual properties classified as a freighter listed on the National Register, two in Guam, one in Indiana, one in Louisiana, eleven in Michigan, four in Minnesota,

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

one in New York, one in Virginia, and two in Wisconsin. A freighter is defined as a ship designed to carry bulk materials which are not liquid. A freighter can be a steamship, as with NORLINA, or a motorship, one powered by an internal combustion engine. Fourteen of them were built during a similar time frame as NORLINA, 1890 through 1930. Twelve are shipwrecks, sunk between 1895 and 1947, and two are museum vessels. All except one was built for service on inland waters, specifically the Great Lakes, or within a canal making them of a vastly different design than NORLINA, a transoceanic steamship. Known as canallers, the vessels had their deck and pilot house forward and the engine space aft clearing the rest of the vessel's length in the middle for cargo holds to carry as much freight as possible while still fitting through the locks within the Great Lakes transportation system. The only freighter not associated with inland waters is the Japanese diesel powered military freighter *Tokai Maru* sunk in Guam.¹ *Tokai Maru* was built in Japan in 1930 for the Tokyo to New York passenger and cargo service through the Panama Canal and eventually sunk during World War II in 1943 when it was operated by the Japanese Navy for military transport, not a property with many similarities to NORLINA.

NORLINA's participation in World War I as a privately owned freighter carrying Allied supplies across the Atlantic and then as a United States government-chartered military vessel operated by the Naval Overseas Transport Service does not have a known comparable vessel or shipwreck listed on the National Register. While there are several purpose-built military vessels, in the form of shipwrecks, that participated in World War I represented on the National Register there is not a merchant freighter that was already in service and then taken over by the United States government during World War I. Two National Register listed shipwrecks have similar stories to NORLINA's and neither is an equivalent vessel. The first one is the shipwreck of the 1897 Scottish-built tanker *Lancing*, known as *Omsk* during World War I. In March 1918, the vessel was taken over by Great Britain from its Russian owners and put under command of The [British] Shipping Controller for wartime use. *Lancing's* activities during the war are unknown. The tanker was later sunk in 1942 during World War II by a German U-boat off North Carolina. *Lancing* is listed under Criteria A and D for its historical and archaeological significance associated with merchant shipping during World War II (Marx and Delgado 2013). The second vessel is the shipwreck of the motorship laker *Bluefields*. *Bluefields* is listed together with the German U-boat U-576 due to their proximity to each other on the seafloor and combined sinking event in 1942 during the Battle of the Atlantic in World War II off North Carolina. *Bluefields*, known as *Lake Mohonk* during World War I, was requisitioned by the United States Shipping Board Fleet Corporation while under construction in Wisconsin. Historical records do not indicate that *Bluefields* was ever used for wartime service, and it was returned to private interests in 1919. *Bluefields* is listed under Criteria A and D for its historical and archaeological significance associated with the Battle of the Atlantic in 1942 during World War II (Marx and Hoyt 2015).

¹ NORLINA is indicated in all caps based on how nominations have been done in the past, an unwritten standard accepted by the National Register since circa 1970, perhaps because typewriters could not do italics. Neither Bulletin 16A nor Bulletin 20 address vessel naming standards. Vessel names other than the subject of the nomination are in italics, the standard way to indicate a vessel name outside of NRHP nominations.

NORLINA (shipwreck and remains)

Name of Property

Sonoma, California

County and State

A final National Register property with maritime connections to World War I is the Mallows Bay-Widewater Historical and Archaeological District in Maryland that encompasses the remains of 101 wooden and composite steamships. The district includes a substantial component of the entire United States merchant marine fleet built between 1917 and 1922 and is considered nationally significant under Criteria A, C, and D for the district's association with the United States Shipping Board's Emergency Fleet Corporation, a civilian endeavor to build vessels and ferry supplies overseas to Allied nations and serving forces during World War I. While this timeframe overlaps with NORLINA's wartime service, the Mallows Bay vessels were purpose built for their wartime job, not taken over from existing maritime commerce as NORLINA was, are of a different design than NORLINA, and were controlled by a private organization, not the military. None of the steamships at Mallows Bay, or any of the wooden Shipping Board steamships, served during the war. Germany surrendered before the Shipping Board steamships were ready and many of the vessels ended up in Maryland after being sold to a ship breaker for scrap (Marx and Shomette 2014).

A comparative analysis of vessels similar to NORLINA—present in the archaeological record and not listed in the National Register—is difficult to conduct. There is no database of known archaeologically recorded sites or even located shipwrecks globally. The Wrecksite is the largest online shipwreck database with over 200,000 vessels entered (The Wrecksite 2022). By using the combined search terms of year built 1908, year sank 1926, and vessel type cargo ship, there are five results. Four of the vessels were British built, *City of Naples*, *Doris*, *Galileo*, and *Ivolina*, and one was built in Norway, *Dagmar*. *Galileo* was scrapped in 1927 and the other four have not been located. By expanding the search to include cargo vessels built in 1908 with no loss data included there are 255 results, with 20 of them under American flag at the time of their loss ranging from 1909 to 1946. Cause of their loss include ten being wrecked/aground, three from fire, two from a storm, two foundered, one abandoned, one torpedoed, and one from explosion.

Based on information included in the Wrecksite database, there are eight vessels with a general location of loss listed, three off Alaska, one off Barbados, one off Louisiana, one off California, one off Washington, and one off Oregon. The only one to have been positively located and archaeologically documented through side scan and multibeam sonar is the Irish built 378-foot-long triple decked steel steamship *Heredia* (1908-1924) in 115 feet of water off Louisiana. While the database has *Heredia* listed as a cargo steamship, it mainly serviced passenger routes to and from New Orleans therefore it fits better in the passenger liner category with its design including a large area devoted to accommodations rather than cargo holds. Site surveys indicate *Heredia* may have been dynamited so it would not be a hazard to navigation (BOEM 2021). *Heredia* is not a similar site to NORLINA due to its design and career. Due to the incomplete nature of available data in publicly searchable databases, like The Wrecksite, the National Register, as a database of properties determined significant, is the best means for a comparative analysis to NORLINA until archeologists create and populate a comprehensive database of located shipwrecks worldwide.

Archaeological Investigations

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

Advocational scientific divers have been researching and mapping the NORLINA shipwreck site over the past several years. Between 2017 and 2020, the team, headed by John Harreld, president of the Sonoma Coast Historical and Undersea Nautical Research Society (SCHUNRS), have conducted twenty-one SCUBA dives in eighteen days, totaling eighteen hours underwater, studying the shipwreck. Due to the site's size, at nearly a football field in scale, divers have systematically swum transects across the wreck site to add features to the sketch map, expanding what is known about NORLINA's construction, use, wrecking event, and site formation processes. Divers have used photography, videography, and measured drawings to complete an overall plan view site map. Additionally, Harreld surveyed Gerstle Cove with a kayak outfitted with a Hummingbird side scan sonar to assess the extent of NORLINA's remains and locate new concentrations of cultural material. While no formal archaeological fieldwork has been completed on NORLINA, the data gathered by Harreld's team has resulted in establishing a baseline level of documentation to demonstrate that there are substantial remains present that warrants a more detailed maritime archaeological survey. The data already gathered and evaluated also established there is considerable archaeological remains present that can answer research questions on a variety of topics important to maritime history (John Harreld 2021, pers. comm.).

Resource Management

NORLINA lies in California state waters within Salt Point State Park, Salt Point State Marine Conservation Area, and Greater Farallones National Marine Sanctuary. Historic shipwrecks and other submerged archaeological sites within California state waters are overseen by the California States Lands Commission, California Department of Parks and Recreation, and California State Historic Preservation Office. Portions of state waters are also co-managed by NOAA's Office of National Marine Sanctuaries where there is overlap with a National Marine Sanctuary. Archaeological resources are protected under California Public Resources Code sections 6309, 6313, and 6314 and California Code of Regulation 14 CCR § 929.

Salt Point State Park is managed by California Department of Parks and Recreation and was designated in 1968. The park covers 5,970 acres with 6.0 miles of rough, rocky coastline. The multi-resource park is important for its cultural and natural history, geology, and wildlife both on land and underwater. Its campgrounds and twenty miles of trails connect visitors to the beautiful land-sea interface. Ample recreational opportunities are available within the park including camping, hiking, fishing, horseback riding, kayaking, and skin and scuba diving. It is illegal to remove, injure, disfigure, deface, or destroy any object of archaeological or historical interest or value in a California State Park (California Code of Regulation 4308).

Salt Point State Marine Conservation Area is one of 124 protected areas designed to protect or conserve marine life and associated habitats. The system of marine protected areas under California Department of Fish and Wildlife were designated in 2009 to protect living marine resources. Within the Salt Point State Marine Conservation Area it is unlawful to injure, damage, take, or possess any living, geological, or cultural marine resource for recreation and/or commercial purposes. The recreational take of abalone and finfish is allowed. The regulations do

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

not include provisions related to the management of historical or archaeological resources (California Department of Fish and Wildlife 2021).

Greater Farallones National Marine Sanctuary is a federal marine managed area, part of a system of fifteen National Marine Sanctuaries and two Marine National Monument managed by NOAA's Office of National Marine Sanctuaries. Designated in 1981 as the Gulf of the Farallones National Marine Sanctuary, it originally encompassed 1,279 square miles just north and west of San Francisco Bay. In 2015, the ONMS expanded the Gulf of the Farallones National Marine Sanctuary north and west of its original boundaries to encompass 3,295 square miles, changing its name from Gulf of the Farallones National Marine Sanctuary to Greater Farallones National Marine Sanctuary. The sanctuary protects open ocean, nearshore tidal flats, rocky intertidal areas, estuarine wetlands, subtidal reefs, and coastal beaches within its boundaries. Sanctuary regulations prohibit possessing, moving, removing, or injuring, or attempting to possess, move, remove or injure a sanctuary historical resource (Greater Farallones National Marine Sanctuary 2021).

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

8. Statement of Significance

Applicable National Register Criteria

(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- A. Property is associated with events that have made a significant contribution to the broad patterns of our history.
- B. Property is associated with the lives of persons significant in our past.
- C. Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- D. Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations

(Mark "x" in all the boxes that apply.)

- A. Owned by a religious institution or used for religious purposes
- B. Removed from its original location
- C. A birthplace or grave
- D. A cemetery
- E. A reconstructed building, object, or structure
- F. A commemorative property
- G. Less than 50 years old or achieving significance within the past 50 years

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

Areas of Significance

(Enter categories from instructions.)

MARITIME HISTORY

COMMERCE

TRANSPORTATION

MILITARY

ARCHAEOLOGY: HISTORIC-NON-ABORIGINAL

Period of Significance

1908-1926

Significant Dates

1908

1917-1919

1926

Significant Person

(Complete only if Criterion B is marked above.)

N/A

Cultural Affiliation

N/A

Architect/Builder

William Gray and Company

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

Statement of Significance Summary Paragraph (Provide a summary paragraph that includes level of significance, applicable criteria, justification for the period of significance, and any applicable criteria considerations.)

NORLINA is eligible for the National Register of Historic Places at the national level of significance under Criterion A in the areas of Maritime History, Commerce, Transportation, and Military for its association with the tramp cargo steamship trade along with merchant and naval shipping activities during World War I. The property is also eligible at the national level of significance under Criterion D in the area of Archaeology: Historic–Non-Aboriginal as a property which has yielded and has the potential to yield information important to the understanding of steamship construction, use, shipboard life, historic salvage activities, and site formation processes. As a property type in Sonoma, California associated with bulk cargo transport by an oceanic tramp steamship, NORLINA is a vessel type currently not represented on the National Register. The period of significance begins in 1908 when NORLINA was launched and closes in 1926 when the steamship sank and was historically salvaged within Gerstle Cove.

Narrative Statement of Significance (Provide at least **one** paragraph for each area of significance.)

Criterion A: Maritime History

The English-built steel-hulled tramp steamship NORLINA is important to maritime history as a representative vessel type utilized across the globe at the beginning of the twentieth century for the bulk transportation of materials and goods. Due to the shortage of American-built steamships prior to World War I, United States companies purchased secondhand foreign-built vessels to meet merchant shipping needs. NORLINA was one of those steamships, which due to the reputation of its builder and commercial track record, entered the American fleet and served until its loss in 1926. NORLINA's wrecking event off the Northern California coast is illustrative of the hazards of shipping operations in an area of unpredictable weather and submerged hazards. NORLINA was also subject to historical salvage activities, a common occurrence to remove valuable cargoes and vessel components. NORLINA supported the maritime trades and is included in the maritime history of use of coastal and deep sea waters.

Criterion A: Commerce

NORLINA was a key instrument in the business of trading goods and commodities around the globe and more specifically in the export and import of materials associated with the United States. NORLINA's design as a tramp steamship provided a flexible platform that was adaptable and able to accommodate a variety of shipments depending on market demand. Over NORLINA's seventeen year career, NORLINA carried cargoes that included oats, coal, wheat, corn, sulphur, pyrite ore, nitrates, cotton, lumber, resin, steel rails and pipes, merchandise, and general cargo to Asia, Europe, the United States, and South America. Waterborne commerce was the lifeblood of the commercial market in the early nineteenth century, even internally between both coasts of the United States. Under NORLINA's various owners, the vessel participated in the

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

transoceanic coal and grain trade for four years, transatlantic sulphur trade for two years, and transatlantic carrier of Allied wartime supplies during World War I for five years, both as a merchant vessel and on charter to the United States military. During NORLINA's last period of use in the United States intercoastal trade it served various Atlantic and Pacific ports with transits through the Panama Canal for a five-year period. NORLINA's role as a bulk cargo steamship, while not glamorous as compared to a passenger liner, was the commercial link supporting the growth of the United States as a leader in industry, economics, and trade.

Criterion A: Transportation

NORLINA transported a variety of commercial and military goods both domestically and internationally during its career operating as a tramp steamship between 1909 and 1926. NORLINA's design as a cargo steamship, with a larger lower cargo hold for bulk materials and an upper level above that for additional materials, made it ideally suited for transportation of a diverse complement of items. The main deck also served as a place to secure additional loads that may be too sizable for placement below decks. NORLINA had a cargo handling system onboard including two masts, kingposts or vertical post(s) to support derricks and booms, along with nine steam powered cargo winches. As a tramp steamship NORLINA sailed between ports without a regular schedule. NORLINA's trips were based on what its owners could find for a charter therefore the steamship had the ability to load and offload its cargo when shoreside facilities were ill equipped or unable to assist. By being self-sufficient, NORLINA could service a larger number of ports and not be reliant on only docking at well-established facilities. NORLINA's design marks a technological milestone in ship design with the combination of a strong steel hull, large cargo holds, reliable triple expansion steam engine, coal and then oil burning boilers, a water ballast system, an electrical powerplant for lighting, and all the other modern advancements including a wireless radio. These factors contributed to American shipping interests seeking out British-built vessels, as was NORLINA, for their companies due to their high insurance safety ratings and proven record of longevity.

Criterion A: Military

NORLINA participated in World War I under bareboat charter to the United States government between April 1918 and May 1919. Based on NORLINA's use supporting the Allied military war effort, the steamship is eligible for listing in the area of Military. NORLINA's flexible design as a tramp steamship allowed it to be retrofitted for military use transporting materials across the Atlantic under the Naval Overseas Transport Service. The United States did not have enough military cargo vessels and looked to the private merchant marine to make up the shortage. Modifications were made to NORLINA for its temporary duty that included providing suitable officer and crew quarters, the addition of magazines, bunkers, wireless, signaling equipment, and armament meeting Navy standards. Prior to NORLINA's charter by the government, the steamship had already been outfitted with two naval deck guns, one at the bow and one at the stern, along with a naval gun crew while it was sailing as a merchant vessel during the start of World War I. During a period of roughly a year, the steamship was renamed the USS NORLINA, and made three trips to France delivering supplies to the American Expeditionary

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

Forces. The American Expeditionary Forces served on the Western front and focused on halting the German troop advancements on Paris. USS NORLINA's crew received the World War I Victory Medal for their service during wartime between June 18, 1918, through September 22, 1918 (Radigan 2021). While USS NORLINA was still under Navy control after war's end, it provided commercial merchant services until its release, a way to generate funds for the government. The bulk cargo steamship was a vital component to the Allied war effort and while not on the front lines of battle, NORLINA transported vital materials to overseas troops.

Criterion D: Archaeology: Historic–Non-Aboriginal

NORLINA's archaeological remains represent an early twentieth century steel-hulled oceanic cargo steamship wrecked, then salvaged. There are no surviving museum vessels of a similar vessel type and no comparable shipwreck site or historic extent vessel listed on the National Register. NORLINA is representative of a vessel type commonly used throughout the world in the late nineteenth and early twentieth century to transport bulk cargo. NORLINA is a well preserved tramp steamship scattered along the bottom of Gerstle Cove—close to shore and in shallow water making the steamship readily accessible for study. NORLINA's remains are likely to yield information important to history. The site's information potential is considerable and can answer questions about ship construction, marine steam engine and boiler construction, cargo handling, tramp steamship use, modifications for military use and then back to commercial merchant use, the wrecking event, salvage activities, and shipboard culture. Archaeological assessment of NORLINA's remains can also provide data about site formation processes and what conditions affect how a vessel breaks up and becomes distributed on the seafloor based on its design, wrecking event, salvage activities, and specific conditions based on sinking location. Data obtained from these studies can better equip archaeologists and cultural resource managers with information on shipwreck corrosion rates and the effects of oceanographic forces.

Archaeological Potential

Archaeological survey and research are ongoing on the NORLINA shipwreck site, mainly undertaken by SCHUNRS in a volunteer capacity. The level of survey and documentation is variable with the focus of the diver transects centered along and parallel to the drive train. No full-scale site survey with detailed measurements of all the features has been completed as well as determining if there are additional debris concentrations in deeper water or further away from the drive train including toward shore in shallower water. Due to NORLINA's large size, exposure to sea conditions that turned the vessel around 180 degrees after its grounding and then broke it apart, wave driven site formation process, and historic salvage activities, it is likely there are places outside the main wreck site where there are pockets of material. It is also likely there is material buried in the sand, surf zone, and shallow water near shore, and within the rocks at Gerstle Cove. One of the components not yet located is the bow section that broke off during the wrecking process and reportedly sank closer to shore near the wave break. The potential of additional submerged remains is of note as a systematic marine remote sensing survey utilizing a marine magnetometer and handheld metal detector has not been conducted in Gerstle Cove to determine the extent of the archaeological features located underwater and in tidal zones. While

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

SCHUNRS conducted a side scan sonar survey around the NORLINA site, the survey was not completed with a survey grade system or the addition of a magnetometer. Side scan sonar is not the most effective tool to located cultural material underwater in Gerstle Cove due to the presence of many rocks and variable terrain. A diver survey with a handheld metal detector has also not been conducted to identify additional features in areas where visual surveys have been completed. The amount of marine growth makes it hard to discern what is a rock and what is manmade. A sample of research questions, which can be explored through archaeological fieldwork and data analysis, are as follows.

- How do the archaeological remains compare with historical accounts of how the hull, engine, boilers, electrical system, etc. were constructed?
- How do the historical builder's records compare with the archaeological remains?
- How do the historical photos compare with the archaeological remains?
- Is there any indication of modifications or repairs to the vessel?
- Is there evidence of the vessel's cargo?
- Is there cultural material related to the crew?
- Is there physical evidence of the historic salvage activities?
- How did the salvage activities impact the vessel?
- Are there other concentrations of vessel material outside the main wreck site including the bow section?
- What conditions impacted the site formation processes?
- How did the site formation process affect where and what condition the remains are in?
- Is there any evidence of anthropogenic or natural impacts?
- What are the current threats?
- What additional efforts can be taken to better protect and interpret the site?
- How does NORLINA's remains compare with other shipwrecks along the California coast or other steel-hulled cargo steamships of the same time period?

Historical Background: Tramp Freighters

For most of NORLINA's career, the vessel operated as a tramp freighter. A tramp had no regularly scheduled sailings or regular routes, it followed market demand with a variable schedule to unfixed ports around the world all derived from what its managers arranged as charters. Tramps could be freighters, coasters, tankers, or any other specialized ship. In the 1910s and 1920s, a large portion of freight was transported in freighters functioning as tramps with a vessel often carrying a cargo for a single shipper. A freighter is defined as a ship designed to carry non-liquid bulk materials. A freighter could be a steamship, as with NORLINA, or a motorship, one powered by an internal combustion engine. A sailing vessel could also function as a tramp, less dependable and timely due to reliance on mother nature for propulsion. The development and regular use of the steel-hulled steamship at the end of the nineteenth century made that vessel type one of the predominate forms of a tramp freighter, a significant step in maritime history and waterborne commerce. Tramp cargoes were usually homogenous raw materials, low in value, and loaded to the ship's deadweight capacity. Tramp export cargoes from United States ports were bulky such as petroleum products, coal, grain, phosphate, steel,

NORLINA (shipwreck and remains)

Name of Property

Sonoma, California

County and State

cotton, or lumber. The large cargoes made up for the cheap prices due to economics of scale. Tramp import cargoes into the United States were petroleum products, iron ore, sugar, bananas, and molasses. “The tramp ship has been an important engine of industrial development, even of globalization, providing an economical and predictable means of moving raw materials from mine to mill, and basic foodstuffs from steppe to shop or prairie to plane” (Fenton 2013). The fast expansion of world trade between 1869 and 1914 caused a great demand for tonnage resulting in tramp ship activities increasing by 660 percent over that time, with an annual expansion of seven percent. After World War I, the trend continued with a steady demand for tramp ships with expected sporadic market depressions in the face of post war uncertainties (Gripaios 1959).

One benefit of managing a tramp is that its owners did not have to provide passenger services and accommodations, or permanent docks and wharfs as compared to liners that needed dedicated terminals and expensive amenities. A line vessel, or liner, could be a steamship or motorship and advertised set sailing schedule between the same ports. A liner is more commonly associated with the passenger trade and high value cargo items including manufactured goods, foodstuffs, mail, and specie, and could also be a freighter based on its owner’s business model. A liner’s design and operating costs were tied to attracting passengers and high value cargo freight rates along with having fast ships, which led to higher fuel consumption and allowance of space for passenger luxuries, a direct opposite to how tramp ships operated. “In very general terms it is possible to say that tramp ships kept the highly industrialized countries supplied with food and raw materials from all parts of the world, whereas cargo liners provided a network for the distribution of manufactured goods” (Gripaios 1959).

In comparison to a liner’s regular schedule controlled by its own company, a tramp vessel’s owners had several options for employing its fleet either by being its own independent company in charge or finding work or through charters. There could also be a combination of being run by the company and under charter. A charter could be for a single trip, known as a voyage charter; a period of time, known as a time charter; or a demise charter (also known as a bareboat charter), one that an owner provides solely the vessel without any crew, fuel, or stores. Voyage or time charters were the most regular route for vessels owners to employ their fleet. During a voyage charter a tramp most often carried bulk cargo while under a time charter it carried general cargo (Stewart 1997; Gripaios 1959).

Overall, a tramp had great flexibility as it could carry a variety of materials to ports all over the globe. A tramps’ profitability was influenced by supply and demand. Freighters, operating as tramps, were frequently bought and sold between shipping companies. Tramps could be engaged in numerous trades throughout their career under different owners with registry spanning several nations. The term tramp is derived from the British definition of an itinerant beggar or vagrant and is first associated with the maritime trade in the 1880s when steamships became more cost effective to operate over traditional sailing ships for bulk commodities. Steamships offered a way for efficient transportation of cargoes with Great Britain taking the lead on naval architecture, construction, and marine engineering that resulted in the early dominance of British-built bulk carrying steamships operating as tramps in the late nineteenth and into the twentieth century.

NORLINA (shipwreck and remains)

Name of Property

Sonoma, California

County and State

The origins of bulk carrying vessels are rooted in the demand for coal throughout England's east coast ports starting in the 1840s. Steam powered screw vessels came on scene in the 1850s and demonstrated they could transport low value commodities in large quantities. At first these early tramps stuck to coastal routes and slowly ventured into longer deep-sea voyages further proving their capabilities. The period after 1880 was one of innovation with tramps becoming bigger, steel hulls replacing iron hulls with more powerful steam engines. The epicenter of construction was at the shipyards along England's northeastern rivers Wear, Tyne, Hartlepoons, and Tees. Between 1890 and 1914, British yards continued to dominate tramp shipbuilding with more design diversity being developed. The three island design emerged as one of the most popular and long-lived styles. The three island vessel had a separate forecastle, bridge deck, and poop and could be a single or two-deck variety. The most important consideration in the use of steamships as tramps was its design. While any vessel type could function as a tramp, some characteristics were beneficial in supporting its job which most often spanned many years.

The development of iron then steel hulls combined with marine steam engines, boilers, and screw propulsion created a strong hull capable of large cargo loads with a reliable propulsion system. This combination of technological advancements allowed bulk freighters to economically operate and be commercially profitable. The steel-hulled freighter with a triple expansion steam engine and propeller was the most common tramp freighter in the early twentieth century with Great Britain dominating the trade both as ship owners and ship builders. The one-deck design was replaced by steamships with two or more decks with the two-deck design becoming the standard for most tramp ships. By 1914, the steam powered tramp virtually rendered the sailing ship extinct from widespread commercial use due to the steam tramp's cargo carrying capabilities and efficiency (Fenton 2013).

Tramp range was limited by fuel capacity and consumption rates, with boilers fueled with coal and then oil. Shipowners were satisfied with slower speeds in exchange for the economy of fuel consumption. A tramp charter did not specify a desired arrival date therefore speed was not a priority. A tramp's engine power was only sufficient to steam around ten knots and provide charter parties with an estimated trip time. A captain might need to stop several times enroute to his destination to take on fuel, a major consideration in operational costs and time frames. To combat needs of coal by steamships, coaling stations were established along the main trade routes. British tramp steamships often supplied the coal to these bunker stations. Even when a local coal supply existed overseas, owners preferred the Welsh coal shipped in. Coaling stations were in South America, South Africa, and the Far East (Stewart 1997; Fenton 2013). "For the tramp steamer, carrying bulk, homogenous commodities, carrying capacity, draught and economy in coal consumption were the principal considerations and it is readily understandable that speed was sacrificed in the interest of the other two variables" (Craig 1980).

There was special consideration in the construction of freighters possibly destined for the tramp trade. The tramp ship was inherently a British invention, with British shipowners and managers working with British naval architects and shipbuilders to develop vessel types and construction techniques that would be adopted by the United States and other countries' shipyards. Overall,

NORLINA (shipwreck and remains)

Name of Property

Sonoma, California

County and State

the considerations for tramp ship designers were economy of construction and operation, ease of loading and unloading, and safety built into a spacious and tough seaworthy hull. The earlier tramp steamship generally had four cargo holds with a 'tween deck, main deck, poop, and forecastle with steam engines amidships to increase stability. Board of Trade regulations, established by the mid-nineteenth century, focused on the design and construction of cargo steamships for safety at sea issues. Detailed criteria, rules, and regulations were created concerning ship design, construction, and uniform tonnage measurements. This was crucial when ships were surveyed, and insurance rating assigned. Lloyd's of London, the world's leading maritime insurance provider for over 300 years, set standards for ship construction and surveying with an eye on risk directly associated with their role as an insurer. At the time of NORLINA's construction in 1908, Lloyd's illustrated eleven steamship types covered in their annual vessel register based on their deck configurations. The varied profiles and deck houses located fore and aft with other raised decks amidships are associated with the vessel's functional use and for protection from weather meant for crew and cargo (Craig 1980; Stewart 1997; Fenton 2013).

Other steamship regulations dealt with ensuring adequate freeboard with load line markings to eliminate overloading, ensure proper trim, and minimize risk to crew and insurance underwriters. Guidance was published on cargo stowage and hazards to maximize the type and quantity of materials able to be carried. Hulls were not open spaces below deck they were divided with several cargo hold as well as additional ones fore and aft as vessel specifics provided. While a liner's cargo hold was designed to store a large variety of goods and multiple compartments to segregate items, a tramp had larger cargo holds to accommodate bulk items. Tramps sailed frequently in ballast, or with no cargo, along with partial cargoes therefore a system of ballasting was necessary for stability. Many vessels had a system of water ballast tanks fitted in the hull's bottom, ends, or sides, to stabilize the vessel at sea. Alternatively iron bars or cement could also be laid in the lower hull for ballast. Also, due to the variety of ports of call, tramps were often outfitted with loading and unloading apparatuses (booms, derricks, or cranes) since a port might not have suitable infrastructure for cargo handling. The captain and crew might not know where their next port might be until the vessel is being loaded therefore a vessel's design needed to adapt to unknown and changing port facilities (Craig 1980; Stewart 1997; Fenton 2013).

Due to the lack of American-built steamships participating in the merchant marine trades prior to World War I, American companies frequently purchased British and foreign built vessels for their fleets. From 1870 to 1910, half the British fleet of merchant vessels were tramp steamships (Stewart 1997). NORLINA was an excellent example of this trend and a British-built vessel that eventually came under American ownership. Tramp freighters were in demand starting at the end of the nineteenth century due to an increase in world populations, emigration, colonization, commercial industrialization, and demand for all types of goods and products. These influences needed large quantities of raw materials, mostly transported in tramps. As countries overharvested their own resources, businessmen looked to import those resources from abroad making a demand for tramps. The freight market was subject to fluctuations in costs, cargo rates, and markets supply or demand. The profitability of tramps was tied to these variations resulting in periods of prosperity and periods of depression. During the low times, tramp owners laid up one or more of their vessels until better economic conditions resumed to save financial resources

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

(Craig 1980). “The world of the tramp steamer was the most internationally competitive sector of the shipping industry, critically affected by violent cyclical fluctuations, national and international regulation, and the chance hazard of war, crop failure or surplus” (Craig 2003).

Transoceanic Coal Trade (1909-1912)

Great Britain’s maritime trades were pioneers in the construction and operation of tramp steamships. The first tramp shipbuilders were in the Tyne and the Wear and later in Hartlepool where NORLINA, launched as HARFLEUR, was built. Another concentration of builders was in the Clyde area, southeast of Scotland. By the turn of the twentieth century, British built ships carried one third of the world’s cargo and in 1901, forty-five percent of the world’s tonnage was under British flag. William Gray and Company of West Hartlepool, England built HARFLEUR for J & C Harrison of London, England. William Gray and Company’s formation dates to 1862 when William Gray joined into a partnership with shipbuilder J.P. Denton and started Denton, Gray, and Company in Hartlepool. Between 1863 and 1913, Denton, Gray, and Company built 835 vessels and after 1886 the collaboration exclusively focused on steel-hulled vessels. In 1869, William Gray and Company moved to West Hartlepool and changed its name in 1872 to William Gray and Company. By 1887, the yard’s success allowed it to expand from three to five building ways for vessels up to 500 feet in length. The yard grew even more and had eleven slipways in 1900. In 1908, the year of NORLINA’s launch, William Gray and Company launched six other vessels. The company remained open under three generations of the Gray family until 1962 with 1,123 vessels, primarily cargo screw steamships, launched from the William Gray and Company yard (Craig 2003; Thomas 1992a; *The Guardian* August 4, 1962; Shipping and Shipbuilding Research Trust 2021).

In 1909, after HARFLEUR’s trial trip on January 4, it joined thirteen other English-built steel-hulled steamships in the Harrison line and it had the largest tonnage of the fleet at that time. William Gray and Company built eleven other Harrison steamships between 1897 and 1911. Nine of the fourteen Harrison steamships in the fleet in 1909 were built in West Hartlepool with the other four from Sunderland or South Shields shipyards (Lloyd’s Register of Shipping 1910; Cooper 2012). Brothers John and Charles W. Harrison formed J & C Harrison in 1888 for the coal trade. The company were hulk and steamship owners, coal exporters, and foreign coaling agents. J & C Harrison prospered for many years until a slump in the market caused them to be idle for five years from 1900 to 1904. J & C Harrison reengaged in the coal trade after their hiatus and increased the number of vessels in the fleet, this included building HARFLEUR. By 1911, J & C Harrison managed eighteen steamships in the tramp trade.

J & C Harrison chose HARFLEUR’s design to be a versatile tramp steamship able to carry bulk cargos such as coal or grain, along with other merchandise within two decks. The vessel’s layout permitted it to carry different commodities of bulk, general, and mixed cargoes, an asset to its owners and charter agents. In March 1909, Charles Harrison registered HARFLEUR in London and prepared the steamship for its first trip. A month later, due to J and C Harrison’s financial constraints, William Gray and Company bought back fifty of the sixty-four shares of HARFLEUR making the shipbuilding company the majority owner. William Gray would buy back the

NORLINA (shipwreck and remains)

Name of Property

Sonoma, California

County and State

majority shares in five other Harrison vessels between 1907 and 1911, a financial arrangement akin to a loan, to permit Harrison's fleet expansion (Swiggum and Kohli 2019; Thomas 1992b; Cooper 2012).

HARFLEUR arrived in New York from Buenos Aires [Brazil] on May 8, 1909 from its maiden voyage under J & C Harrison carrying a cargo of 6,000 tons of oats (*The Standard Union* May 8, 1909). The vessel's last documented trip, with J & C Harrison in late October 1910, also included a cargo of grains, this time wheat, between Tacoma, Washington and the United Kingdom under charter to Balfour, Guthrie & Company (*Oregon Daily Journal* October 6, 1910; *San Francisco Examiner* October 21, 1910). Over the next two years, HARFLEUR made at least eleven trips between various ports around the world, with over a third of them associated with the coal trade with departures from Newport News and Norfolk, Virginia. J & C Harrison was best known for its association with the coal trade and secured a contract with the U.S. government to use HARFLEUR for most of 1910. HARFLEUR's five trips with coal included Norfolk to Chimbote, Peru; Norfolk to Mare Island in San Francisco; Newport News to Manila, Philippines; Newport News to Australia; and Newport News to Sabine, Texas (*Evening Star* July 14, 1910; *Baltimore Sun* July 14, 1910; *The Gazette* October 8, 1910; *The Province* October 21, 1910; *Galveston Daily News* May 2, 1912).

Coal was one of the most important cargoes carried by tramp steamships. The industrial revolution, urbanization, and lighting of cities by gas or electricity, followed by the expansion of railway and steamship lines, required a large consumption of coal by many industries worldwide. The domestic household also required coal for home heating and cooking. Coal offered the distinct advantage of producing considerably more heat per weight than wood. As demand for coal increased the infrastructure to mine and transport coal likewise developed. Commercial waterborne transportation of coal began in the 1790s when coal mines in West Virginia and Virginia shipped coal via small vessels to shop owners in New York, Boston, and Philadelphia. Waterborne coal shipments, like nearly all bulk commodities in the eighteenth, nineteenth, and early twentieth centuries, were more economically sound than shipment overland. One of the main centers of U.S. coal exports was in the mid-Atlantic centered around Pennsylvania and Virginia, solidifying the country as an influential player in the trade (Marx and Lawrence 2006). The main coal ports in Virginia were at Newport News and Norfolk, both of which HARFLEUR loaded at. HARFLEUR's coal trips were most likely associated with supplying U.S. naval coaling stations. The American steam navy required large amounts of coal to fuel its steamships and established a chain of locations around the globe where its vessels could stop and take on bunker and supplies. The naval coaling requirements meant coal became a strategic requirement for overseas diplomacy and one that needed large tramp steamships for its transport.

Transatlantic Sulphur Trade (1912-1914)

In 1912, the Union Navigation Company of Toronto, Canada, a subsidiary of Union Sulphur Company of New York, purchased HARFLEUR. The Union Navigation Company, formed around April 1912, operated steamships between Europe and Sabine, Texas. In 1912, the company only owned HARFLEUR. By 1913, Union Navigation Company owned two vessels,

NORLINA (shipwreck and remains)

Name of Property

Sonoma, California

County and State

HARFLEUR and *Harley*, both purchased from J & C Harrison (*The Gazette* May 15, 1913; *Wall Street Journal* December 29, 1914). Both steamships' port of registry was Montreal while remaining under British flag. From October 1912 through August 1914, HARFLEUR made at least nine trips from Sabine, Texas to various European ports including Marseilles [France], Cette [France], Hamburg [Germany], and Rotterdam [Netherlands]. Cargo details are not captured for HARFLEUR's cargo for every trip; sulphur or sulphate rock is mentioned for several of them. In May 1914, HARFLEUR carried 6,500 tons of sulphur valued at \$113,750 (*Daily Press* May 5, 1914).

Union Navigation Company's association with the Union Sulphur Company, founded in 1896, provided the infrastructure for HARFLEUR to participate in the sulphur trade. Union Sulphur Company had its own small fleet of two vessels and holdings in Western Louisiana for sulphur extraction with Sabine their shipping point (*Fall River Daily Evening News* March 6, 1912). In 1912, sulphur production was on the rise with 787,735 long tons produced in the United States and Louisiana accounting for 786,605 long tons of the total. Most of the sulphur was used domestically with only 57,738 long tons exported. In 1913 and 1914, export numbers increased to 89,221 and 98,163 long tons respectively.

Louisiana was the dominate location for the domestic sulphur industry with other material coming from Texas, Nevada, Colorado, and Wyoming mines. The United States was one of the two leading sulphur producers in the world at the time due to the availability of the material in Louisiana with the other large producer being Italy (*Barre Daily Times* July 12, 1913; Lynn 1950). Herman Frasch, of Union Sulphur Company, patented a process for melting sulphur in the ground and then pumping it to the surface as a liquid. The success of this process led to a monopoly of the industry by the Union Sulphur Company (*Wall Street Journal* August 16, 1912).

Sulphur plays an important part in the agricultural, industrial, and the scientific disciplines. Some uses for sulphur or sulphuric acid includes explosives, munitions, paint compounds, rubber vulcanization, fertilizer, pesticides, herbicides, additive for natural gas, silver polish, paper bleaching, food preservative, detergent, and as additive to cement and plaster. The Union Sulphur Company dominated the trade including the deep mining through the Frasch process. The company opened offices and distribution centers in Rotterdam, Marburg, Cette, and Marseilles to manage the increased production and export traffic from its Louisiana mines.

At the onset of World War I, the demand for American sulphur expanded due to military research and materials production. Union Sulphur Company slowly built up its own fleet and did not have the internal resources to only use its own vessels until after World War I started. To meet its needs Union Sulphur Company chartered vessels, including HARFLEUR, to supplement their freight capabilities. HARFLEUR and its running mate provided a means of export for the Union Sulphur Company during a period of rising demand abroad for American sulphur for a company. Even though HARFLEUR was under British registry and Canadian ownership, its primary role was in support of the American sulphur trade, a growing and important market at the onset of World War I (Lynn 1950).

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

Merchant Transatlantic Shipping during World War I (1914-1917)

The outbreak of World War I on July 18, 1914, disrupted shipping interests worldwide. The United States remained a neutral nation for three years, using the new demand for wartime goods in Europe to its advantage as a market for its valuable exports. The United States did not have a large tonnage of merchant steamships prior to World War I as compared to the United Kingdom and was unprepared for its impending joining of the Allied forces in 1917. The percentage of U.S. trade carried in American flagged vessels had been on a slow decline for some time since the heyday of the clipper ships due to the Civil War, priorities on internal domestic priorities, and transition from wooden sailing ships to iron and steel steamships. The shipping focus was generally within the Great Lakes, along the coast with domestic trade, and fisheries with little influence in international involvement. By comparison, the British government saw its merchant shipping as a vital component to the nation's political and economic world power and provided subsidies to the industry. By 1914, British shipping amounted to half of the world's tonnage. British vessels transported American cargoes making them a dominant force in the trade. The state of the world's shipping, "in the years immediately preceding the war was growing rapidly, due partly to trade development, and partly to a spirit of rivalry among the leading commercial countries to have a mercantile marine consonant with their supposed commercial and political importance" (Berglund 1920; Tilden 2021).

Due to the shortage of American built merchant steamships, American companies sought out second hand foreign built vessels, particularly from United Kingdom shipyards, which had a long track record of building strong, modern, steel-hulled steamships capable of world wide service. In April 1914, George F. Armstrong, George P. Walker, and Robert W. Groves, of the shipping firm Strachan & Company, purchased HARFLEUR. Armstrong, Walker, and Groves organized a new line, Walker, Armstrong & Company, out of Savannah, Georgia for freight service between American and European ports and renamed HARFLEUR GEORGIANA (Cooper 2012). At the same time, Walker, Armstrong & Company also acquired a second British-built steamship, *Harley* and renamed it *Southerner*. This vessel had been with Union Navigation Company previously with GEORGIANA. Both GEORGIANA and *Southerner* both came from shipyards in West Hartlepool, United Kingdom and launched within three years of each other. Both vessels received American registry after their change of ownership. Armstrong was the first Southern shipper to purchase foreign vessels and put them under American flag (*Atlanta Constitution* December 15, 1914; *Salisbury Evening Post* January 27, 1915). The Walker, Armstrong and Company line was the only regular transatlantic steamship line out of Savannah at the time (*New York Times* March 29, 1915).

In 1915, Walker Armstrong, & Company owned four vessels, GEORGIANA, *Southerner*, *Carib*, and *Vigilancia* (*Atlanta Constitution* February 24, 1915). In response to World War I breaking out and the United States not initially joining the war, GEORGIANA was painted with American neutrality markings consisting of a large American flag on its stern and sides and "Georgiana U.S.A." written on each side. This identified GEORGIANA as belonging to a neutral county to prevent it from being a target of Axis, namely German, naval attacks. The steamship was the first

NORLINA (shipwreck and remains)

Name of Property

Sonoma, California

County and State

vessel to leave Charleston with the neutrality markings (*Greenwood Daily Journal* March 5, 1915).

Between December 1914 and February 1916, GEORGIANA departed Savannah or Charleston six times for ports including Rotterdam [Netherlands], Liverpool and London [United Kingdom], Havre [France], Barcelona [Spain], and Genoa [Italy]. GEORGIANA's first trip departed Savannah for Rotterdam on December 30, 1914, with 15,000 bales of cotton. GEORGIANA was the first Savannah owned transatlantic freighter to leave Savannah and its cargo represented the largest shipment of cotton to a European port since World War I began. The vessel's second trip was also cotton shipment to Rotterdam, from Charleston with 16,000 bales. The two cotton shipments into Rotterdam GEORGIANA made were consigned to Germany. The Netherlands remained neutral throughout World War I and the country served as a way for materials to make it through to the Axis powers (*Alabama Times* January 5, 1915; *Statesville Sentinel* January 7, 1915).

After the two trips to Rotterdam, GEORGIANA continued to transport cotton across the Atlantic to Allied or neutral ports. One large cargo GEORGIANA carried in August 1915, from Savannah for London and English Channel ports, was 2,300 tons pig iron, 10,00 barrels turpentine, 1,800 barrels of resin, 50 carloads of forest products, and 5,080 railroad ties. Another vessel from the same line, *Vigilancia*, departed the same day for the same ports with an equally large cargo consisting of 77 tons pig iron, 8,600 bales cotton, and two carloads of forest products (*Lumber Trade Journal* 1915). Later in November 1915, GEORGIANA carried lumber, cotton, resin, and steel rails from Savannah to Havre and London (*Brooklyn Daily Eagle* November 15, 1915; *Pensacola Journal* December 1, 1915).

At the start of World War I, cotton prices fell by fifty percent in response to the uncertainty of the world markets. Britain's blockade affected Germany cotton supplies and often temporarily seized vessels headed into Germany ports. Walker, Armstrong & Company's vessel *Vigilancia* was intercepted by the British Navy enroute to Bremen from Savannah on March 11, 1915 and taken to Kirkwell (*Marysville Journal-Tribune* March 11, 1915). In January 1914, the United States exported 308,116 bales of cotton to Germany and a year later only 99,913 bales. In June 1914, there were 80,639 bales and none a year later in June 1915. For a short time, Germany obtained cotton through Scandinavian ports, as GEORIGIANA discharged cotton in Rotterdam. Those channels were eventually closed. Cotton was not only essential for military uniforms it was also used as gun-cotton, a form of propulsive ammunition (Scherer 1916). As cotton exports to Germany disappeared new markets opened in other countries and GEORGIANA's routes showed this trend.

In June 1916, the Garland Steamship Corporation of New York purchased GEORGIANA for \$1,400,000 and renamed the vessel NORLINA. The corporation had only been incorporated three months prior to NORLINA's acquisition on March 14 with capital of \$1,900,000 by William M. Campion, George Garland Allen, and Wesley W. Cheek, all from New York or New Jersey. Allen was from Warrenton, Warren County, North Carolina and named NORLINA after the town Norlina, located four miles south of his hometown. Allen was director of the British

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

American Tobacco Company with Campion and Cheek also holding interests in the company. Soon after British American Tobacco Company's formation, Garland Steamship Corporation became a subsidiary of the British American Tobacco Company. The British American Tobacco Company owed tobacco factories and depots in England, the United States, and other countries as well as owning its own plantations. The corporation intended to put five ships into the commercial merchant trade on the Atlantic coast between Baltimore, Maryland and Liverpool, England and between a Pacific coast port and China with a principle focus on carrying tobacco along with cotton. The corporation was not set on those routes and Allen stated to newspapers that their ships would service other routes if it offered greater profit (*The Sun* March 15, 1916; *Wall Street Journal* March 24, 1916; *Honolulu Advertiser* April 8, 1916; *Tampa Tribune* June 4, 1916; *Baltimore Sun* July 22, 1916).

After a few months in business, Garland opened an office in Baltimore to service its Atlantic sailings. The corporation provided two to four steamships a month departing Baltimore with exports to Liverpool. Despite the challenges the world in World War I, shipping by sea remained a profitable venture and the lifeblood for supplying Allied forces overseas. By July 1916, Garland owned eight steamships, six on the East Coast, *Alamance*, *Borinquen*, *Carolinian*, *Grayson*, NORLINA, and *Rockhampton*, and two on the West Coast, *Javary* and *Justin*. All the vessels were steel-hulled single or double screw steamships with NORLINA at the time having the largest tonnage at 2,846. *Carolinian* (ex-*Southerner* and *Harley*) had been in the same two previous lines with NORLINA, Walker, Armstrong, and Company and Union Navigation Company (*The Victoria Daily Times* March 30, 1916; *Baltimore Sun* July 22, 1916; American Bureau of Shipping 1917:916).

World War I caused changing conditions to foreign trade combined with favorable governmental policies encouraging the growth of the American merchant marine. These key drivers stimulated a built up of the American fleet both through government backed endeavors and private efforts. With British shipping diverted to the war effort, there was a lack of vessels to transport good to markets. Garland Steamship Corporation's decision to incorporate and enter the merchant marine trade added valuable tonnage to fleet and furthered American influence in the transatlantic network. At the time, the U.S. fleet was moderately sized in vessel individual tonnage and unable to be economically successful in longer voyages. Garland's fleet of larger tonnage steel-hulled steamships could operate on the transpacific or transatlantic market against those of the United Kingdom. Three factors were big influencers on the economics of ship operations: fuel costs, labor costs, and balanced traffic.

NORLINA homeported in Baltimore provided an accessible source of bunker coal and eventually fuel oil. NORLINA's crew was a diverse mix of American and foreign born crewmembers and its owners factored in the higher rates paid to American flag vessel's crew after the passage of legislation in 1920 to protect seaman's rights. Lastly, a balance between imports and exports was essential for long term viability and hard to maintain. During the 1910s, American exports were higher than imports to Western Europe and Mediterranean Africa along with eastern South America with imports being higher than exports from Mexico, West Indies, and Caribbean (Berglund 1920). Many times, NORLINA returned to Baltimore in ballast with no

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

cargo indicating an uneven balance of trade. NORLINA's outbound export cargo must have been profitable enough to justify the empty hold on its return trip.

In 1914, the United States only had 4.6 percent of the world's seagoing tonnage (with an additional 5.0 percent encompassing the Great Lakes inland tonnage). This was well behind that of the United Kingdom with 41.6 percent, and Germany at 11.3 percent. To meet this deficit, the Shipping Act of 1916 created the United States Shipping Board to promote and modernize the merchant marine. The Shipping Board was tasked with operating government owned merchant ships, acquiring auxiliary vessels, chartering vessels, seizing ships from enemy nations, and regulating commerce. During the height of World War I, the Shipping Board operated 1,350 ships and had agreements with 160 companies. One of Garland's vessels, the *Alamance*, was requisitioned by the Shipping Board on October 20, 1917, then turned back to the company under charter back to the Shipping Board on December 29, 1917. *Alamance* was sunk by a German U-boat on February 5, 1918, enroute from Hampton Roads, Virginia to Liverpool with a cargo of tobacco, cotton, zinc, and lumber (U.S. Mixed Claims Commission 1928).

The Shipping Board efforts were to combat the previous dependance on foreign vessels for American trade. The Shipping Board actions also became a mechanism for building up the U.S. merchant fleet with the creation of the Emergency Fleet Corporation in 1917. The Emergency Fleet Corporation launched a massive shipbuilding program to increase the U.S. fleet in response to World War I. By the end of the war in 1918, shipyards had launched 470 ships, very few completed in time to ever assist with wartime efforts. When construction ended in 1922, the initiative completed 2,312 ships, making the U.S. merchant fleet the largest in the world (U.S. Department of Transportation 2021). The Merchant Marine Act of 1920, also known as the Jones Act, followed up on the increasing focus on commercial shipping spurred on by World War I. The act restricted American coastwise and intercoastal trade to U.S. built, owned and flagged [registered] vessels. The act also promoted Shipping Board to sell surplus vessels to American companies to promote the industry and assist with making sure there were enough American built vessels for the trade. The legislation also dealt with seaman's rights. As NORLINA was a foreign built vessel it would have not been able to operate on the intercoastal route under the Jones Act. Due to the shortage of American merchant vessels at the start of World War I, foreign-built American owned vessels were given permission under certain circumstances to be brought under American registry as NORLINA (then GEORGIANA) was between 1914 and 1916 under its previous owners. This was important later in NORLINA's career in the intercoastal trade (U.S. Department of Transportation 2021).

Before the war, the U.S. international fleet was insignificant and after only a few years it was one of great importance. American seagoing steam gross tonnage in July 1914 was 2,069,637; in October 1918 was 5,116,521; and in June 1920 was 14,574,375. The gains to U.S. tonnage were still far below the dominance of United Kingdom's fleet even with their losses at 46.5 percent during the war (U.S. Federal Reserve 1921). Overall, with the losses and gains factored in with an assumption of normal growth if there had not been a war, The United Kingdom lost 5,003,00 gross tons and the United States gained 7,168,000 gross tons (for seagoing vessels). The only

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

other country with a gain after the war was Japan at 20,000 gross tons. Overall, the world's tonnage declined by over 7,000,000 gross tons (Berglund 1920).

Captain Jesse Foster commanded NORLINA during its service between June 1916 and April 1918. NORLINA's trips over that time were back and forth among Baltimore, Liverpool, and Glasgow making five known round trips over two and a half years. As it had under the name GEORGIANA, NORLINA was painted with American neutrality markings consisting of a large American flag on its bow and stern and "AMERICAN S.S. NORLINA" written amidships below its deckhouse to clarify its nationality and intent (**Figure 2**). Newspapers did not publish NORLINA's cargo during wartime to lessen enemy information on shipping activities, a common wartime tactic. Marine intelligence reports did include that NORLINA's shipments arriving in Baltimore were for the Terminal Shipping Company, Garland's agent, with it docking at the Baltimore and Ohio Railroad Company piers at Locust Point. Terminal Steamship Company served as agents for several lines and facilitated cargo shipments on both coasts. The Locust Point terminal was a shipping hub in Baltimore's inner harbor for steamships loading and offloading cargo from train cars right next to the pier. A few reports of what other Garland steamships carried indicate what NORLINA might have had as cargo. In December 1916, *Justin* departed Tacoma, Washington with a full cargo of tobacco and large consignment of cigarettes for Shanghai. Once the United States entered World War I on April 6, 1917, Garland steamship supported the transport of supplies overseas. In 1917, *Carolinian* had a cargo of cotton and 7,000 tons of "necessities for the Allies." The newspaper article goes on to state that the steamers, "have been carrying big war cargoes from Baltimore to Allied ports in the last year and have generally been considered fine targets for the Germans" (*San Francisco Examiner* December 23, 1916; *Baltimore Sun* March 3, 1917).

Garland profited from the war effort early on by employing its steamships to carry materials to Europe for Allied forces. On the return trips, most of the steamships were in ballast with no cargo. On the Pacific coast, the Garland steamship's *Javary* and *Justin* provided Tacoma to Shanghai service with large shipments of tobacco and cigarettes under the Export Tobacco Company. Due to demand, *Grayson* was repositioned and stationed on the West Coast to support the tobacco exports. On return trips the steamships brought items such as tea, oil, tallow, walnuts, peanuts, hides, and general cargo (*San Francisco Examiner* November 24, 1917; *San Francisco Examiner* May 8, 1919).

Baltimore was an active maritime port and the United States' third largest port of entry at that time for immigrant processing. NORLINA provided both transport and employment to immigrants. By 1913, Baltimore saw on average 40,000 immigrants entering its ports per year with its immigration center at Locust Point. This number slowed dramatically during World War I. Two million immigrants arrive through Baltimore in the nineteenth and twentieth centuries, second only to New York (Stolarik 1988). While cargo was the primary money maker for the Garland Steamship Corporation, passengers supplemented their profits on occasion and provided people with a way to cross the Atlantic. Baltimore passenger lists include entries for "alien passengers." There are three instances of foreigners arriving in Baltimore on NORLINA during 1916 through 1918. On a trip departing Liverpool on October 28, 1916, and arriving at Baltimore

NORLINA (shipwreck and remains)

Name of Property

Sonoma, California

County and State

November 22, 1916, two Russian men, age 23 and 25, arrived with occupation listed as seaman. Both men were classified as stowaways. On a trip departing Liverpool on February 1, 1917, and arriving in Baltimore February 17, 1917, one Danish man, age 30, arrived with occupation of seaman, listed as a member of NORLINA's crew. On a trip departing Liverpool and arriving in Baltimore on June 22, 1917, one Dutch man, age 35, arrived with occupation of laborer, listed as a member of NORLINA's crew (National Archives and Records Administration 1820-1964).

The Garland Steamship Corporation's steamships safely crossed the Atlantic Ocean for several months until Germany declared unrestricted submarine warfare against Great Britain and its Allies on February 1, 1917, a tactic that changed the nature of shipping around the globe. Garland's *Rockingham* was the first United States steamship to leave Baltimore with general cargo for the European war zone since unrestricted warfare went into effect (*Buffalo Commercial* February 21, 1917). Germany's U-boats—submarines—became the greatest threat to merchant and naval ships crossing the Atlantic Ocean and their actions came at a time when the United States military and its merchant vessels was unable to defend against them. The American military had shipped its men, supplies, and naval forces to Europe leaving home waters vulnerable. At the start of hostilities in 1914, Germany had a fleet numbering twenty-nine boats. By war's end, the German navy had built 375 U-boats and demonstrated its submarines could make successful long distance voyages. Seven U-boats eventually made it to the United States to inflict harm to coastal shipping and three, U-151, U-140, and U-117, inflicted damage to merchant shipping, sinking ten vessels off North Carolina (Stick 1952:197).

While U-boats came near American shores on several occasions, it was closer to Europe that their effects were more felt. Submarine warfare has its roots to August 1914, when a group of ten German U-boats attacked Royal Navy warships in the North Sea and completed history's first submarine patrol. The mission was not a success, only one attack was carried out without result and two of the ten U-boats were lost on the sortie. Later that same month, the tactical promise of the U-boat was realized when the U-21 sank the cruiser HMS *Pathfinder* off the heavily guarded entrance to the Firth of Forth (Scotland). The sinking was the second successful submarine attack in history (the first being that of the CSS *Hunley*). *Pathfinder* became the first ship to be sunk by a submarine's self-propelled torpedo. In September 1914, the U-9 sank three British cruisers in quick succession off Holland and solidified the U-boat's role as a deadly weapon. The loss of HMS *Aboukir*, *Hogue* and *Cressy* with 1,459 British sailors (only 837 men rescued) was a major blow to the Allied morale. In 1915, U-boats sank 555 Allied merchant ships, in 1916 1,200 ships, and in 1917 1,300 ships. This represented a major threat to Allied interests (Showell 2006).

The Allies were slow to develop effective measures to counter the U-boat threat. The major increase of U-boat activities against British shipping and the sinking of unarmed passenger vessels RMS *Lusitania* and *Arabic* eventually led to the United States' entrance into the war with Allies France, Russia, and Great Britain on August 6, 1917. Eventually the tactics used included mine barriers, depth charges set with hydrostatic triggers, rammings, Q-ships (warships disguised as unarmed merchant ships), zig-zag maneuvers, Huff-Duff directional finders, Anti-Submarine Detection Investigation Committee (ASDIC), Sound Navigation and Ranging (SONAR), and British submarines. Merchant vessels were also equipped with defensive guns manned by naval

NORLINA (shipwreck and remains)

Name of Property

Sonoma, California

County and State

crews trained in antisubmarine tactics. The arming of these vessels reduced the U-boat efficiency by forcing them to stay underwater more and use their limited supply of torpedoes rather than relying on its deck guns (Clephane 1969). The introduction of the convoy system with armed escorts proved to be the tool to defeat the U-boat. The British admiralty had long opposed convoys, believing that the Royal Navy did not have the capability to protect very many ships at one time. Eventually the convoy system proved to be effective tool, only after the Allies were forced to adopt it in response to the call for unrestricted submarine warfare. The first transatlantic convoy left Hampton Roads, Virginia on May 24, 1917, with the first regular convoy leaving on June 15, 1917. It was not until later in the summer that convoys became a standard measure to combat the U-boat threat. The technological limitations of the World War I U-boat made it incapable of successful action against escorted or armed convoys. Any ship was a U-boat target, including NORLINA (Tucker 2005).

In March 1917, while steaming from Baltimore to Liverpool, NORLINA picked up twenty-six crewmen from the steamship SS *Alnwick Castle* which had been torpedoed and sunk by a U-boat in the Atlantic Ocean, 320 miles from land. The survivors were saved by the crew from the French schooner *Tramontane* who later transferred to NORLINA and landed in Liverpool on March 28 (National Archives 1917). By this time NORLINA was outfitted with a deck gun with four-inch shells at the bow and stern and had onboard a naval armed guard and U.S. naval reserve force to defend itself from U-boat attacks. Most American merchant ships after March 1917 had been furnished with a deck gun and other armament manned by a small number of Navy crew in response to the German U-boats.

NORLINA had a close call with a German U-boat on June 4, 1917, while off Ireland, eighty miles northwest of Inishtrahull Island, at latitude 56° 32' N longitude 10° 46' W enroute from Liverpool back home to Baltimore in ballast. NORLINA was steaming at 10 knots, running without lights with portholes blacked out, and zig zagging. Although this was before organized convoys, NORLINA was in the company of three British cargo vessels, all armed and sailing together for protection but were not within sight of each other. Around 5:00 pm one of the convoy vessels sighted a U-boat. The British vessel *Miniota* then engaged in a half hour gun duel with the U-boat without injury to either side. The U-boat submerged and ended the conflict. Twenty minutes later, another of the British vessels, the *Manchester Port*, send out a SOS stated it was being attacked by a U-boat off its stern. *Manchester Port* fended off the attack that was over by 6:30 pm. When NORLINA's armed guard heard of the events they left dinner and stood watch on deck (Crowell and Wilson 1921; Parrott 1918; *Evening Sun* June 22, 1917; *Evening Sun* June 25, 1917).

Chief boatswain's mate Olaf J. Gullickson, commander of NORLINA's naval armed guard, recalled the incident during a naval investigation. Gullickson reported around 6:30 pm a man at the forward gun platform shouted he saw a torpedo to port. NORLINA's wheel was put hard to starboard toward the torpedo. The torpedo struck just aft of the beam and glanced off the hull near the engine room and did not explode. NORLINA's first mate sounded the alarm to abandon ship, and everyone made for the lifeboats. The crew abandoned ship, leaving behind Captain Foster and five others to inspect the hold, engine room, and bilges for damage. The other ships

NORLINA (shipwreck and remains)

Name of Property

Sonoma, California

County and State

sailing with NORLINA quickly left the area when they heard of the encounter. The rest of the crew returned onboard after the ship was found to not be leaking and the torpedo did not explode. As the lifeboats came along side to return the crew a periscope was seen off NORLINA's starboard beam. The crew manned both guns and fired on the target 2,000 yards away. The gun crews had been taken from the battleship *Nevada* and were well trained and ready for action. Captain Foster got the engine underway and headed towards the periscope. The forward gun hit just in front of the U-boat periscope making it submerge. Light blue smoke was observed coming up from the U-boat's stern. The periscope was observed again 600 yards away and NORLINA's stern gun fired and hit the U-boat two or three times, one at the waterline, and one or two on its deck destroying the periscope. Small pieces of steel from the exploding shell were seen and bubbles in the water (United States Senate 1921:2226-2227; *Baltimore Sun* June 23, 1917; *Mount Union Times* June 29, 1917).

In total NORLINA's gun fired nineteen shots. Captain Foster ordered the engineers to bring NORLINA to all stop while lifeboats were hoisted back aboard. By 9:05 pm the U-boat had not been seen again. NORLINA's crew assumed the U-boat had been sunk or damaged and continued their course. For his quick action, Gullickson was awarded the Navy Cross (United States Senate 1921:2226-2227; *Baltimore Sun* June 23, 1917; *Mount Union Times* June 29, 1917). After action reports believed it was possible that German U-boat *U-88* was the one to attack NORLINA. There is no indication that *U-88* was sunk because of this incident as the U-boat went on to sink several vessels and hit a mine, sinking with all-hands, on September 5, 1917. There is also no indication that *U-88* was even the U-boat that was on scene that day as records do not put it off Ireland at that time. It is not known which U-boat was the one to engage with NORLINA and the other two British vessels on June 4th (Navy Department 1923; Helgason 2021).

NORLINA's interactions with a U-boat represent the wartime battles between an Allied merchant vessel and an enemy German submarine that sometimes did not result in the merchant vessel being fatally damaged or sunk. The U-boat had the advantage and due to the skill of the crew and gunners, with luck on their side, NORLINA escaped to tell the tale and contribute to the intelligence on U-boat tactics. Newspapers around the country carried NORLINA's story. The Garland steamship *Rockingham* had not been so lucky and was sunk by a torpedo a month before from a German U-boat while enroute from Baltimore to Liverpool 150 miles off Ireland. NORLINA was drydocked at the Baltimore Drydock and Shipbuilding Company to check the hull for any torpedo damage and repair as needed. The ship received a new propeller blade and paint job (*Baltimore Sun* May 3, 1917; *Evening Sun* June 23, 1917; *Baltimore Sun* June 23, 1917).

Naval Cargo Transport in World War I (1918-1919)

With the fall of Russia and shift of German armies to the Western front, Allies focused their efforts on the fighting in France. The United States military was not prepared for its entry in World War I. This included having enough vessels to transport men, munitions, and supplies overseas. To combat this deficiency, the United States government chartered or purchased

NORLINA (shipwreck and remains)

Name of Property

Sonoma, California

County and State

existing merchant vessels to fill in the shortages. On April 15, 1918, the United States Navy acquired NORLINA under a bareboat charter agreement for cargo transport and underwent a prescribed conversion for naval service and manning by a Navy crew. This started with an inspection to determine seaworthiness and sanitary condition to determine if or what hull and machinery repairs were needed. The Navy survey also included what changes were needed for officer and crew quarters, magazines, bunkers, wireless, signaling equipment, and armament to meet Navy standards. NORLINA retained the two naval deck guns already onboard. The ship's color scheme was also darkened to make it blend in more with the ocean. On May 1, 1918, NORLINA was fitted out for naval service and commissioned under Captain Lieutenant Commander Carl G. Muller, USNR and renamed USS NORLINA. USS NORLINA's Navy identification number was 1597 with Norfolk, Virginia as its home district. USS NORLINA was assigned to the Naval Overseas Transport Service (NOTS) with a crew of ten officers and fifty-two seamen (Navy Department 1918; Navy Department 1919:512-513; Clephane 1969).

NOTS, established in January 1918 under the Department of the Navy, provided an efficient, centralized, coordinated, military controlled, transportation link between the United States and Europe, the predecessor of military sealift command. The service only focused on handling cargo transports as troop movements were done by specially outfitted troopships, often chartered passenger liners, under the Navy's Cruiser and Transport Force. When the United States entered World War I, it did not have a transport fleet or merchant marine capable of supporting a large assemblage of troops overseas. Within a short time, the Navy ramped up its forces and acquired as many private and Allied country vessels as it could to supplement the exiting military vessels for trips to France, the transportation hub for the American Expeditionary Forces. At its height, in December 1918, NOTS had 450 ships under its command. The service involved the Army, Navy, and United States Shipping Board and at any one time had 378 vessels actively sailing overseas. Before this time, the Army and Navy operated their own cargo transports independently of each other (Clephane 1969; Crowell and Wilson 1921).

NOTS transformed the system into a more useful machine. These vessels carried six million tons of supplies including animals, lumber, medical supplies, automobiles, boats, seaplanes, paint, ordinance, steel, rope, office supplies, coal, fuel and lubricating oil, gasoline, provisions, and food for the war effort. NOTS vessel categories included cargo ships, tankers, refrigerator ships, and seagoing coal barges. Within the cargo ships, the subcategories were animal transport, cargo, collier, or mine carrier. NOTS focused on carrying supplies for the American [Army] Expeditionary Forces in France, naval supplies for various Atlantic and Pacific ports, food cargoes to Europe and the near east, and commercial cargoes for the Shipping Board (Clephane 1969; Crowell and Wilson 1921). USS NORLINA entered service with the NOTS, under the Army account, and joined a unified force of vessels all working under a central command to support Allied efforts in World War I. In addition to USS NORLINA, NOTC acquired two other Garland Steamship Corporation vessels, *Carolinian* (ex. *Southerner*, *Harley*) and *Polar Sea* (ex. *Warrenton*). Both were commissioned on October 5, 1918. *Warrenton* served as a refrigerator ship and *Carolinian* as a cargo transport, the same as USS NORLINA (Navy Department 1919).

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

In late May 1918, USS NORLINA loaded Army supplies in Baltimore and took on bunkers in Norfolk before heading to Halifax, Nova Scotia to join a convoy across the Atlantic to France. USS NORLINA arrived in Le Havre on June 18, offloaded its cargo, and left July 2 for Baltimore. USS NORLINA arrived back home on July 21. Over the next five months, the steamship made two more similar trips to France delivering supplies to the American Expeditionary Forces. USS NORLINA departed Sydney, Nova Scotia on August 23, arrived Bordeaux on September 8 and returned to Norfolk on October 9. Next it departed New York on October 27, arrived Nantes November 15, and returned to Baltimore December 14. USS NORLINA traveled east within an organized convoy consisting of at least a dozen other cargo ships, armed escorts, mine sweepers, and harbor and air patrol support. The group followed a specified route including course, speed, and communication protocols. For the return trip west, when vessels were in ballast, the convoy cleared the harbors and dispersed, sailing independently or in pairs (Clephane 1969). NOTS was a partnership between the Army and the Navy with the Army overseeing the docks at the ports at home and abroad as well as loading cargo while the Navy was in charge while at sea and provided escort and convoy routing along with manning, operating, repairing, coaling, and provisioning (Gleaves 1921).

World War I ended on November 11, 1918, and NOTS vessels assisted with returning materials back home. After NOTS vessels were no longer needed it took weeks to months to resurvey and return them to their previous owners. The materials USS NORLINA brought over were vital to the war effort, specifically outfitting the American Expeditionary Forces. The cargoes were transferred at the ports to rail lines and moved inland across France. The American Expeditionary Forces served on the Western front during World War I and focused on halting the German troop advancements on Paris. By war's end, over two million troops had been transported across the Atlantic, all relying on the NOTS ships for supplies. NORLINA and its counterparts supported British and French forces, ultimately stopping German advancements, and ending the war. The men relied on the materials ferried across the Atlantic on NOTS cargo ships and the brave men on those vessels who steamed through U-boat patrolled waters provide the lifeblood for defeating the Axis powers (Crowell and Wilson 1921). Vice Admiral Albert Gleaves, commander of convoy operations in the Atlantic between 1917 and 1919, summed up the dangers freighter crews faced. The NOTS crews, "endured the greatest hardships of war. They faced not only the menace of the U-boat, but also the perils of the deep, danger of collision and shipwreck, and the liability of instant death by accident from inflammable and explosive cargoes" (Gleaves 1921).

The other Garland steamships taken over by NOTS, *Carolinian* renamed *USS Carolinian* and *Polar Sea* renamed *USS Polar Sea*, also supported cargo movements to France in 1918 and 1919. *USS Carolinian* carried coal between England and France and general cargo for the Army across the Atlantic. *USS Polar Sea* transported general cargo, trucks, ammunition, and frozen beef for the Army in between New York and France. *USS Carolinian* was returned to the Garland Line while *USS Polar Sea* was transferred to the United States Shipping Board and continued shipping under government control until being scrapped in 1937 (Roberts 2021).

NORLINA (shipwreck and remains)

Name of Property

Sonoma, California

County and State

USS NORLINA's next trip, still under the NOTS, departed Norfolk on December 29 carrying coal to Mejillones, Chile and arrived January 19, 1919. The steamship picked up a cargo of nitrates and copper ore and steamed to Charleston, South Carolina and Savannah, Georgia. While USS NORLINA was still under Navy control after war's end, it provided commercial merchant services until its release, a way to generate funds for the government. USS NORLINA finally arrived in New York on April 18 and was decommissioned May 2 and turned over to the Shipping Board for return to the Garland Steamship Corporation on May 5. USS NORLINA's name was changed back to NORLINA. Due to the war Garland had halted all their service and reentered the trade quickly after war's end (*Evening Sun* March 12, 1919; Radigan 2021).

Post-War Activity (1919-1922)

Upon NORLINA's return to private hands, it was drydocked at the Baltimore Dry Docks and Shipbuilding Company for repairs and painting. After the overhaul the steamship returned to service with Baltimore as its homeport. Garland Steamship Corporation advertised having weekly departures between Baltimore and Liverpool. The 1919 *Record of American and Foreign Shipping* lists Garland Steamship Corporation owning five steamships, *Carolinian*, *Grayson*, *Javary*, *Justin*, and NORLINA. All the steamships were homeported in New York (American Bureau of Shipping 1919; *Baltimore Sun* May 9, 1919). *Javary* and *Justin* were still on the Tacoma to Shanghai trips with *Grayson* returning to Baltimore to join NORLINA and *Carolinian* on the Baltimore to Liverpool route as well as other ports as needed. On May 28, 1919, NORLINA departed Baltimore and arrived in Liverpool on June 14 with a "valuable cargo" (*Baltimore Sun* June 17, 1919; *Baltimore Sun* June 20, 1919). NORLINA remained based in Baltimore through the end of 1922 before expanding its service to California and the Pacific Northwest.

World War I affected the status and distribution of merchant shipping around the world. The number of ships and overall tonnage was redistributed due to losses and gains from the war with an overall increase in tonnage for the United States. The North Atlantic route between the northeastern part of the United States and the United Kingdom and Northern Europe remained the largest trade network as well as that between British Columbia and San Diego across to Japan and China. Garland Steamship Corporation put their fleet on both of those routes and continued to base its operation in Baltimore instead of New York, where its main office was located due to favorable economics. Baltimore focused on bulk commodities after the turn of the twentieth century due to geographic advantages. The city is known as the seagoing port of the Midwest as it was a transshipment center for commerce from the Chesapeake Bay, the South, and the Midwest to all parts of the globe. This, "made her a natural point for the stock piling, warehousing and redistributing of goods.... And so waterfront industry grew hand in hand with water front commerce" (Keith 1992:3).

Baltimore businesses received imports of iron ore from Chile and Canada to supply Bethlehem Steel and exported coal from West Virginia to fuel shipping and industries. These merchants also received large amounts of grain from inland states, which was then shipped out to numerous ports around the globe. Baltimore served as one of the major East Coast ports both before and

NORLINA (shipwreck and remains)

Name of Property

Sonoma, California

County and State

after World War I due to its extensive connections with the Baltimore and Ohio Railroad to the Midwest states. The area around the harbor facilities at Locust Point, where NORLINA docked, is a National Register-listed historic district, significant for its importance as a center of transportation, industry, manufacturing, and immigration. Locust Point is between the northwest and middle branches of the Patapsco River at the southern end of Baltimore Harbor at the eastern tip of Whetstone Point. Locust Point's location provided deep water access for shipping with several piers for steamships directly next to railroad lines suitable for the movement of bulk cargoes. Baltimore had easy access to coal fields with a well-organized transportation network and shipbuilding infrastructure making it a wise economic decision for Garland Steamship Corporation to station its steamships there. The Baltimore and Ohio Railroad developed Locust Point Marine Terminal in 1845 to facilitate the export of coal from Western Maryland and gained increased importance in 1868 when the immigration pier opened supported by an agreement between the Baltimore and Ohio Railroad and North German Lloyd Steamship Line (Hayward and Fessenden 2011).

The common bulk commodities shipped out from Baltimore straddling World War I were flour, wheat, oats, hay, straw, rye, barley, corn, coal, cotton, and tobacco (*Baltimore Sun* January 1, 1920). Wartime government purchasing of materials was replaced upon war's end by domestic and foreign markets including relief aid coming back online and steamships like NORLINA providing a transportation mechanism. Baltimore's Merchants and Manufactures Association made a strong push after World War I to promote Baltimore through foreign advertising focusing on the port's advantages over New York. The Baltimore merchants stated it costs less in freight to move cargoes from inland cities to Baltimore over New York or Philadelphia, the facilities charged a lower rate, financing was easier, there were plenty of freight handlers and loading facilities, reduced congestion and delay, and there were dependable sailings. In February 1920, trade journals advertised regular steamship sailings from Baltimore to ports around the world. The lines listed to Liverpool included Garland Steamship Corporation, Oriole Steamship Line, Atlantic Transport Company, and Johnston Line (The Merchants and Manufacturers Association 1919: 10-16; The Merchants and Manufacturers Association 1920:24).

NORLINA's first trip after being back under Garland's ownership after World War I was from Baltimore to Liverpool. The freighter departed on May 28, 1919, and arrived on June 14, 1919, with a "valuable general cargo" of timber, tobacco, pork products, and oil (*Baltimore Sun* June 21, 1919; *The Guardian* June 17, 1919). While NORLINA was discharging cargo at the Alexandra dock in Liverpool on June 17, a large fire broke out at the West Alexandria berthing sheds causing extensive damage to the freighter and surrounding facilities. The dock warehouses that stored timber, cotton, oil, and turpentine burned for several days resulting in five million dollars of damage. NORLINA and five other large steamships were docked there when the fire started and only NORLINA did not escape the flames. To prevent NORLINA from being a total loss, it was intentionally scuttled at Hornby Dock. NORLINA's decks buckled from the heat and its woodwork destroyed along with damage to its hull and cargo (*The Guardian* June 18, 1918; *The Town Talk* June 19, 1919; *Baltimore Sun* June 21, 1919). NORLINA remained in Liverpool for some time to repair damages and deal with insurance claims. On August 1, 1,463 tierces [casks] of NORLINA's water and fire damaged tobacco were auctioned off in Liverpool (*The*

NORLINA (shipwreck and remains)

Name of Property

Sonoma, California

County and State

Times July 28, 1919). On November 18, 4,392 boxes of ham of a variety of cuts were next auctioned off (*The Guardian* November 13, 1919). NORLINA arrived back in Baltimore on November 20 and went into drydock for general repairs and installation of oil burners on the boilers to allow it to make a round trip across the Atlantic before needing fuel (*The Evening Sun* December 1, 1919).

For just over the next two years NORLINA steamed around the globe to various ports, unlike its previously scheduled regular line service to Liverpool. There was no pattern nor regular trips to a certain place; rather, it took cargoes to any port as needed based on charter orders including passage through the Panama Canal to South America. NORLINA, and the other Baltimore based Garland steamships, were diverted from their Liverpool service as line steamships and employed as tramp steamships. In 1920, freight rates collapsed from too many World War I surplus vessels buying for reduced cargo amounts. Immigration also slowed from reduced quotas impacting the profits of many steamship lines (Berglund 1931; Tilden 2021).

Baltimore remained the homeport for NORLINA. The steamship's destinations included those in Panama, Cuba, Chile, Egypt, Spain, Netherlands, Denmark, Philadelphia, New Zealand, and the United Kingdom while commanded by captains Johnson and Frantzen. In April 1920, Garland Steamship Corporation reorganized and changed its company headquarters from New York to Delaware. Garland Steamship Corporation had registered capital of \$150,000,000 with continued ties to the British American Tobacco Company (Simmons-Boardman 1920:541). Newspapers indicate NORLINA made at least five trips from Baltimore between December 1919 and August 1921 with a six-month period of inactivity the beginning of 1921. Details on NORLINA's cargo are unknown other than it carried pyrites ore from Huelva, Spain to Philadelphia and several times it returned to Baltimore in ballast (*The Evening Journal* April 21, 1920).

Russian Relief Missions (1922)

At the beginning of 1922, the Garland Steamship Corporation owned four vessels: NORLINA, *Carolinian*, and *Stonewall* operating on the east coast and *Javary* on the west coast between Tacoma and Shanghai. All three east coast vessels were chartered by the United States government for most of the year to transport grain to Black Sea ports for Russian aid. This aid was in response to the Russian famine of 1921-1922 (*Baltimore Sun* January 10, 1922). The famine was a result of economic decline and sociopolitical instability after the Russian Revolution (1917-1923), Russian Civil War (1917-1923) and World War I (1914-1918) combined with crop failures and the inability to distribute food nationwide due to railway problems. The United States was the first country to respond to the call for aid and organized the support under the American Relief Administration (ARA) formed by Herbert Hoover. Congress appropriated twenty million dollars for relief efforts. The ARA chartered 237 ships to supply Russia with flour, grain, rice, beans, pork, milk, and sugar feeding over ten million people a day. American (private and U.S. Shipping Board owned) and foreign-flagged steamships from New York, Philadelphia, Baltimore, and New Orleans discharged cargoes at ports along the Black Sea and Baltic Sea such as Constantinople, Odessa, Theodosia, Novorossiisk, Batumi, Petrograd, Riga, Libau, and Danzig. Cargoes were then moved inland along railway lines. In the end, the

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

famine took the lives of five million and affected another fifteen million people (Bartlett 1962; Smith 2019).

Nine ships from Baltimore joined NORLINA and steamed with cargoes of corn and grain for ports in the Black Sea starting in mid-January. NORLINA was under the command of captain William Fralic with overall management of the Garland steamships by captain David Campbell. NORLINA completed at least two trips from Baltimore to Constantinople, Turkey, one with corn and one with grain, between January and July 1922. In addition to the bulk cargoes, each vessel carried 100,000 empty sacks, for transporting the foodstuffs by rail, and several thousand feet of lumber, for fitting out the rail cars (*Baltimore Sun* January 13, 1922; *Baltimore Sun* January 15, 1922). All three Garland steamships picked up cargo for their first return trip to Baltimore after discharging. NORLINA went from Constantinople to Panderma, Turkey then Palermo, Italy. The steamship arrived in New York on April 13 with a cargo of iron ore and then to Baltimore in ballast (*New York Herald* April 14, 1922; *Baltimore Sun* April 15, 1922).

For NORLINA's second trip in April, it made the same route as its first with an initial stop in Constantinople and a last stop in Palermo before a return to New York and Baltimore. The increased demand for steamships in response to the Russian aid efforts provided Garland steamships with a much needed financial boost after their minimal use the previous year. The 1922 specifics on the Garland Steamship Corporation showed their steamships served all ports in the United States and in all foreign countries, a much more diversified portfolio than its early beginnings.

Intercoastal Trade (1922-1926)

The Garland Steamship Corporation saw increased profits and capital from its steamships' postwar activities and corporate reorganization with additional stock offerings. During the last quarter of 1922, the company entered the intercoastal trade between Baltimore and the Pacific Coast with seven steamships leaving every two weeks or monthly. The main ports of call on the Pacific were Los Angeles, San Francisco, Seattle, and Portland with east coast ports focused on New York, Baltimore, and Norfolk. Railroads connected the United States' west and east coasts by this time, and it was still cheaper for bulk cargo to be transported by water through the Panama Canal. The port a vessel arrived at initially and discharged its cargo was not always the one where new cargo was loaded. It was more standard to discharge then sail to another port or two discharging or taking on other cargo until reaching its final port before departing to the west or east. The vessel would also have to stop along its way to refuel coal or oil.

Garland's Pacific coast agent was J.D. Spreckels and Bros. Company with Allen M. Culver the representative. Culver was connected to transportation companies for thirty years with extensive influence with steamship interests. The line's coast-to-coast service provided increased activity and opportunities as well as financial risk. Garland officials believed there was enough freight offerings to keep their steamships busy for some time with a particular focus on tobacco shipments. Thirteen other steamship lines with 144 vessels combined were operating between the Atlantic, Gulf, and Pacific ports via the Panama Canal at the beginning of 1923 besides Garland,

NORLINA (shipwreck and remains)

Name of Property

Sonoma, California

County and State

which was also known as the United States Intercoastal Line. NORLINA was joined by *Carolinian*, *James B. Duke*, *William Perkins*, *Albert Jeffress*, *George Allen*, and *William Champion* (*Evening Sun* November 23, 1922; *Wall Street Journal* November 24, 1922; *Hilo Daily Tribune* November 24, 1922). The *Los Angeles Times* wrote that, "Backed by the British American Tobacco Company and the James B. Duke interests, the Garland Line is expected to become one of the most important factors in intercoastal freight trade" (*Los Angeles Times* November 26, 1922). Prior to the entire line operating on the intercoastal service, the Luckenbach Steamship Company chartered two Garland steamships for their own intercoastal use (*San Francisco Chronicle* September 16, 1922). Marine trade journals report that other steamship companies such as the American Hawaiian Steamship Company, and United American Line frequently chartered Garland steamships to fill in gaps their vessels could not accommodate (Winthrop 1922).

Garland's steamships had to compete with U.S. Shipping Board steamships that continued to operate and charter its surplus vessels on the intercoastal trade since the end of World War I. The Shipping Board's shipbuilding efforts to provide vessels for the war effort was unsuccessful since none of them were ready in time to serve the purpose for which they were built. The most common vessel type constructed were Hog Island freighters and 535-type passenger ships. Therefore, the U.S. Shipping Board used those surplus vessels in the commercial market to serve to develop American self-sufficiency. The Shipping Board had a hard time selling off its vessels after the war because the Jones Act of 1920 did not allow them to sell the surplus vessels to foreign owners. Private shipping interests protested that the use of government controlled steamships was unfair competition on coastal trade and passenger routes. This included much higher wages paid to crew and lower cargo rates than the private companies could provide. The Shipping Board responded that the government ships were servicing ports that private lines were not covering and not competing with private interests. If the Shipping Board was directly running ships on the same routes as private parties, they expressed it was only until the Shipping Board found a company to purchase the interests (Tilden 2021).

REVIEW SPACING

Garland Steamship Corporation officials were vocal about the unfair conditions placed on private vessels due to government competition. Garland Steamship Corporation withdrew from foreign trade and changed to intercoastal trade due to the following factors: 1) non-enforcement of the Merchant Marine Act of 1920 and failure to enact legislation to favor American vessels in foreign trade, 2) the inability to compete with U.S. Shipping Board owned and operated ships, 3) unreasonable freight rates with Shipping Board steamships sailing on schedule even at a loss, 4) small cargo volumes from the Orient to West Coast ports (*Nautical Gazette* 1924). Over time the Shipping Board vessels were eventually sold or scrapped, not before taking away profits from private companies and using the U.S. government name on steamship line advertising as an unfair marketing tactic.

NORLINA started on the intercoastal trade at the end of 1922 and transited westbound through the Panama Canal on January 3, 1923, after leaving Mobile, Alabama with 6,400 tons of general cargo for Seattle, Washington. Between 1922 and 1926, Garland Steamship Corporation

NORLINA (shipwreck and remains)

Name of Property

Sonoma, California

County and State

operated eight large freighters, including NORLINA, in the U.S. intercoastal trade through the Panama Canal with sailings every two weeks between the east coast ports of Mobile, New Orleans, New York, Baltimore, Galveston, Sabine, Newport News [Virginia], Norfolk, and Philadelphia and the west coast ports of Aberdeen [Oregon], Astoria, [Oregon], Portland [Oregon], Everett [Washington], Grays Harbor [Washington], Tacoma [Washington] Seattle, San Pedro, Los Angeles, Oakland, San Francisco, Vancouver, and Victoria. The other seven steamships besides NORLINA were *Albert Jeffress*, *Carolinian*, *Edgar Bowling*, *George Allen*, *James B. Duke*, *William Champion*, and *William Perkins* (Panama Canal 1923).

When Garland started its intercoastal operations, the company had competition from thirteen other lines including Pacific Mail Steamship Company that had sailings every fifteen days, the Isthmian Steamship Line with sailing every ten days, and the Luckenbach Line with weekly sailings. The trade route was one that was increasing at a fast rate with the traffic engaged in it for 1922 doubling that of 1921 numbers and accounting for twenty-five percent of the Panama Canal traffic. In December 1922 alone, fifty-five vessels went westbound, and forty-four vessels went eastbound through the canal with coastwise service. This was the greatest tonnage of intercoastal traffic through the Panama since its opening in 1914 and the intercoastal tonnage made up a majority of all the tonnage through the canal as well. The principal commodities moving westbound included general merchandise, iron and steel, kerosene or gasoline, coal and coke, and cotton. The eastbound commodities were mainly lumber, wheat, and barley, iron ore, nitrates, and fruit (Panama Canal 1923).

NORLINA made twenty-one transits through the Panama Canal between January 1923 and July 1926, ten going eastbound and eleven going westbound. The most frequent departure ports on the east coast were Norfolk and New York and on the west coast were Grays Harbor and Aberdeen. The most frequent arrival ports on the east coast were Philadelphia and New York and on the west coast were Los Angeles and Seattle. For westbound cargo NORLINA carried 2,000 to 6,000 tons of general unspecified cargo and on eastbound trips it carried on average 6,000 tons of lumber. One of NORLINA's interesting cargos was 75,000 cases of Campbell's condensed soup loaded at the Campbell factory in New Jersey and offloaded in San Pedro in January 1926 for distribution via rail to inland points. The quantity could make 7,200,000 bowls of soup. NORLINA's frequency of intercoastal transits at ten round trips between coasts is consistent with Garland's other steamships that each made from nine to twelve round trips besides *Carolinian* with four trips. In total, the eight vessels made seventy-seven round trips. NORLINA's cargo was also consistent with the other steamships in the line with almost all westbound cargos listed as general and eastbound cargos primarily being lumber, copper, shingles, and laths. Newspapers included some cargo brought westbound to provide more details other than what *The Panama Canal Record* published. The *James B. Duke* brought 2,000 hogshead of Virginia tobacco from New York and Baltimore to Long Beach [California] where it was then shipped to the orient (*Press—Telegram* January 5, 1924).

Lumber shipments from the Pacific northwest to the east coast represented a large portion of the intercoastal traffic during the four years NORLINA was active due to the building boom in the eastern and central states. Lumber was second in tonnage of commodities moving from the

NORLINA (shipwreck and remains)

Name of Property

Sonoma, California

County and State

Pacific to Atlantic, only behind crude petroleum, through the Panama Canal during that time with approximately a billion feet shipped in 1923. There was an ever growing demand specifically for Douglas fir for the New York area and its vicinity providing a strong market need for intercoastal shipping. The tonnage of lumber shipped through the canal steadily rose from 1,824,438 tons in 1924, to 2,255,421 in 1925, and 3,200,311 in 1926 (Panama Canal 1924; Panama Canal 1925; Panama Canal 1927).

For coastal shipments, schooners and steam schooners were used to move lumber. For longer trips between coasts, steamships were the most common vessel type utilized after the turn of the twentieth century due to their large cargo carrying abilities over long distances. The Panama Canal's opening in 1914 cut into the use of deep water sailing ships that once dominated the lumber trade. Once there was a shorter and easier route east and west, steamships became the preferred vessel type for intercoastal lumber traffic. Steamships also offered rates that could compete with railroad rates during the time NORLINA operated in the trade. Only a small percentage of U.S. lumber production, at three to seven percent, was exported with the majority being consumed in the population centers of the northeast and central west.

NORLINA and the other Garland ships focused their shipments on those originating in the Pacific northwest states of Oregon and Washington where Douglas fir was the main species being harvested and milled as it was plentiful and inexpensive. Douglas fir is characterized as being a general-purpose softwood that is strong, compact, tough, straight grained, resilient, durable, and able to hold nails well. The main uses included heavy construction work where large timbers were needed, shipbuilding, railroad car construction, flooring, furniture, boxes/crates, pumps and wood pipe, tanks, silos, cross ties, planning mill products, and general millwork (Brown 1923). The West Coast states dominated the Douglas fir market with its mills able to supply large-sized timbers in the 1920s when other regions producing Southern yellow pine had been overharvested and unable to supply larger sized products.

NORLINA's cargo records through the Panama Canal did not specify the type of lumber. The steamship may have also carried Redwood lumber, which for east coast markets was mostly used for siding and wide panel stock. Another species NORLINA may have likely carried was hemlock as there is a report of Garland steamship *Edgar Bowling* with a cargo of 4,300,000 feet of hemlock lumber from Grays Harbor for Philadelphia. Hemlock is a general-purpose softwood characterized as weak, light, coarse, splintery, and crooked grained. Hemlock's main use was in rough construction work, general millwork, boxes/crates, furniture, trunks, cabinets, fencing, and shipbuilding. The western species had a straighter grain and was harder than the eastern species. In 1925, one Grays Harbor mill shipped nine million feet of hemlock to Atlantic states per month. Hemlock was marketed as an inexpensive wood for flooring (Brown 1923; *The Timberman* 1925). NORLINA's lumber cargos, once offloaded at its east coast port, might have been used locally or transferred to railway cars for transshipment to interior states (Bryant 1922; *Philadelphia Inquirer* March 31, 1925).

NORLINA completed ten trips from a west coast port through the Panama Canal to an east coast port. Eight of those trips were between Grays Harbor/Aberdeen in Washington and Philadelphia

NORLINA (shipwreck and remains)

Name of Property

Sonoma, California

County and State

with an average of 5,785 tons of lumber per load. Grays Harbor is located on the southwest coast Washington, within North Bay. Several rivers empty into the bay with the most important being the Chehalis, Wishkah, Hoquiam, and Humptulips. Logs were sent down river from inland timberlands to sawmills that sat along the river. Milled lumber products were then transferred to storage yards alongside the wharfs for shipment out. Grays Harbor was ideally suited to the lumber trade with a deep water port that allowed sawmills to be built close to the shipment point and river access to forestlands. The lumber industry started on a local scale in the 1850s and grew to a larger proportion in the 1880s as trade routes expanded to California, the orient, and to the Atlantic coast. The region had access to high quality timber on favorable logging grounds with nearby transportation facilities. By the 1910s, there were several commercial lumber operations present around Grays Harbors with annual production peaking in the 1920s after World War I (U.S. Department of Agriculture 1944).

In 1938, the port facilities, on the north side of the Chehalis River and encompassing Aberdeen and Hoquiam, had twenty-nine wharfs with a rail connection and modern equipment for handling lumber and other cargo. The wharfs were a combination of private lumber company wharfs and those of the general freight terminal. Thirteen of those wharfs were devoted to mill products such as lumber and shingles. During a ten-year period between 1927 and 1936, lumber products accounted for 96.9 percent of the coastwise shipments out of Grays Harbor. The year 1926 represented the peak of lumber shipments with 2,549,454 tons, a major increase from 638,828 tons in 1921. After 1926, there were fluctuations in tonnage with a downward trend in 1930s with a slight increase during World War II (U.S. Army Corps of Engineers 1938).

During the first two quarters of 1924, NORLINA deviated from its regular ports of call within the intercoastal trade and sailed once to the Far East, stopping in Manila, Philippines and Shanghai, China. NORLINA carried lumber to the orient and returned with unspecified merchandise. NORLINA departed Portland, Oregon on February 10 and returned to San Francisco on June 7. Six other Garland steamship also made trips to Hong Kong and Shanghai during the same timeframe. The company withdrew its steamships from the intercoastal trade and temporarily diverted them to the transpacific under its agent, the General Steamship Corporation. An increase in Panama Canal tolls and more competition made the Garland Line seek out new business opportunities. When Garland entered the trade in 1922 there were 99 vessels, up to 216 vessels in 1923, down to 137 vessels in 1924. The change of route was short lived due to a slump in the trade. Garland reentered the intercoastal trade after its vessels only making one transpacific trip each. (*San Francisco Examiner* January 14, 1924; *Los Angeles Times* February 28, 1924; *San Francisco Examiner* March 14, 1924; *Hanford Morning Journal* April 30, 1924).

“... the lack of business and unreasonable competition by Shipping Board vessels were the chief reasons for the decision of the company to abandon the oriental traffic” (*Los Angeles Times* May 20, 1924). Even with the Garland steamships not steaming to the orient anymore, the company’s vessels carried products from east coast ports to California destined to cross the Pacific on another vessel. One example is the *Edgar Bowling* that arrived in San Pedro several times with

NORLINA (shipwreck and remains)

Name of Property

Sonoma, California

County and State

cigarettes consigned to oriental ports (*News-Pilot* August 30, 1924; *Los Angeles Evening Express* April 3, 1925).

Wrecking Event (August 1926)

NORLINA departed San Francisco, California at 5:30 pm on August 3, 1926, under Captain John Soderlun and thirty-five crewmen, with the hold lightly filled with 400 tons of mixed general cargo, freight, and merchandise for the Puget Sound ports of Seattle and Grays Harbor, Washington. The cargo was consigned to Sears Roebuck. NORLINA had steamed its way from New York to California, arriving in San Francisco on July 31, just as it had done many times before. This trip was less than ordinary as the steamship continued north. While steaming at nine knots holding a course "North 40 West" in dense fog at 2:47am, forty-five miles north of Point Reyes, NORLINA struck the jagged shoals south of Horseshoe Point (*Press Democrat* August 8, 1926).

Horseshoe Point is located eighty miles north of San Francisco and is one of the most treacherous spots along the California Coast. The freighter sat off the 4,000-acre ranch of A.P. Eckert. NORLINA's captain might have been running too close to shore to hear the Point Area fog station signal and misjudged his distance while getting his bearings. At the helm during the grounding was helmsman Gene Gray. Reporters found, "There was a grinding crash, a sudden sickening lift and lurch, and the vessel was still. The engines were shut off, then run in reverse. But all efforts to back off were vain" (*San Francisco Examiner* August 5, 1926). An SOS signal was immediately sent out when the ship impacted the reef. At the same time a distress signal was sounded on the ship's whistle that could be heard at Fort Ross four miles south and Stewarts Point ten miles north. The lifeboats were swung over NORLINA's side and readied to leave at any moment (**Figure 3**). When NORLINA ran aground, the bow initially pointed towards shore and was quickly affected by the sea conditions that battered the vessel and moved the hull around (*Press Telegram* August 4, 1926, *Oakland Tribune* August 4, 1926, *Santa Ana Register* August 4, 1926; *Oakland Tribune* August 7, 1926).

By 8:00am there was fourteen feet of water in the forehold, ten feet of water in holds No. 1, 2, and 3, and the ship was fast on the rocks forty-five yards offshore. NORLINA's wireless operator initially reported to the Federal Telegraph Company that the freighter was not in immediate danger if the weather remained calm and salvage tugs were enroute from San Francisco to help as well as a lifesaving crew on standby at Point Arena if needed. At 9:00am the swell picked up and the hull started pounding on the rocks causing Coast Guard stations at Point Arena, Arena Cove, Point Reyes, and Bolinas to dispatch rescue crews. The Coast Guard cutter *Shawnee* was also sent from San Francisco to stand by if needed. An Army Air Corps plane from Crissy Field piloted by Lieutenant Willis Taylor flew out to the scene to make observations. He was forced to land in Gualala due to heavy fog and never sighted NORLINA. Captain Soderlun believed he could refloat NORLINA at high tide and work was underway to patch the hole in its hull (*Press Telegram* August 4, 1926, *Oakland Tribune* August 4, 1926, *Santa Ana Register* August 4, 1926; *Visalia Daily Times* August 5, 1926).

NORLINA (shipwreck and remains)

Name of Property

Sonoma, California

County and State

Twelve hours after NORLINA hit the rocks the sea was calm, and the captain was still hopeful he could float his vessel after lightering cargo as long as a storm did not come up. Lightering is the process of removing oil or other hazardous chemicals from a compromised vessel to another vessel to prevent oil from spilling into the surrounding waters. The crew was prepared to get the vessel off immediately or wait until higher season tides in mid-August. In 1919, the Dutch steamship *Arakan* grounded and sat off Salt Point for three weeks before being pulled off so Soderlun had hopes he could free NORLINA eventually. The Coast Guard power boat from Arena Cove arrived just after noon on August 4. Soderlun said NORLINA's crew were fine and did not need help, and the Coast Guard power boat returned home. The Point Arena lifesaving crew stood by on the rocky shore. The San Francisco salvage tug *Sea Salvor* arrived with pumps to try and reduce the water level in the forehold. It is unclear if the pumps were even used. *Sea Salvor* also brought a breeches buoy and other salvage equipment. The tug also waited to pull the freighter off, which never happened (*San Francisco Examiner* August 5, 1926).

The incident caused a response from NORLINA's insurer, Lloyd's of London, who sent its Pacific Coast agent/chief surveyor Captain J.H. Kennedy to the wreck site for an assessment. Curtis was joined by marine surveyor Captain Lib Curtis. Lloyd's of London charged Kennedy and Curtis with collecting crewmember reports to find responsibility for the wreck. Residents of Stewart's Point are credited with notifying authorities and press of the incident and assisting NORLINA's crew. The local residents reported that the ship had rolled and split open along half its length flooding the three forward holds. Mrs. Arch Richardson, of Stewarts Point, telephoned *The [Santa Rosa] Press Democrat* the evening of August 4 and passed along there was no effort to get a line to NORLINA at that time. At that time NORLINA was "fast aground, but no immediate danger" although water was continuing to rise inside its hull from the hole in the bow and the vessel had a list to port (*San Francisco Examiner* August 5, 1926).

The fog lifted and revealed NORLINA to the "throng" of persons gathered at the shore to witness the large freighter so close to them. Six crewmen (William Gladney, E.L. Craver, P.W. Spencer, Larry Tucker, L.R. Linker, and J. Axelbaum) rowed ashore in a dory and informed employees of the Richardson Redwood Tie Company of Stewart's Point that Captain Soderlun was drunk when NORLINA departed San Francisco. Garland Steamship Line's San Francisco agent Neil Laidlaw presented a different picture and reported to the newspapers that Soderlun was sober and San Francisco harbor pilot Captain C.G. Graham also agreed Soderlun was sober (*Los Angeles Times* August 5, 1926; *The News Review* August 5, 1926; *The Press Democrat* August 5, 1926; *San Francisco Examiner* August 5, 1926). The crew also linked the lack of the ship's mascot caused its unlucky grounding. NORLINA typically sailed with a black cat onboard. When the ship departed San Francisco on August 3, the cat was left behind, leading the crew to blame the wrecking on this event. Chief officer Bangs stated, "I don't deny that perhaps that's why we had this wreck" (*Oakland Tribune* August 7, 1926). The preliminary investigation absolved Captain Soderlun of any blame.

NORLINA's condition on August 5 worsened. Salvage efforts continued despite the two forward and after holds full of water and for a short time Soderlun still believed NORLINA was able to be refloated. The observers on shore concluded from witnessing other shipwrecks along the

NORLINA (shipwreck and remains)

Name of Property

Sonoma, California

County and State

coast, that the freighter was a total loss. “The seamen have the assurance of men long afloat, but the farmers and lumberman who have viewed the ill-fated vessel, have a familiarity with conditions here, born of long acquittance with the disposition of the sea along this rugged coast” (*The Press Democrat* August 6, 1926). The swells and wind picked up the evening of August 5 and NORLINA swayed precariously on the rocks. Soderlun and his crew continued to prepare the cargo to be lightered ashore and then patch the bow. At low tide, eight feet of water lay under NORLINA’s bow. Only a few yards inshore, the receding tide revealed a sharp rocky reef. Further inshore was a small section of beach backed by an eighty-foot-high rocky bluff (*The Press Democrat* August 6, 1926).

At 10:30am on August 6, NORLINA’s crew radioed the Federal Telegraph Company that, “Norlina condition bad. We expect to break up at any moment” (*Sacramento Bee* August 6, 1926). The hole in NORLINA’s side spanned from bow to amidships. One hour later the crew left the ship and returned to San Francisco on *Shawnee* and *Sea Salvor*. The Coast Guard patrol boat *Cahokia* also assisted with personnel transport and provided hospital treatment onboard for a NORLINA crew member for unknown reasons. Heavy swells opened hull seams amidships and flooded the engine room making all hopes of refloating shattered. Four crewmen remained onboard to oversee the salvage efforts as Garland Steamship Line owners felt the machinery and cargo could be saved. The crewmen’s opinion changed and by the end of day they stated NORLINA was a total loss and unsalvageable. The hull was beginning to buckle from the waves and tides. Garland Steamship Line district manager remarked, the “vessel has been left to the mercy of the sea.” “We have given her up as a total loss. The waves are pushing her closer to shore, and it will be a fruitless task to attempt to float the ship again” (*Morning Register* August 6, 1926; *Santa Cruz Evening News* August 6, 1926; *Oakland Tribune* August 7, 1926; *The Press Democrat* August 7, 1926; *San Francisco Examiner* August 7, 1926). Garland Steamship Line officially abandoned NORLINA to its insurance underwriters, Lloyd’s Register of Shipping of London, on August 6 (Garland Steamship Corporation 1926). It was not until September 21 that the Lloyd’s Report of Total Loss and Casualty was signed (Lloyd’s Register of Shipping 1926).

After an initial hearing into NORLINA’s loss, Captain Soderlun and second mate Fred Atwood were charged with negligence and ordered to be tried before the board of steamship inspectors on August 9. It was ultimately found that Soderlun was not intoxicated after crewmembers testified nobody onboard was drunk or had been drinking. Seaman Jacob Alexbaum, who said Soderlun was drunk, received a severe beating by fellow crewmembers outside the steamship line’s office in San Francisco. Alexbaum reported NORLINA, was a “hell ship, rotten from stem to stern,” and Soderlun was, “cock-eyed drunk” when the freighter sank (*The Press Democrat* August 8, 1926). Newspapers presented differing views by the crew on whether Soderlun was drunk as on August 10, eleven crewmembers signed an affidavit that Soderlun was indeed drunk. The full hearing by steamboat inspectors Frank Turner and Joseph Dolan concluded Soderlun and Atwood were negligent. While Soderlun was NORLINA’s captain, Atwood was in charge at the time of the grounding (*Oakland Tribune* August 10, 1926).

Crewmember interviews revealed seven main points that revealed highly negligent seamanship by Soderlun and Atwood as published in the *San Francisco Examiner* on August 8 and 10, 1926.

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

1. "A Garland Steamship Line pilot, who was supposed to stay onboard for the entire voyage, was so drunk he was sent back ashore off Alcatraz Island."
2. "Water Bowers, a sixteen-year-old boy, was at NORLINA's wheel, which almost hit Alcatraz Island departing San Francisco Bay."
3. "NORLINA's course between Point Richmond and Horseshoe Point was steered by guesswork based on calculated distance from Pont Reyes fog whistle. Soderlun did not deny this finding. NORLINA had no pilot therefore the crew was unfamiliar with the course."
4. "Atwood did not see Soderlun between leaving San Francisco and the grounding although he attempted for an hour and a half to call him from his cabin to take command. Additional testimony added that Soderlun came onboard for the trip drunk. Soderlun denied this finding."
5. "NORLINA traveled at full speed despite the heavy fog."
6. "After NORLINA grounded Soderlun gave no orders for six minutes before finally giving an order to stop the engines. Other testimony stated Soderlun was not seen for hours after the wreck. It is unsure what is the correct finding but after the ship hit the rocks inadequate measures were taken to save it."
7. "Whiskey was poured overboard to conceal Soderlun's intoxication while insurance investigator were onboard."

Soderlun and Atwood's licenses were cancelled temporarily when both men pleaded guilty to negligence. Soderlun's was cancelled until its date of expiration, December 7, 1926, and Atwood's for sixty days. This meant during that time Soderlun and Atwood could not serve as an officer of an ocean steamship. The board also ruled the findings would not be used against them when it came time to renew their license after suspension (*Sacramento Bee* August 9, 1926; *Oakland Tribune* August 10, 1926). Newspapers reported wrote that, "it is generally believed from the testimony given by Captain Soderlun on Saturday that an error in deviation reckoning that should later have been checked by the second mate, was responsible for the grounding the freighter" (*The Press Democrat* August 10, 1926). The federal inquiry into NORLINA's wrecking was closed on August 10.

Garland Steamship Line discharged NORLINA's crew from their jobs when the men arrived in San Francisco with only a few dollars compensation owing for having abandoned ship on August 6. The crew asserted their mariners' papers signed in New York stated they were promised passage back to New York in the event of a disaster. The United States Commissioner informed the crew that since the ship went ashore off the American coast, the crew lost their jobs with the Garland Steamship Line the day they abandoned ship. NORLINA's crew recalled that Soderlun also promised them a return trip to New York and that the men would be paid for salvage work. Eventually each crewman was compensated \$15.20 for the nineteen hours they spent on salvage attempts (*San Francisco Examiner* August 10, 1926; *San Francisco Examiner* August 11, 1926).

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

Salvage Efforts (1926)

When NORLINA grounded and became a total loss, it was valued at \$350,000 and fully insured. Three days after the wrecking event, on August 7, NORLINA's owners or insurers issued a contract for the removal of the 400 tons of miscellaneous merchandise. The salvors also planned to build a rigging apparatus from ship to shore to transfer the cargo. This was the first mention of salvage efforts, which would continue for several months (*The Press Democrat* August 7, 1926). A system of hoisting gear with cables and donkey steam engine was installed between NORLINA and shore to move material. The *Napa Journal* reported on August 10, 1926 that Lloyd's agents ordered salvage operations stopped, official acknowledgment that NORLINA was not able to be saved (*Petaluma-Argus Courier* August 10, 1926; *San Francisco Examiner* August 12, 1926).

W.R. Kennedy, Lloyd's San Francisco agent, put out a request for bids for NORLINA's salvage on August 13. He sought interest from salvage firms who would operate on a percentage basis. The bids were to state the percentage the recovering party would like to receive. At this time NORLINA had been pushed towards shore and at low tide could be accessed by climbing out over the rocks. A portion of the cargo, forty tons valued at of \$3,000, had already been removed during previous efforts. Salvage efforts were not limited to the cargo; ship materials such as anchors, chain, fixtures, deck gear, or machinery were profitable material for scrap or reuse. No bids were received in response to Kennedy's request for bids (*San Pedro Daily News* August 13, 1926; *San Pedro Daily News* August 19, 1926).

Clyde Henry, of Point Arena Electric Light and Power Company, purchased NORLINA and its cargo for \$1,000. A good deal, as the freighter was valued at \$300,000 to \$350,000. He employed wharf manager Fred Warren, also of Point Arena, to oversee a crew of thirty men to take off the remainder of its cargo, which was reported to be heavy materials including nails and wire (*Oakland Tribune* August 22, 1926). A line was run from ship to shore and material transferred on the wire like a zip line. The salvors used NORLINA's own steam winch until its fuel supply was exhausted. The salvors were fighting Mother Nature in, "a frantic effort to remove the vessel's cargo to dry land before the elements set in and complete the destruction of the wreck." Warren also removed NORLINA's anchors, anchor chain, and several winches. He transported the material to Point Arena and then shipped it to San Francisco (*Petaluma Argus-Courier* August 20, 1926; Tooker n.d.).

Any heavy weather would beat NORLINA to pieces against the rocks. By August 14, NORLINA lay parallel to and within speaking distance of shore. The rivets holding the hull plates together were starting to give way from its precarious location. Two jagged holes in the outer hull below the waterline caused NORLINA to be half full of water. After another two weeks, onlookers reported the hole in its side widened and all attempt of reflatting the vessels were abandoned. All the cargo had been taken off and salvage operations continued with favorable weather and sea conditions present for several weeks. After just over a month of work, NORLINA's bow had settled down further into the water and the rest of the hull was collapsing. Salvage operations ended in October as NORLINA's hull buckled on the rocks. By this time NORLINA, which

NORLINA (shipwreck and remains)

Name of Property

Sonoma, California

County and State

initially grounded with its bow pointing towards shore, had rotated almost 180 degrees as a result of being pounded by the rough sea conditions. Before NORLINA finally met its end, the vessel sat with its stern end closest to shore (*Mendocino Beacon* August 14, 1926; *The Press Democrat* September 5, 1926; *The Press Democrat* October 6, 1926).

Over the three months' time after NORLINA hit the rocks off Salt Point, its hull slowly broke apart from the weather and sea conditions as well as being affected by the stresses from salvage efforts (**Figure 4**). Eventually the freighter cracked in half and its bow broke off and settled closer to shore approximately 100 feet from the wave break. The pilot house was gone and upper deck structure barley hanging on (*Oakland Tribune* October 31, 1926). As 1926 was coming to an end NORLINA's bow settled into the sandy and rocky bottom and the stern section remained perched upon the rocks for some time until its hull plates weakened and gave way causing the wreckage slipped beneath the waves (*Petaluma Argus Courier* December 3, 1926).

Tourist Attraction (1926)

The isolated Sonoma County coastline was a tough place to live during the early 1900s. Any event that was out of the ordinary, like a vessel grounding or wrecking, attracted lots of attention from the local community. A break from the daily monotony was broken when a lumber schooner or coastal steamship came into trouble and ended up close to shore. NORLINA's wreck site, near Salt Point Landing, a once busy doghole port with a surrounding community, drew crowds both locally and from the San Francisco and Santa Rosa areas. Close by was the community at Stewart's Point Landing, a still active doghole port with ties to the lumber, ranching, and agricultural industries. On Sunday, August 8, 1926, the *Petaluma-Argus Courier* reported hundreds of people from all parts of the state motored to Salt Point to see NORLINA. The headline read, "Crowds Visit The Big Wreck" (*Petaluma-Argus Courier* August 10, 1926). "The cars kept coming and going all day long... Many people took their lunches with them and spent the day at the scene." The tourists picnicked on the scenic coastal bluff with a view of NORLINA so close to shore that, "it seems as if a person could walk out to it" (*Petaluma-Argus Courier* August 10, 1926). The newspaper coverage of NORLINA's loss and its accessible and observable position increased the public interest in venturing out to see the large freighter. Trips to see NORLINA were covered like a social event with newspaper articles including the names of individuals that went together to see NORLINA (*Press Democrat* August 11, 1926).

Two months later NORLINA was still drawing large crowds with the *Press Democrat* reporting the freighter, "continues to be the mecca for sight-seers, and weekend tourists from the various resorts [who] motor there for Sunday picnics on the beach" (*Press Democrat* October 31, 1926). The popularity of NORLINA as an attraction culminated with a film reel captured of the wreck site. The California and Cline theaters showed the newsreel in Santa Rosa and then San Francisco. The film, "will be specially interesting here [Santa Rosa] because of the fact that hundreds of local people have autoed to the shore near the big freighter" (*Santa Rosa Republican* August 9, 1926). Even a month after NORLINA's wrecking, the steamship continued to be a tourist magnet. The *Santa Rosa Republican* wrote on September 11, 1926, that, "fair weather and good roads lured hundreds to view the wreck of Norlina at Salt Point." Another month passed

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

and NORLINA still made the headlines as it broke up in October and November. The freighter, “continues to be the mecca for sight-seers and weekend tourist from the various resorts moto there for Sunday picnics on the beach” (*The Press Democrat* October 31, 1926).

Shortly after NORLINA’s wrecking in November 1926, the Garland Steamship Corporation withdrew all its remaining steamships from the intercoastal trade with a portion of them going to the coal trade from the United States to the United Kingdom. The coal trade provided high charter rates due to British miners being on strike compared to the diminishing profits and stability within the intercoastal lines. After the strike ended Garland returned to the intercoastal service. In November 1927, the Garland line dissolved ending the company’s eleven years in business (*Panama Canal* 1927; *Oakland Tribune* January 3, 1927; *San Francisco Examiner* January 5, 1927; *Oakland Tribune* November 20, 1927).

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

9. Major Bibliographical References

Bibliography (Cite the books, articles, and other sources used in preparing this form.)

American Bureau of Shipping

1917 *Record of American and Foreign Shipping*. American Bureau of Shipping, New York, New York.

1919 *Record of American and Foreign Shipping*. American Bureau of Shipping, New York, New York.

Bartlett, Charles

1962 "U.S. Food Relief for Communists?" *Enquirer and News*. Battle Creek, Michigan. August 2.

Berglund, Abraham

1920 "The War and the World's Mercantile Marine." *The American Economic Review*. June 1920, Volume 10, Number 2, pp. 227-258.

1931 *Ocean Transportation*. Longmans, Green and Co., New York, New York.

Bureau of Ocean Energy Management (BOEM)

2021 Shipwrecks in the Gulf! Electronic document, <http://www.flpublicarchaeology.org/blog/teslaproject/>. Accessed November 11, 2021.

Brown, Nelson Courtlandt

1923 *The American Lumber Industry*. John Wiley & Sons, Inc. New York, New York.

Bryant, Ralph Clement

1922 *Lumber: Its Manufacture and Distribution*. John Wiley & Sons, Inc. New York, New York.

California Department of Fish and Wildlife

2021 Salt Point State Marine Conservation Area. Electronic document, <https://wildlife.ca.gov/Conservation/Marine/MPAs/Network/North-Central-California#27287577-salt-point-state-marine-conservation-area>. Accessed April 22, 2021.

Clephane, Lewis P.

1969 *History of the Naval Overseas Transportation Service in World War I*. Naval History Division. Washington, D.C.

Cooper, Malcolm

2012 *J. and C. Harrison: The History of a Family Shipping Venture*. Ships in Focus Publications, Preston, United Kingdom.

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

Craig, Robin

- 1980 *The Ship: Steam Tramps and Cargo Liners 1850-1950*. National Maritime Museum. Her Majesty's Stationary Office. London, England.
- 2003 *British Tramp Shipping, 1750-1914*. Research in Maritime History No. 24. International Maritime Economic History Association. St. John's Newfoundland.

Crowell, Benedict and Robert Forrest Wilson

- 1921 *The Road To France, II. The Transportation of Troops and Military Supplies 1917-1918*. Yale University Press, New Haven, Connecticut.

Fenton, Roy

- 2013 *Tramp Ships: An Illustrated History*. Seaforth Publishing. Barnsley, Great Britain.

Garland Steamship Corporation

- 1926 Letter from Garland Steamship Corporation to Lloyd's Register of Shipping, September 8, 1926. Lloyd's Register Foundation. Electronic document, <https://hec.lrfoundation.org.uk/>. Accessed May 17, 2021.

Gleaves, Albert

- 1921 *A History of the Transport Service: Adventures and Experiences of Unites States Transports and Cruisers in the World War*. George H. Doran Company, New York, New York.

Greater Farallones National Marine Sanctuary

- 2021 Greater Farallones National Marine Sanctuary. Electronic document, <https://farallones.noaa.gov/>. Accessed March 26, 2021.

Gripaios, Hector

- 1959 *Tramp Shipping*. Thomas Nelson and Sons Ltd. New York, New York.

Hayward, Mary Ellen, and Nicholas Fessenden

- 2011 Locust Point Historic District. National Register of Historic Places nomination. NRIS #12001084, listed December 26, 2012. Electronic document, https://mht.maryland.gov/secure/medusa/PDF/NR_PDFs/NR-1537.pdf. Accessed May 27, 2021.

Helgason, Gudmundur

- 2021 World War I German U-boats and ships. Electronic document, <https://uboaat.net/wwi/>. Accessed May 18, 2021.

Keith, Robert C.

- 1982 *Baltimore Harbor: A Picture History*. Ocean World Publishing Cp., Inc. Baltimore, Maryland.

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

Lloyd's Register Foundation

1908 Profile Plan for Harfleur, 2nd May 1908. LRF-PUN-W670-0147-P. Electronic document, <https://hec.lrfoundation.org.uk/archive-library/documents/lrf-pun-w670-0147-p>. Accessed July 22, 2021.

Lloyd's Register of Shipping

1910 *Lloyd's Register of British and Foreign Shipping, 1909-1910*. volume 1. Wyman and Sons. London, England.

1926 Report of Total Loss, Casualty, &c. *Norlina*, September 21, 1926. Lloyd's Register Foundation. Electronic document, <https://hec.lrfoundation.org.uk/>. Accessed May 17, 2021.

Lumber Trade Journal

1915 "Exports of Savannah Growing." September 1. Pg. 38. Walter Wright, New Orleans, Louisiana.

Lynn, Louis August

1950 The Sulphur Industry of Calcasieu Parish. Master of Arts Thesis. Department of History. Louisiana State University. Electronic document, <http://ereserves.mcneese.edu/depts/archive/FTBooks/lynn.htm>. Accessed July 6, 2021.

Marvin, Winthrop, ed.

1922 The Marine Journal. October 21, 1922 pg 18 and December pg 25. The Marine Journal Company, New York, New York.

Marx, Deborah and Donald Shomette

2014 Mallows Bay - Widewater Historical and Archaeological District. National Register of Historic Places nomination. NRIS 15000173, listed April 24, 2015.

Marx, Deborah and James P. Delgado

2013 LANCING (shipwreck and remains). National Register of Historic Places nomination. NRIS 13000451, listed June 23, 2013. Electronic document, https://nmsmonitor.blob.core.windows.net/monitor-prod/media/archive/shipwrecks/lancing_nrn.pdf. Accessed May 24, 2021.

Marx, Deborah and Joseph Hoyt

2015 U-576 and BLUEFIELDS (shipwrecks and remains). National Register of Historic Places nomination. NRIS 15000864, listed December 8, 2015. Electronic document, https://nmsmonitor.blob.core.windows.net/monitor-prod/media/docs/u576_bluefields_nrn.pdf. Accessed May 24, 2021.

Marx, Deborah and Matthew Lawrence

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

2006 FRANK A. PALMER and LOUISE B. CRARY (shipwreck and remains). National Register of Historic Places nomination. NRIS 6000107, listed March 8, 2006.

Merchants and Manufacturers Association

1919 Baltimore. "Merchants and Manufacturers Association Has Been A Leading Force In Arousing Baltimore Into the Foreign Trade Activities Which Have Developed Since the War". October 1919. Volume XII. No. 1 Baltimore, Maryland.

1920 Baltimore. "Partial List of Regular Sailings from Baltimore." February 1920. Volume XIII. No 5. Baltimore, Maryland.

National Archives [UK]

1917 Liverpool: SS Norlina (United States Line) Traveling from Baltimore to Liverpool. March 28, 1917. Board of Trade Inward Passenger Lists 1878-1960. BT 26/635/24. Electronic document, <https://discovery.nationalarchives.gov.uk/details/r/C9344783>. Accessed May 17, 2021.

National Archives and Records Administration

1820-1964 Baltimore, Passengers Lists. National Archives, Washington, D.C. Database online. Ancestry.com. Provo, UT, USA: Ancestry.com Operations Inc, 2006. <https://www.ancestry.com/search/collections/8679/>. Accessed May 18, 2021.

Nautical Gazette

1924 "The Crime of Government Competition: William M. Campion Tells How Garland Line was Ruthlessly Forced Out of Foreign Trade by Devastation Conditions Created by Shipping Board Vessels." Volume 106, Number 21. May 24. Pg. 563, 567-568. New York, New York.

NavSource Naval History

2022 Norlina (ID 1597). NavSource Online: Identification Numbered Ships Photo Archive. Electronic document, <http://navsource.org/archives/12/171597.html>. Accessed March 23, 2022.

Navy Department

1918 Memorandum List of Transports and Merchantmen with Armed Guards, &c. Navy Department. Washington, D.C. Electronic document, <https://www.history.navy.mil/research/publications/documentary-histories/wwi/april-1918/navy-department-list.html>. Accessed May 19, 2021.

1919 Ships' Data, U.S. Naval Vessels: Constriction and Repair Bureau November 1, 1918. Navy Department. Washington, D.C.

1923 *American Ship Casualties of the World War including Naval Vessels, Merchant Ships, Sailing Vessels, and Fishing Craft*. Government Printing Office, Washington, D.C. Electronic document, <https://www.history.navy.mil/research/library/online-reading-room/title-list-alphabetically/a/american-ship-casualties-world-war.html>. Accessed May 18, 2021.

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

Panama Canal

1923 *The Panama Canal Record*. Volume XVI. August 16, 1922 to August 8, 1923. The Panama Canal. Balboa Heights, Canal Zone, Panama.

Parrott, Sir Edward

1918 *The Children's Story of the War*. Thomas Nelson and Sons, Ltd., London, England.

Radigan, Joseph M.

2021 NavSource Online. Norlina 9ID 1597). Electronic document, <http://www.navsource.org/archives/12/171597.htm>. Accessed May 20, 2021.

Roberts, Stephen S,

2021 Shipscribe: United States Navy Temporary Auxiliary Ships of World War I, 1917-1919. Electronic document, <https://www.shipscribe.com/usnaux/ww1/index.htm>. Accessed May 28, 2021.

Scherer, James A.B.

1916 *Cotton as a World Power: A Study in the Economic Interpretation of History*. Frederick A. Stokes Company. New York, New York.

Shipping and Shipbuilding Research Trust

2021 Ships Built in the River Tees, Hartlepool, and Whitby. Electronic document, <http://www.teesbuiltships.co.uk/search.php>. Accessed August 3, 2021.

Simmons-Boardman Publishing Company

1920 "\$178,835,000 In New Shipping Concerns Formed in April." International Marine Engineering. June 1920. Simmons-Boardman Publishing Company. New York, New York.

Stewart, I.G.

1997 *British Tramps and their Peacetime Contribution to World Shipping History*. Ian Stewart Marine Publications. Rockingham Beach, Western Australia.

Stick, David

1952 *Graveyard of the Atlantic: Shipwrecks of the North Carolina Coast*. University of North Carolina Press. n.p., North Carolina.

Stolarik, Mark M. (ed.)

1988 *Forgotten Doors: The Other Ports of Entry to the United States*. The Balch Institute Press, Philadelphia, Pennsylvania.

Smith, Douglas

NORLINA (shipwreck and remains)

Name of Property

Sonoma, California

County and State

2019 *The Russian Job: The Forgotten Story of How America Saved the Soviet Union from Ruin*. Farrar, Straus and Giroux. New York, New York.

Swiggum, S. and M. Kohli

2019 J & C Harrison, London 1888-1979. The Ships List. Electronic document.
https://www.theshipslist.com/ships/lines/j_charrison.shtml. Accessed July 6, 2021.

The Timberman

1925 "Western Hemlock for Atlantic Coast." Volume XXVI, Number 9. June. Portland, Oregon.

The Wrecksite

2022 The Wrecksite online database. Electronic document, <https://www.wrecksite.eu>. Accessed March 23, 2022.

Thomas, P.N.

1992a *British Ocean Tramps Volume 1: Builders and their Cargoes*. Waine Research Publications. Wolverhampton, England.

1992b *British Ocean Tramps Volume 2: Owners and Their Ships*. Waine Research Publications. Wolverhampton, England.

Tilden, Doug

2021 "The Founding of the United States Lines: A Tale for its Time Part 1." *Power Ships*. Number 317 Spring 2021. Steamship Historical Society of America. Warwick, Rhode Island.

Tooker, Richard

n.d. "Condensation and combination of reports in Chronicle and Examiner about the wreck of SS Norlina, Wed. Aug. 4, 1926, 2:47am." Richard Tooker Papers. HDC 1062, Box 4 of 4. Coastal Miscellany, 3 of 4. Folder 4 Series 4. San Francisco Maritime Historical Park. San Francisco, California.

Tucker, Spencer C. (ed.)

2005 *The Encyclopedia of World War I: A Political, Social and Military History, Volume 1*. ABC-CLIO Information Services. Santa Barbara, California.

United State Army Corps of Engineers

1938 The Ports of Everett, Bellingham, and Grays Harbor, Washington. Port Series No. 28. War Department, Corps of Engineers, United States Army and United States Maritime Commission. Government Printing Office. Washington, D.C.

United States Department of Agriculture

1944 Forests and Forest Industries of the Grays Harbor Unit. Forest Economics Report Number 1. April. Forest Service. Portland, Oregon.

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

United States Department of Transportation

2021 Maritime Administration's First 100 Years: 1916-2016. Electronic document, <https://www.maritime.dot.gov/history/historical-documents-and-resources/maritime-administration%E2%80%99s-first-100-years-1916-%E2%80%93-2016>. Accessed June 15, 2021.

United States Federal Reserve

1921 Federal Reserve Bulletin. February 1921, pp 184, 186. Electronic document, https://fraser.stlouisfed.org/files/docs/publications/FRB/pages/1920-1924/23262_1920-1924.pdf. Accessed June 15, 2021.

United States Mixed Claims Commission

1928 United States and Germany. Administrative Decision No. I, Dealing with the Liabilities of Germany on All Claims (Save Those Expressly Excepted) Asserted by the United States on Behalf of Its Nationals. November 1, 1928. Government Printing Office, Washington, D.C.

United States Senate

1921 Naval Investigation. Hearings before the Subcommittee of the Committee on Naval Affairs, 66th Congress Second Session, Volume 2. Government Printing Office, Washington D.C.

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 # _____
- recorded by Historic American Landscape Survey # _____

Primary location of additional data:

- State Historic Preservation Office
- Other State agency
- Federal agency
- Local government
- University
- Other

Name of repository: CA Department of Parks and Recreation. NOAA Office of National Marine Sanctuaries

Historic Resources Survey Number (if assigned): _____

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

10. Geographical Data [redacted]

11. Form Prepared By

name/title: Deborah Marx, maritime archaeologist
organization: _____
street & number: 672 N Lake Dr.
city or town: Key Largo state: FL zip code: 33037
e-mail: deborahmarxarchaeologist@gmail.com
telephone: (617) 827-4398
date: February 2022; Revised March 2022

Additional Documentation

Submit the following items with the completed form:

- **Maps:** A USGS map or equivalent (7.5 or 15 minute series) indicating the property's location.
- **Sketch map** for historic districts and properties having large acreage or numerous resources. Key all photographs to this map.
- **Additional items:** (Check with the SHPO, TPO, or FPO for any additional items.)

Photographs

Submit clear and descriptive photographs. The size of each image must be 1600x1200 pixels (minimum), 3000x2000 preferred, at 300 ppi (pixels per inch) or larger. Key all photographs to the sketch map. Each photograph must be numbered and that number must correspond to the photograph number on the photo log. For simplicity, the name of the photographer, photo date, etc. may be listed once on the photograph log and doesn't need to be labeled on every photograph.

Photo Log

Name of Property:	NORLINA (shipwreck and remains)
City or Vicinity:	Jenner (vicinity)
County:	Sonoma County
State:	California
Photographer:	John Harreld
Date Photographed:	October 2020; August 2019a; October 2019b

Description of Photograph(s) and number, include view indicating direction of camera:

- | | |
|---------|---|
| 1 of 12 | View southeast from shore looking towards the wreck site (Harreld, 2020) |
| 2 of 12 | View west from shore looking toward the wreck site with vessel fragment exposed at low tide (Harreld 2019a) |

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

- 3 of 12 Triple expansion engine (high pressure steam cylinder and piston), detailed view looking southwest (Harreld 2019b)
- 4 of 12 Drive shaft, detailed view looking west (Harreld 2019b)
- 5 of 12 Boiler one of two looking northwest (closer to shore), detailed view (Harreld 2019b)
- 6 of 12 Boiler two of two looking north (closer to drive shaft), detailed view (Harreld 2019b)
- 7 of 12 Propeller blade, detailed view looking north (Harreld 2019b)
- 8 of 12 Hull fragment, detailed view looking south (Harreld 2019b)
- 9 of 12 Section of the double bottom, detailed view looking northwest (Harreld 2019b)
- 10 of 12 Cargo winch, detailed view (Harreld 2019b)
- 11 of 12 Bitt, detailed view (Harreld 2019b)
- 12 of 12 Tile floor section, detailed view (Harreld 2019b)

Paperwork Reduction Act Statement: This information is being collected for nominations to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C.460 et seq.). We may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a currently valid OMB control number.

Estimated Burden Statement: Public reporting burden for each response using this form is estimated to be between the Tier 1 and Tier 4 levels with the estimate of the time for each tier as follows:

- Tier 1 – 60-100 hours
- Tier 2 – 120 hours
- Tier 3 – 230 hours
- Tier 4 – 280 hours

The above estimates include time for reviewing instructions, gathering and maintaining data, and preparing and transmitting nominations. Send comments regarding these estimates or any other aspect of the requirement(s) to the Service Information Collection Clearance Officer, National Park Service, 1201 Oakridge Drive Fort Collins, CO 80525.

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

Location Map [*redacted*]

Boundary Map [*redacted*]

Sketch Map/Photo Key [*redacted*]

NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

Figure 2 NORLINA with American neutrality markings circa 1916-1918 (photograph NH 65108, U.S. Naval History and Heritage Command).

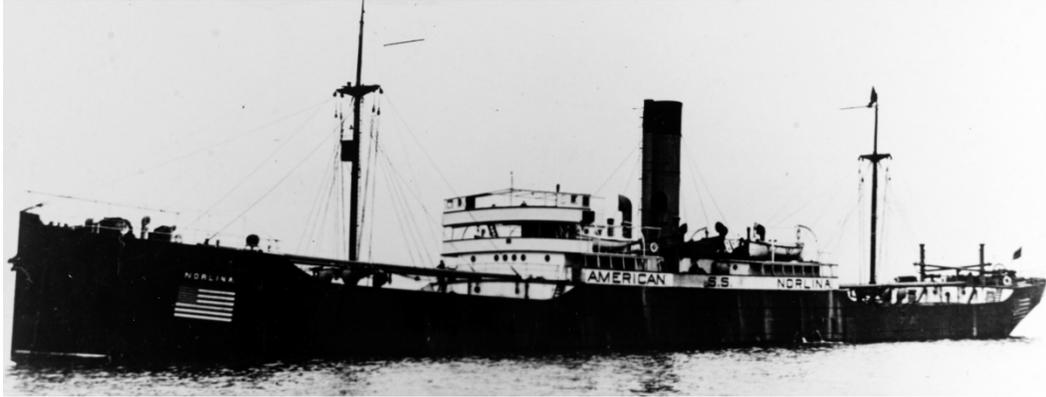


Figure 3 NORLINA aground in Gerstle Cove, August 1926 (San Francisco Maritime National Historical Park, International Newsreel Collection, P82-019a. 1,077pl SAFR 19106).



NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

Figure 4 NORLINA breaking up in Gerstle Cove, 1926 (San Francisco Maritime National Historical Park, P-91-057 Item 3).



NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

Photo 1 View southeast from shore looking towards the wreck site (Harreld, 2020)



Photo 2 View west from shore looking toward the wreck site with vessel fragment exposed at low tide (Harreld 2019a)



NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

Photo 3 Triple expansion engine (high pressure steam cylinder and piston), detailed view (Harreld 2019b)



Photo 4 Drive shaft, detailed view looking northwest (Harreld 2019b).



NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

Photo 5 Boiler one of two (closer to shore), detailed view looking northwest (Harreld 2019b)



Photo 6 Boiler two or two (closer to drive shaft), detailed view looking north (Harreld 2019b)



NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

Photo 7 Propeller blade, detailed view looking north (Harreld 2019b)



Photo 8 Hull fragment, detailed view looking south (Harreld 2019b)



NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

Photo 9 Section of the double bottom, detailed view looking northwest (Harreld 2019b)



Photo 10 Cargo winch, detailed view (Harreld 2019b)



NORLINA (shipwreck and remains)
Name of Property

Sonoma, California
County and State

Photo 11 Bitt, detailed view (Harreld 2019b)



Photo 12 Tile floor section, detailed view (Harreld 2019b)

