Blue-Water Ships, Brown-Water Bayou:

Wartime Construction of the EC-2 "Liberty" Type Cargo Ship at Houston, 1941-1945

By Andrew W. Hall

On the second Friday evening in December 1945, the famed San Jacinto Inn closed to the general public to host a farewell dinner for Todd Houston Shipbuilding. Several hundred guests dined on an endless supply of oysters on the half shell, oysters *en brochette*, fried chicken, tenderloin of trout, and the house specialty, shrimp *a la* San Jacinto Inn. French fries, hot biscuits, and pineapple sherbet rounded out the menu. Though wartime rationing of beef and cheese had officially ended a few weeks before, those foodstuffs remained scarce and did not appear on the dinner menu.[1]

The guests that evening could reflect on a remarkable accomplishment. In a bit over four years, they had built a modern, efficient shipyard on an open lot of soggy, Gulf Coast prairie, and constructed over two hundred general cargo ships and small tankers. Placed bow to stern, the 208 Liberty ships they launched into the muddy waters of Buffalo Bayou would stretch for more than seventeen miles, from the dining room of the San Jacinto Inn to City Hall in downtown Houston.

Long before its formal entry into the Second World War in December 1941, the United States was actively supporting Great Britain and its allies in the struggle against Germany through the Lend-Lease program and other efforts. Part of this assistance was the U.S. Maritime Commission's decision in late 1940 to accept a contract to build sixty standardized freighters for the British government. At the same time, the Maritime Commission was interested in adopting a design for a standardized, general-purpose freighter that would lend itself well to rapid production on a

Launching of the James Barbour*, Hull No. 831, an EC2-S-C1 type ship built at Todd Houston. The Liberty ship was a War Shipping Administration Transport (WSAT) capable of carrying 550 troops and named for the former secretary of war (1825-1828) under John Quincy Adams.*
Photo courtesy of the Houston Metropolitan Research Center, Houston Public Library, RG0600-0047.

Cover from a 1942 commemorative program celebrating the award of a U.S. Maritime Commission "M Pennant" for achievement, 1942.
Photo courtesy of the Galveston and Texas History Center, Rosenberg Library, Galveston.

large scale. The exigencies of the war demanded quantity over quality.[2] After reviewing proposals for a number of different designs, the Maritime Commission selected the British design for adaptation to the commission's expanding shipbuilding program. With a handful of additional modifications for American use, such as oil-firing instead of coal, the British design was the genesis of the famous Liberty ship.[3]

Though they were slow and only lightly armed, the Liberties had one attribute that outweighed all their defects: the prodigious amount of cargo they could carry. A Liberty was said to be able to carry 2,840 Jeeps, 260 medium tanks, 234 million rounds of rifle ammunition, between 320 and 699 mules, or 430,000 cases of C Rations – the latter sufficient to feed a full-strength infantry division in the field for eight months.[4]

The initial phase of the Liberty ship program had first been publicly announced on January 3, 1941, in a radio address by President Franklin Roosevelt. That first phase called for the construction of 200 EC-2 cargo ships (plus the sixty British hulls) over two years at nine yards around the United States. Between them, the nine shipyards had sixty-five slipways, the inclined ramps on which ships are traditionally built. Because many of the existing shipyards already had all the orders they could fill for the foreseeable future, several of the contracts under the first phase of the program were awarded to companies that proposed to build new shipyards where none had existed before. One of these contracts was awarded to Houston Shipbuilding, a newly-created subsidiary of the Todd Shipyards Corporation. (On May 1, 1944, the prefix "Todd" was added to the name of the Houston facility to underscore its corporate paternity, making the organization's full name Todd Houston Shipbuilding Corp., or "Todd Houston" for short.)[5]

The site chosen was located at an old, sluggish curve of Buffalo Bayou known as Irish Bend. The bend had been cut through in the process of straightening and widening the bayou for the use of seagoing vessels, leaving a stagnant and disused oxbow channel on the south side of the Houston Ship Channel just west of the stream's confluence with Green's Bayou. The primary contractor for construction of the yard was the Brown Corporation, which built not only the Irish Bend facility but also its own shipyard directly across the ship channel, where Brown would construct destroyer escorts and landing craft under its own government contracts. The anticipated cost of the new Houston Shipbuilding yard was just over $7.6 million, but the actual cost of the yard and capital improvements through 1944, which included its expansion from six slipways to nine, was nearly double the original figure, at $14.9 million.[6]

Aerial view of Irish Bend, c. 1941, before beginning construction of the shipyard, as shown on "For Auld Lang Syne" souvenir program.
Photo courtesy of the Galveston and Texas History Center, Rosenberg Library, Galveston.

Even as the yard around it was being built, the keel for the first of the Irish Bend Liberties, Maritime Commission Hull No. 95, was laid on July 18, 1941, on Slipway No.6. Work on each of the yard's facilities was prioritized according to what was most needed to keep the production on schedule. Houston Shipbuilding quickly grew to become one of Houston's largest employers, and the largest shipyard in the region. In March 1942, the month the first of the Irish Bend Liberty ships was launched, the yard had 6,000 workers; that number had doubled to 12,000 by May, and to 18,000 in June. Just under 20,000 employees were working at the yard in July 1942, after which expansion of the payroll gradually leveled off. Employment at Irish Bend peaked at 23,500 workers in the summer of 1944. The three daily shifts ran from 7:00 a.m. to 3:30 p.m., 3:30 p.m. to 11:30 p.m., and 11:30 p.m. to 7:00 a.m. Each shift worker was allowed a half-hour lunch break in his or her shift, and the yard scaled back to a skeleton shift on Sundays.[7]

The first ship launchings at Irish Bend were appropriately grand affairs. The first of the new Liberties, *Sam Houston*,

Rendering of the Liberty ship
Houston Volunteers.
Images courtesy of Andrew W. Hall.

slid down the greased ways on March 29, 1942, after being christened by the Texas hero's granddaughter. The ceremony was a substantial logistical undertaking in itself, with a concert by the shipyard's band and an audience of more than 12,000 employees and invited guests. By the launch of Houston Shipbuilding's third Liberty a month later, though, yard management had decided to scale back the ceremony and dispense with prior public announcements all together in the interests of keeping up production and maintaining wartime censorship. After April 1942, the only large-scale launching ceremonies were those associated with significant production milestones.[8]

The names chosen by the Maritime Commission for the Houston-built ships included Confederate generals (*James Longstreet, J. E. B. Stuart*), pathfinders (*Matthew Maury, Amelia Earhart*), artists and literary figures (*Thomas Eakins, Thomas Bullfinch*), and mythic American legends (*Johnny Appleseed, Paul Bunyan*). By far the largest group of names, however, was drawn from prominent Texans of the past. The names chosen included figures from the Texas Republic (*Stephen F. Austin, Mirabeau B. Lamar, Lorenzo de Zavala*) and governors of the state (*John Ireland, Sul Ross, James S. Hogg*). Contemporary heroes were represented, too; when hundreds of Houstonians volunteered en masse to replace the crew of the cruiser *Houston* (CA-30), sunk at the Battle of Sunda Strait in early 1942, one of the new hulls was christened *Houston Volunteers* in their honor.[9] To ensure that the significance of the ships' names would not be lost on their future crews, each vessel was provided with a special library of books on Texas history, that they might "become better informed about the State and the men who have made it great."[10]

The first few ships constructed at the yard took a long time to complete, as yard managers and supervisors worked out the most efficient methods. There were an almost infinite number of new techniques and approaches to learn, and relatively few employees had previous shipbuilding experience. The first four ships, all laid down in July 1941, were not completed for delivery until May and June of 1942, each taking a total construction time of more than 300 days. After that, though, the time to complete a Liberty at Irish Bend dropped dramatically. By the fall of 1942, Houston Shipbuilding was delivering ships in fewer than ninety days from keel-laying. From July 1943 through the end of the war, the yard at Irish Bend was completing a Liberty ship in forty days from keel-laying to launch, with another two weeks for fitting out before delivery. The fastest construction job by the yard was on *James Kyron Walker*, delivered to her wartime operator, Alcoa, in December 1944, just forty days after being laid down.[11]

Liberty ships were welded throughout, at a time when riveted construction was still the universal standard for shipbuilding. Traditional shipbuilders were skeptical of welding, but it sped production and eliminated an entire specialty shop in the yard. It came at a price, though, as many Liberty ships experienced cracking along welded joints, and six were lost to catastrophic structural failure and broke up in heavy seas. The last of these was a Houston-built ship, *Joel R. Poinsett*, which broke apart in the Atlantic in March 1944. The entire bow section of the vessel, forward of the superstructure, broke clean away and sank. Remarkably, there were no casualties. These structural problems were eventually overcome by the addition of bracing and reinforcing plates at vulnerable points, but the failures of the new ships in 1942-1944 permanently marred their reputation.[12]

One recent study of the relative impact of experience and capital improvement in the production efficiency of Liberty ships recalculated the rates for plate fractures for individual shipyards in the Liberty program. Of 2,692 ships' histories which were reviewed, 362 (13.6%) reported at least one fracture incident. Todd Houston's fracture rate was slightly higher than average, with 29 out of 208 ships, or 13.9%, reporting fractures.[13]

Wages in the Maritime Commission shipyards were relatively high, particularly when compared to those in other trades. Wages increased steadily during the war, along with working hours, until the shipyard worker's weekly paycheck peaked at $63.90 in 1944, almost $20 more than it had been before the war. While much of this increase was offset by wartime inflation, and shipyard work was more physically demanding than work in other wartime production plants, one postwar analysis concluded that, "a shipyard was the place to be to get big pay."[14]

Despite the ample wages, extremely high employee turnover was a serious problem throughout the Maritime Commission's shipbuilding program. Shipyards generally had a higher turnover rate than any other critical war production industry; during the last six months of 1943, between 8.2% and 12.0% of shipyard workers left their jobs *every month*.[15] Numerous factors were cited for this trend, including skilled workers who moved from yard to yard seeking better positions or higher pay, inexperienced employees who underestimated the difficult working conditions, and workers who had difficulty finding adequate

housing close to the shipyard. Female employees had a higher-than-average turnover rate because, in the words of one postwar analysis, "in addition to sickness and exhaustion [experienced by all neophyte shipyard workers] were added the difficulties of keeping up with home duties."[16]

Although leaders of the major national labor unions had made a "no-strike" pledge to the Maritime Commission early in 1941, strikes and other work stoppages caused problems at some yards during the war. Houston Shipbuilding had established a labor-management committee in April 1942, composed of seven members each from the workers and shipyard management.[17] The yard appears to have avoided significant labor unrest almost completely, the only work stoppage of note occurring in the late summer of 1944. On September 9, a Saturday, over 700 burners and welders from the International Brotherhood of Boilermakers and Iron Shipbuilders, AFL Local 731, failed to report for their shift at the yard. They were protesting the refusal of the National Labor Relations Board to hold a petitioned hearing on the reelection of the union's bargaining agent. Over the next two days Irish Bend workers in other trades began failing to report in sympathy with the boilermakers, forcing (on the third day) a complete shutdown of the yard. The situation was relieved on the fourth day, a Tuesday, when the regional office of the National Labor Relations Board agreed to send a field inspector to meet with Local 731, and in return the union released its members to return to work. In all, the "spontaneous action" had resulted in four days of reduced production at Irish Bend and three shifts (twenty-four hours) of complete shutdown.[18]

One of the most dramatic features of the wartime shipbuilding program and other defense industries is the influx of large numbers of women into jobs previously held almost exclusively by men. In some cases, this "female invasion" eventually filled 20% or more of individual yards' employee rolls in several West Coast shipyards. Women represented a smaller proportion of the workforce at Irish Bend. In the spring of 1943, for example, 1,700 of the yard's 21,430 employees were women, a number representing about 8% of the total workforce. Two-thirds of those women worked in traditional shipyard jobs as welders, burners, machinists and electricians.[19]

The yard's female employees also played key roles in shaping Houston Shipbuilding's public image. Women figure prominently in many newspaper and magazine stories about the facility, either as a group or as individuals. It is common to find news items mentioning awards or special honors given to female employees for superior performance, although most often these acknowledgments were for such activities as selling war bonds rather than actual shipbuilding work.[20]

The number of African Americans employed at Irish Bend is difficult to estimate. Discrimination on account of race was prohibited by presidential executive order and an explicit clause in all Maritime Commission contracts, but in practice African Americans were often turned away from shipyard employment offices.[21] When they were hired, it was almost always as unskilled laborers, and often in segregated divisions of the yards. Undoubtedly African Americans did work at Irish Bend, but their numbers may have been small and, unlike the female employees at the yard, their contribution to the production effort is virtually invisible in contemporary local publications. Faces of color simply do not appear, a situation which (by accident or design) makes it very difficult to assess their representation in the workforce at Todd Houston.[22]

Bennice Vick Russell and sister-in-law Marjorie Vick share a soda during a break at Brown Shipping Company, located across the channel from Todd Houston, in 1944.

Photo courtesy of the National Park Service.

The Liberty ship design was remarkably successful; with 2,710 vessels built to that pattern, Liberties represented nearly half the total number of ships ordered by the Maritime Commission during the war and the largest single class of ships ever built.[23] But the design had distinct disadvantages as well. Most notably, the Liberties were very slow, capable of only about 11 knots (12.7 mph) in optimum conditions. Efforts to create a replacement design began almost immediately, and by early 1943 the plans for the 14-knot, turbine-driven Victory ships were ready to go into production. Many shipyards that had begun building Liberties were slated for conversion to the new design, including the yard at Irish Bend. For unknown reasons, however, that contract was either cancelled or never formalized by the Maritime Commission. Instead, Houston Shipbuilding received additional orders for Liberties, which continued in production at Irish Bend until March 28, 1945, with the delivery of the yard's 208th Liberty, *Edward N. Hinton*.[24]

Todd Houston had begun scaling back its operations and personnel gradually since the summer of 1944, when it became clear that any future Maritime Commission contracts, if they came at all, would be smaller than those received previously. That same year, the Maritime Commission awarded its last contract to Todd Houston, for fourteen small T-1 tankers. These vessels were still under construction when the war ended in August 1945, and the contract enabled the yard to remain in operation with a reduced workforce for several more months. The last of these ships, *Cisne*, Todd Houston Hull No. 222, was delivered on December 13,

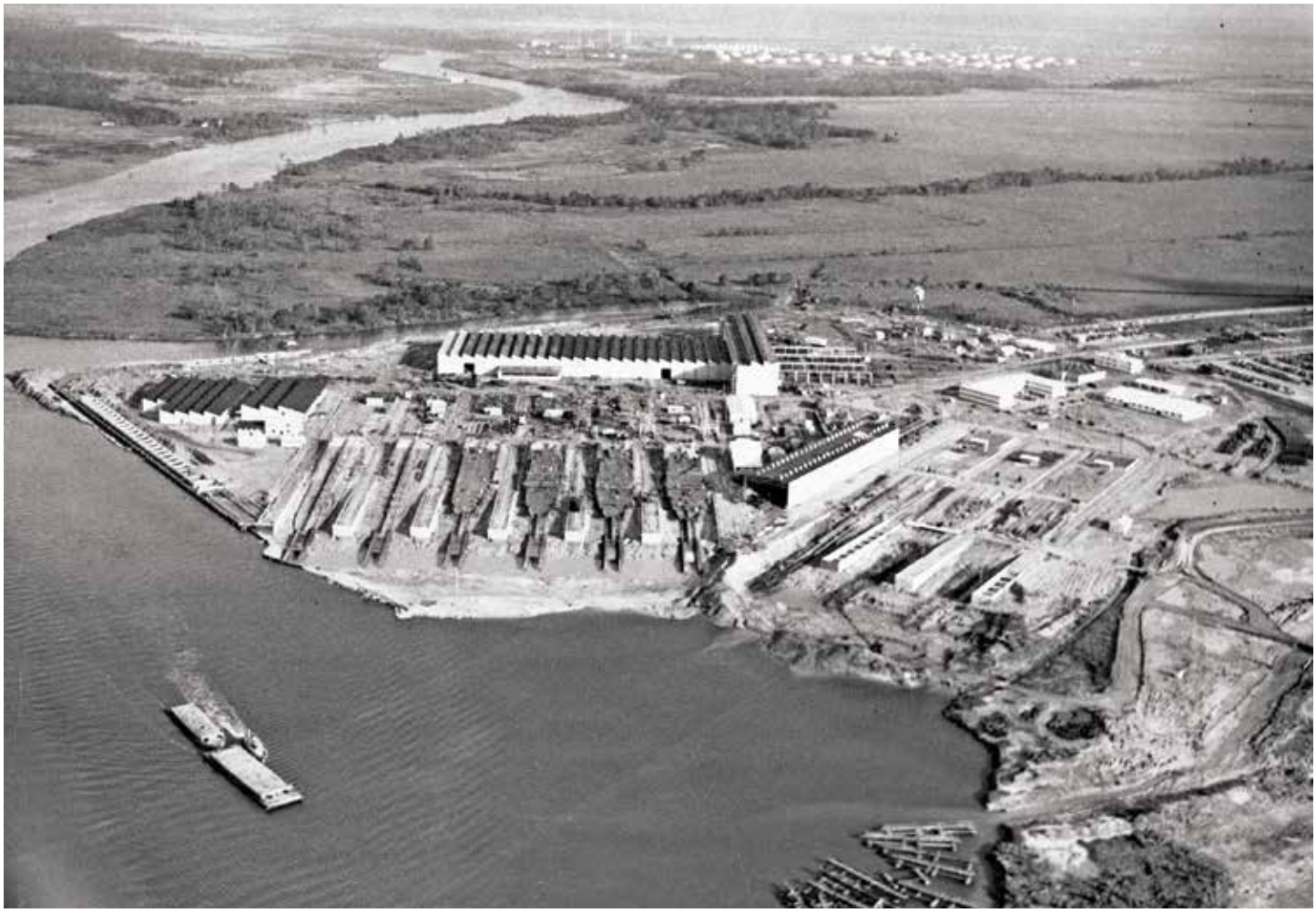
In 2011 the U.S. Postal Service issued a series of four stamps honoring the U.S. Merchant Marine, including a World War II-era Liberty ship.
Photo courtesy of the U.S. Postal Service.

1945. Another, *Taverton*, was probably the last of all Todd Houston ships in regular service, running in the Philippines as the tanker *Trans Asia* as recently as the early 2000s.[25]

Thus ended the story of Liberty ship construction in Houston. The shipyard site remained vacant until it was purchased by Phillips Petroleum in 1947. The company operated a plant to manufacture fertilizer and other agricultural chemicals there in the 1960s, but today the old shipyard site is largely vacant, used by Phillips for such auxiliary activities as employee emergency training. None of the buildings from 1941 to 1945 remain, and the land at the shipyard site has been extensively built up over the years, covering many of the foundations of the shipyard buildings, slipways, and rail lines. The ends of Nos. 1 and 2 slipways, those closest to the ship channel, are still visible. The 2,800-foot fitting-out wharf, capable of servicing six Liberty ships at a time, is well maintained but is often leased out to an adjoining petrochemical facility.

After the war most of the 2,500 or so surviving Liberty ships went into civilian service. Together with their mass-produced cousins, the turbine-powered Victory ships and T-2 tankers, they formed the core of the world's merchant marine well into the 1960s, when they began to be replaced by the newer technology of containerized shipping. Two ships destroyed in the Texas City Disaster in April 1947, *Grandcamp* and *Wilson B. Keene*, were Liberties. In the 1970s, twelve retired Liberty ships were sunk at five different locations along the Texas coast to serve as artificial reefs in the largest program of its type, up to that time; they remain popular with sport divers. As recently as 2009, the wreck of Liberty ship *William Beaumont* – a vessel not part of the artificial reef program – was found to be leaking oil off Sabine Pass. In September 2014 a Florida-built Liberty ship, *Sturgis* (ex-*Charles H. Cugle*), that was later reconstructed as a floating nuclear power plant, was scheduled for scrapping at Galveston beginning in December.[26]

The story of Liberty ship construction in Houston is a remarkable one. It is difficult to imagine today an industrial effort so driven that it could create a fully-functional shipyard from scratch, launch its first seagoing vessel within a year, and within three more years complete over 200 others.



The aerial view of Houston Shipbuilding Corporation's shipyard in 1941 shows the first four Liberty ships under construction (center). The ends of the building slips had not yet been dredged for launching.
Photo courtesy of the Houston Metropolitan Research Center, Houston Public Library, RG0600-804.

The impact of the Houston Shipbuilding yard, together with other new war production yards, was so great that in early 1943 the Houston Chamber of Commerce proclaimed "shipbuilding now Houston's No. 1 Industry."[27] The 208 ships built at Irish Bend represented nearly 8% of the total number of Liberties built nationwide, ranking Todd Houston sixth among all Maritime Commission yards building Liberties and the largest of the three yards on the Gulf Coast. The yard offered tremendous economic opportunity for its employees, who even with no prior shipbuilding experience could look forward to steady (if difficult) work and good wages. Todd Houston, like other war industries, also offered women an opportunity to compete directly for well-paying jobs that offered, at least for the duration of the war, a level of economic independence most had not known before. And while the shipyard's production efficiency and workmanship were probably no better than average, this work was accomplished with an untrained workforce and an industrial infrastructure that had been built up from nothing.

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THE LAST HOUSTON LIBERTY

Of the more than 2,700 Liberty ships built during World War II, only three are known to survive as museum ships, in New York, San Francisco, and Piraeus, Greece. Elements of others survive as wrecks or breakwaters in various parts of the globe.

The last surviving Houston-built Liberty ship may have been the second one launched at Irish Bend, *Davy Crockett*. Her days as a freighter ended in the 1960s, and in 1969 she was converted to a barge and moored on the Columbia River, between the towns of Vancouver and Camas, Washington. She remained there for the next four decades, used for storing ships' fuel, known as bunker oil, and gradually deteriorating. The hulk passed through several owners over the years.

Then, in January 2011, residents on the Columbia spotted an oil slick streaming from the old *Davy Crockett*. The source of the leak proved to be the owner's attempt to scrap the vessel in place; workers had tried cutting up the vessel amidships, causing the hull to buckle and dump oil into the river. "In water" scrapping operations are prohibited by law specifically to avoid this sort of environmental damage.

A full investigation of the accident revealed a large quantity of fuel oil, asbestos, and other hazardous materials in the now-unstable hull. The Washington State Department of Ecology undertook a massive, ten-month project to remove both the hazardous materials and the hulk itself. The investigation also revealed a spill occurred in December 2010 that *Davy Crockett*'s owner knew about but failed to report. The cleanup project included building a cofferdam around the site, to prevent further releases into the river. The state ultimately hauled away for proper disposal over 38,000 gallons of bunker oil, two-and-a-half tons of asbestos, 1.6 million gallons of oily water, and over 1,800 tons of steel. Total cost to taxpayers: $22 million.

In July 2012 the owner of the hulk pled guilty in federal court to two violations of the Clean Water Act: failing to report an oil discharge (for the 2010 incident) and unlawfully discharging oil into the Columbia River. He was sentenced in March 2013 to four months in prison, followed by eight months of home detention and three years of supervised release. He and his company were also fined $405,000 for the spill "and 40 days of ongoing environmental harm from continuing oil leaks to the Columbia River." Efforts to recover the rest of the costs of the cleanup continue.

Lifting out a section of Davy Crockett*'s double bottom, August 18, 2011.*
Photo courtesy of the Washington Department of Ecology.

Responders examining the broken hull of the former Liberty ship Davy Crockett*, January 27, 2011.*
Photo courtesy of the Washington Department of Ecology.