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T S MISTOVICH ET AL. 1983 DACW01-82-C-0132

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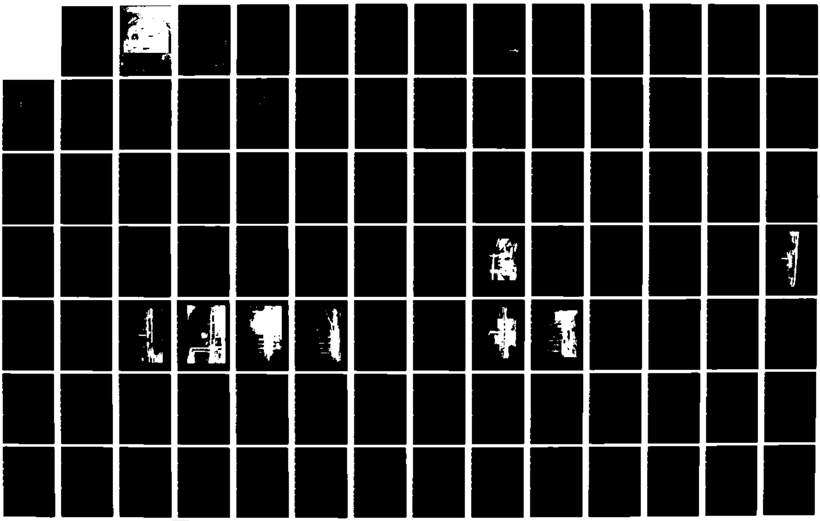

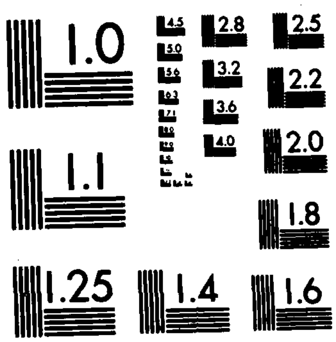
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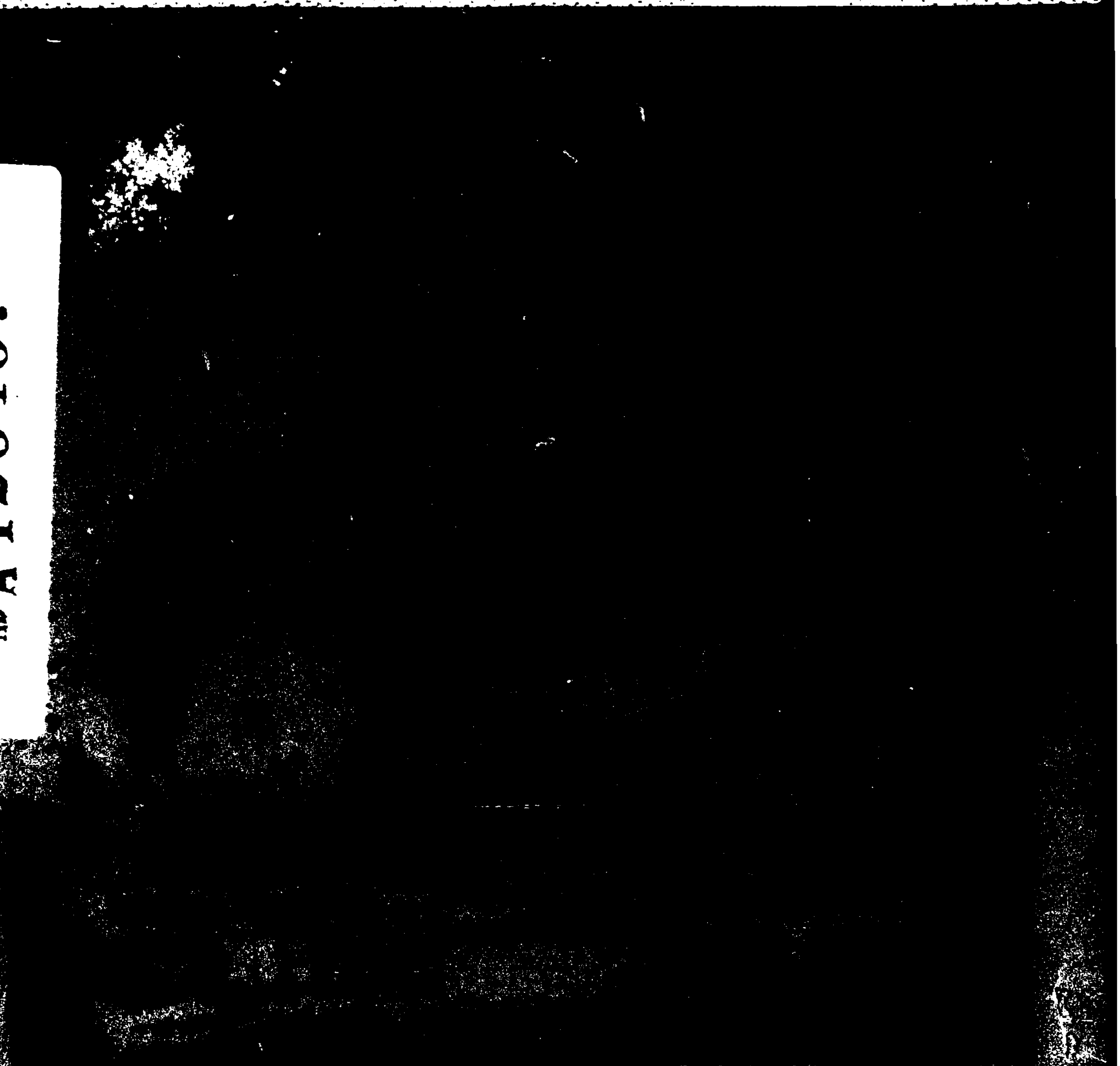

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by
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Prepared for:
The U.S. Army Corps of Engineers
Mobile District

OSM Archaeological Consultants, Inc.
Moundville, Alabama
1983

(1)

Cultural Resources Survey of Mobile Harbor, Alabama

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Contributions by:
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The findings of an extensive documentary search and Phase I remote sensing survey of Mobile Bay and offshore areas are presented, as a result of planned harbor expansion and modification by the U.S. Army Corps of Engineers, Mobile District. The documentary effort produced a reconstruction of the maritime history of the Bay area, as well as detailed information on 282 shipwrecks located there. Over six hundred anomalies were recorded by the remote sensing survey, which covered 2,000 linear miles of bay and gulf waters. Correlations with shipwreck data have indicated fifteen correspondences of wreck sites with ano-

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered) malies in proposed construction areas. Three areas of potential submerged pre-historic sites are also outlined. A cultural resource management plan is presented for use by the Corps of Engineers.

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Cover: Mobile waterfront in the late 1860s.
Courtesy: Museum of The City of Mobile.

Abstract

The findings of an extensive documentary search and Phase I remote sensing survey of Mobile Bay and selected offshore areas are presented, as a result of planned harbor expansion and modification by the U.S. Army Corps of Engineers, Mobile District. The documentary effort produced a reconstruction of the maritime history of the Bay area, as well as detailed information on 282 shipwrecks located there. Over six hundred anomalies were recorded by the remote sensing survey, which covered 2,000 linear miles of bay and gulf waters. Correlations with shipwreck data have indicated fifteen correspondences of wreck sites with anomalies in proposed construction areas. Three areas of potential submerged prehistoric sites are also outlined. A cultural resource management plan is presented for use by the Corps of Engineers in future planning of the Mobile Bay project.

INTRODUCTION

The following report presents the findings of a cultural resource survey of Mobile Harbor, conducted under U.S. Army Corps of Engineers Contract No. DACW01-82-C-0132, and is intended to function as a baseline study of the prehistoric and historic human use and occupation of this area. As such, it serves a dual purpose: to provide a comprehensive overview of cultural resources, both potential and known, which are located in the bay region; and to provide a framework for cultural resource management within the region, from which future resource planning may evolve. At its inception the survey addressed the following primary tasks.

1) To conduct an extensive literature and archival search concerning human use and occupation of the Mobile Bay region; to include data on known cultural resources both marine and terrestrial, and to consider the potential for as yet undiscovered resources.

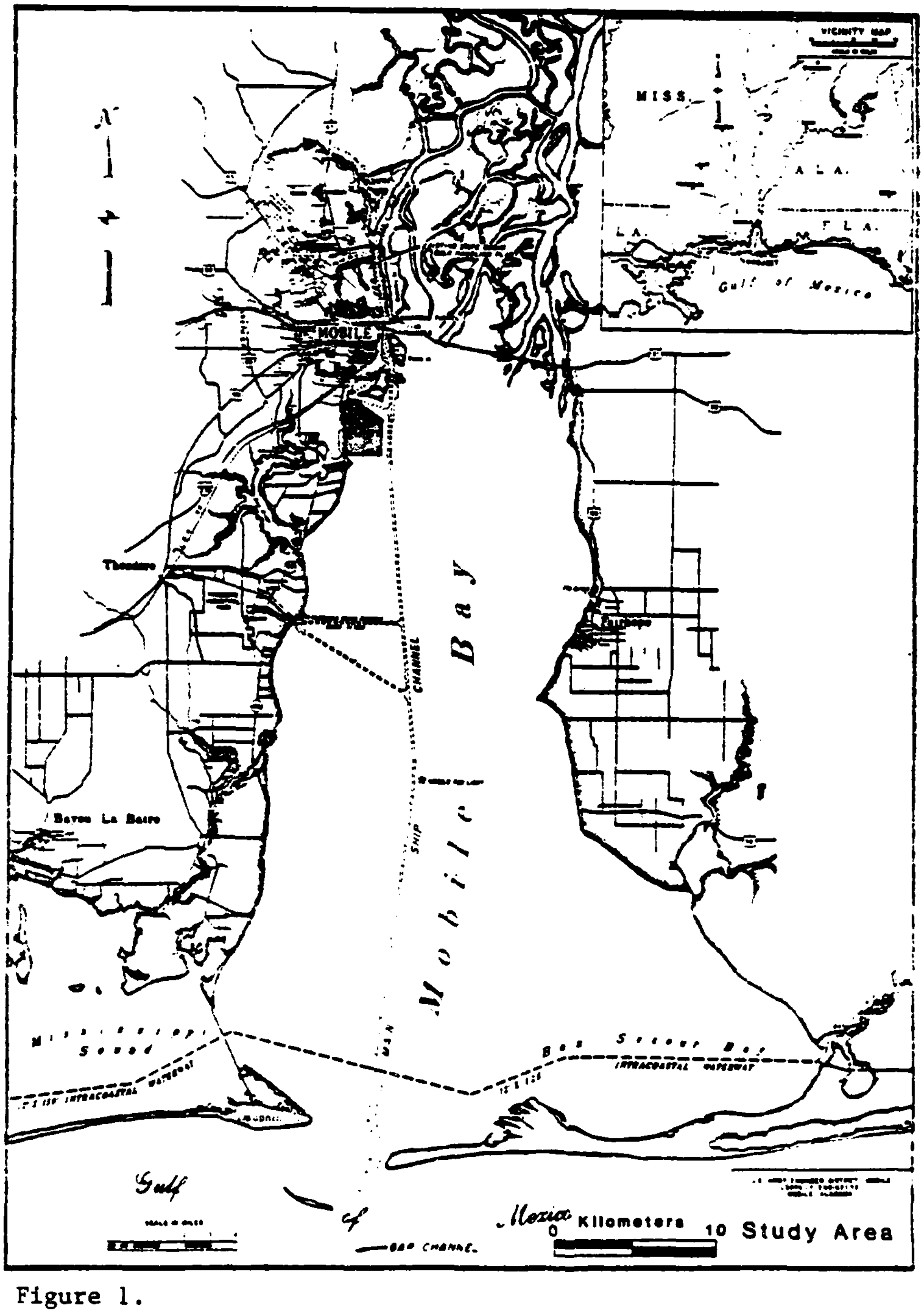
2) To perform a marine reconnaissance survey to ascertain the presence, nature, and distribution of both potential sites derived from archival research and of unknown sites within the bay area.

3) To present the data thus recovered in a report form which addresses both academic research and cultural resource management.

The project was initiated in the late summer of 1982 in light of U.S. Army Corps of Engineers plans to enlarge the Mobile ship channel from the outer bar channel to the channel's terminus at the Interstate 10 Tunnel in Mobile (Figure 1). In addition, a state dock transfer area off Mobile Point and turning basin and anchorage areas in the upper harbor area are proposed, as well as bay and gulf disposal areas. The cultural resource survey reported herein entailed a comprehensive inspection of all these areas in accordance with the Mobile District's responsibilities for cultural resources under the National Historic Preservation Act of 1966 (PL89-655) as amended, the National Environmental Policy Act of 1969 (PL91-190), Executive Order 11593 and the Archaeological and Historic Preservation Act of 1974 (PL93-291).

Fieldwork for both the documentary effort and remote sensing survey was conducted primarily in August and September 1982. The documentary research for the project, in accordance with the terms of the project Scope of Work, was to "assess in general terms the numbers, locations, cultural components, spatial distribution, data potential, and other salient characteristics of cultural resources within the project area." The collection of data for this portion of the project was carried out by the designated Chief Researcher, Dr. Vernon James Knight, Jr. Historical expertise and assistance were provided under consultantship arrangements with Mr. Jay Higginbotham of the Mobile Public Library and Dr. William Coker of the University of West Florida. Dr. Eugene Wilson of the University of South Alabama provided a summary of ship types and terminologies used in the Mobile Bay region from the sixteenth through the twentieth century. Dr. George Lamb of the same institution was engaged to summarize the recent coastal geology and geomorphology of the study area.

In order to best meet the terms of the Scope of Work, the documentary research effort was divided into two general components. The first consisted of assembling data relevant to the preparation of a general over-



MOBILE
Theodore
Fairhope
Bayou La Batre
Mobile
Bay
SHIP CHANNEL
MISS.
ALA.
LA.
FLA.
Gulf of Mexico
Mississippi Sound
Bon Secour Bay
INTRACOASTAL WATERWAY
Gulf
of
Mexico
Kilometers
0
10
Study Area

Figure 1.

view of the cultural and historical maritime history of the study area. This overview provides a general framework for the evaluation of cultural resources identified in this and subsequent projects. The second research component involved the assembling of more detailed information concerning specific cultural resources reported from the study area and its vicinity. This information was then applied directly to the evaluation of anomalies recorded during the maritime survey.

A section of this report entitled "A Sketch of the Cultural and Maritime History of the Mobile Bay Region" was compiled largely from secondary sources, except for sections of the prehistoric synopsis which employed a few primary sources, manuscript documents, and the personal experience of the author.

It was considered important to devote the greatest portion of the research effort to the collection of more specific data of direct utility in the discovery and management of actual cultural resources. The results are presented in the section entitled "Documentary Record of Submerged Cultural Resources." This consists of several parts, the most substantial of which is a shipwreck compilation for the Mobile Bay area containing data on 282 wrecked vessels, of which 209 potentially remain submerged in the area. For these 209 wrecks, a level of documentation was sought exceeding that normally available in shipwreck compilation. The vessels have been classified and summary statistics have been compiled regarding them. Locational information has been especially sought and emphasized, and charts have been prepared incorporating these data.

A separate record of potential nonvessel submerged cultural resources in the study area and vicinity has also been compiled.

The remote sensing survey was conducted within the Scope of Work requirement that "survey techniques, procedures and remote sensing equipment shall be representative of the state of current knowledge and development." The survey team was composed of personnel from Cultural Resources Services (CRS) - magnetometer and fathometer, Van Reenan International (VRI) - subbottom profiler and side scan sonar, and Internationl Technology, Limited (ITECH) - positioning, under the overall direction of OSM, Inc. Mark Price of CRS, Ron Beauregard of VRI and Warren Jansen of ITECH performed the daily, often arduous task of remote sensing equipment operation. All systems were placed on board the CRS R/V Gamma, skippered by Tom Taylor and the R/V Amity of Continental Shelf Associates, Inc., skippered by Tom Weaver and Bob Mulcahy. Additional services were performed by Dauphin Island natives Charles Appel, Mike Tafra, and Billy Springer. Logistics and data interpretation were the domain of Jack Hudson (CRS), Earl Van Reenan (VRI) and Tim Mistovich (OSM). Principal investigator for the project was Carey B. Oakley (OSM). U.S. Army Corps of Engineers representative Dorothy Gibbens provided beneficial aid, as well as a number of individuals from that office's survey and planning divisions.

The findings of this comprehensive effort are contained in this two volume document. It includes a brief overview of the Mobile Bay environment (Chapter I - Knight and Mistovich), a cultural and maritime history of the bay and a vessel typology (Chapter II - Knight and Wilson), a review of previous cultural resource studies (Chapter III - Knight and Mistovich), the documentary record of submerged resources (Chapter IV - Knight), description of survey design and methodology (Chapter V - Mistovich, Hudson and Price), inventory of anomalies recorded (Chapter VI - Mistovich), correlations of anomalies and wreck sites (Chapter VII - Mistovich and Knight), an analysis of the potential for submerged prehistoric sites (Chapter VIII - Mistovich and Lamb) and a series of recommendations for Phase II Testing (Chapter IX - Mistovich). Due to the proprietary nature of information dealing with specific wreck site and anomaly locations, a second volume containing descriptions and maps of these data, has been compiled (Index Volume - Knight and Mistovich) and presented to the U.S. Army Corps of Engineers.

The mechanics of report preparation were conducted under subcontract by the Word Processing Center of the Office of Archaeological Research, The University of Alabama. Word processors Kemp White and Jackie Redding, research assistants Cecile Waits and David Zeanah and cartographers Rick Walling and Polly Futato were all instrumental in this task.

The Mobile Bay cultural resource survey was of a magnitude never before attempted in marine archaeological reconnaissance. It was through the immense efforts and dedication of the above-named individuals that it was accomplished.

Tim Mistovich
Project Archaeologist
OSM Archaeological Consultants, Inc.

Carey B. Oakley
Principal Investigator
OSM Archaeological Consultants, Inc

CHAPTER I

OVERVIEW OF THE ENVIRONMENT OF THE STUDY AREA

A number of excellent descriptions of the Mobile Bay area have been written in recent years (Chermock 1974, Boone 1974, Copeland 1968) and it is not our intention here to extensively re-present such data. The following serves to highlight the salient points of the Mobile Bay environment.

Geography

Mobile Bay is the terminus for the second largest river basin system in the eastern United States. It's narrow, elongated delta originates at the confluence of the Alabama and Tombigbee rivers and extends southward for approximately 40 miles through a series of rivers, inter-connecting streams and perennial marshes that open into the northern end of Mobile Bay (Figure 2).

Flanking the delta on either site are navigable rivers, the Tensaw on the east and the Mobile on the west. These rivers drain into Mobile Bay, a submerged river valley 8 miles wide at its northern limit and extending south about 30 miles to the Gulf of Mexico, where it broadens to 25 miles wide.

The land area surrounding Mobile Bay is termed the Southern Pine Hills. The region is geologically characterized as a moderately dissected, cuesta-like plain, formed in the northern portion on clastic deposits of Miocene age and in the southern section on the sands and gravels of the Citronelle Formation of Pliocene and Pleistocene origin (Boone 1974). A detailed geologic perspective of the bay's history since 15,000 B.P. is presented in Chapter VIII of this report.

Climate

The Southern Pine Hills region has a humid, nearly subtropical climate that is influenced by the prevailing winds from the Gulf of Mexico. Average annual temperatures range from 66 to 69 degrees F and excessively high or low temperatures are rare.

Winter weather is usually mild. January is the coldest month of the year with an average of 50 degrees F. Summers are consistently warm; July being the warmest month with an average of 81 degrees F.

Precipitation is high, averaging 66.98 inches yearly, one of the highest in the United States. Rainfall is fairly evenly distributed throughout the year, with July being the wettest month.

The threat of hurricanes is present from June to October, particularly in August and September. The area is subject to hurricanes from several areas: the West Indies, the western Carribbean, and the southwestern Gulf of Mexico. The major cause of hurricane damage is from hurri-

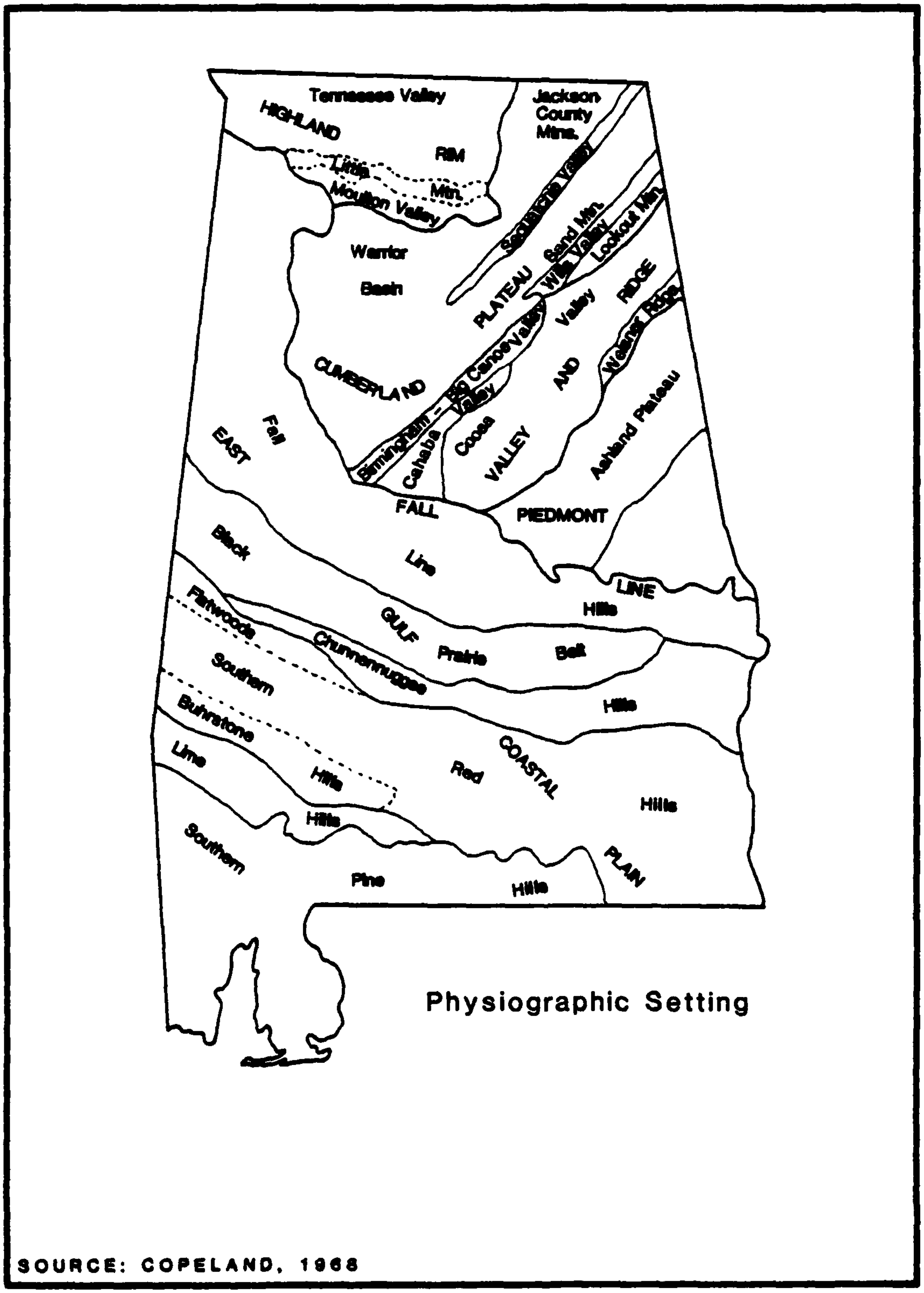

Tennessee Valley
HIGHLAND
RIM
Jackson County Mtns.
Little Mtn.
Moulton Valley
Sequatchie Valley
Sand Mtn.
Wills Valley
Lookout Mtn.
Warrior Basin
PLATEAU
RIDGE
Valley
CUMBERLAND
Canoe Valley
Birmingham
Cahaba
Valley
Coosa
VALLEY
AND
Ashland Plateau
Fall
EAST
FALL
PIEDMONT
Black
Line
LINE
Hills
Flatwoods
GULF
Chunnennuggee
Prairie
Belt
Southern
Hills
Buhrstone
COASTAL
Red
Line
Hills
Hills
Hills
Southern
Pine
Hills
PLAIN
Physiographic Setting
SOURCE: COPELAND, 1968

Figure 2.

cane surge, a rise in the water level above the normal tide, which is accompanied by high winds and, occasionally, tornadoes (Chermock 1974).

Native Flora and Fauna

The main forms of marine life common to the estuaries around Mobile Bay include several species of shrimp, fish, crab and oyster, whose life cycle require an estuarine environment at certain times of the year for spawning and maturation (Chermock 1974). Other marine animals not uncommon to Mobile Bay include sea turtle, bottlenose dolphin and manatee. There have been offshore occurrences of fin whale, pilot whale and sea lion.

Reptiles and amphibians include species of turtles, snakes, newts, lizards and toads.

Typical land animals include armadillo, skunk, cottontail rabbit, fox, white-tail deer, fox squirrel, raccoon, opossum, marsh rabbit, beach mouse and muskrat. Migratory waterfowl utilize the coastal estuary for winter stopovers. Over 100 species of birds occur in the estuary of Mobile Bay, including osprey, eagle, pelican, bobwhite quail and mourning dove.

The Mobile Bay area is divided into four general vegetation communities (Harper 1943, Larson 1980):

1) Upland pine community - The inland vegetation pattern around the Mobile Bay is dominated by long-leaf pines, while in the lowland regions some hardwoods are present. The dominant evergreen vegetation is a result of frequent rains, which leach nutrients from the sandy soils, producing conditions favorable for the growth of pines. In addition, naturally occurring fires diminish the establishment of hardwoods. Chestnut trees are also found, but are extremely sparse to the region.

2) Lagoon and marsh community - This coastal area is dominated by several species of cordgrass. Other common marsh plants are grassworts, marsh elder, spike grass and groundsel trees.

3) Beach strand community - Composed of the beaches on the coast and barrier islands, this vegetation community includes china brier, Spanish bayonet, yaupon, live oak, cabbage palm, saw palmetto and prickly pear.

4) Floodplain forest/delta community - Forests covering the delta floodplains are dominated by tupelo gum, willow oak and bald cypress. Other species include the red maple, pepper vine, cowitch vine, water hickory, pecan, hackberry, swamp privet, water ash, pumpkin ash, water locust, possum haw, sweet gum, black gum, red bay, swamp cottonwood, Spanish oak, overcup oak, swamp white oak, water oak, leopard oak, black willow, and American elm.

CHAPTER II

A SKETCH OF THE CULTURAL AND MARITIME HISTORY OF THE MOBILE BAY REGION

Prehistory Chronology of Mobile Bay

The earliest firm evidence of human occupation in the Mobile Bay region dates to the Early Archaic stage. Trickey and Holmes (1971:124) report the finding of Dalton, Hardaway, and Big Sandy projectile point types in upland areas away from the bay margins, typically "on hills above tributary creeks." These lithic forms are dated elsewhere to the period of roughly 7000-8000 B.C. Evidence at this point is meager, but it nevertheless suggests a minor population of small, mobile groups of hunter-gatherers.

It seems highly probable, nevertheless, despite the present lack of evidence, that similar human groups had resided in this region in earlier Paleo-Indian times. Fluted projectile points diagnostic of the Paleo-Indian stage have been found in comparable south Alabama settings, in Escambia and Covington Counties (Futato 1982). Because of the inland encroachment of the Gulf shoreline following the Pleistocene, Paleo-Indian sites (as well as later Archaic sites) might well be present beneath the waters of Mobile Bay, on the near continental shelf, or buried beneath Holocene sediments in the Mobile-Tensaw delta (Trickey and Holmes 1971: 124).

It has been noted that there is an apparent dearth of Early and Middle Archaic materials in the Mobile Bay region (Trickey and Holmes 1971:124). This seems surprising in light of the fact that such materials are unquestionably abundant elsewhere along the Gulf Coastal Plain. We might expect that this apparent "hiatus," for which we have only sparse hints at a lithic industry, is only a product of the unrepresentativeness of published data. But it is also possible that the phenomenon has validity, perhaps related to local climatic shifts. Of course, many sites of this period may now be submerged or deeply buried beneath Holocene sediments. Large stemmed Late Archaic projectile point forms are also known for the area, but these clearly persist until Bayou La Batre times in South Alabama during the first millenium B.C. (Chase 1972).

Fiber tempered Gulf Formational ceramics, probably affiliated with either the Wheeler or Norwood ceramic series, appear in the Mobile Bay region in small quantity at several sites. This pottery is not securely dated, but comparisons with comparable manifestations on the Gulf Coast suggest a dating in the range of about 1200-700 B.C. At the latter end of this time range, there is some evidence for an overlap and partial contemporaneity with Bayou La Batre ceramics (Trickey and Holmes 1971:Fig. 2; Wimberly 1960:Table 18). While the evidence is slim, it is intriguing that some of these fiber tempered components occur directly on the estuaries rather than in hinterland or riverine environments, perhaps representing the initiation of the long-lived and highly significant coastal estuarine economic tradition in this region.

Much better known is the subsequent cultural complex diagnosed by the Bayou La Batre ceramic series (Wimberly 1960:64-74). The stylistic relationships of this pottery to the Tchefuncte of the lower Mississippi

Valley and other Gulf Formational manifestations has seen much discussion and need not be reviewed in this brief outline. The introduction of this complex is not well dated, but it was clearly on the wane by about A.D. 1. Two observations concerning Bayou La Batre are worthy of special note in the context of the changing human use of the Mobile Bay area. The first is that Bayou La Batre provides the earliest extensive evidence of a subsistence regime substantially focused on estuarine fishing and shellfishing, perhaps implying the development of new technologies for efficiently exploiting these abundant marine biota. The second observation is that Bayou La Batre settlement occurs on Dauphin Island (Knight 1976), which strongly suggests the development at this time of a watercraft technology accompanying the estuarine economic orientation of these peoples.

Forthcoming data to be published by N.J. Jenkins (personal communication) suggests a rather definite cultural continuity between Bayou La Batre and the subsequent Middle Woodland manifestation known as Porter. The possibility of such a continuity had earlier been posited by Wimberly (1960:86). The Porter phase dates roughly between A.D. 1 and A.D. 400, and is characterized by the Santa Rosa ceramic series, which parallels in many respects the Marksville complex in the lower Mississippi Valley.

Porter phase settlement on Mobile Bay basically continues the littoral economic orientation of earlier Bayou La Batre times, but inland "village" type settlements and a few burial mounds are also known (Wimberly 1960: 12-14, 28-30; Wimberly and Tourtelot 1941). Porter phase burial mounds show evidence of the widespread exchange of exotic goods that is generally characteristic of the Hopewellian climax in the Southeastern United States.

The local cultural system during the Late Woodland period, A.D. 400-800, is known as the Tates Hammock phase (Walthall 1980:171-172), a local variant of the Weeden Island culture. The Tates Hammock phase pottery repertoire is foreshadowed in many respects by the earlier Santa Rosa styles, and contains in addition some quantity of Coles Creek ceramic types bearing witness to the continuation of widespread Gulf Coast interaction. As before, mortuary and "village" sites are known in addition to the ubiquitous shell middens, the latter providing ample testimony to the continuance of the littoral economic tradition. To date, there is no clear evidence during this period either for the development of marked social inequality, or for any shift towards a horticultural subsistence base. Moore excavated a Tates Hammock phase mound at Starkes Wharf on the eastern shore of Mobile Bay (Moore 1905:287), and a number of similar mounds were tested by the Alabama Museum of Natural History on the Fort Morgan Penninsula in 1937 (DeJarnette and Buckner 1937), revealing a mortuary program not unlike that seen among contemporaneous cultures in the northwest Florida area.

For the period between about A.D. 800 and A.D. 1200 the cultural sequence in the Mobile Bay area is quite unclear. Just to the north of the study area this period is occupied by a cultural complex recently named by Jenkins the Tensaw Lake phase. The Tensaw Lake phase, which replaces Weeden Island in that area, is characterized by a ceramic complex of coarse sand tempered cord marked pottery, accompanied by small amounts of check stamped, simple stamped, and plain types. Preliminary indications suggest, however, that the Tensaw Lake complex is not found within the Mobile Bay area. We are faced, then, either with a lengthy hiatus, or perhaps with a very late persistence of Weeden Island in the Bay region and peripheral areas to the south. At this point neither hypothesis is much more than a guess.

This unfortunate gap in our understanding contributes to a certain confusion regarding the nature of the emergence of the next major prehistoric culture in the area. This culture is termed Pensacola, a coastal Mississippian manifestation which appears to represent a break with the earlier cultural tradition. One of the most persistent problems has been the lack of a chronological breakdown for Pensacola. This has been rectified to some extent by the recent efforts of Stowe and Fuller, who now divide the phenomenon into an early complex (Bottle Creek) and a late complex (Bear Point) (R. Stowe and R. Fuller, personal communication). Available radiocarbon dates and cross-dating with similar coastal manifestations allows some preliminary chronological estimates: for the Bottle Creek complex, ca. A.D. 1250–1450; for the Bear Point complex, ca. A.D. 1450–1600.

Few details are known of the subsistence base for the Pensacola culture, especially regarding its degree of reliance on horticulture vis-a-vis hunting and gathering. The presence of a large ceremonial center (the Bottle Creek site) with subsidiary mound centers, at least suggests a correspondingly hierarchical political structure for the Bottle Creek complex. It has been hypothesized that such an unprecedented degree of social complexity and village life in this region could have been supported by the integration of a form of delta horticulture into traditional estuarine fishing and hunting schedules (Knight n.d.). It is intriguing, however, that virtually all of the large Pensacola estuarine fishing sites on the margins of Mobile Bay appear to date to the later Bear Point complex. A dietary analysis conducted at one such site, which also produced early European items, revealed a thoroughly mixed diet combining fish, shellfish, terrestrial animals, and products of agriculture (Curren 1978; Knight n.d.).

Pensacola ceramics are shell tempered, and the material culture in general shows many relationships with Moundville to the north, with additional influence from Mississippian and Plaquemine cultures of the lower Mississippi Valley.

Aboriginal ceramics of the Colonial period in the Mobile Bay region are not well documented, but certain controlled collections exist, especially from Fort Conde and the French warehouse on Dauphin Island. This was a period when a number of nonindigenous native peoples entered the area, and this is reflected in the presence of foreign ceramic traditions. The historic indigenous peoples, however, including the Mobile, Tomeh, Naniaba, Pensacola, and Biloxi, are thought to have generally inherited the Pensacola ceramic tradition in a slightly altered form, to a degree modified by foreign influences and European vessel types.

The Era of Discovery and Exploration: 1513-1699

The earliest European activities along the northern Gulf Coast are shrouded in relative obscurity. This is in part the result of the rarity of documents of the period, and in part the result of the rather faulty conceptions of geography which lie behind most of the extant narratives and maps. Still, there is much left to learn about this crucial period of initial contact between natives and Europeans, and no modern historian or anthropologist has delved into these topics to any appreciable depth.

Between 1513 and 1529 it is quite certain that at least four Spaniards had been on the Gulf Coast between Florida and Texas: Juan Ponce de Leon, Diego Miruelo, Alonso Alvarez de Pineda, and Panfilo de Narvaez. Of these certainly Pineda and Narvaez, and perhaps Miruelo as well, had known the Mobile area.

An often repeated hypothesis of considerable interest is that "unknown navigators" had also visited the Gulf Coast during the early sixteenth century and perhaps as early as about 1497, many years previous to the first clearly documented voyage to the Florida/Gulf region. The maps of La Cosa (1500), Cantino (1502), Caniero (1502), and Waldseemuller (1507) all bear the representation of a land to the west or northwest of Cuba, bearing a peninsula and gulf roughly resembling the outline of the Gulf Coast. This has led a number of writers to conclude that the coast of Florida was actually known at the time, perhaps as a result of the disputed voyage to the mainland by Vespucius in 1497. Summersell (1949: frontispiece) goes so far as to suggest that a particular bay shown on the Waldseemuller map is intended for Mobile Bay.

Such conclusions, however, are especially subject to doubt, and the Gulf-like features on the early maps in question can probably be explained without reference to a supposed early Gulf exploration. Fite and Freeman (1926:16, 26, 34) point out the strong possibility that this coastline was a copy of the southwest coast of Asia, as known from Marco Polo, transposed to this location in the erroneous belief that the recent discoveries in the West Indies were near mainland Asia, or that Cuba was in fact contiguous with "Cathay."

As for later "unknown navigators" in the Gulf region during the sixteenth century, the possibility is not so remote. Ponce de Leon had apparently encountered a Spanish speaking Indian during a 1513 voyage to Florida, and Narvaez had seen European goods among the Indians of northern Florida in 1528, said to have come from the Apalachee area near modern Tallahassee (Smith 1971:56-58). The presence of early sixteenth century European objects found archaeologically in several aboriginal sites on the northern Gulf is provocative evidence, but the matter has not yet been sufficiently reviewed to suggest in any defensible manner the reasons for their existence and distribution in this area.

In light of the extensive disagreements among earlier historians and geographers concerning the route of the Pineda/Garay expedition of 1519, and the identity of the "river of very great volume" discovered at that time (Fiske 1901; Winsor 1884; Scaife 1892; Harrisse 1892; Hamilton 1910), it is decidedly unfortunate that no modern historian has attempted a detailed reevaluation of the original materials. Such would be a definite boon, since it appears that neither of the two most extensive commentators on the discoveries of Pineda-Scaife and Harrisse-had access to the full range of documentary materials known to exist. The point is more than a historical quibble, since the possibility of an encampment of a large Spanish expedition at Mobile Bay 21 years prior to Soto has clear anthropological importance, both from the perspective of the introduction of contagious disease, and from the consequences of direct, protracted exposure to quantities of European material culture and to Spanish demeanor at this early date.

But whether our Mobile Bay is equivalent to the site of Pineda's recouperative sojourn of forty days, as Hamilton alleges, or not, as Scaife concludes, the following facts are nevertheless sufficiently clear. Pineda's caravels visited Mobile Bay, the expedition mapped it, named it Rio del Espiritu Santo, included it within the "province of Amichel" claimed for Garay, and made note of the fact that it was "well replenished with people" (see Peter Martyr's comments reproduced in Scaife 1892:149). The notion that the site on the northern Gulf Coast known by some sixteenth century Spanish navigators and cartographers by the name of Espiritu Santo was Mobile Bay rather than the Mississippi River, Pensacola Bay, or some other locality may be considered sufficiently proved (Scaife 1892; Hamilton 1904).

The pathetic remnants of the expedition of Panfilo de Narvaez coasted by the mouth of Mobile Bay in October of 1528, navigating towards Mexico in makeshift boats. The incident described by Cabeza de Vaca (1871:55-60) involving a show of force by elaborately clad chieftains in canoes, must have occured at or near Mobile Bay, if we may trust the information later gathered by Biedma concerning the fate of two of the Narvaez party lost many years before on the lower Alabama River (Smith 1968:242). The subsequent Soto expedition, fueled by similar aspirations to those of Narvaez, here interests us only in the fact that Francisco Maldonado with several brigantines was entrusted to meet with the overland party at "Achusi" on the northern Gulf. The rendezvous was thwarted on the command of Soto, but Mobile Bay and its native inhabitants may thus have been contacted in 1540 by the Spaniards under Maldonado, while reconnoitering the coast in search of news of their Adelantado.

In 1558 Guido de las Bazares rediscovered Mobile Bay and renamed it "Bahia Filipina," providing a good description of the Bay, its natural environs, and its inhabitants. Luna's colonial expedition of the following year made use of this intelligence, and there is sufficient evidence to suggest that Luna possessed accurate knowledge of the geographical relationship between Pensacola Bay (Achusi) and Mobile Bay, and of the fact that the route to Cosa, the Piachi (Alabama) River, discharged into the latter (Lankford 1981). For some unknown reason, none of the source materials on the Luna enterprise give any indication of the bustle of Indian activity seen just one year earlier by Bazares on Mobile Bay. After a disastrous year in the interior, Luna's party returned to briefly encamp on the eastern shore of Mobile Bay before departing again for Achusi and thence to Havana.

Despite the failure of these Spanish colonial enterprises between peninsular Florida and Mexico, Spain felt relatively secure in its possession of the northern Gulf to the point of entirely neglecting its exploration, until the French encroachment of La Salle more than a century later. The correspondence of Spanish officials from the Apalachee area of northwest Florida during the last quarter of the seventeenth century reveals an astonishing ignorance concerning geographical and sociopolitical matters west of St. Marks. All of this changed with the arrival of the French on the Gulf, and the Spanish search for La Salle once again resulted in the rediscovery of Mobile Bay.

By way of summary, European maritime activity in the Mobile region during the era of discovery and exploration was very sporadic and always limited to episodes of brief duration. Known voyages of exploration were brief and few, and the three subsequent expeditions of conquest and colonization which bear on our area of concern all equally came to grief. The area was subsequently of no vital interest to the Spaniards who nominally claimed it for more than a century.

The Colonial Era: 1701-1813

The nature of maritime activity at Mobile was radically altered by the French decision to locate a permanent settlement and port there in 1701. As the infant colony began to grow, the character of Mobile's waterborne commerce became gradually molded by the interaction of such factors as the changing physical state of the harbor, the mercantilist economic policies of the French crown, and the intercolonial rivalries among France, Spain, and England. The shifting of sand bars, governments, and economic policies during the colonial era would combine to introduce a hesitancy and precariousness to the progress of commercial growth in colonial Mobile, at times retarding and even threatening to extinguish the rise of Mobile as a major Gulf seaport, second only to New Orleans. Such turns of fortune nevertheless were consistently weathered by the port city.

The overall prosperity of Mobile during French dominion (1701-1763) was as much tied to the natural condition of its harbor as to its productivity. From the beginning of the colonial enterprise it was evident that the shallowness of the northern Gulf embayments and the presence of barrier islands was a disadvantage to commerce. At the time Iberville petitioned the French Minister of the Marine to move the colony from Biloxi to Mobile, he had found in Mobile Bay a suitable if imperfect facility, with 12 to 13 feet of water over the entrance bar at low tide (McWilliams 1981:40). The Bay could be entered with ease by all but the largest of ships, but there were no good landing points on the Bay margins, and the rivers were shallow and treacherous (Surrey 1916:40). Consequently it became necessary to establish the main harbor at Pelican Bay, on the south side of Dauphin Island, a full 92 kilometers from the main settlement at 27-Mile Bluff. Using "Port Dauphine" as a point of disembarkation for supply ships, goods and passengers had to be lightered and ferried in smaller vessels to Fort Louis. Thus while commerce between Mobile and distant ports was carried out by merchant ships of large burden-"frigates," "paquetbots,", "brigatins," "flutes," "couriers," "galeres," "navires," "gabares," "goelettes," "parlementaires," and "balandres"-the coastal trade, the interior trade and lightering duties were performed by a fleet of much smaller vessels, many locally built by colonial shipwrights. These were "canots," "bateaux," "bateaux plats," "radeax," "chaloupes," "felouques," "traversiers," "caiches," and small "brigatins" (Surrey 1916:55-81).

The Mobile settlement was moved in 1711 close to Choctaw Point, its present location, closer to the growing port settlement on Dauphin Island. This was an improvement from the point of view of supply and communication with other European settlements, since it cut the lightering distance to the capital in half. Nevertheless, nature was soon to intervene in the continued usefulness of Port Dauphine. As an omen of coming misfortune, a French vessel was stranded on a shifting sand bar in Pelican Bay in 1717, having to be unloaded and taken out through a little used channel, the Grand Goziers (Margry 1888(5):548). Later the same year the main harbor channel was entirely obstructed by sand during a storm, as was Mobile Bar at the entrance to the larger Bay. Pelican Bay could henceforth accomodate vessels of no deeper draught than 10 feet. Larger vessels were forced to adopt the dangerous and costly procedure of discharging cargoes from anchorages outside the harbor in the Gulf of Mexico (Summersell 1949:2).

This unsatisfactory solution to an unforeseen turn of events had a serious negative effect not only on the commerce of Mobile, but on its effectiveness as a center of Louisiana government as well. The little harbor settlement on Dauphin Island had to be abandoned in 1719. This was closely followed by the transfer of the capital from Mobile to New Biloxi in 1720, the latter featuring a safer harbor on Ship Island, where the supply vessels of Law's company had been going since the close of Port Dauphin. The Mobile settlement thus suffered a double setback, both in commerce and in political influence. No effort was made by the French to dredge either the pass to Pelican Bay or the channel at the entrance to Mobile Bay, although the colony was technologically quite capable of it (see Surrey 1916:51).

Serigny produced some of the first detailed sounding charts of Mobile Bay after his arrival in 1719 (Delaney 1962:29-30), which doubtless improved the confidence of the pilots of the smaller vessels which supplied Mobile, but the damage done by the closing of Mobile's only potential deep water port was not remedied until late in the nineteenth century.

The subsequent British (1763-1780) and Spanish (1780-1813) colonial governments both commissioned increasingly accurate navigation maps of Mobile Bay and surrounding waters (Delaney 1962:43; Holmes 1972), in the interest both of military security and of reviving the lagging trade to the city. With an accurate knowledge of the limits of Mobile Pass and surrounding sand bars, it became feasible for large draught vessels to anchor safely in lower Mobile Bay, a practice which quickly became customary. During British tenure, in fact, it was at one point boasted that the entire British fleet could if necessary anchor within the confines of the Bay (Delaney 1962:43).

Mobile's initial colonial economy under French dominion was shaped in part by the natural resources of its hinterland and in part by the mercantilist economic policies of France under Louis XIV. The natural resource potential was a clear disappointment. Despite the bright hopes of a few, the colony lacked any lead or silver deposits within easy reach, and the promise of agriculture on a large scale appeared slim. Deer hides, timber, and indigo were to become the mainstays of colonial exportation.

Mercantilism, the philosophy that priviledged the economic well-being of the mother country over that of its colonies, tended to discourage extensive subsistence farming in French Mobile in favor of the production of export goods for France and the West Indies. Seen thus as a profit making investment, the colony was utterly dependent upon the Crown or chartered company for supplies, colonists, slaves, military protection, and even food. In the early years of the colony, the arrival of a supply ship was a happy event, but delays resulted in near famine.

Such complete dependence meant that the economic hardships of the French crown, as the result of depleting the treasury in the conduct of wars with England and Spain, would have directly deleterious effects on the welfare of the colony. Bienville as Commandant at Mobile sought to offset the chronic undersupply by encouraging the colonists to plant corn, wheat, beans, and melons, and to raise cattle (Delaney 1962:24). Goods were also commonly exchanged in times of hardship between French Mobile and Spanish Pensacola.

Because of the difficulties of the crown in keeping the colony supplied, and because of apparent financial mismanagement on the part of colonial officials, exclusive rights to the trade of Louisiana were granted by charter in 1712 to Antoine Crozat, a private merchant. Until this time the colony had produced no real exports except peltry (Surrey 1916:158), but now that Mobile was part of a trading venture under Crozat's monopoly, efforts were made to enlarge its productivity. Unfortunately, the particulars of government were badly handled by the colonial governor, Cadillac. Crozat eventually gave up his charter upon the death of Louis XIV.

In 1717 a similar charter was granted to John Law and the "Company of the West." Law's efforts to promote the commerce of the colony were more successful than Crozat's. He imported settlers and slaves, encouraged agriculture, and developed the Indian trade in peltry under the guidance of Bienville as Commandant-General. The list of export items gradually came to include peltry, lumber, pitch, tar, indigo, rice, tobacco, corn, and cotton (Surrey 1916:166). Growth, however, was encouraged on the lower Mississippi much at the expense of Mobile, since the former region was seen to hold more economic promise, and the latter had recently lost the use of its harbor by large ships. As the weight of commercial and government affairs shifted thus to New Orleans, Mobile remained valuable primarily as a population center, as a frontier military post, and as a center for Indian congresses (Hamilton 1910:102).

By the time that Law's company went bankrupt in 1724, due to fiscal mismanagement in France, the main colonial industries had become well established in the Mobile region, and there were now some agricultural plantations, thus setting the commercial pace for the remainder of the colonial era.

During British and subsequent Spanish dominion, the port of Mobile was reopened to major shipping, and commerce once again flourished at the city. Shipping between Pensacola and Mobile was probably reduced as a result of the construction of the first road between the two cities. Production of export goods remained in character much the same under the British as during the French tenure (Hamilton 1910:289-291), with nevertheless a much greater emphasis on three commodities: timber, naval stores, and indigo. Hides obtained from the Indian trade still dominated the roster of local products, but these were now obtained largely by private enterprise rather than under government auspices as had been the case with the French. One result was that much of the generated capital from this trade remained within colonial pockets and purses, to the betterment of Mobile businesses (Delaney 1962:41). In the years of Spanish rule, however, the control of Mobile commerce reverted to a system much like that experienced under the French, with the important difference that the colony was now virtually self-sufficient.

After 1790, the important trading firm of Panton, Leslie and Company (succeeded by John Forbes and Company) began to monopolize the Choctaw and Chickasaw skin and fur trade, much of which was funneled through Mobile. Panton, Leslie and Co. was essentially a British firm under Spanish protection. Based in Pensacola, it had several branch stores including a large one at Mobile, and a private fleet of fifteen schooners. The vast quantities of goods imported through Mobile for the Indian trade during this period were thus predominantly British goods. At an unknown date, a second store or trading post in the Mobile Bay area was established at Bon Secour (Hamilton 1910:352-353; Coker 1979).

The course of international warfare had an equally important impact on the nature of colonial trade at Mobile. Warfare affected the dependability of supplies, while shifting alliances at times dampened intercolonial trade, as during the French war with Spain in 1719. Treaties resulted in changes of government, with consequent changes in trade policies and in the Indian relations which controlled the flow of deer hides to the port city. The local pursuit of naval warfare had a more direct effect on commerce: for example Dauphin Island proved vulnerable to enemy destruction of stores during Queen Anne's War (1711), and Mobile Point was blockaded by the British during the French and Indian War (1756-1763). Finally, the presence of a disputed international boundary north of Mobile after the Revolutionary War clearly impacted the interior trade upon which Mobile so much depended, as commerce was diverted to rival St. Stephens across the American border in Mississippi Territory.

The American Era: 1813-1930

Another major shift in the commercial and maritime history of Mobile coincided with the Americanization of the Alabama coast following the War of 1812. During this period Mobile rapidly became an international port, second on the Gulf Coast only to New Orleans in magnitude of trade. The reason was primarily that Mobile now served as the coastal center of distribution for cotton grown in the Alabama - Tombigbee - Warrior River agricultural region, the second largest watershed in the Southeast.

The ascendency of Mobile in this respect was triggered by two political circumstances. The first was the capture of Mobile from the Spanish by the American general Wilkinson in 1813, which dissolved the international boundary north of Mobile and thus opened up the entire river system to free commerce under a single flag. The second was the Indian cession of most of present-day Alabama to the Americans. Most notable were the treaties of Mount Dexter (Choctaw, 1805) and Fort Jackson (Creek, 1814) which opened up to American settlement most of south, central, and west Alabama (Royce 1899).

Between 1815 and 1818 hundreds of settlers poured into the recently vacated lands of interior Alabama, purchasing tracts of land at public auction. During these three short years the important river towns of Tuscaloosa, Claiborne, Demopolis, Cahawba, Selma, and Montgomery were all founded (Summersell 1949:16). These towns, along with St. Stephens and others, maintained cotton warehouses which served as collecting stations for a large agricultural area. In most of the cotton belt, a plantation system was gradually developed by transplanted slaveholders from the older Atlantic plantation district (Phillips 1968).

The cotton was transported downriver to Mobile for conveyance to eastern ports and Europe. Prior to the middle 1820s, the bulk of this river traffic was conducted on flatboats and keelboats. According to Abernethy (1922:74-75), flatboats were often used only once, being broken up at the end of the journey. Keelboats could be poled back upriver, but only at great expense. Freight costs upriver were such that it was impractical for most plantation owners to purchase their supplies through Mobile, and so these supplies were generally brought overland from Tennessee and Georgia (Abernethy 1922:74-75). This largely prevented the early development of a truly reciprocal market at Mobile.

Matters changed greatly with the introduction of the steamboat to the river trade. Steamboats were capable of efficient packet service between Mobile and interior river ports, and could make the round trip in much less time than had earlier been possible. The first of these steamboats to operate on Alabama rivers was in service by 1819. Upriver freight costs consequently were brought to a practical level.

Despite the novelty of cotton as the chief export commodity, the overall economic regime of antebellum Mobile retained many features of earlier colonial times. Capital was still largely brought in from elsewhere, and profit was still largely siphoned off by absentee investors (Summersell 1949:15). The economic livelihood of the region continued to be dominated by the port of Mobile: the hinterlands surrounding the city were among the least productive agricultural areas in the state (Summersell 1949:20).

Shipping to and from antebellum Mobile thus focused on trade in cotton. Seagoing vessels of numerous types were employed in this trade, most typically including ships, barks, brigs, and "blue water" schooners. As before in British and Spanish times, the anchorage in lower Mobile Bay was used by deep-draught vessels. Cargoes were lightered to and from the city by smaller boats owned by lightering firms. This lack of direct access to the city was, as always, a hinderance to trade, and this fact in part stimulated the rise of Blakely as a rival port city at the opposite side of the Bay from Mobile.

The approach to Blakely through Mobile Bay and Tensaw River avoided Choctaw Point Bar and Dog River Bar, the two main shoal areas which inhibited the passage of vessels to Mobile. Blakely became an official port of entry of the United States in 1818, having a customs office, a shipyard, and a population of 3,500 according to the 1820 census (Bisbort 1957:1241-4). On the other hand, ships of moderate draught wishing to reach the city of Mobile were often required to pass to the east of the Bay shoal areas, up the Tensaw River, thence back down to Mobile via Mobile River.

In May of 1826, the first congressional appropriation was made for the improvement of the harbor facilities at Mobile. This money and subsequent appropriations were used for removing obstructions, dredging Choctaw Pass Bar, and opening Pinto Pass. Further appropriations made between 1837 and 1855 were employed to dredge a channel through Dog River Bar to a depth of 10 feet, and a final antebellum appropriation in 1857 was used to dredge the Inner Harbor to an equivalent depth (Bisbort 1957; U.S. Army Corps of Engineers 1915). These improvements did not fully access the city of Mobile to seagoing trade, but they did stimulate maritime commerce to some degree contributing to the demise of Blakely as a competitive port. A further boon to maritime commerce was the opening of Grant's Pass to a depth of 6 feet in 1839. This provided a direct link from Mobile to New Orleans through the protected waters of Mississippi Sound.

Imports shipped to the Mobile area in antebellum times chiefly consisted of agricultural products destined for city markets. While cotton was always the supreme native export product, lumber and naval stores were also shipped in some quantity from the ports of Mobile and Blakely (Summersell 1949:23).

The Civil War (1861-1865) put an end to normal maritime commerce at Mobile. For most of the war the port was blockaded by the Union warships of Admiral Farragut's "West Coast Blockading Squadron." Fast blockade runners nevertheless consistently risked capture and supplied the city from Cuba, the Bahamas, and European ports. New Orleans and Pensacola had both been captured by the Federals as early as 1862, leaving Mobile as the single operational Confederate port on the northern Gulf of Mexico.

The blockade runners were sleek steamers, either sidewheel or screw propelled with steel hulls and auxiliary sails. The design had been inspired by earlier cross-channel steamships (Chappelle 1976:347). They were typically built in England and were privately operated. Normally a blockade runner leaving Mobile with a cargo of cotton would anchor behind the Fort Morgan peninsula and await darkness or especially foul weather - the conditions under which the possibility of escape from Union pursuit would be most favorable. Three blockade runners were burned or destroyed by Union gunfire near Fort Morgan during the course of the war.

The Confederate defenses at Mobile were elaborate. They incorporated the already existing forts Gaines and Morgan at the entrance to Mobile Bay, and a ring of newer forts, batteries, earthworks, and entrenchments at the Bay margins, river mouths, and surrounding the city. There were in addition several lines of wood, steel, and rope obstructions placed in the Bay, the rivers, at Mobile Point and in Mississippi Sound, designed to prevent the passage of Union warships to the city. Certain areas were also mined.

In charge of the coastal defenses at Mobile in the latter part of the war was Major Viktor E.R. von Sheliha, a former Prussian officer who had volunteered for service in the Confederate Army Corps of Engineers. The upper line of obstructions consisted of log piles, while the lower line consisted mainly of obsolete sunken ships hulls, lashed together with heavy cables and filled with ballast, and held in place by pilings (Von Sheliha 1868:189, 191).

The Battle of Mobile Bay was one of the most significant naval engagements of the Civil War. After several delays in planning and preparation, Admiral Farragut entered the Bay on August 5, 1864 with fourteen wooden gunboats lashed together in pairs, four ironclad monitors, 2,700 men and 197 guns (Delaney 1962:130). After passing under the guns of Fort Morgan, Farragut's fleet engaged four vessels of the Confederate Navy. The exchange was fierce, but the larger numbers of the Federal force eventually prevailed. Mobile Bay was now completely under Union control, but the city held out against capture until March of the following year. It is significant that the greatest number of losses to vessels during the war at Mobile were due not to gunfire but to the effectiveness of mines, the latter eventually claiming 15 military vessels in the Bay area by the close of the war. The development of mines, then called "torpedos," was primarily a Confederate venture, and their successful use in coastal defense was at that time unprecedented in military history (Perry 1965).

From a maritime perspective, the most significant postwar event in the Mobile region was the progressive opening up of a continuous ship channel from the outer bar to the Inner Harbor at the city of Mobile. This work, conducted by the U.S. Army Corps of Engineers between 1870 and 1938, allowed for the first time the passage of deep-draught vessels directly to the city wharves. The harbor had much deteriorated during the Civil War because of extensive shoaling on Dog River Bar, and the military obstructions in the Bay had combined to threaten Mobile's vital links to eastern and foreign ports. The Mobile Board of Trade, organized in 1868, grappled with the problem of declining maritime trade, and promoted the coming revitalization of the harbor (Hamilton 1913:376-377).

An earlier postwar plan carried out by the Harbor Board under the supervision of General Braxton Bragg was designed to open up the Inner Harbor by means of a series of jetties which would force the entire discharge of lower Mobile River through a single channel. In theory the increased velocity through the harbor would naturally scour out the recent siltation, thus avoiding the costly procedure of dredging. Bragg opened up 600 foot gaps in the upper and lower lines of Confederate obstructions, and built three jetties across Pinto Pass, at the south end of Pinto Island, and at Garrow's Bend just below the swamp at Choctaw Point (U.S. Army Corps of Engineers 1872; Hamilton 1913:376).

The U.S. Army Corps of Engineers, however, was dramatically opposed to the Bragg plan. Colonel J.H. Simpson argued to the Chief of Engineers that the immediate benefits of Bragg's jetties in the Inner Harbor area were more than offset by the shoaling problem in the upper Bay, which was actually aggravated by the jetties (U.S. Army Corps of Engineers 1872: 593). Simpson's opinion prevailed, the jetties were destroyed, and an alternate plan of dredging was begun in 1873, beginning with the opening of a channel across Dog River Bar. Table 1 below presents a chronology of major harbor improvements from 1826 through 1943 (mainly abstracted from U.S. Army Corps of Engineers 1868-1943).

Table 1. Major Improvements of Mobile Harbor, 1826-1943.

Date	Activity	Channel Dimensions	Cost
1826	First appropriation for dredging Choctaw Pass Bar		
1827-29	Choctaw Pass Bar dredged	8' x ?	$ 30,000.00
1828	Pass Aux Heron channel dredged		
1834-38	Choctaw Pass Bar dredged	10' x 200'	$ 117,997.60
1839	Grant's Pass dredged		
1852-1855	Dog River Bar dredged	10' x ?	$ 50,000.00
1857	Mobile River Channel dredged	10' x ?	$ 20,883.00
1870-75	Choctaw Pass Bar dredged	13' x 300'	$ 401,000.00
	Dog River Bar dredged	13' x 200'	
	600' gaps in upper and lower lines of obstructions removed		
	200' gap at Spanish River mouth		
	Bragg's jetties constructed		
1878-86	Mobile Bay Channel dredged	17' x 200'	$ 740,000.00
1888-97	Mobile Bay Channel dredged work Work extended north to Chickasaw Bogue	23' x 280'(t)*	$2,183,161.32
1899-1909	Mobile Bay Channel dredged	23' x 300'(b)*	$1,896,860.58
1903-04	Mobile Bar Channel dredged	25' x 300'(t)	$ 46,993.00
1910-15	Mobile Bay Channel dredged	27' x 200'(t)	$1,594,629.29
1914	Upper Bay Channel straightened		
1917-1929	Mobile Bay Channel dredged	30' x 300'(t)	Data unavailable
	Mobile Bar Channel dredged	33' x 450"(t)	" "
1925	Arlington Pier Channel dredged		
1929-38	Mobile Bay Channel dredged	33' x 450'(t)	" "
	Mobile Bar Channel dredged	36' x 450'(t)	" "
	Anchorage Basin dredged	32'	
1936	Intracoastal Waterway:		
	Pass Aux Herons Channel	10'	
	Oyster-Bon Secour Bay Channel	8'	
1943	Intracoastal Waterway:		
	Pass Aux Herons Channel	12'	
	Oyster-Bon Secour Bay Channel	12"	

* (t) = top width
* (b) = bottom width

Thus by 1877 large steam and sailing ships of up to 13 foot draught could pass directly to the Mobile Inner Harbor. Port records monitored by the U.S. Army Corps of Engineers during this period document a renaissance of foreign trade at Mobile. The first seagoing steamship to dock at the city of Mobile did so in 1888 (Summersell 1949:47).

However, during the last quarter of the nineteenth century the rise in railroad business resulted in a decline in the competing river steamboat traffic in Alabama. Much cotton and other export commodities continued to arrive at Mobile via rail and steam packet, but a proportion was also diverted to other ports as the network of overland railroad service expanded. As a result cotton receipts generally declined to the detriment of Mobile commerce (Summersell 1949:48-49).

At the same time, there appears to have been a significant rise in the strictly local or regional use of Bay waters for various purposes. Fishing and oystering industries began to expand, and by the turn of the century there were substantial fleets of small schooners and sloops at Bon Secour Bay and Heron Bay. In the months opposite the fishing and oystering season, these privately owned vessels were typically employed in freighting timber or vegetables, or used for charter (Wilson and Curren 1981:72). Private sailing yachts became a common sight on Mobile Bay, and regattas were regularly held. Steamers of various sizes, many purchased on the eastern seaboard, were put in service as bay passenger ferries, traversing regular routes between Mobile and popular excursion points on the eastern shore. The eastern shore of Mobile Bay had gained the reputation since mid-century as one of the most healthful resort areas in the south, and a number of resort hotels flourished at Daphne, Fairhope, and Point Clear during the Victorian era. Small shipyards other than those at the city of Mobile appeared at Fairhope, Fowl River, Fish River, Shell Banks, Bayou La Batre, Bon Secour, and Mon Louis. Little is known concerning these shipyards, which probably varied in scale from large to insignificant, but they were responsible for turning out a good proportion of the oystering and fishing fleet, and several steamboats as well.

The cotton trade gradually declined in the early years of the twentieth century, while shipbuilding became increasingly important to the local economy. By the First World War the Alabama Dry Dock and Shipbuilding Company (formerly the firm of Ollinger and Bruce, in operation since the 1880s) was the largest industrial employer in the city of Mobile (McLaurin and Thomason 1981:81). That war stimulated the shipbuilding industry, as five major companies became established in the harbor area by 1917. A decade later, the Alabama State Docks was dedicated in 1928 (McLaurin and Thomason 1981:106-107, 111-112).

As coal and iron became the dominant industrial products of interior Alabama after the 1880s, and the Tombigbee-Black Warrior navigation route was opened by means of a series of locks to Jefferson County, these commodoties replaced cotton and timber as the chief focus of Mobile commerce and seagoing trade, in concert with an unprecedented rise in industrial manufacturing at the city. Coastwise barge traffic was largely made possible by the opening of the Gulf Intracoastal Waterway between 1936 and 1943. After about 1930, most of the steamboats and sailing vessels were absent from Bay waters, yielding to the more modern regime of barges, harbor boats, steamers bound to and from the Inner Harbor, and fishing vessels, which together continue to dominate maritime traffic in the area.

A Chronological Synopsis of Landmarks in the Maritime History of Mobile Bay and Harbor to 1936

Prehistoric Chronology

15,000–10,000 B.P.

The Gulf of Mexico shoreline is located over 100 kilometers south of the present mouth of Mobile Bay. The present area of Mobile Bay is an entrenched river valley. The sea level begins a general rise. There is no evidence of human activity.

10,000–6,000 B.P.

Toward the end of this period, the lower Mobile River valley is progressively drowned by the encroaching shoreline. Mobile Bay takes on its present configuration. There is evidence of scattered human occupation in upland areas, in the form of Dalton, Hardaway, and Big Sandy projectile points.

6,000–3,000 B.P.

Dauphin Island and the Fort Morgan Peninsula begin to form. This is the age of relict oyster beds in upper Mobile Bay, which are potentially used by Archaic Stage Indians. There is evidence of Late Archaic use of delta, upland and estuarine environments.

3,200–2,700 B.P.

This is the probable age of fiber tempered ceramics found in the Mobile River Delta and on the present margins of Mobile Bay and Mississippi Sound.

2,700–2,000 B.P.

The Bayou La Batre ceramic complex is characteristic of the region at this time. There is documented cultural interaction with the lower Mississippi Valley area, and speculative contact and influence from Mesoamerica. The earliest known human occupation of Dauphin Island occurs at this time, indicating development of a watercraft technology. There is substantial use of estuarine resources.

2,000–1,550 B.P.

The Porter ceramic complex characterizes human occupation of the area, developing directly from Bayou La Batre. Porter peoples of the Mobile Bay area continue the estuarine oriented hunting and gathering economy of Bayou La Batre times. Evidence of widespread cultural contact occurs along the Gulf Coast and Coastal Plain.

1,550–850 B.P.

The local cultural system is known as the Tates Hammock phase, a regional variant of the Weeden Island culture. An estuarine hunting and gathering emphasis is continued from earlier times, and cultural contact continues to be widespread on the Gulf Coastal Plain.

850-300 B.P.

The late prehistoric culture of the Mobile Bay area is known as Pensacola, divided into an early complex (Bottle Creek) and a late complex (Bear Point). Large estuarine fishing and shellfishing sites which ring the Bay margins, Dauphin Island, and the Fort Morgan Peninsula date mainly to the later Bear Point complex. Evidence of inital European contact appears at some sites. Use of dugout canoes for navigation is documented by radiocarbon dates of preserved examples.

Historic Chronology

A.D. 1500-1516

According to some anthorities the northern Gulf Coast was discovered and explored on different occasions by Spanish navigators during these years. There is no unequivocal evidence, however, of the discovery of Mobile Bay. Local Indians may have nevertheless begun receiving European goods through coastal aboriginal trade with south Florida.

1516

Diego Miruelo sails along a portion of the northern Gulf Coast, from Florida possibly as far westward as Mobile Bay.

1519

Alonso Alvarez de Pineda, with four ships, sails from Jamaica to explore the northern Gulf Coast. Among his discoveries are the River and Bay of Espiritu Santo, without much question identifiable as Mobile River and Mobile Bay. Pineda remains forty days in a large Indian village at the mouth of the river, trading with the natives while repairing his ships.

1528

Panfilo de Narvaez, in a fleet of makeshift boats, coasts by the mouth of Mobile Bay with the remnants of his colonial expedition. In that vicinity he contacts, trades with, and fights the local Indians, who are mainly fishermen. Cabeza de Vaca, a member of the expedition, mentions seeing numerous dugout canoes used by the Indians in navigating the rivers, bays, and sounds.

1540

Francisco Maldonado, in command of several brigantines, arrives at the bay of Ochuse in relief of the expedition of Hernando de Soto. Ochuse was more probably Pensacola Bay than Mobile Bay, but the latter was perhaps also visited on this occasion.

1558

In advance of the colonial expedition of Tristan de Luna, Guido de las Bazares explores the northern Gulf Coast. He reports favorably of "Bahia Filipina," which was probably Mobile Bay.

1559

The expedition of Tristan de Luna arrives at Bahia Filipina (Mobile Bay) but rejects the place as a suitable base of operations. Going thence to Achuse (Pensacola Bay), a hurricane destroys his convoy. The expedition is then conveyed to Nanipacna on the Alabama River. The route taken is apparently through Mobile Bay, ascending the Tensaw River.

1560

After an unsuccessful year in the interior, the expedition of Luna encamps on the eastern shore of Mobile Bay before departing for Ochuse.

1685-1693

In response to the threat of French presence on the Gulf Coast, the Spanish, based in northern Florida, commission reconnaissances which result in the re-discovery and exploration of Pensacola Bay and Mobile Bay.

1699-1701

The French colony of Louisiana is established. The main settlement is first at Biloxi, later moved to 27-Mile Bluff on the Mobile River. The French explore Dauphin Island, Mobile Bay, and the Mobile River Delta, establishing friendly relations with the native inhabitants.

1701-1711

Mobile at 27-Mile Bluff is the capital of French Louisiana. The principal harbor is established in Pelican Bay on the south side of Dauphin Island. Mobile experiences periodic famine because of the erratic arrival of supply ships. Deer hides are exported in small quantities.

1711

The Mobile settlement is moved to Choctaw Point at the head of Mobile Bay.

1712-1717

Mobile commerce is monopolized by a private merchant, Antoine Crozat.

1717

A major hurricane obstructs the main channel to the Pelican Bay harbor, henceforth preventing its use by large ships.

1717-1731

Mobile commerce is expanded under the trade monopoly of John Law's "Company of the West." Supplies to the colony become more dependable, slaves and colonists are imported, and agriculture is encouraged. Exports include pitch, tar, lumber, tobacco, rice, corn, beans, indigo, and cotton. The capital of Louisiana is transferred from Mobile to New Biloxi in 1720, and thence to New Orleans in 1722, reducing Mobile's influence and importance.

1731-1763

Mobile commerce reverts to the control of the French crown. Mobile suffers a decline as a political and trade center.

1763-1780

Mobile is transfered to British dominion at the Treaty of Paris. Mobile harbor is re-opened to seagoing trade, employing the anchorage in the lower Bay. Major exports include indigo, hides, timber, lumber, naval stores, cattle, corn, tallow, bear's oil, rice, tobacco, myrtle wax, salted wild beef, salted fish, pecans, sassafrass, and oranges. Trade is now largely in the hands of private businesses.

1780

Bernado de Galvez beseiges and captures Mobile. Four ships of his Spanish convoy are lost on Mobile Bar.

1781-1813

Foreign commerce languishes under mercantilist Spanish government. The Indian trade is reorganized, with trade concessions granted to private firms.

1781

A British squadron enters Mobile Bay to assist in an attack on the Spanish "Village" on the eastern shore. The ships did not participate, instead attacking Dauphin Island.

1814

Mobile is captured by the American General Wilkinson.

1814-1815

Fort Bowyer at Mobile Point is defended by American forces in two British naval and infantry attacks. During the first battle the H.M.S. HERMES is sunk off Mobile Point. Fort Bowyer is surrendered to the British following the second attack.

1815-1861

Mobile enjoys a half-century of prosperity as the second largest international seaport on the Gulf Coast. Progress is based upon the ascendancy of cotton as an export commodity, shipped downriver by flatboat or steamboat from cotton growing centers in Mississippi and Alabama. Sawed lumber also increases in importance. Federal funds are expended in improving the Bay approach to Mobile by dredging. The port's deep anchorage continues to be the lower part of Mobile Bay, with lightering services between the city and the "lower fleet" anchorage. The number of wharves at the city increases to more than forty. The Mobile and Ohio railroad is completed.

1861-1865

The city, fortified by the Confederates, is blockaded during the Civil War by Farragut's "West Gulf Blockading Squadron." The Battle of Mobile Bay, fought in August 1864, results in the loss of four ships, and several more are sunk by Confederate mines in the following months.

1865-1875

Reconstruction witnesses lagging commerce and the physical degradation of the harbor. The City of Mobile acquires title to a segment of riverfront and begins to set wharf charges. The Mobile Board of Trade is organized. The Alabama Legislature establishes a commission for the improvement of Mobile Harbor. A Federal survey of the Bay is undertaken, and Civil War obstructions are removed.

1876-1934

The U.S. Army Corps of Engineers, in a series of dredging projects, gradually creates, deepens, and widens a 32 foot ship channel from the Mobile Bar entrance to the city. The opening of the channel greatly stimulates seagoing trade to the city. Grant's Pass is opened, allowing steamships access between Mobile Bay and Mississippi Sound. Oystering and fishing fleets flourish at Bon Secour Bay and Heron Bay, the vessels largely constructed at Bay area boatyards. Major hurricanes occur in 1906 and 1916, resulting in substantial losses in merchant shipping.

1936

The Intracoastal Waterway channels between Oyster Bay and Bon Secour Bay, and through Pass Aux Herons, are opened to coastal merchant traffic.

A Typology of Vessels Known to Have Been Used in the Mobile Bay Region from the Sixteenth through the Twentieth Century

by Eugene Wilson

1519-1700

Introduction

During the era of discovery and exploration, the vessels used were either built in Europe or were of European design. There is a general lack of exact information on vessel types, but these can be deduced in some cases. More information readily exists on British and French vessels than for Spanish vessels, although maritime historians have pointed out that colonial records are at best a catalogue of vessel names, and that these names varied both in time and place; we have no plan or depiction of smaller vessels in America until 1688 (Chapelle 1951:10). The variety of changes in sixteenth century vessels are poorly documented, and commonly several different impressionistic descriptions of the same ship exist. It is not even possible to reproduce Columbus' SANTA MARIA with certainty (Lobley 1972:29).

In addition, three kinds of criteria were used separately or in combination to classify ships: 1) the hull form - a clipper, for example; 2) the rig or sail plan - a sloop, for example, and 3) a combination of both hull and rig, as in a catboat. Some writers have contributed confusion to the records by not making their criteria clear.

Vessel Types

Caravel. A fifteenth to sixteenth century vessel of small to medium size, 10 to 50 tons, having three or four masts with lateen sails, except for the foremast and bowsprit which carried square sails; commonly used in the Portuguese exploration of Africa and by the Spanish. The NINA and PINTA of Columbus' first voyage were classed as caravels and may have carried a square sail on the fore or main masts.

Spanish vessels that were probably used in most of the early exploration and trade were fairly small, with two to three lateen rigged masts. Later, square sails on fore and main masts replaced lateen sails.

Carrack. A warship that employed some cannon amidship, but greatly dependent upon infantry weapons, long bows, pikes, and small guns concentrated on the elevated sterncastle and forecastle. A large, heavily built three- or four-masted carrack type of grand proportions was developed by Henry VIII, and included the HENRI GRACE A DIEU of 1500 tons, and the MARY ROSE of 600 tons (the latter recently raised at Portsmouth where she sank in 1545). Smaller carracks were common in Europe. The carrack form was also used as merchant vessels which had a raised forecastle and sterncastle that served no military function. Columbus' ship the SANTA MARIA was classed either as a carrack or a nao, about 75 feet long, 25 feet wide, with a draft of six feet, and a displacement of about 150 tons (Hale 1966:89, Lobley 1972:29).

Flyboat (also fluyt, flute). Small cargo vessel of which the MAYFLOWER was an example (Lobley 1972:48). The MAYFLOWER was rigged like an early bark (or barque); fore and main masts with square sails, a lateen sail on the mizzen mast, but with a square sail on the bowsprit (Villiers 1973:143). The MAYFLOWER built in 1588, was about 90 feet long, 25 feet wide, and of about 180 tons (Bathe 1973:43). From its maximum width, the stern decreased to about 5 feet in width at the highest deck of the sterncastle, about 40 feet above the waterline (Villiers 1973:143).

Wrecks in the Bahamas indicate that cargo ships were built larger after 1550 for carrying more cargo. One Spanish wreck, 120 to 140 feet long and about 30 feet wide, that displaced about 400 tons, had a keel 20 inches by 20 inches, a keelson 24 inches by 9 inches, floor timbers 13 inches by 13 inches, and planks 15 inches by 3 inches, all of oak, it was a heavily built armed cargo vessel of ca. 1575 (Bass 1972:257).

Galleon (also galley). A sixteenth to seventeenth century warship or armed merchant ship with a sterncastle higher than the forecastle, a fish-like underbody, a greatest breadth forward of midships, and a projecting beakhead. The guns of war galleons extended along the entire side with covered ports. Galleons had a square stern, three or four masts, a long high angled bowsprit and profusely decorative carving. The one or two stern masts carried lateen sails. Galleons appear to have been about 100 feet to 200 feet long, and 20 feet to 40 feet wide (Bass 1972: 244-247). Galleons, as armed merchantmen, were used in the Spanish treasure fleets returning from Panama, Vera Cruz, and Havana.

Nao. A small ship (the word means ship or round ship) of which Columbus' ship the SANTA MARIA may have been an example (Lobley 1972:29). The nao had a main mast and mizzen mast, but no foremast. The carrack is quite similar, except for the fact that it had a foremast. The nao and carrack both had a raised forecastle and sterncástle. More recent research in Spain points to the SANTA MARIA as a nao (Chapelle 1976:307).

Vessel types used by the French during this period, according to McWilliams and Surrey, were the following: barque, bateau, Biscayan, brigantine, canoe, canots maitres, chaloupe, corvette, felucca or felouque, flatboat, frigate, hooker, ketch, launch, longboat, pinnace, piroque, smack, traversier, and radeau.

Bark (also barque). Probably in 1700 this was a small ship. By the second half of the eighteenth century a bark was a three-masted vessel, square rigged on the fore and main masts and fore-and-aft rigged with a rectangular sail on the mizzen mast. Cook's exploration vessel of 1768 was H.M. Bark ENDEAVOR, 106 feet long, 29 feet wide, and 368 tons, rigged like a bark of the late nineteenth century (Villiers 1973:156-157).

Bateau. This is the French word for "boat," which was a distinctive double-ended, flat bottomed boat used for rowing or poling, normally 40-45 feet in length, some as long as 85 feet, and others as short as 18 feet. Some were equipped with rigs such as a one-mast square sail, sloop, cutter and possibly schooner. The modern dory probably developed from the bateau (Chapelle 1951:33-36). Surrey noted that the French bateaux had a wide range of size and capacity. In 1737 a contract for 50 bateaux 40 feet by 9 feet was awarded. One built in Mobile had a capacity of 40 tons (Surrey 1916:63, 68).

Bilander. One mentioned by Iberville was a Spanish vessel from Pensacola that carried 6 guns and 40 men (McWilliams 1981). A bilander sail rig was two-masted, with three square sails on the foremast. The lower sail on the main mast was a large lug sail and the upper two sails were square. An English bilander was similar to a brig, which was a medium sized vessel 100 feet to 150 feet long (Millar 1978:5).

Biscayan. A type of longboat or chaloupe. One was carried on Iberville's frigate BADINE and held 30 to 45 men; probably a two-masted double-ended boat (McWilliams 1981).

Brigantine. Mentioned by Surrey (1916) as one of several generic vessel names used in French records. The Spanish brigantine was sometimes equivalent to the English pinnace, having a range in size and rig from a ship's boat to a sizable, decked sailing vessel (Chapelle 1976:14). By the 1800s a brigantine was a fast, two-masted vessel with square sails on the foremast and fore-and-aft sails on the main mast.

Caiche. Another vessel name which Surrey (1916) notes was generically and variously used by the French. In the English colonies it was probably a ketch, which was a square-sterned sailing vessel with two masts and fore-and-aft sails. The term "ketch" or "catch" was dropped in the early 1700s and the term "schooner" for these vessels was used instead (Chapelle 1976:14-15).

Canoe. Made of birch bark, split cedar, spruce ribs, and pine pitch. A typical example could be carried by four men. Some made of hides were called "bullboats." Canoes were classed as two-place, three-place, etc. The two-place version was 12 feet to 14 feet in length and carried a load of 300-400 pounds, besides two men. The four-place version was about 20 feet long, and carried up to a ton of cargo.

South of the Ohio, dugouts were most common among the Indians. Cypress, cottonwood, etc., were used. Larger dugouts to 50 feet long by 3 to 5 feet wide were called both "piroques" and "canoes" by the French and both sometimes carried sails (Surrey 1916:55-57).

Canoe was also a generic term for smaller dugouts of about 15 feet by 4 feet, either square-sterned or more commonly a trough-shaped form with the ends rather spoon-shaped. The birch bark canoe attracted much attention; they were built in Maine or Canada but were not large until the arrival of the French, when "grand canots" of about 36 feet in length appear. Most canoes had low or moderate ends; the high upturned ends were very rare (Chapelle 1951: 36-37). Many Canadian canoes were used in Louisiana.

Canots Maitres. "Canots maitres" or master canoes carried as many as 14 people and were about 36 feet long. La Salle constructed one 42 feet by 12 feet in 1683.

Chaloupe. A synonym for the English "shallop" and Spanish "lancha". McWilliams (1981) translated it simply as a "longboat". Surrey (1916) did not find a clear use of the term but suggested that a chaloupe carried 4 to 60 tons and was generally smaller than a traversier and a bateau. Chapelle (1951:20) defines it as a ship's open boat 18 feet to 28 feet long; by the late 1700s it was simply a two-masted boat. Chaloupes were double-ended, round-bottomed, and had a keel. Iberville's Biscayan seems to have been a chaloupe type.

Corvette. Also a "sloop-of-war", but not sloop rigged; it had two or three masts with square sails, like a brig or a ship. A corvette was a warship smaller than a frigate, carrying 10 to 20 guns. It was used more by the French and Americans than by the British. Corvettes were fast and were used as fighting ships and privateers (Millar 1978:15-16).

Felucca (or felouque). Surrey (1916) described the felucca as a double-ended sail or rowboat with lateen (triangular) sails that could be sailed with the helm at either end (although this seems unlikely). A Spanish felucca built at Havanna in 1786 was about the same size as a corvette or brig, 100 feet long and 27 feet wide, carrying 14 guns. Feluccas were often rigged with lateen sails (Millar 1978:313-314). Thus, in size and rig, the felucca was similar to the older caravel of the fifteenth and sixteenth centuries. (Parenthetically, in the nineteenth century the felucca was a double-ended, round bottomed, lateen sail boat about 25 feet long [Chapelle 1951:287]).

Flatboat. A barge-like flat-ended vessel of shallow draft and of various sizes, used on rivers and protected waters. A French "bateau plat" or "radeau", and American "scow", are types of flatboats, poled or sailed with one or two masts and with square or fore-and-aft sails. The "gondalow" or gundalow was similar, though some had pointed ends (Chapelle 1951:32; 1976:103-104).

Frigate. (French "fregate", Spanish "fragata"). At 1700, a frigate referred to a small, fast, armed ship that carried messages. The French developed the fregate as a type of small warship in the 1740s, equivalent to the British Sixth Rate Ship (Millar 1978:14). In 1699, Iberville came to the Gulf Coast with the frigates BADINE and FRANCOIS. The BADINE had 30 guns and a crew of 150. Frigates were three-masted, about 125 feet long and 30 feet wide.

Hooker. McWilliams (1981) translates a Spanish supply ship type (not named) as a "hooker." It could have been any type of medium or small cargo vessel.

Ketch. (also catch or caiche(?)). A two-masted rig similar to a bilander, a brig, a snow, or a schooner, but bearing a foremast taller than the main mast. All of these sail arrangements were used on medium sized vessels from about 70 feet to 130 feet in length.

Launch. (Spanish lancha). A general term for a small boat for rowing or sailing. After the 1740s, the name "launch" began to replace "shallop" and "longboat", which were going out of fashion. By 1784, the name was applied to a two-masted shallop (Chapelle 1951:20-21).

Longboat. McWilliams (1981) translated "chaloupe" as "longboat". This was a general term for a ship's boat, usually a shallop, used for rowing or sailing; a rowboat; or a two-masted, double-ended, round bottomed, keel boat, about 20 feet to 30 feet long.

Pinnace. A term used in the seventeenth and eighteenth centuries for a long, narrow, sharp-ended open boat larger than a launch or longboat, used for rowing or sailing, and about 30 feet to 50 feet long. A variety of sail rigs were used with pinnaces including lateen sails (Chapelle 1951:22). The pinnace VIRGINIA was probably the first vessel built by Englishmen in America, in 1607 on the Kennebec River in Maine. The VIRGINIA was approximately 51.5 feet long, 13 feet wide, and 6 feet from deck to keel. It carried 30 tons, and was probably sloop rigged. The VIRGINIA made several transatlantic crossings (Millar 1978:282-283).

Piroque. A dugout boat. Iberville had piroques made of cedar logs that carried ten men (McWilliams 1981:116). These were evidently 25 to 30 feet long.

Traversier. McWilliams (1981) translated the French term "traversier" as "smack". Traversier was a French term for any small freight or general purpose boat.

Radeau. Radeau was a French name for a freight boat similar to a flatboat (Surrey 1916:61). In the late 1700s some radeau had a slight V-bottom (Chapelle 1951:305).

1700-1800

Introduction

Vessel types of the preceding period, 1500-1700, continued to be used in the eighteenth century for a time. However, many changes took place in ship design, and new names replaced earlier names for the same rig or vessel type.

Merchant ships and warships up to 1800 commonly had three masts: fore, main, and mizzen. The head sails on the bowsprit were square. By 1750, triangular sails were being added between the masts (stay sails) and on the bowsprit. The dolphin striker, a spreader for the jib-boom, was not used on ships before 1790. By 1775 the lateen three-cornered sail(s) on the mizzen was changed to a four-cornered gaff sail. The number of square sails on the fore and main masts increased from two to four or five by 1800. Ship profiles changed, with greatly reduced height of the fore and sterncastles. The sterns of larger vessels changed from square to round by the early 1800s. The very marked tumblehome of the larger vessels was decreased through the eighteenth century. After about 1750, small and medium sized warships had round bows. In the 1760s, copper sheathing below the waterline was first used, and led to the use of bronze or copper fastenings on British vessels shortly thereafter. Few American or French vessels used copper sheathing before 1790. Ornate wood carving was greatly reduced in the 1700s in order to cut the costs of building (Bathe 1978:08.00-02; Millar 1978:15-29).

The sharing of ship builders, the borrowing of vessel lines and the use of captured or purchased ships were common practices in the 1700s among the various European powers. For example, the Spanish fleet of July, 1733 that was hit by a storm in the Florida Straits lost eight Spanish vessels, eleven English built ships, two New England built ships, and one each Genoese, Dutch, Mexican, and Cuban ship (Bass 1972:264).

Names appearing for Spanish vessels employed during this period (Coker and Coker 1981, 1982; Borja Medina 1980) are as follows: balandra, bercha, bergantine, brig, fragata, frigate, galley, galliot, goleta, guairo, navio, packet boat, paquebot, pink, polacre, saetia, schooner, ship, sloop, snow, tender. These were used on the Gulf Coast in 1780-1781.

English-American vessel names used in the 1700s include the following: bateau, canoe, cutter, dory, flat, gondalow, moses boat, periagua, pinnace, punt, schooner, scow, shallop, skiff, sloop, whaleboat, wherry, yawl.

Vessel Types

Balandra. Probably a Spanish name for the bilander. In England it was a two-masted medium sized vessel (see bilander). (Borja Medina 1980:17, Millar 1978:5).

Bateau. A French type of double-ended, flat-bottomed vessel as used in the 1600s (see bateau, 1519-1700), (Chapelle 1951:33-36).

Bercha. A type of small Spanish vessel in use during the 1780s (Coker and Coker 1982:107).

Bergantine. Probably a Spanish corruption of "brigantine". Whereas the English brigantine was a medium sized two-masted vessel, Spanish bergantines were small vessels of the shallop or pinnace type, open and often lateen rigged (Chapelle 1976:14).

Brig. In English America, the brig was a two-masted, medium sized vessel with square sails on both masts, with the addition of the fore-and-aft driver sail on the main mast. It was fast and sometimes used for slaving, like brigantines and topsail schooners.

Canoe. As previously described above.

Cutter. Also called a "gig". From about 1760 the cutter type is frequently mentioned. It was a ship's boat: long, narrow, fast, "lap-stroke" built (overlapping planks), having a nearly vertical stern, a transom placed behind the sternpost, a rocker (arched) keel, notched oar-ports, and two or three masts with fore-and-aft sails. Usually 20 to 28 feet long, it was used for smuggling or law enforcement (Chapelle 1951:24-25). In the late 1700s "cutter" also referred to a sail plan very much like a sloop. A cutter rig had one mast near the center of the hull, a gaff main sail, a stay sail, a jib, and sometimes a square top sail.

Dory. A double-ended, flat-bottomed boat with flared sides and strong sheer and rocker (arched bottom). It was used for rowing and sailing. Typical dimensions were 16 to 20 feet long, and 4 to 5 feet wide. Some kind of dory was used as early as 1726 in Massachusetts. The dory seems to have been developed from the bateau (Chapelle 1951:85).

Flat. This was a flat-bottomed rowboat common in the eighteenth century. The scow, radeau, and gondalow were also flat-bottomed boats of various sizes used on sheltered waters (Chapelle 1951:32).

Fragata. The Spanish name for frigate (see frigate, 1519-1700); 20 to 42 guns, 177 to 284 men (Borja Medina 1980:16).

Galley. A Spanish navio or warship, a galley carried 60 to 70 guns and up to 600 men (Coker and Coker 1981; Borja Medina 1980:16) (see galley, 1519-1700).

Galliott. A variety of galleon noted by Coker and Coker (1982:104). In the Mediterranean Renaissance, the galeotta or galliot was a small galley with 16 to 20 oars and one or two lateen sails (Bass 1972:210).

Goleta. Spanish vessel name used by Borja Medina (1980:19) for one of three mail or messenger boats. "Goleta" referred to a two-masted, medium sized vessel similar or equivalent to a schooner. The Spanish goleta LA JOSEFA MARACAYER, a captured slave ship, was a two-masted, lateen (settee) rigged vessel of 90 tons, 72 feet long and 15 feet wide (Bathe 1973:58).

Gondalow (gundalow, gondola). Equivalent to a scow, flat, or radeau; all flat-bottomed, rounded or flat-ended, shallow draft cargo vessels for rivers, lakes and bays of various sizes. They were either poled or sailed (Chapelle 1951:32).

Guairo. This vessel name is used by Borja Medina (1980:19) and Coker and Coker (1981:93). The Cokers call it "a lateen sloop or two-masted coaster." There is no such vessel rig as a "lateen sloop;" perhaps it was a one- or two-masted lateen rig similar to a goleta. Used as a mail or messenger vessel, the guairo carried no guns and could carry five men (Borja Medina 1980:19).

Moses Boat. A short, heavily built open rowboat, double-ended or square sterned, with strong sheer and rocker (upturned ends). It was typically 14 to 17 feet long. Moses boats were used as beach lighters, especially for carrying casks and hogsheads. These are still used in the West Indies (Chapelle 1951:29).

Navio. A Spanish name for a warship or galley used by Borja Medina (1980:16). These carried 60 to 70 guns and 500 to 600 men.

Paquebot. Spanish name for a packet boat or transport. Borja Medina (1980:17) mentions one that carried 18 guns and 141 men.

Periagua. A dugout boat with planked-up sides used for sail in the West Indies (Chapelle 1951:18-19). The name means "around the water," in the sense of the English "runabout."

Pink. A sharp-sterned vessel in which the bulwarks or side planks (strakes) extended behind the sternpost. It was rigged as a sloop, brigantine, ship, or schooner. In the nineteenth century it was any small sharp-sterned vessel (Chapelle 1976:14, 1951:137).

Polacre. A Spanish vessel name used by Coker and Coker (1981:96). This was a Mediterranean sail rig with a combination of square and lateen sails on two or three masts (Stein 1969:1112).

Punt. An English type of small flat-bottomed, square-ended rowboat, common in the eighteenth century. The sides were slightly flared; at the ends, the bottom curved upward and the ends tapered. The punt is a form of scow, about 20 feet long and 5 feet wide (Chapelle 1951:32).

Saetia. A Spanish name for the settee sail rig, i.e., a two-masted vessel with lateen sails. In earlier times in the Mediterranean, it was called "saettia" ("arrow"), having long oars and capable of great speed (Bass 1972:210). Coker and Coker (1981:93) comment that it was "variously described as a settee-rigged vessel, a three-masted galley, and a catalan."

Schooner. A sail rig of European origin with two to seven masts, all with fore-and-aft sails, and with staysails and jibs. The simplest and one of the most common forms was with two masts, the foremast shorter than the main mast. The most common sails used were gaff, or four-sided sails, with triangular staysails and jibs. The hull lengths of schooners ranged from around 30 feet to 375 feet with the majority probably 60 to 120 feet, the latter coasting or fishing vessels. It was a very popular type in America where, by 1790, it was called "the national rig of the United States and Canada" (Morris 1979:3-4).

Scow. Another name for a flatboat (see above). The name "scow" first appeared well into the eighteenth century, probably derived from the Dutch "schouw" (Chapelle 1951:33).

Shallop. English name for "chaloupe" (see above), replaced by the name "longboat", then "launch" in the late eighteenth century, (Chapelle 1951:20).

Ship. A general name for large merchant or war vessels. It is also a sail plan, or rig, which, by the late eighteenth century, included at least three masts with square sails on all the masts.

Skiff. A name for any small general purpose rowing or sailing boat with a flat or round bottom.

Sloop. In early colonial records a sloop was a vessel capable of making coastal voyages, or a warship of corvette size. By the early eighteenth century "sloop" referred to a sail plan. Ship's boats were sometimes sloop rigged. In these vessels, and larger examples, the mast position, near the center of the hull, was that of a cutter. The sloop/cutter sail rig employed a single mast, a gaff main sail, a stay sail and one or two jibs. Larger sloop/cutter rigged vessels sometimes carried a square topsail (Morris 1979:2-4, Chapelle 1951:18).

Snow. Probably a medium sized vessel 100 to 150 feet long, noted by Coker and Coker (1982). By the nineteenth century, a snow was a particular sail plan almost identical to a brig, except that the driver sail was set on a separate short mast attached to the rear of the main mast (Bathe 1978: 08.03).

Tender. Noted by Coker and Coker (1981:98); possibly a supply vessel.

Transport. Noted by Coker and Coker (1981:98), possibly a general purpose vessel of medium to large size.

Whaleboat. A popular American eighteenth century rowing boat, about 20 to 24 feet long. It was used not only for whaling but for rapid transport of mail and light freight, and for personal transportation like the pinnace-barge. Some longer whaleboats were armed and were used as privateers (Chapelle 1951:22-23).

Wherry. A fast English rowboat introduced into America around 1700, used for personal transportation. They were built both double-ended and with a narrow stern transom, a sharp bow and stern, and flared sides (Chapelle 1951: 25-27).

Yawl. A small rowboat for ship use that appeared around 1706. It had a full-bodied hull 15 to 23 feet long with sheer. Some had sails and one or two masts (Chapelle 1951:27-28).

1800-1900

Introduction

Distinctive regional vessel types developed in this period (Chapelle 1976:16-55) and, compared to earlier periods, some profound design changes occurred, not to mention the introduction of engine power and steel hulls. One of the important areas on the Atlantic coast for new developments was Chesapeake Bay, which had many small shipyards. It seems to have first taken the lead in vessel design, to be followed at mid-century and after by New England. Because of the lack of an American navy for protection, unstable international conditions, and profitable trade in smuggling, slow vessels were unsafe. Consequently, small, fast vessels were frequently used in the eighteenth century. At about 1750 a fast "West Indies" sloop type was being built on the Chesapeake, soon modified with a schooner rig with very raked masts. Two types subsequently emerged, one used for coastal trade and the other a larger deep water vessel that appeared with schooner, brig, and brigantine rigs. The latter evolved into a sharp-ended schooner about 1800. It typically measured about 90 by 23 feet, with a 13 foot draft. The centerboard was introduced on Chesapeake Bay at about 1815-1825 for coastal schooners. By 1820 the name "Baltimore clipper" came into use.

For deep water trading vessels, the Baltimore clipper was modified to a somewhat less sharp-ended form for freight. Heavier brig and brigantine sail rigs were added. The bows became flared, the hull lines straightened, and the bow draft became deeper. Ship rigs (three masts, all with square sails) appeared with these long, narrow hulls before 1832. Larger shipyards in Philadelphia, New York, Boston, and other New England yards took the lead in building the larger clipper ships of the mid-1850s. Ships of the period from about 1820 to 1840 were commonly 100 to 135 feet long on the deck. Brigs were typically 75 to 100 feet long, with topsail schooners and brigantines a little smaller. At this time, the bark (barque) sail rig was becoming more popular. By the 1840s and 1850s the clippers influenced a general change to a more sharp-ended hull, and ships around 190 feet long became common.

Progressive designs were developed in New York, where nearly all of the fast American passenger or packet ships were built during 1820-1850. By 1850 two and three deck packets around 180 feet long took on clipper features, with a long, straight hull having a nearly upright stern and sternpost, a sharp bow below the waterline, a sharp stern (both bow and stern lines show a gentle concave form), a flush deck, and a slight sheer fore and aft. Typically three masts were ship rigged, i.e., with square sails on all masts, fore-and-aft jibs, stay sails, and a driver on the mizzen. From 1850-1857, and reaching a peak between 1853-1854, the clipper ships appeared. They were strongly built so as not to be damaged by hard sailing with heavy gear. Additional square studding sails could be added on either side of the normal sails for speed, which reached 15 to 20 statute miles per hour under favorable conditions. The prosperity of the clipper ship trade depended upon high prices for their cargo, including tea from China. A depression in 1857, followed by war and then rail competition, ruined the United States shipbuilding industry, which never fully recovered. After the Civil War, New England took the lead in shipbuilding with the "down-Easters," which were perfected by 1885. These vessels had longer hulls (over 190 feet), carried less sail than clippers, were less sharp-ended, had stronger sheer than clippers, and bore less decoration. By 1900, these vessels declined in number, replaced by the newer technology of steamers and railroads; smaller schooners were left to carry on the coastal trade.

Small coastal cargo vessels, rigged as sloop, schooner, brigantine or brig, carried on trade with other United States ports. Foreign ships were prohibited after March 1, 1817 in the United States coastal trade. Gulf Coast ports exported large amounts of lumber to the Caribbean that was usually carried in schooners. Larger vessels of all rigs by the mid-1850s were being built with more iron and steel. Composite vessels with iron or steel frames and various supports were planked and decked with wood and bore wooden masts. These were built, along with completely wooden vessels, until the demise of sail watercraft after World War I. The first iron-hulled schooner was built in 1880, measuring 129 by 34 by 10.5 feet. Some others followed, culminating in the largest and only seven-masted schooner ever built, the THOMAS W. LAWSON in 1902, measuring 375.6 by 50 by 32.9 feet (deck to keel) (Morris 1979). Wood was cheaper to build with, and schooners, with their small crews, were inexpensive to operate. By 1875, and continuing until after World War I, nearly all coastal freight was carried by schooners. Most of these were 50 to 100 feet long, although some bulk lumber carriers, and especially coal carriers, were much larger, reaching 300 feet. More three-masted schooners appeared in the 1850s, and by the 1880s four, then five-masted schooners were built. These bulk carriers at first carried large sails requiring a large crew, but it was discovered that more masts with smaller sails could be handled by a smaller crew. Five-masted schooners required a crew of only 10 to 12 men.

Until the construction of railroads, travel was faster, safer, and more comfortable by passenger ship than by wagon or carriage. Sailing passenger vessels were also cleaner and safer than steam vessels (many steamers were combination sail and steam in the nineteenth century). Sailing passenger packets remained common until the last quarter of the nineteenth century.

Vessel types used between 1800 and 1900 on the Gulf Coast included the following: Baltimore clipper, bark, barkentine, bateau, Bermuda sloop, Biloxi catboat, Biloxi schooner, Biloxi lugger, brig, brigantine, catboat, clipper schooner, clipper sloop, cutter, dory, flattie, gundalow, hermaphrodite brig, ketch, Key West smacker, Louisiana oyster sloop, packet, pilot sloop, pinky, pirogue, river yawl-boat, schooner, scow, shallop, sharpie, ship, skiff, skipjack, sloop, smack, snow, steamer, tugboat, well smack, whitehall, yawl, and yawl-boat.

Vessel Types

Baltimore Clipper. A fast medium sized sailing vessel of the period 1800-1850. This was a development from about 1780 in the Chesapeake Bay area (not concentrated at Baltimore), as a result of frequent trade with the West Indies, particularly with Bermuda and Jamaica, where a large fast sloop design was in use. The schooner rig was adopted, being easier to handle than a sloop with a small crew, and the hull became more streamlined, with a sharp bow and stern (under water), with less sheer and less width. The masts were typically raked or slanted aft giving a racy appearance, and the bowsprit was long. The topsail schooner PRIDE OF BALTIMORE, a modern reconstruction, is the only existing example of the type. After the War of 1812, some larger merchant vessels were built with some refinements to the hull form, and brig, brigantine, and ship rigs were used. Because of their speed, the Baltimore clipper hull rigged as brig, brigantine and square topsail schooner was often used for slaving. Dimensions of typical Chesapeake or "Baltimore" clippers were 90 by 23 by 13 feet to 120 by 27 by 13 feet. The hulls had a noticeable concave bow and stern in their lines, and had a fairly straight keel. The Baltimore clipper also served as a model for coastal trading schooners, which were rarely over 80 feet long. Between 1815 and 1825, the centerboard was introduced on the Chesapeake schooners.

Bark. A bark (barque) was a sail plan used on medium and large sized cargo vessels from the late eighteenth century until after World War I. The three mast bark rig was common on European vessels trading with Gulf ports from 1875 to 1915 (Plate 1). The bark rig had three, four, or five masts with square sails on all masts except the mizzen, which had fore-and-aft sails. There was no particular distinctive hull design of the nineteenth or twentieth century bark. It was similar to contemporary ships of the time. Typical dimensions were 102 by 22 by 11 feet to 155 by 34 by 20 feet.

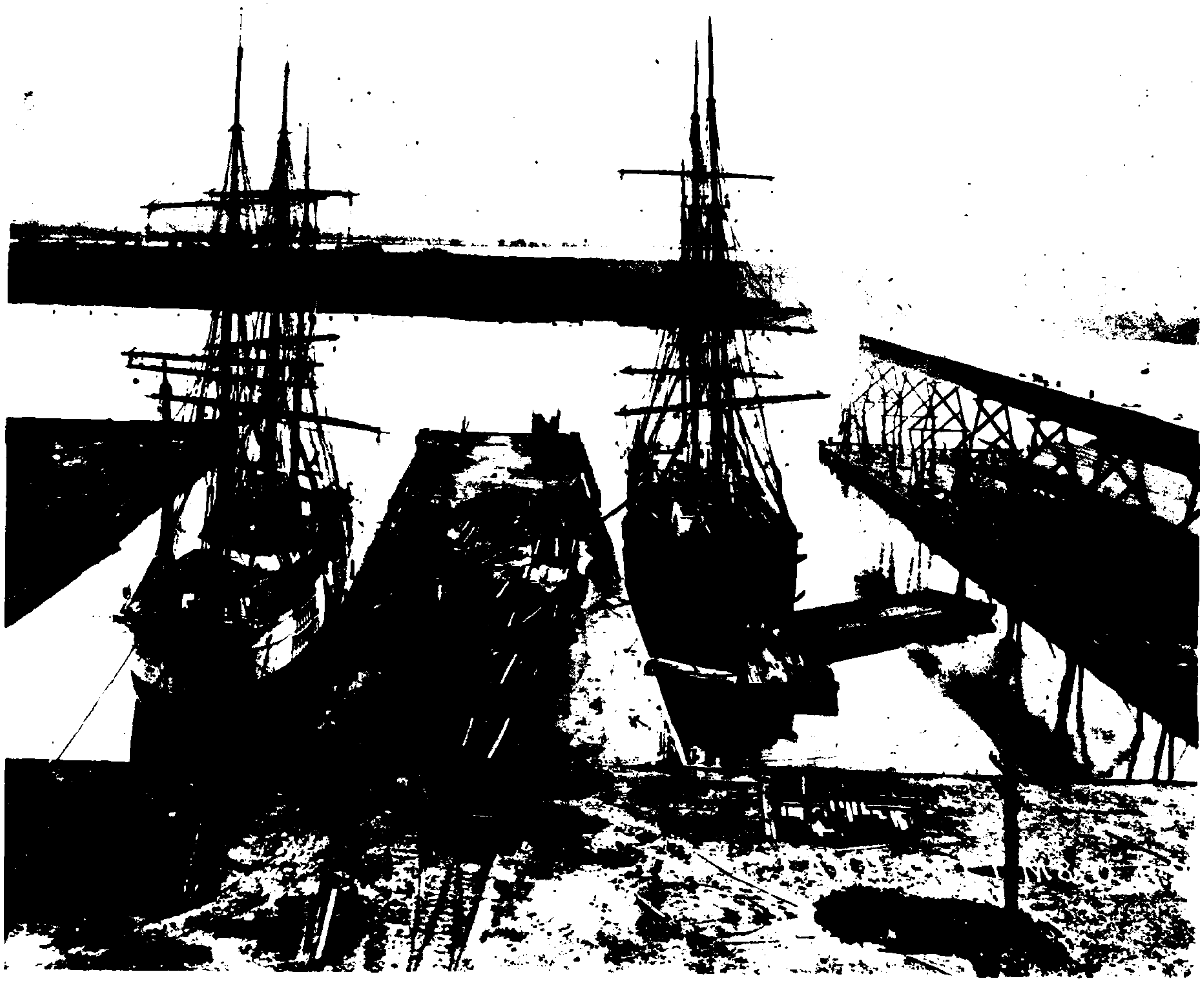


Plate 1. Three masted barks loading coal and lumber. ADELE in port berth.
Note: Plates 1-8 courtesy of T.E. Armitstead/Museum of the City of Mobile Collection. University of South Alabama Photographic Archives.

Barkentine. This was a sail plan used on medium and large vessels in the late nineteenth century until after World War I. The rig is similar to a schooner, except that all sails on the foremast (except jibs and stay sails) were square; sails on the other masts were fore-and-aft. Barkentines had three to six masts.

Bateau. Various types of bateaux were built after the colonial period. One was a lumbermans bateau used in Canada; another was the New England dory that was introduced on the Gulf Coast by snapper fishing vessels around 1875, and used until about 1970 on some Mobile fishing vessels. These modern dories were double-ended with a narrow, steeply angled flat transom, arched flat bottom (rocker), sheer, with removable seats so that they could be stocked. Overall length was about 20 feet, width about 5 feet (Chapelle 1951:86-90).

Bermuda Sloop. A West Indies-Bermuda sloop type built on the Chesapeake about 1740. Its sails were large and it had a very long bowsprit with large jibs and stay sail; it also carried a square top sail, square main in addition to a gaff sail. The bow was full and rounded and the stern was raised. It was around 66 feet long, 21 feet wide, 10 feet deep (deck to keel). This sloop was modified to a schooner that later developed into the nineteenth century Baltimore clipper (Chapelle 1976:16-18).

Biloxi Catboat. The catboat originated from about 1800 to 1850 in the area from Long Island to Cape Cod, where it reached its highest development. Catboats are wide in proportion to their length, usually around 20 to 30 feet long and 9 to 13 feet wide, shallow draft with a centerboard. The single mast is placed far forward in the bow and carries a single, large gaff sail with a boom extending to or slightly beyond the stern. Catboats were popular for general use and recreation on Mississippi Sound and Mobile Bay from about 1890-1930 (Chapelle 1976:239, Morris 1927:58-59, 63-64).

Biloxi Schooner. Gulf Coast schooners probably were introduced from Atlantic ports and modified to suit local conditions. The relation of the Biloxi schooner to the Chesapeake designs is not clear, but some features are common to both. The typical Biloxi schooner about 1895 was around 65 feet long, 18 feet wide, a draft of 4 1/2 feet, with a centerboard, slight deadrise or nearly flat bottom amidships, long bowsprit, sheer and sharp bow, two masts, flush deck, and no deckhouse (Chapelle 1976: 234-235, 322-323).

Biloxi or New Orleans Lugger. Many, perhaps most, of the luggers used on the Gulf Coast and in the New Orleans trade were built in Mississippi. The dipping lug sail rig is old, probably introduced by the colonial French, but the hull form was developed locally (Morris 1927:71). The term lugger was used in New Orleans in the early 1800s but the Biloxi-New Orleans type developed around mid-century and was popular in the fish, oyster, and fruit trades dominated by Spaniards and Italians. Luggers had a sharp bow, moderate sheer, straight keel, low deadrise, large centerboard, broad stern, outboard rudder, small cuddy cabin in the bow, a large cockpit and several covers on the deck. The greatest breadth was forward of center, length about 34 feet, width about 12 feet, depth deck to keel 4 to 5 feet and draft about 2 1/2 feet. The mast was placed forward, was about 35 feet high; the yard or spar to which the single sail was attached was about 34 feet long, unbalanced, at about one-third of its length on the mast. The lug sail is foursided and is not to be confused with the lateen sail, which was triangular (Chapelle 1951:202, 1976:292, Hall 1884:39, 130).

Brig. Originally, an abbreviation for brigantine. A medium sized vessel of two masts and several variations of sail rig through the seventeenth to nineteenth centuries. In the 1600s it carried square sails on the foremast and fore-and-aft sails on the main mast. In the 1700s, upper square sails were added to the main mast. In the later 1700s a square sail replaced the remaining fore-and-aft sail on the main mast. A variation c. 1810 was called a snow. A snow had a fore-and-aft sail on a short mast attached to the rear of the main mast. In the later 1800s a fore-and-aft sail was put on the foremast, resulting in a "brig schooner," or hermaphrodite (or "morphydite") brig.

The American brigantine/brig was built in a variety of hull forms, the most common one being like a two-masted schooner, 1820-1850, and 1840-1850, like a clipper ship. The brig was not a popular sail rig in the late 1800s (Chapelle 1976:43-46).

Brigantine. See brig.

Catboat. See Biloxi catboat. A vessel/sail rig widely used on the Atlantic and Gulf for fishing and recreation.

Clipper Schooner. A clipper hull used with the sloop rig.

Cutter. The term for fast Revenue (Coast Guard) vessels of sail or steam, also for a sail rig in which a single mast is positioned amidships. The sails are usually fore-and-aft, with jib(s), stay sail, main sail and, in the 1800s, a square top sail.

Dory. See bateau.

Flattie. A flat-bottomed, sloop rigged boat used on the Gulf Coast in the 1880s, around 17 feet long, 8 1/2 feet wide, draft about 2 1/2 feet. It had an arched bottom with a skeg, an outboard rudder and small cuddy (Chapelle 1951:310-311).

Gundalow (see scow). The gundalow or scow was a flat or slightly V-bottomed vessel that after 1840 became a popular type of freighter on the western Gulf Coast, sloop or schooner rigged. The ends were flat, the bottom arched (had rockers), shallow draft, centerboard, 25 to 35 feet long, 10 to 12 feet wide, with small trunk cabin and cuddy (Chapelle 1951: 332-336).

Hermaphrodite Brig. See brig. A variation of the brig sail plan.

Ketch. In the seventeenth century a ketch, or catch, was a small, two masted boat; later in the nineteenth century to twentieth century, a ketch was a small or medium sized vessel, fore-and-aft rigged with the foremast taller than the main mast, or the main mast taller than the mizzen, which is forward of the helm (tiller or wheel).

Key West Smackee. A fishing sloop, 17 to 26 feet long, shoal draft with a keel and with a fish well to keep fish alive and fresh while in transit. Most had a straight stern and a flat transom with an outboard rudder.

Louisiana Oyster Sloop. A centerboard sloop with a straight, upright stern, a full-ended hull with great sheer, length about 36 feet, width about 13 feet, depth 5 feet. Used at Morgan City, Louisiana and possibly east to Mobile Bay (Chapelle 1976:293).

Packet. A scheduled sail or stream-powered vessel, packets carried passengers and freight along the Gulf from about 1820 to 1927.

Pilot Boat. Sloop or schooner rigged vessels around 75 feet long used by pilots to meet incoming vessels. Early pilot boats on the mid-Atlantic were based on the Jamaica - Bermuda - Chesapeake sloop of the mid 1700s. Various pilot boat types were very fast and prior to the organization of pilot associations, the pilots would race to the incoming ship. A modified Chesapeake form was used on the Gulf Coast in the late 1800s, having large sail area and raking masts as previously described (Chapelle 1976: 50-52, 88-93).

Pinky. A late colonial hull design that became very popular for New England fishing vessels in the period 1800 to 1840s. These were large shallops, double-ended, two-masted with two gaff sails and no bowsprit and no head sails. The bulwarks extended to a point at the stern. East coast fishing schooners around 50 by 13 by 7 feet retained the sharp, overhanging stern to the mid-1800s and smaller sloops kept this form through the last half of the 1800s (Chapelle 1976:166-168, 359). Some of the pinky schooners may have been used in the Gulf of Mexico in the early snapper industry.

Piroque. Small dugouts and planked boats with double ends continue to be used on the Gulf Coast since the colonial period for use in marsh hunting and fishing. These are around 10 to 12 feet long, 1 1/2 to 2 feet wide, with low sides and fairly flat bottoms. The Alabama plank bottom version is pronounced "peerow."

River Yawl Boat. Also river skiff. Used from about 1850 to 1925, these river yawl boats were 18 to 24 feet long and 5 to 6 feet wide with a sharp bow, square stern, flat bottom with some rocker, flared sides, and were always fore-and-aft (longitudinal) planked (Chapelle 1951: 97).

Schooner. See Biloxi schooner.

Scow. See gundalow. Schooner rigged scows were used on some southern rivers, on the south Atlantic and western Gulf of Mexico. Scows were 25 to 35 feet long, 10 to 12 feet wide, had a small trunk cabin and cuddy, were cross-planked on the bottom, had flat ends, and a dead rise in the ends. Some used a V-bottom around 1890, after 1840 a centerboard was common, along with an outboard rudder (Chapelle 1951:310).

Shallop. The modern shallops, 1800-1940, were designed for sailing and most were two-masted, round-bottomed, and half-decked (Chapelle 1951: 136-192).

Sharpie. Flat-bottomed boats originally, sharpies were sharp-bowed, 20 to 65 feet long, some partly decked, and used mainly for sailing in the late 1800s from New England to the Gulf Coast. Various sail rigs were used - cat, sloop (usually called flatties), schooner, yawl and cat-ketch (Chapelle 1951: 46, 104; 1976:177).

Ship. A sail rig with three, four or five masts having square sails. In addition, head sails, jibs and fore stay sail, and other triangular stay sails were used. Ships with up to five masts and steel hulls were built in the late 1800s and early 1900s as long distance, deep water bulk carriers.

Skiff. Any open or partly decked rowing or sailing boat, 12 to 24 feet long and used for inshore waters (see Whitehall).

Skipjack. A V-bottomed sail boat 20 to 25 feet long. Developed along the coast of Rhode Island and Massachusetts around 1860, the V-bottom hull was introduced to Chesapeake Bay in the late 1880s and was built on the Gulf Coast by 1886, where V-bottomed hulls with cat and lug sail rigs were used. The Chesapeake "skipjace" is a sloop rigged, round-bottomed boat; there, a V-bottomed boat is called a "bateau" (Chapelle 1951:305-309; 1976:367-373).

Sloop. A fore-and-aft sail rig with one mast and at least a main sail and a fore sail. Early sloops of the late 1700s had one or two square sails on the mast and one or two jibs in addition. Through the 1800s sloops were commonly used for fishing and freight. In the late 1800s sloops with a large amount of canvas were sometimes used as yachts.

Smack. A fishing vessel especially one having a live-well or waterfilled tank built-in to keep fish alive. Smacks varied in size and were commonly rigged schooner or sloop.

Snow. See Brig. A snow was a type of brig with a fore-and-aft sail set on a short mast just aft of the main mast.

Steamer. Steam powered vessels. Steamers were used from the 1820s on rivers and bays of the northern Gulf Coast for passengers, freight, and towing (Plate 2). The details of their construction have been thoroughly described elsewhere. The various types include not only the river and Mobile Bay ferries, but smaller passenger boats and work boats 30 to 70 feet long.

Steam fishing vessels were found to be too expensive in deep water Gulf fisheries. The first New England steam fishing vessel, a steam schooner, was not built until 1885. Sail, with small auxillary engines, dominated Gulf fishing vessels from about 1910 to 1915, when oil (diesel) engines without sail began to appear.

Steam powered towboats and harbor boats were probably in use by the 1830s. They were often used to aid coasting freight schooners and others when the wind failed or when vessels were damaged. By 1875, large seaworthy coastwise towing vessels were, from one example, around 100 feet long, 20 feet wide and 10 feet in depth. At this time these vessels were

Plate 2. Steamboat LOUIS D'OLIVE built in Wilmington, Del. 1861.

often used to pull coal barges and were displacing the large coal schooners.

War vessels at mid-century were mostly a combination sail and steam. In the Civil War some unusually fast vessels were built in Britain for the Confederacy as blockade runners. While these also carried auxiliary sail, they were primarily steamers, using two side paddle wheels. The best known on Mobile Bay was the HEROINE built in 1862 at Glasgow. It had an iron hull, 180 horsepower engine, was 178 feet long, 19.2 feet wide and 7 feet deep. The HEROINE was used as a Mobile Bay ferry until damaged by the 1906 hurricane, after which it was scrapped. Local photos show the hull of a similar vessel abandoned and partially sunk on the Mobile River bank around 1910. Another blockade runner of similar form was the FERGUS, built at Glasgow in 1863. It was 210 feet long, 23 feet wide and 9 1/2 feet in depth. Both of these vessels could reach a speed of 20 statute miles an hour (U.S. Bureau of Customs 1890; Chapelle 1976:131, 150, 23, 347).

Well Smack. See smack. A fishing boat with a live-well to keep fish alive.

Whitehall. A narrow, light, fast, seaworthy row boat, carvel planked on small frames, with a straight keel, sharp bow, straight stern and wine-glass shaped transom; 17 to 20 feet long, about 4 feet wide and 19 inches in depth. It originated in the 1820s at New York and was used as a fast harbor boat for pilots, reporters, runners, brokers, etc. (Gardner 1977: 194-210). Whitehall type boats were used in Mobile.

Yawl. An eighteenth century ship's boat that continued in use through the nineteenth century. Also a fore-and-aft sail rig, in use since the 1870s for recreational use, with a tall main mast and a mizzen placed in the stern aft of the wheel or tiller.

Yawl-Boat. Ship's boat, c. 1850 to 1900 or later for general ship use, fishing and light freight. Yawl-boats were designed mainly for sailing, commonly with one mast and sprit or gaff sail, 16 to 20 feet long, 5 to 7 feet wide (Chapelle 1951:222-223).

1900-1980

Introduction

The greatest changes during this period were the increasing use of engine power after 1916, gradually replacing sails - which was completed by about 1975, and the use of steel-hulled vessels. Of the many vessel types and variations, the following have been taken to be representative of the Mobile Bay area: bark, barkentine, bay shrimper, bay steamer, Biloxi lugger, Biloxi schooner, catboat, cat-rigged skiff, charter boat, dory, Gulf shrimper, Lafitte skiff, mullet boat, oyster skiff, snapper boat, sport fisherman, towboat, tugboat, Whitehall.

Vessel Types

Bark. The bark rig, three, four, or five masts with square sails except fore-and-aft sails on the mizzen, was used for deep water freighters into the 1920s. The most popular, judging by many examples in Mobile photographic collections, was the three-masted rig, used on medium sized European cargo vessels with wood or steel hulls.

Barkentine. A sail rig with three to six masts. The foremast carried square sails, the other masts carried fore-and-aft sails. Two wooden five-masted barkentines were built at Pascagoula for an Italian firm for carrying coal and lumber. The MONFALCONE, built in 1919 (the captain of which was a Canadian, J.D. Buffett), was 282.4 feet long, 45.8 feet wide with a depth of 23 feet. The MOLFETTA, built in 1920, was 284 feet long, 46.3 feet wide and 22.5 feet in depth. These were probably the last large sailing vessels built in this area (The Chronicle 1966, U.S. Bureau of Customs 1924).

Bay Shrimper. A distinctive inshore shrimp/oyster boat developed 1915 to 1925 as a result of full reliance on engine power and the end of the use of sails. In addition, the gradual increase in the use of a wheel-house took place. Schooners without main mast, sails or long bowsprit, but with a wheel-house marked the transition. The first fully engine powered bay shrimper in Alabama was the EAGLE, of Bayou La Batre, in 1925. Most of these bay shrimpers are "single rigged," or fitted out for pulling one net from a forward mast. They are wooden, round or V-bottomed, commonly around 35 feet long, 10 feet wide and have shallow draft, with low free board and a good bit of sheer.

Bay Steamers. These were large scheduled ferry boats or excursion boats used on Mobile Bay from the late 1800s until 1927 when the Cochrane Bridge causeway opened. All but one, the BALDWIN, built in Mobile, were sidewheelers. (See Table 2). (See Plates 3 and 4).

Biloxi Lugger. The lug sail vessel of the 1800s and early 1900s changed to a motor vessel around 1920. It has a displacement (non-planing), round-bottomed, shallow-draft hull, vertical stem, moderate sheer and moderate flare at the bow, with rear wheel-house. An example is the JENNIE LOUISE 39.4 feet by 12.4 feet by 4.4 feet, 24 horsepower engine, built in Pascagoula in 1927. The modern luggers work inshore carrying oysters and shrimping (U.S. Bureau of Customs 1924).

Biloxi Schooner. A shallow-draft, nearly flat-bottomed, centerboard schooner with a clipper bow and two masts built on the Mississippi coast until c. 1933 and used mainly for oyster dredging. These vessels were usually 60 to 70 feet long, 20 to 24 feet wide, with a 4 to 5 feet depth. Freight schooners in Mobile Bay and Mississippi Sound were very similar. Power dredging was permitted after 1933 and deep water shrimping began a few years later, so that the Biloxi schooners were soon altered to motor vessels (Chapelle 1976:235-236, 293, 322-323; Toops 1980:80-84). (See Plates 5 and 6).

Catboat. The popularity of the late nineteenth century catboat for recreation and fisheries continued into the first quarter of the twentieth century. The working catboat, based on a model in the watercraft collection, was about 24 feet long, 9 feet wide, with a depth of about 2.5 feet, upright stem and stern and moderate sheer (Chapelle 1976:293).

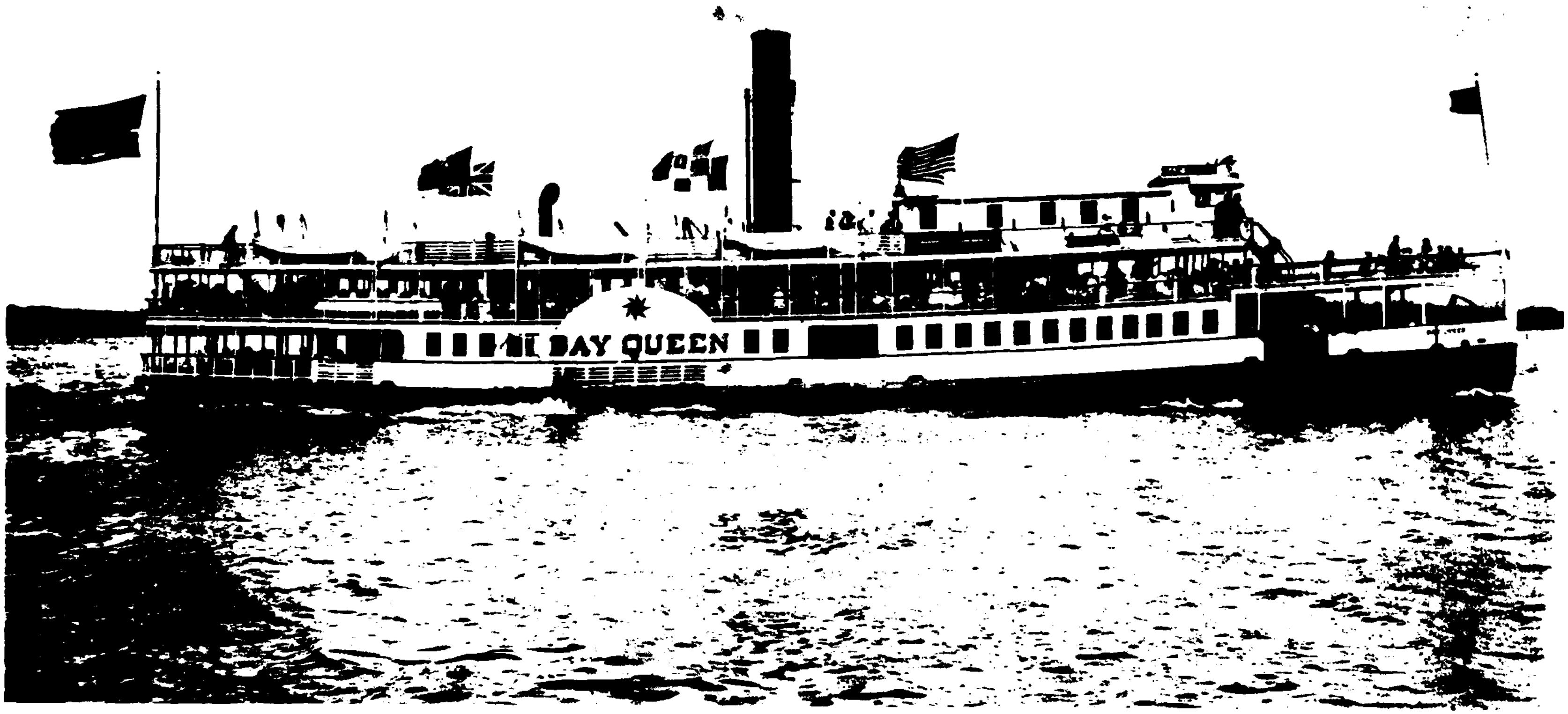


Plate 3. Bay ferry BAY QUEEN. Built 1896. Burned 1927.

Plate 4. Steamer JOHN QUILL. Built in Jeffersonville, Indiana. 1907.

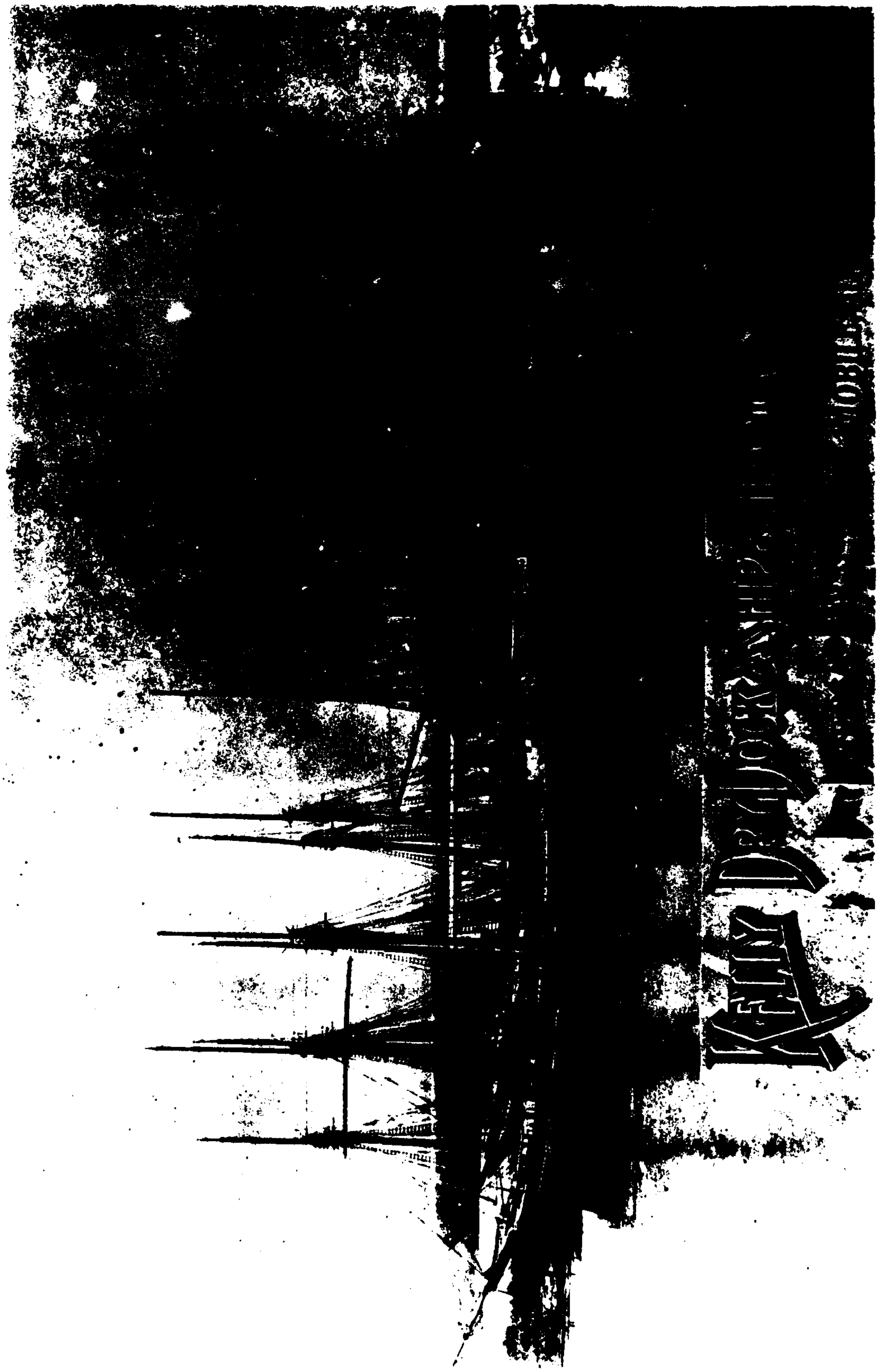


Plate 5. Three and four masted schooners at Mobile. Ca. 1900.

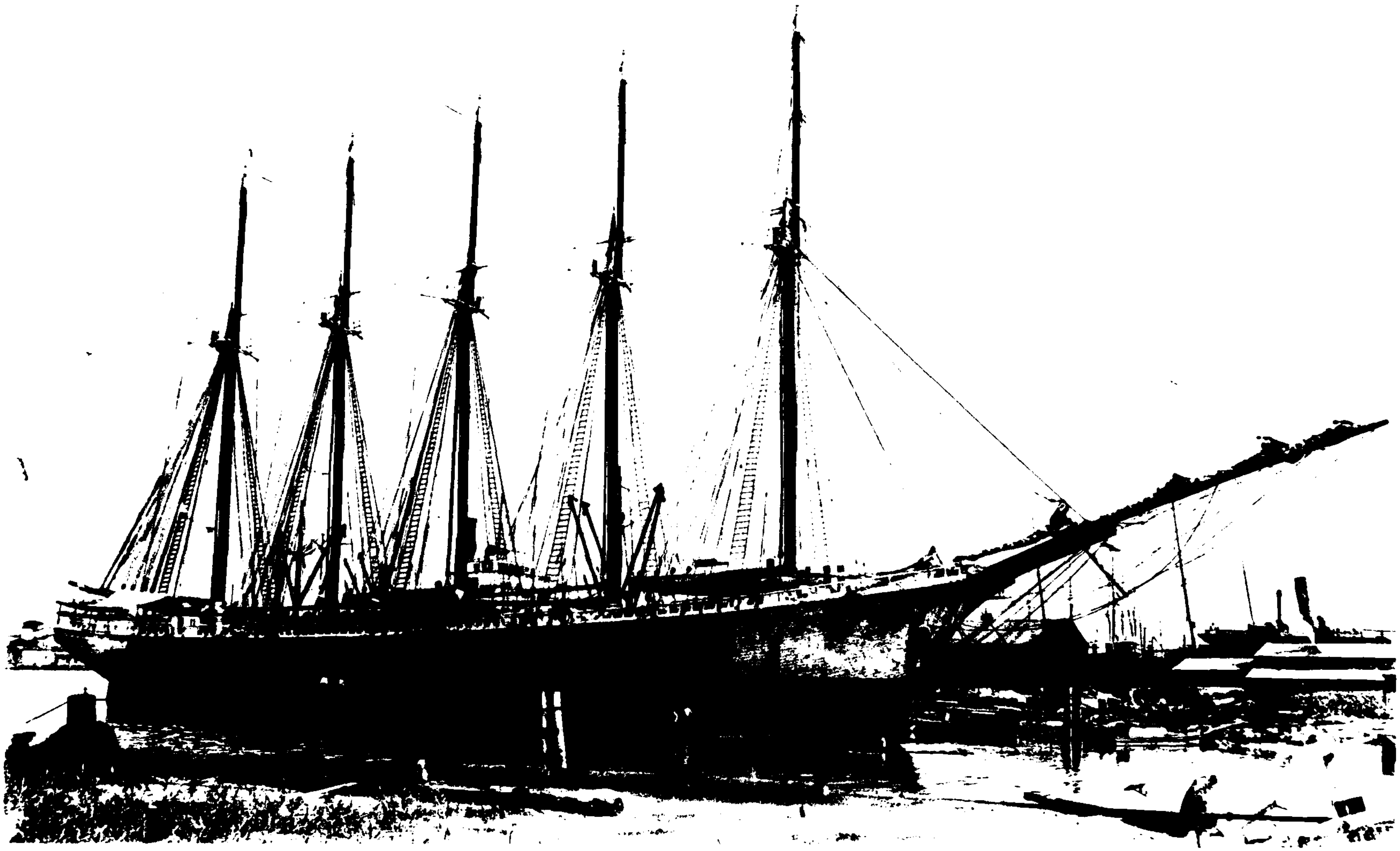


Plate 6. Five masted schooner SINGLETON PALMER. Built in Waldoboro, Maine. 1904.

Table 2. Ferry Boats on Mobile Bay.

	Built	Year On Mobile Bay	Year Lost	Cause	Place
Apollo	1864	1894	1920	Scrapped	(?)
150.3' x 25.9' x 8.9', Keyport, N.J., 402 HP, steam, side-wheel, crew 10					
Baldwin	1905	1905	1945	Sank	Warrior R.
109' x 23.7' x 5.2 ', Mobile, 99 HP, steam stern-wheel, steel hull, crew 5-12					
Bay Queen	(?)	1896	1929	Burned	Mobile
Fairhope Currier 15 February 1973: 167' x 25', 471 tons					
James C. Carney	1894	1894	1916	Storm	Mobile
130.4' x 25.2' x 7.0', Mobile, 600 HP, steam, side-wheel, crew 10, steel hull					
Eastern Shore	(?)	1922	1932	Scrapped	Mobile
Fairhope Currier 15 February 1973: 147' x 26', 413 tons					
Fairhope #1	(?)	1901	1905	Burned	Mobile Bay?
Fairhope #2	1907	1907	(?)	(?)	(?)
No data					
General Lee	(?)	1908	1910	Burned	Fairhope
No data					
Heroine	1862	1865?	1906	Scrapped	Mobile
178' x 19.2' x 7', 180 HP, steam, side-wheel, crew ?, iron hull					
Louis D'Olive	1861	(?)	(?)	(?)	(?)
(ex-Delaware, ex-Louis Mclane), 163' x 28' x 8.2', 250 HP, steam side-wheel, crew 10, iron hull					
Ocean Wave	(?)	1871	1871	Exploded	Pt. Clear
No data					
Pleasure Bay	1890	1891	1922	Burned	Madisonville, La.
150.8' x 25.5' x 7', Upper Nyack, N.Y., 440 HP, steam, side-wheel, crew ?, steel hull					

Cat-Rigged Skiff. One of several forms of small, open, flat-bottomed, gaff or sprit-sail, one mast boats for bay fishing and recreation, approximately 14 feet long and 5 feet wide (Curren 1981).

Charter Boats. A class of motor powered sport fishing boats used along the coast since about 1920. Inboard engine powered and originally open, canopy, deck and forward cabin were gradually added. The older boats were built locally of wood and were 24 to 35 feet long. Newer charter boats are often of fiberglass and commercially built (Curren 1981).

Dory. The New England banks dory was introduced on the Gulf Coast about 1875 by New England snapper fishermen. The dory continued to be used, mainly as a life boat, on snapper boats of the Star Fish and Oyster Company in the 1950s and perhaps later.

Gulf Shrimper. Large, offshore shrimp trawlers developed after 1937 when offshore shrimp grounds were discovered. Most of these vessels are now built of steel, although at least two yards still build wooden hulls. The Gulf Shrimper is typically 70 to 100 feet long, has great fore and aft sheer, forward wheel-house and is double rigged for pulling two nets. The latest models have the wheel-house above the crew's quarters and galley, which allows for more deck space.

A smaller forward-wheelhouse shrimp trawler, 45 to about 60 feet long, operates along shore, making one or two day trips, unlike the Gulf shrimpers, which may stay out two to four weeks.

Lafitte Skiff. Developed in Lafitte, Louisiana, between 1936 and 1946, this is an all-purpose, inshore, shallow water craft with a V-prow planing hull, 30 to 34 feet long, 14 feet wide and about a 2 foot draft. The skiff originally had a rear wheel-house, however, the Alabama version has a forward shelter cabin and wheel-house (Kirkpatrick 1981:75-76).

Mullet Boat. The older boats used in sound and bay net fishing were rowed or sailed according to reports, but these are no longer extant. The present mullet boats are often commercially built, wooden, around 16 feet long, flat or slightly V-bottomed and powered by outboard motors.

Oyster Skiff. The oyster skiff ranges in size from around 18 to 25 feet long, 6 to 8 feet wide and draws less than one foot. They are flat-bottomed, V-prowed with sheer, flat stern, have a distinctive small shelter cabin aft and are outboard powered.

Snapper Boat. The offshore line fishing vessels of the late nineteenth century were schooners, a good many of which were built in New England. The schooner has remained as the primary type for deep water bottom or "snapper" fishery. About 1950 sailing schooners were being modified to use engine power completely, although a steadying sail was sometimes retained. A rear wheel-house had been added to the earlier type. With the removal of sails, a long canopy over the fishing stations was added to cover most of the deck forward of the wheel-house. The older round-bottomed hull has been retained and several older sailing schooners have only recently been modified to complete engine power. Thus, two variations of the snapper boat are in use. Both hull forms are quite similar, being wooden, round-bottomed, 60 to 70 feet long, 19 to 21 feet wide, 8 to 10 feet in depth deck to keel and draft about 5 to 6 feet. The bow is sharp with sheer, the transom is flat and nearly vertical.

Sport Fisherman. See charter boats.

Tugboat or Towboat. Early twentieth century tugs and towboats were more narrow with sharp bows and actually performed towing. The ELEANOR, used at Mobile and built in 1903 at New Orleans, was 55.2 feet by 13 feet by 11.1 feet, had a 40 horsepower steam engine and a crew of four (Plate 7). Later, barge towboats became push-boats with flat bows, but harbor tugs, used to dock large vessels, retained the sharp bow.

Whitehall. The Whitehall rowboat used in the nineteenth century continued in the twentieth century. Whitehall boats were used in Mobile after 1900, but no details on these boats are currently available (Plate 8).

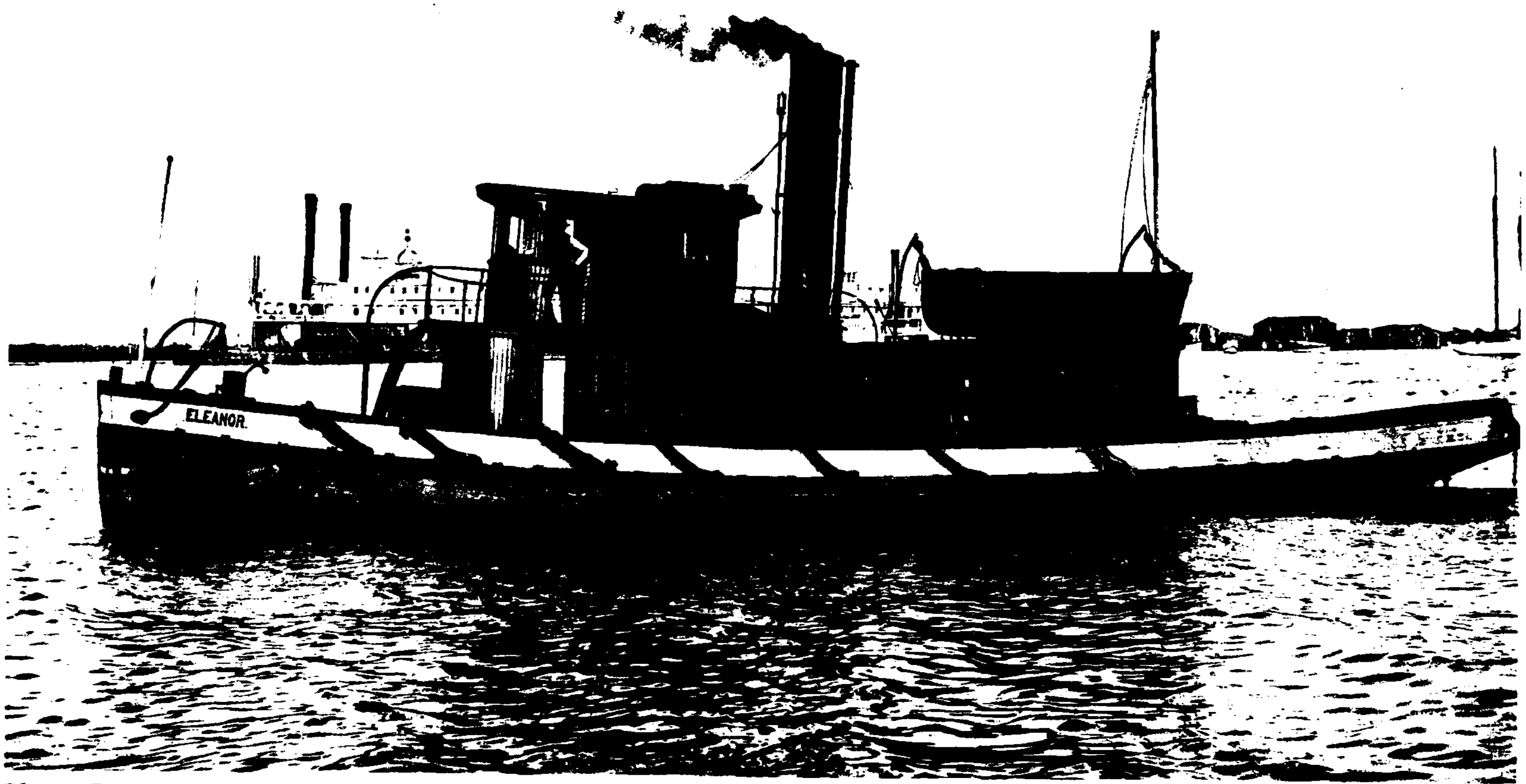


Plate 7. Harbor Tug ELEANOR. Built in New Orleans. 1903.

Plate 8. Mobile Wharf ca. 1900. Freighter RAVENSDALE. Schooners ORION and METEOR. Bark ALICE. Whitehall rowboat.

CHAPTER III

PREVIOUS CULTURAL RESOURCE STUDIES OF THE MOBILE BAY AND HARBOR STUDY AREA:

Terrestrial Archaeology

While there are several examples which show that the colonial European inhabitants of the Mobile area were curious about the origin and nature of certain conspicuous aboriginal antiquities in the area, there was no real effort at systematic study until well into the nineteenth century. The most obvious of these remains were the extensive shell heaps composed of *Rangia* and oyster which existed at several points around the Bay margins, on Dauphin Island, and on Mississippi Sound. It is important to note that many of these sites had been extensively disturbed prior to their first description by the early antiquarians. The Dauphin Island shell banks, for example had been mined for lime even in the time of Cadillac (Rowland and Sanders 1929:165), later by De Vauxbercy in early American times (Owen 1922:3), and even more substantially in the preparation of lime for the construction of Fort Morgan and Fort Gaines (Knight 1976:17). Shell used as construction material in Mobile for roadways and embankments was similarly hauled from the nearest convenient sources, namely aboriginal sites (Mohr 1881).

Most of the scientific attention attracted to the aboriginal evidences on Mobile Bay during the last half of the nineteenth century focused on the problem of the nature and origin of the "shell heaps," or "Gnathadon beds" as they were sometimes called. Such investigations as C.S. Hale, Michael Tuomey, Daniel G. Brinton, and Charles Mohr debated such topics as the extent to which the shell heaps might be artificial rather than a natural occurrence. This discussion was stimulated by some actual excavation and the limited consideration of artifactual contents. By the end of the century a substantial number of artifactual "curiosities" from the Mobile Bay area shell middens had made their way into many private collections and museums (Alabama Anthropological Society 1910).

Clarence B. Moore's forays into the Mobile region between 1899 and 1905 resulted in the national publication of an extensive body of archaeological data, replete with illustrations of the artifactual materials. Moore's attention was mainly drawn to aboriginal sites outside of our primary area of interest, but he did perform a survey of the eastern and western shores of Mobile Bay in search of mound sites (Moore 1905:279). Moore considered his results here "meager," nevertheless he conducted excavations at six important sites along the Bay margins and Dauphin Island, resulting in reported data which still retain much utility. The sites included a Weeden Island burial mound near present Daphne (Mound near Starke's Wharf), shell middens near Fish River, Bon Secour, Seymour's Bluff, and Strong's Bayou, and the large shell mounds on the northern side of Dauphin Island (Moore 1905:287-294). In these investigations Moore clearly recognized the distinction between the ceramics within the small burial mounds (Weeden Island) and those within the chiefly Late Mississippian shell midden sites.

While a number of amateur explorations were conducted in subsequent years, the next major professional archaeological research conducted in the area was carried out during the Depression era by representation of the Alabama Museum of Natural History. Between 1929 and 1935, Alabama Museum personnel conducted a much more thorough archaeological reconnaissance of the Bay area than had previously been carried out.

Subsequent extensive excavations at southwest Alabama sites during 1940 and 1941, utilizing local WPA labor, were located outside the project area on Mississippi Sound in southern Mobile County, and in Clarke County to the north. These excavations provided the basis for the first secure prehistoric chronological frame of reference for the region (DeJarnette 1952; Wimberly 1960).

Two comparable episodes of excavation, however, were conducted in 1937 and 1940 at sites on the Fort Morgan Peninsula. The 1937 excavations consisted of the testing of a group of nine sand mounds (DeJarnette and Buckner 1937), while the 1940 work of more extensive scope concentrated on the large shell bank at Strong's Bayou (DeJarnette, Anderson, and Wimberly 1941). These excavations contributed materially to the developing chronological picture, both for the Mobile Bay region and the state in general, permitting a series of comparisons with materials then being recovered in northern Alabama.

Bruce Trickey's publication of a chronological framework for the Mobile Bay region in 1958, based upon a seriation of mainly surface materials from various locales, considered data from several sites on or near the Bay margins (Trickey 1958). The resulting synthesis, complementing that produced by Wimberly (1960) largely on stratigraphic and comparative grounds, allowed a more confident alignment of Mobile area culture history with the corresponding sequences of culture that had been worked out for northwest Florida to the east and the lower Mississippi Valley to the west.

Several archaeological reports dealing with diverse aspects of Mobile Bay area archaeology have appeared in the last two decades, and more limited surveys have been conducted in certain restricted areas, but only a few have been based upon freshly excavated data. Some important exceptions of larger scale include Harris and Nielsen's (1972) report on salvage excavations at Fort Conde/Charlotte; a report on extensive excavations at two Mississippian shell middens on the eastern shore of the Bay (DeJarnette, ed. 1976); and a yet unpublished manuscript by N.R. Stowe concerning the excavation of the French warehouse at Dauphin Island. Recent extensive surveys have been conducted at Mobile Point and in the Mobile River Delta (Stowe 1979, 1981). Trickey and Holmes (1971), Knight (1977), and Walthall (1980) have attempted brief syntheses of the regional prehistory, and a forthcoming report on a Lower Tombigbee River cultural resource reconnaissance, conducted under auspices of the University of South Alabama, promises much refinement both in data and theoretical focus for the region. Mobile Bay area prehistory is only beginning to take its place among those regions of the Southeast wherein provocative new research can address questions of broad significance.

Marine Archaeology

It has been only within the past decade that marine archaeological activities have occurred in the Mobile Bay area. The period 1974 to present has reflected the increased awareness of submerged cultural resources by various governmental agencies through the initiation of a number of remote sensing surveys. These fall into three general categories: navigational improvements in the bay, shell dredging permits and hydrocarbon resource lease tracts.

Under the auspices of the U.S. Army Corps of Engineers, Mobile District, navigational improvements in the upper bay region were preceded by remote sensing surveys performed by Hudson (1974) and Saltus (1978). These surveys explored the proposed Theodore Ship Channel and disposal area and the Pinto Pass disposal site.

Shell dredging permits requested by Radcliffe Materials, Inc. of Mobile resulted in a magnetometer survey in the vicinity of the ship channel (Floyd 1981a) and an on-site evaluation of the effects of exploratory shell dredging involving members of the Alabama Historical Commission, the Mobile Corps of Engineers and cultural resource consultants (Mistovich 1981).

The preponderance of remote sensing activity has been the product of exploratory drilling for hydrocarbon resources both within the bay and offshore. This is a relatively new phenomenon for the Alabama coastal waters, with surveys occurring principally within the past three years. Exploratory geologic hazard and cultural resource surveys have been performed for Mobil Oil (Marine Environmental Sciences Consortium 1979, Dames and Moore 1981, Coastal Environments 1982), Shell Oil (Floyd 1981b), Phillips Petroleum (Hudson 1981) and Exxon (Racal-Decca 1981, 1982). In two cases, magnetic anomalies discovered in these preliminary surveys were evaluated by subsequent close grid survey (Dames and Moore 1982) or diver inspection (Floyd 1981b).

The major consideration of potential submerged cultural resources in the form of anomalies encountered during the remote sensing surveys in the bay and offshore has been avoidance. In no case has an anomaly been evaluated as a significant cultural resource, been in a geographical position where avoidance was impossible and, consequently, subjected to the process of mitigation. From an archaeological perspective, the body of submerged resource data for this area is restricted to that garnered in the Phase I or reconnaissance level. This has been augmented by a number of literature reviews (cf. Stowe and Fuller 1979) and one prior, comprehensive documentary effort (Wilson and Curren 1981), utilized extensively in this report.

By far the largest remote sensing and documentary effort for Mobile Bay to this date has taken place under this contract. Based on the results of this work, further investigations under Phase II (evaluation) and Phase III (mitigation) efforts should add considerably to the knowledge of marine activity in the Mobile Bay area.

List of National Register of Historic Places Properties in the Vicinity of the Mobile Bay and Harbor Study Area, Alabama.

Baldwin County
- Aboriginal Sites
  - Bottle Creek Indian Mounds
  - Caron Site (1Ba376) (declared eligible)
- Historic Archaeological Sites
  - Blakely
  - Fort Mims
- Historic Structures
  - * Fort Morgan
  - * Sand Island Light
  - * Mobile Point Light Station Keepers Quarters
  - Daphne Methodist Episcopal Church
- Historic Districts
  - Montrose Historic District
- Maritime Vessels
  - * U.S.S. Tecumseh

Mobile County
- Aboriginal Sites
  - Dauphin Island Indian Mound Park (1Mb72)
  - Nanna Hubba Bluff Site
  - Dead Lake Site (1Mb96) (declared eligible)
- Historic Archaeological Sites
  - Fort Conde-Charlotte
  - Fort Louis de la Louisiane
- Historic Structures
  - Ellicott Stone House
  - Barton Academy
  - Braggs-Mitchell House
  - Brisk and Jacobson Store
  - Carolina House (Dawson-Perdue House)
  - Gates-Davis House
  - Georgia Cottage
  - Martin Horst House
  - Kirkbridge House (Fort Conde-Charlotte House)
  - Mobile City Hall
  - Mobile City Hospital
  - Oakleigh
  - Bishop Portier House
  - Protestant Children's Home
  - Raphael Semmes House
  - U.S. Marine Hospital
  - * Middle Bay Light
  - Emmanuel Building
  - Carlen House
  - Tschiener House (Damus School)
  - Battle House Royale

List of National Register of Historic Places Properties in the Vicinity of the Mobile Bay and Harbor Study Area, Alabama (continued).

	Gulf, Mobile, and Ohio Passenger Terminal
	Pincus Building
	South Lafayette Street Creole Cottage
	St. Louis Street Missionary Baptist Church
*	Fort Gaines
	First National Bank
	Miller-O'Donnel House
	State Street A.M.E. Zion Church
Engineering Properties	
	Cochrane Bridge (declared eligible)
Historic Districts	
	Church Street East Historic District
	DeTonti Square
	Oakleigh Garden Historic District (Washington Square)
	Springhill College Quadrangle
	Lower Dauphin Street Historic District
	Common Street District

* Properties adjacent to survey corrider. No National Register properties exist within the specific limits of the present project.

CHAPTER IV

DOCUMENTARY RECORD OF SUBMERGED CULTURAL RESOURCES

Introduction

The documentation of specific shipwrecks and other submerged cultural resources in the Mobile Bay area is an undertaking of considerable magnitude, yet one which is fully justified by the practicality and informativeness of the results. Prior to the present study, no compilation of such data existed that could be considered adequate for the purposes of a large scale maritime cultural resources survey. While shipwreck compilations relevant to this area do exist (e.g. Berman 1972; Coastal Environments 1978), these are too limited in content to be of much utility, and the entries included in them, mainly taken themselves from secondary sources, are biased in important ways which have never been made explicit. An important phase of the documentary research for this reconnaissance, then, consisted of the compilation and systematization of an expanded body of data on submerged cultural resources for Mobile Bay and Harbor.

As with other classes of historical information, these data reside in diverse sources, existing in various degrees of completeness, clarity, and reliability, all of which must be taken into account. Newspapers, maps, official records, histories, reminiscences, previous compilations, and oral accounts are among the kinds of sources consulted in the preparation of the corpus presented here. These were searched according to a systematic method which can be replicated, if desired, in future work. The data have been here brought together in two basic formats, the first consisting of a compilation of selected aspects of vessels known or reported lost in the area, and the second consisting of specific locational data for all types of potentially significant submerged resources.

Classes of relevant information were selected partially according to what types of observations happen to have been preserved, and partially according to the particular requirements of the marine archaeological survey. These consist of observations which might be useful in the identification and/or location of particular submerged resources. It is appropriate to emphasize, however, that these data can and should be put to other uses as well. The compilation of shipwrecks, for example, can be legitimately treated as a sample, either of the types of vessels in use, or of the unknown total population of shipwrecks, during successive historical periods. For the period beginning with the last quarter of the nineteenth century, at which time reliable data become available on tonnage and hull dimensions of commercial watercraft, these data for the shipwreck sample can be employed in limited ways as a guide to modalities in hull shape and size, and to technological changes involving shape, size, materials, and modes of propulsion. Taken as a sample of the historic shipwreck population, the shipwreck compilation can also provide summary data on changing frequencies of losses, on trends in reported causes of losses, and on the influences of isolated phenomena such as wars and hurricanes upon these frequencies. Locational data on documented shipwreck sites can be of value in the identification of zones of high or low shipwreck frequency (e.g. Coastal Environments 1978:96), for use as management aids. Limited summary data of this sort will be incorporated into the discussion to follow, which should serve to suggest its potential.

Shipwreck Compilation

Methods Employed

The entries which constitute the shipwreck inventory were mainly drawn from some eighteen published and unpublished works, excluding addenda derived from maps, isolated documents, incidentally used historical references, and oral information. These sources, to be briefly recounted in turn, were systematically consulted in order to standardize the data gathering procedures and to insure consistency in the information obtained. For the purpose of obtaining a beginning corpus of data from which to expand the inventory, among the first works examined were those which provided previous compilations of shipwreck data for the Mobile Bay and Harbor area.

It was established beforehand that for each vessel, data would be gathered on name, any former names or alternate names appearing in the documentation, registry number (for merchant vessels and yachts), gross and net tonnage, standardized dimensions of length, beam, and depth, the year and place of construction, the home port and nationality, disposition (including date, location, and any relevant details), other notes relevant to the documentation, and principal references. These data were initially entered on 4" x 6" cards, later to be indexed, coded, and entered into a computer file.

With a baseline of shipwreck data established from previous compilations, a number of works were consulted specifically in order to expand and update the listing. This procedure yielded satisfactory results by more than doubling the size of the original list. Finally, a series of primary sources, registries, and official records were systematically searched for the purpose of filling in the gaps in the data for each vessel, and for correcting errors and noting discrepancies in the data obtained from secondary sources.

After reaching a rather definite point of diminishing returns in this research, the shipwreck compilation for the Mobile Bay and Harbor area stood at 282 entries, of which 73 have been excluded for various reasons as irrelevant to the purposes at hand.

Among the preexisting compilations and lists of shipwrecks applicable to the study area, we need say little about the many popular works which exist concerning treasure diving, treasure ships, and amateur underwater "archaeology." Of those which contain wreck listings, perhaps the most popular is John S. Potter's The Treasure Diver's Guide (1960). While such books occasionally evidence a conscious concern for historical accuracy, their usefulness is generally limited by amateurish scholarship and by a neglect of vessels which are neither treasure-laden nor colonial. To these we may add the many published "treasure maps" which show wreck locations, but with a locational precision that is typically too gross to be of interest.

By far the most comprehensive of the relevant compilations which exist are those which concern steamboats, largely because of the energy of legions of steamboat enthusiasts from the nineteenth century to the present time. A noteworthy early example is Lloyd's Steamboat Directory, and Disasters on the Western Waters, a privately published work which appeared in 1856. Lloyd's Directory was a widely read compendium (advertised, for example, in contemporary issues of the Mobile Daily Register) presenting data on packet steamers operating on the "western rivers," by which was meant the Chattahoochee and Tombigbee-Alabama watercourses as well as the Mississippi-Ohio-Tennessee river systems. Much space in the Directory is devoted to accounts of explosions, collisions, snaggings, and sinkings of steamboats, including a discussion and lithograph of the explosion of the BEN FRANKLIN at Mobile in March of 1836.

Nevertheless the U.S. merchant marine was not officially inventoried on an annual basis until 1866, with the establishment of the Bureau of Statistics. The first annual list of Merchant Vessels of the United States was produced by the Bureau of Statistics in 1867, and has been compiled yearly ever since, the responsibility being taken over first by the U.S. Bureau of Customs (1867-1967) and more recently by the U.S. Coast Guard (1968-present). Beginning in 1866 all U.S. steamboats as well as merchant vessels of other types have been registered by the Federal Government, thus providing a valuable, comprehensive, and reliable guide to merchant vessels lost since that date.

Recognizing the historical gap in the documentation of merchant vessels from 1807 to 1866, the U.S. Bureau of Navigation enlisted William M. Lytle to compile a set of data on U.S. merchant steamboats for these years, from official merchant marine documents and other sources, as a supplement to the annual series beginning in 1867. The results of this research were first published by the Bureau of Navigation in 1931 as Merchant Steam Vessels of the United States, 1807-1856 (Lytle 1931). The "Lytle List" has since become one of the most widely cited authorities on the operation and disposition of nineteenth century steamboats in the United States. An undated, popular edition of the "Lytle List" was published by the Steamship Historical Society of America, Inc., under the editorship of Forrest R. Holdcamper in 1952 (Lytle 1952). The most recent edition, now known as the "Lytle-Holdcamper List," appeared in 1975 (Lytle and Holdcamper 1975).

The Steamship Historical Society of America, Inc., organized in 1935, has been active in revising and publishing these and other data on steamship history, and in promoting scholarly research on the topic. The Society publishes a quarterly journal, sponsors meetings and conferences, and maintains a research library at the University of Baltimore wholly devoted to steamships. This facility curates a large collection of early steamship photographs.

Widespread interest in steamboat history has also extended to regional historians, two of whom have produced compilations specifically concerning early Alabama river packets. Both of these, in addition to the "Lytle Holdcamper List," have contributed data to our own inventory of shipwrecks for Mobile Bay and Harbor. These are J.H. Scruggs, Jr.'s, Alabama Steamboats, 1819-1869 (1953) and Bert Neville's Directory of River

Packets in the Mobile-Alabama-Warrior-Tombigbee Trades, 1818-1932 (1962). Both works are extensively based on the Lytle data, amended and expanded in each case by reference to local documentary sources. Neville had Scruggs' data to work with as well. Unfortunately there are numerous discrepancies among the entries in Lytle, Scruggs, and Neville, some attributable to copying errors from the Lytle original, and many others of a more uncertain nature. Our own research into newspaper accounts of particular shipwrecks has brought to light errors contained in all three sources, especially in the matter of dates. Caution is therefore advised in the use of our steamship data: the number of errors discovered suggest that many more innacuracies have survived our scrutiny and are inherited in our compilation.

Bruce D. Berman's Encyclopedia of American Shipwrecks (1972) consists of an extensive listing of wrecks, with accompanying data on modern as well as premodern losses. Berman's data are broken down by coastal region, arbitrarily excluding all vessels of less than 50 tons. This is a generally reliable work, the data largely being drawn from earlier amateur compilations, from the "Lytle List," or from the record of "Loss of American Vessels" which appears in the annual listing of Merchant Vessels of the United States after 1906. Coverage is nevertheless spotty, and the incorporation of Lytle's exhaustive data on nineteenth century steamships adds a definite bias in favor of that class of vessels.

Other secondary sources containing relevant shipwreck information include Donald G. Shomette's Shipwrecks of the Civil War (1973), which gives some data on the vessels lost in Mobile Bay and on Mobile Bar in the late years of that war. Similar data are contained in the Navy Department's Civil War Naval Chronology, 1861-1865 (1971), and to a lesser extent in several other naval histories of the Civil War. Another secondary source of note is the compilation of Wreck Reports prepared by the Works Progress Administration (WPA 1938) for the New Orleans Customs District covering the period 1873-1924. These wrecks pertain mainly to the Mississippi River, but a few are included of importance to this study.

The most recent shipwreck compilation of interest constitutes the fourth volume of a study by Coastal Environments, Inc. entitled Cultural Resources Evaluation of the Northern Gulf of Mexico Continental Shelf (Coastal Environments 1978). This listing includes 111 shipwrecks for the Mobile and Mobile Bay area, nearly all of which are drawn from three of the secondary sources already mentioned: Shomette (1973), Lytle (1952), and Berman (1972). The primary purpose of the CEI research was not to provide an exhaustive inventory, but rather to generate a sample for use in defining probability zones of shipwreck occurence in the Gulf of Mexico, and to derive certain other generalizations about the population of shipwrecks in this area (Coastal Environments 1978 (II):4-5).

While the sum of the data contained in all of the sources discussed above provides a considerable body of information on Mobile Bay and Harbor area shipwrecks, these data alone were not considered sufficient for the goals of this study. These goals were, first, to provide a corpus of data of sufficient detail and coverage to assist in the location and identification of actual submerged resources, and second, to insure at least a partial representativeness for the sample, enhancing the validity of generalizations drawn for various aspects of the shipwreck population. Clearly the existing data drawn from secondary sources included an insufficient number of entries for these purposes, with a gross underrepresentation of certain classes of vessels, particularly coastal fishing, oystering, and pleasure craft. Equally inadequate was the amount of information published for each entry, lacking especially in crucial data on hull dimensions, vessel use, and specific wreck locations. Moreover, there was no way of assessing the reliability of much of the published information, because of the lack of citations to primary documentary sources.

Consequently, further research efforts were directed toward rectifying these shortcomings. It was first necessary to delimit the scope of the proposed compilation, beyond defining the categories of information already mentioned considered relevant for each entry. It became apparent, for example, that many of the wrecked vessels encountered in the research could be excluded as potential submerged resources existing today. These vessels, some of which had appeared in previous shipwreck compendia, were deleted from our inventory. The names of these vessels will be tabulated separately, for the record. Among the vessels deleted are those known to have been fully salvaged or otherwise removed from the bottom. Similarly, vessels reported to have been repaired and put back into service have been excluded. Those vessels reported beached or blown ashore have also been deleted, because of the unliklihood that they now constitute submerged resources. Those, however, which are reported as wrecked at or against wharves have been retained in the inventory, despite the assumption that the bulk of these were probably also salvaged or removed soon after the wrecks occurred.

Spatial boundaries were set so as to include the entire extent of Mobile Bay, Mobile Bar, and the Mobile Inner Harbor (Mobile River opposite the city). These boundaries are, of course, much broader than the scope of the present survey, not only because these data would have to be examined anyway, but for a more important reason, viz., that in order to know which vessels are potentially present within the survey limits, one has to know which vessels are <u>not</u> likely to be there, among more than 200 craft known to have been wrecked in the vicinity. The procedure for a given limited survey area is thus one of narrowing down the roster of possibilities from a large initial list.

The boundaries established for the documentary research are indicated on Figure 1. The northern boundary in Mobile River was set at the mouth of Chickasaw Creek. At the head of Mobile Bay, a boundary was set paralleling and approximately 100 m north of Battleship Parkway (a.k.a. the old Causeway or U.S. Highway 90). This boundary thus excludes a number of shipwrecks known or reported for the lower Delta, and several other shipwrecks and Civil War obstructions reported below old Blakely on the Tensaw, Blakely, and Apalachee Rivers. On the Bay margins, shipwrecks were excluded which lay within creeks or rivers emptying into the Bay, or within subsidiary closed bodies of water (e.g. Weeks Bay or Oyster Bay). All wrecks on Mobile Bar, as broadly conceived, with an added margin at the head of the entrance channel, were included in the inventory. To this was added the bounded borrow areas in the Gulf of Mexico that were surveyed under this contract.

Recognizing that existing shipwreck inventories were weak for the colonial era and possibly incomplete for the War of 1812 and Civil War periods, steps were taken to consult primary sources and dependable histories for these periods.

Historian Jay Higginbotham of the Mobile Public Library assisted us in verifying the shipwreck record for the French colonial period (1701-1763). Only the merchant ship BELLONE has been retained as a valid entry for this period. Two other French vessels, the brigantine SAINT-ANTOINE and the frigate JUSTICE, are mentioned by historian Peter J. Hamilton as having gone down in the vicinity of Dauphin Island, but a reevaluation in both cases shows that Hamilton's conclusions are misleading. Hamilton (1913:84) indicates that the SAINT-ANTOINE (which he mentions as a vessel from St. Malo), foundered in sight of Dauphin Island. A more complete account of the incident, however (Higgenbotham 1977: 217-18), shows that the SAINT-ANTOINE initially grounded on Sand Island on Mobile Bar, later became dislodged, and finally drifted out into the Gulf to sink. The JUSTICE, which Hamilton (1913:84) suggests was sunk in Dauphin Island channel, was actually lost far to the southeast in the Old Bahama Channel (Higgenbotham, pers. comm.).

Dr. William Coker of the University of West Florida provided unpublished data and commentary concerning the four Spanish vessels and one English vessel lost on Mobile Bar prior to Galvez' seige of Mobile in 1780. He also provided materials relevant to the sinking of the H.M.S. HERMES in Mobile Pass during the first battle for Fort Bowyer in September of 1815.

The disposition of Civil War vessels reportedly lost in Mobile Bay was much clarified by consulting the documents reproduced in the Official Records of the Union and Confederate Navies in the War of the Rebellion (Daniels 1921). These records provided valuable data on the vessels lost, and also documented the efforts to salvage several of the Union vessels that were sunk by Confederate torpedos in Mobile Bay in the last days and immediately following the war. These records were supplemented by consulting the Papers Pertaining to Vessels of or Involved with the Confederate States of America, known more briefly as the "Vessel Papers," housed on microfilm at the National Archives. On the loss of the Confederate submarine torpedo boat PIONEER II in Mobile Bay, the best reference is Perry's book, Infernal Machines (1965). Further information on the vessels used by the Confederate Corps of Engineers as obstructions in Mobile Bay was found in Viktor E.K.E. von Scheliha's A Treatise on Coast-Defense (1868).

A successful means of expanding the inventory of shipwrecks was realized in researching the effects of major hurricanes historically affecting the Mobile area. Chermock's "Hurricanes and Tornados in Alabama" (1976) gives the dates of major and minor hurricanes from 1732 to the present. Of these, the hurricanes of September 27, 1906 and of July 5, 1916, were the most severe in recorded Mobile history, and both resulted in the substantial loss of ships. Ludlum's Early American Hurricanes: 1492-1870 summarizes much of the pertinent historical data on several major hurricanes of early date.

Little is known of the local shipwrecks associated with hurricanes prior to the major gale of October 2, 1893. A report by Sieur Louis Tixerant, Guardian of the Store of the Company of the Indies, speaks of "several boats, shallops, and other vessels (owned by the company)" that had wrecked ashore near Fort Louis during the great hurricane of 1722. Cruzat and Dart (1931:567) have erroneously referred this incident to Mobile, but the "Fort Louis" intended is that of New Biloxi instead, the administrative center of Louisiana from the end of 1720 through 1722. These wrecks, then, presumably occurred either at Ship Island or Biloxi Bay, rather than in Mobile Bay.

Two major hurricanes struck the northern Gulf Coast in 1780, but no ship losses are specifically reported for Mobile Bay. Historian Charles Gayarre describes the storm of August, 1780, as "sinking every vessel or boat, which was afloat on the Mississippi or the lakes" (quoted in Ludlum 1963:68). New Orleans had also seen major ship losses during a hurricane the year before (Ludlum 1963:66). These losses in the New Orleans area are more fully documented by Borja Medina (1980:426-430), including some supplies destined for Mobile in "berchas." "Solano's hurricane," in October of 1780, scattered a Spanish convoy in the northern Gulf (Ludlum 1963:72-73), but again there are no specific losses reported near Mobile.

The hurricane of August 25 through 28, 1819, is supposed to have resulted in the loss of a large brig at the city of Mobile, on Dauphin Street east of Water Street. Likewise the hurricane of August 23, 1852, resulted in the wreckage of an unidentified large schooner, which "drifted across Commerce Street against the walls of Matthew's Press" (Mobile Register, July 6, 1916).

Shipwreck information for more recent hurricanes is more detailed and more accessible. Beginning in 1906, a feature was added to the annual list of Merchant Vessels of the United States entitled "Loss of American Vessels," consisting of a useful compilation of all merchant vessels reported lost during each year. These lists were carefully scanned for each hurricane year, yielding a number of additional entries to our inventory for the Mobile area. Accounts of the hurricanes in the Mobile Register, Mobile's most prominent daily newspaper, were also examined for additional shipwreck data. These sources were supplemented by a number of valuable accounts, documents, and photographs bearing on hurricane losses, assembled in the vertical file of the Mobile Public Library.

To bring the compilation up to date, the records of the U.S. Coast Guard, Aids to Navigation Branch (8th Coast Guard District, New Orleans) were reviewed for recent shipwreck entries recorded in the past several years. The Aids to Navigation Branch acts as a clearinghouse for reports of navigation hazards, including shipwrecks, and distributes a monthly Hazards to Navigation report to local Coast Guard groups. The local groups are charged with examining and monitoring each reported obstruction. The Coast Guard supplies the National Ocean Survey with locational information on shipwrecks not salvaged within six months after being initially reported, and this information is incorporated into the annually revised coastal navigation Chart 11376. Detailed data on shipwrecks and other obstructions have been kept by the U.S. Coast Guard only for about three years (Don Brooks, pers. comm.). Our review of Coast Guard records revealed names and locations for several vessels sunk within the past decade in the Mobile Bay area.

With the shipwreck inventory thus greatly expanded in quantity, it remained to improve the quality of each entry by seeking data in relevant categories not usually reported in the sources already mentioned. It was judged worthwhile to examine local newspaper accounts for each reported date of loss, as a primary data source for amplifying and correcting the information already obtained.

This time consuming procedure was carried out by carefully scanning a set of newspapers directly following the loss date reported for each vessel in the inventory. The newspapers employed were issues of the Mobile Register (originally known as the Mobile Commercial Register and later as the Mobile Daily Register), a large series of which is available on microfilm at the Mobile Public Library. This series commences with the year 1825, and is reasonably complete. The Mobile Public Library also maintains on microfilm a series of the short-lived nineteenth century paper, the Mobile Evening News, pertinent issues of which were also examined. The usual procedure was to examine the Marine News column for the Port of Mobile on the date of the loss, for the purpose of checking arrivals and departures, and then to scan the local news and Marine News for the following three days. This resulted in a number of corrections, additions, and new entries to the inventory.

A surprising number of reported dates of loss could not be confirmed by a newspaper account, which suggests that a substantial proportion of these reported dates are in error. Further suspicion is drawn to these entries because of several instances of duplication, where as many as three different vessels are reported to have been accidently lost the same day, a highly unlikely possibility. The newspaper accounts examined show that losses of merchant vessels, especially of river packets, were always considered newsworthy events and are consistently reported as far away from Mobile as the Mississippi and Ohio Rivers. This sheds doubt on the alternative possibility that some vessel losses simply went unreported in the local news media.

Among the most valuable sources of supplementary data are shipping registries, three of which were extensively employed. Seagoing merchant vessels in the inventory dating between 1760 and 1866 were in several cases found to be documented in Lloyd's Register of British and Foreign Shipping, annually published since 1760 by Lloyd's of London. Unfortunately the early series of this registry is quite rare, but copies can be consulted in the Library of Congress or obtained from a few other American libraries through inter-library loan. Seagoing merchant vessels post-dating 1867 are often documented as well in the Record of American and Foreign Shipping, published annually by the American Bureau of Shipping. This registry provides valuable details of hull manufacture, rig, and engine types which cannot be found elsewhere. A more complete registry of all United States merchant vessels since 1866 is found in Merchant Vessels of the United States, which as already mentioned has been published annually since 1867 by the U.S. Bureau of Customs and by the U.S. Coast Guard. An important feature of this registry entitled "Loss of American Vessels" (1901-present) was extensively consulted during this research, especially for hurricane years and years for which alternative data sources were unavailable. The entire series, however, could not be consulted because of time restrictions.

An important source of information concerning the salvage of vessels, the removal of underwater obstructions, and the chronology and details of harbor improvement, is the U.S. Army Corps of Engineers annual Report of the Chief of Engineers (1869-present). During our research every report between 1869 and 1938, copies of which are on deposit at the Mobile Public Library and the Technical Library of the U.S. Army Corps of Engineers-Mobile District, was examined for relevant information. These records reveal that between 1872 and 1920, a total of 21 vessels were salvaged in the Mobile ship channel and in Mobile Harbor. Prior to 1884 these vessels are unidentified except by type, but between 1884 and 1920 the name of each vessel salvaged is generally given along with variable locational data. After 1921 the reports dispense with giving details on particular projects of this sort, and no further vessel names or locations are provided. Mobile District wreck reports for the years 1920-1939 were, however, located in the G.S.A. archives in East Point, Georgia. These were thoroughly examined, adding six more vessels to the list of wrecks known to have been salvaged.

Prior to 1905, the Mobile District of the Corps of Engineers was not active in removing wrecks from shipping channels, except for those which clearly obstructed navigation or interfered with dredging operations. Those wreck removals which were conducted were generally performed by a contractor on a low-bid basis, and were budgeted separately from dredging and channel maintenance projects. By the authority of the River and Harbor Act of 1899, however, the budgeting structure was changed, and the removal of wrecks was begun in earnest, more frequently after 1905 by U.S.C.O.E. snag boats than by contractors. Among the most interesting vessels removed by the Corps from Mobile Bay was the Confederate submarine torpedo boat popularly known as the PIONEER II, which had sunk in the channel late in 1864. The vessel was recovered after being struck by a dredge in 1874, without recognizing its identity (USCE 1873:692-693; 1874:75). The PIONEER II has long been suspected of remaining at the bottom of Mobile Bay by Civil War enthusiasts. Each of the identifiable vessels recovered by the Corps of Engineers, except for two which were only partially recovered, have been excluded from the shipwreck inventory. These are listed separately in Table 9.

The example of the NUECES, a tugboat which sank in Mobile Bay in 1956, will illustrate the progressive development of a typical entry in the inventory as a result of the research procedures outlined above. The name was first encountered in the Berman list (1972), in which the data are evidently abstracted from Merchant Vessels of the United States. These were transferred to an index card, with the reference. The entry in Berman, however, states only that the NUECES was an oil screw (i.e. diesel) vessel of 83 tons, built in 1927, that foundered March 8, 1956, in Mobile Bay. It was not difficult to find an entry for the NUECES in the merchant vessel registry, which gave considerably more information, including the fact that the NUECES was actually a tugboat, an observation missing from Berman. Its registry number, net tonnage, dimensions, place built, engine horsepower, and ownership were added to the working index card for the vessel. Later, in the process of scanning relevant issues of the Mobile Register, an item found in the March 9, 1956 issue provided still more information: the NUECES had developed a leak and sunk while en route to Demopolis, Alabama from the Intracoastal Waterway, in Mobile Bay just east of Dauphin Island bridge. This sequence of increasing resolution of the kinds of data valuable to the goals of this study was repeated frequently, an artifact of the systematic documentary search procedures developed at the inception of the research.

The explicit use of a definite method and search sequence applied to all entries insures a maximum amount of uniformity in the data. Nevertheless there still remain important shortcomings in the inventory as presented here, which demand comment. First, while the representativeness of the inventory is greatly improved over that of previously available compilations for the area, some weaknesses still exist. It is undoubtedly deficient for small colonial craft and early sailing vessels, perhaps especially for pre-Civil War coastal fishing and oystering craft. Pleasure craft of all periods are definitely underrepresented, as there are no rowboats, catboats, or skiffs in the compilation, and too few small yachts. Working craft too small for commercial registration do not make an adequate appearance. Finally, there are no small oyster boats of the "modern" type represented. Nevertheless, we feel that the representativeness of our compilation is sufficient for certain generalizations on loss frequencies and causes in general, if not for relative loss frequencies among classes of vessels.

Another shortcoming worthy of mention is that the inventory undoubtedly contains a proportion of vessels which were actually salvaged shortly after being wrecked. Documentary evidence to this effect was located for several of the vessels which had been earlier included in the shipwreck inventory. These few were subsequently removed. The truth is however, that documentary materials on shipwrecks are by nature far more plentiful and accessible than are materials on the largely private salvage operations which recover the same vessels. There is reason to believe that the many vessels reported to have stranded in shoal areas of Mobile Bay and Mobile Bar, especially large vessels which would have protruded largely out of the water, were salvaged more often than not. Several references were encountered of steamships which burned to the waterline, and were officially reported as burned in Mobile Bay or Mobile Harbor, but which in reality were simply towed away to the nearest convenient "bone yard" after the accident.

Despite the large number of vessels sunk or wrecked against wharves in Mobile Harbor during the nineteenth and early twentieth century, it is certain that the Harbor area was kept largely clear of wrecks which might impede commerce. Many of these were probably towed to the "bone yard" of wrecked vessels which existed at that time on the east side of Mobile River opposite the city (Holt n.d.:7). With the exception of some operations of the U.S. Army Corps of Engineers, no records of the salvage of the many Mobile Harbor losses have come to light. While many of the vessels sunk in storms such as the hurricane of September 27, 1906 were reported as shipwrecks, an eyewitness account based on an "early inspection" of the Harbor area after that storm may serve to temper the assumption that these vessels potentially remain in the Harbor: "None of the larger vessels proved to be a total loss and nearly all of the small vessels sunk have since been raised and placed again in commission" (Holt n.d.:3). Only in very recent years has the U.S. Coast Guard monitored salvage operations in the area by private individuals and insurance companies.

The unknown proportion of salvaged vessels obviously has a bearing on any estimate of the total number of actual shipwrecks which exist as potential resources, by invalidating some portion of the shipwreck inventory. This is probably greatly offset, however, by the large number of shipwrecks which are not reported in the sources examined. Their number is difficult to estimate, but some clue as to their frequency can be gained from the records bearing on a single, well documented event, the hurricane of September 27, 1906.

One reliable source, the Mobile Chamber of Commerce and Maritime Exchange and Shipper's Association, in their "Statement of Water-Borne Commerce of Port and Rivers" (n.d.), estimates that the total number of oyster and fishing schooners and smacks lost in the Mobile Bay area during the 1906 hurricane was between 40 and 60. Of that number, our research has revealed data on 10 vessels of this class lost on that date, thus comprising 15 to 25 percent of the estimated total. Using the figure of 20 percent for a class of small merchant vessels as a rough guide, we might estimate that a somewhat smaller percentage of pleasure craft and small noncommercial vessels would come to our attention at this level of research, perhaps in the range of 5 to 10 percent. Because of their greater importance, perhaps something more than 50 percent of larger commercial vessel shipwrecks would be documented by these research methods. These estimates imply a much larger potential shipwreck population than that suggested by Coastal Environments, Inc. (1978(II): iv, 96) who imply that their inventory (which included only 111 entries for the Mobile Bay area as compared to 282 in this one) is conservative by a factor of only 24-37 percent.

A final shortcoming of our inventory resides in the data on specific wreck locations. While we have refined many of the vague references to locations which exist in official and unofficial sources by recourse to primary documentation, the sum to the results still leaves much to be desired for an inventory very close to a major port. Some 38 percent of the current entries still bear locational notes no more specific than "Mobile" or "Mobile Bay." Of those recorded as lost at "Mobile," especially in the case of the river packets which shuttled between Mobile and interior river landings, the notation might often refer to a loss some distance north of the city, outside of our area of concern. In the official reporting of such incidents Mobile was simply listed as the nearest port of call. Some of these entries have been weeded out, but undoubtedly others remain.

<u>Vessel Classes</u>

For convenience in use and analysis, the vessels constituting the shipwreck inventory have been grouped into the general classes below. These classes will be discussed in turn.

Class 1. Colonial Vessels
- Subclass 1. Frigate
- Subclass 2. Ship of War
- Subclass 3. Ship, Merchant
- Subclass 4. Packet Boat
- Subclass 5. Brigantine
- Subclass 6. Settee

Class 2. Civil War Period Military Vessels and Blockade Runners
- Subclass 1. Sidewheel Steam Gunboat
- Subclass 2. Ironclad Monitor
- Subclass 3. Ironclad Floating Battery
- Subclass 4. Transport Steamer
- Subclass 5. Steam Launch
- Subclass 6. Blockade Runner

Class 3. Post-Colonial Sailing Vessels
- Subclass 1. Yacht
- Subclass 2. Sloop
- Subclass 3. Fishing and Oystering Schooner
- Subclass 4. Smack
- Subclass 5. Blue Water Schooner
- Subclass 6. Brig
- Subclass 7. Barkentine
- Subclass 8. Bark
- Subclass 9. Ship
- Subclass 10. Type Undetermined

Class 4. Auxiliary Sail/Motor Vessels
- Subclass 1. Packet Steamer Auxiliary Sail
- Subclass 2. Auxiliary Schooner

Class 5. Large Freight and Passenger Steamboats
- Subclass 1. River Packet
- Subclass 2. Bay or Gulf Ferryboat
- Subclass 3. Service Undetermined

Class 6. Harbor Boats
- Subclass 1. Tugboat or Towboat
- Subclass 2. Pilot Boat

Class 7. Motor Launches, Yachts, and Freight Boats
- Subclass 1. Steam Screw
- Subclass 2. Oil Screw
- Subclass 3. Gas Screw
- Subclass 4. Type Undetermined

Class 8. Barges

Class 9. Miscellaneous Vessel Types

Guide to Entries in the Shipwreck Inventory

Each entry in the shipwreck inventory follows a standard format. Data categories that are missing for a particular vessel are deleted from the inventory record. Entries are organized first by general vessel class, secondarily by the date of loss, and then alphabetically.

Line 1. Entered first, in capital letters, is the vessel's name at the time of loss. Where two ships in the inventory bear the same name, their chronological order is indicated by the notation (#1) or (#2). Entered to the right of the vessel name, in parenthesis, are any known former names for the same vessel; and/or any alternate or misspelled names for that vessel encountered in published records. On the right hand margin of line 1 is the U.S. merchant vessel registration number, if any.

Line 2. Line 2 gives the type of vessel or type of sail/ motor rig, the service or use of the vessel, and, if foreign, the nationality of origin.

Tonnage. Recorded in gross (g) and net (n) tonnage.

Dimensions. Dimensions are recorded, if known, following the guidelines published in the annual list of Merchant Vessels of the United States (U.S. Bureau of Customs 1867-1967), as follows:

> "The registry of every vessel shall express her length and breadth, together with her depth and the height under the third or spar deck, which shall be ascertained in the following manner: The tonnage deck, in vessels having three or more decks to the hull, shall be the second deck from below; in all other cases the upper deck of the hull is to be the tonnage deck. The length from the fore part of the outer planking on the side of the stem to the after part of the main stern-post of screw steamers and to the after part of the rudder-post of all other vessels measured on the top of the tonnage deck shall be accounted the vessel's length. The breadth of the broadest part on the outside of the vessel shall be accounted the vessel's breadth of beam. A measure from the under side of the tonnage-deck plank, amidships, to the ceiling of the hold (average thickness), shall be accounted the depth of hold. If the vessel has a third deck, then the height from the top of the tonnage-deck plank to the under side of the upper-deck plank shall be accounted as the height under the spar deck. All measurement to be taken in feet and fractions of feet; and all fractions of feet shall be expressed in decimals."

Year Built.

Place Built. City and state, or nationality if foreign.

Home Port. City and state, or nationality if foreign.

Disposition. The cause, date, and place of loss are given, along with any known descriptive details pertinent to the loss as a potential cultural resource. Categories of causation are to some degree standardized, as follows (U.S. Bureau of Customs 1866-1967).

1. Foundered. Casualties due to leaking or capsizing of vessels, including vessels lost at sea not due to causes 3 or 4.
2. Stranded. Casualties due to vessels running aground, striking rocks, reefs, bars, etc.
3. Collided. Casualties involving impacts between two or more vessels, and between a vessel or vessels and some other floating or fixed object or objects.
4. Burned. Casualties due to fire or explosion.
5. Abandoned. Abandoned at sea.

6. Lost. Self-explanatory causes not included in preceding classifications, and losses of vessels where the cause and/or place is unknown.

Notes. Brief notes on crew size, rig, hull, horsepower, ownership, lives lost, contradicting references, and other pertinent data not covered in preceding categories.

References. Abbreviations are given for frequently cited sources, as follows. Full citations are included in the bibliography.

Ber: Berman (1972)
Carr: Carr (1970)
CE: U.S. Army Corps of Engineers (1867-1938)
Hlt: Holt (n.d.)
HN: U.S. Coast Guard (1979-present)
LMV: U.S. Bureau of Customs (1866-1967); U.S. Coast Guard (1968-present)
Lyd: Lloyd's of London (1760-present)
Lyt: Lytle (1952; Lytle and Holdcamper (1975)
MR: Mobile Register (1825-present)
NC: U.S. Navy Department (1971)
Nev: Neville
OR: Daniels (1921)
RAFS: American Bureau of Shipping, "American Lloyds" (1867-present)
Scr: Scruggs (1953)
Sho: Shomette (1973)
WPA: Works Progress Administration (1938)

Class 1. Colonial Vessels. Inventory.

BELLONE
Ship, Merchant, French
Disposition: Sunk, April 1, 1725, in the harbor on the south side of Dauphin Island.
Notes: Cargo of indigo, tobacco, dry pitch, beaver skins, deer skins, piastres and bullion amounting to more than 60,000 crowns. Cargo may have been partially salvaged by blowing hole in deck (RS 1929:458).
References: Rowland and Sanders (1929:428, 470ff)

BROWNHALL
Frigate, Merchant, English
Disposition: Went aground on sand bar, February 4, 1780, on north side of Sand Island, Mobile Bay. Abandoned February 10, 1780. Taking on water, February 14, 1780.
Notes: Mounted with 16 cannon. Crew of 20. Carrying presents for proposed Indian congress.
References: Coker and Coker (1982:31-41); Hamilton (1910:313)

EL VOLANTE
Frigate of War (Fragata de Guerra), Spanish
Disposition: Ran aground in shallow water, February 10, 1780, just north of Sand Island, west side of channel. Filled with water February 14, 1780.

Notes: 8 cannon were salvaged. Carried 20 guns.
References: Coker and Coker (1982:35)

ROSARIO

Packet Boat, (Snow ?) Hospital Ship, Spanish

Disposition: Ran aground, February 13, 1780, off Mobile Point, probably on the east side of the channel.

Notes: A ship of Galvez' convoy prior to siege of Mobile. Vessel type is unclear. Listed by Galvez as a packet boat (paquebot); possibly the snow listed by Calvert among Spanish ships lost (Coker and Coker 1982:43n).

References: Coker and Coker (1982:39)

NAME UNDETERMINED

Brigantine (Bergantine), Spanish

Disposition: Went aground on sand bar, February 10, 1780, just south of Sand Island, Mobile Bar, on west side of channel.

Notes: Name of vessel does not appear in Galvez' Diario. Probably the "brig" listed by Calvert as among Spanish vessels lost (Coker and Coker 1982:43n).

References: Coker and Coker (1982:35, 104)

NAME UNDETERMINED

Settee (Saetia), Spanish

Disposition: Went aground on sand bar, February 10, 1780, just south of Sand Island, Mobile Bar, on west side of channel.

Notes: The Diario of Galvez fails to give the name of this vessel. Probably the vessel listed as a polacre by Calvert (Coker and Coker 1982:43n).

References: Coker and Coker (1982)

H.M.S. HERMES

Ship of War, England

Disposition: Blown up and sunk, September 15, 1814 on Mobile Bar near Fort Bowyer (Morgan), during first battle for Fort Bowyer. Approximate position known.

Notes: First damaged by gunfire, drifted ½ mile and grounded, then abandoned and intentionally set afire. Powder magazine exploded, sinking ship. Carried 28 32-pound carronades. Crew of 175.

References: Coker (1981); Latour (1816:36-39).

Class 1. Colonial Vessels. Discussion

The shipwreck inventory includes seven colonial sailing vessels lost in the Mobile Bay area between 1725 and 1815. These were all relatively large seagoing vessels. As already noted, the inventory is presumably deficient in smaller coasting vessels of the colonial era, some of which undoubtedly were lost in the area of our concern.

At the present stage of research there remains some uncertainty regarding some of the vessel types represented. The BROWNHALL was clearly a frigate, the EL VOLANTE equally clearly a frigate of war (fragata de guerra), and the HERMES a ship of war, (though the latter carried only 28 cannon), but classifications for the four remaining entries are more vague. The BELLONE is described simply as a merchant vessel, with an unspecified rig type. There is some confusion regarding the classification of two of the four Spanish vessels of the Galvez convoy lost on Mobile Bar in February of 1780. Galvez in his Diario (AGS GM 6912), identifies among the four the frigate of war EL VOLANTE and the packet boat ROSARIO, the latter used as a hospital ship. He leaves the other two lost vessels unnamed, but they are by inference identical with the two unnamed vessels elsewhere listed in the roster of the convoy, classified there as a brigatine and a settee (Galvez, Diario, 11 Jan. 1780, 18-21 Feb. 1780).

Class 2. Civil War Period Military Vessels and Blockade Runners. Inventory.

JOSEPHINE (#1)
Sloop, Blockade Runner
Disposition: Ran aground and destroyed by gunfire, March 5, 1863, near Fort Morgan, Ala. Chased by U.S.S. ARISTOOK.
Notes: No corresponding vessel registered by Lyd.
References: Sho; NC

ISABEL
Schooner, Blockade Runner
Tonnage: 150 (g); 130 (n)
Year Built: 1852
Place Built: Prince Edward Islands
Disposition: Captured and burned, May 18, 1863, Fort Morgan, Ala. Boarded by boat crew from U.S.S. R.R. CUYLER. Cargo of cotton.
References: Sho; NC; Lyd

IVANHOE
Sidewheel Steamboat, Blockade Runner
Disposition: Ran aground and burned, June 30, 1864, near Fort Morgan, Ala. Forced aground by U.S.S. GLASGOW while attempting to run blockade. Cargo salvaged.
References: NC; OR

C.S.S. GAINES
Sidewheel steamboat, gunboat, schooner rigged
Tonnage 863 (g)
Dimensions: 202.0' x 38.0' x 13.0'
Year Built: 1862
Place Built: Mobile
Disposition: Sunk, August 5, 1864, near Fort Morgan, Ala. Suffered steering casualty during Battle of Mobile Bay. Settled in 2 fathoms of water. Approximate position known.
Notes: 8 guns. Crew of about 120. Draught about 6'.
References: Sho; NC; OR

U.S.S. PHILLIPI (ELLA)

Schooner-Rigged Sidewheel Steamship, 4th class
Tonnage: 368 (g)
Dimensions: 140.0' x 24.0' x 9.9'
Year Built: 1862 (?)
Place Built: Brooklyn, N.Y.
Home Port: St Georges, Bermuda (as ELLA)
Disposition: Sunk, August 5, 1864, between Fort Morgan and and Fort Gaines, Ala. Disabled by gunfire from Fort Morgan during Battle of Mobile Bay. Boarded and burned by Confederates. Approximately position known.
Notes: As ELLA, a Confederate blockade runner. Captured by Union, armed, and used as a picket ship. Boiler was an obstruction to navigation for many years. See Appendix A.
References: NC; OR

U.S.S. TECUMSEH

Screw Steamer, Single-Turret Ironclad Monitor
Tonnage: 1034 (g)
Dimensions: 223.0' x 43.3'
Year Built: 1863
Place Built: New York, N.Y.
Disposition: Sunk, August 5, 1864, near Fort Morgan, Ala. Hit a torpedo during Battle of Mobile Bay. 91 killed. Position known.
Notes: 14' draught when loaded. Built under contract by Secor and Co., N.Y.
References: Sho; OR

C.S.S. PHOENIX

Ironclad Floating Battery
Year Built: 1863
Disposition: Sunk as an obstruction, August, 1864. Later exploded. In gap of upper obstructions, Mobile Bay.
Notes: 6 guns. Reportedly plated with 2½" plate, or 4" plate. Description in OR (I(21):361-2) says built square, of heavy timber, inclined inward, pierced for four guns. Towed by means of a hawser attached to one angle.
References: Sho; NC; OR

U.S.S. MILWAUKEE

Screw Steamboat, Double-Turret Monitor
Tonnage: 970 (g)
Year Built: 1864
Place Built: St. Louis, Mo.
Disposition: Sunk, March 28, 1865, in mouth of Blakely River, Ala. Struck torpedo.
Notes: Armament was 4 11" Dahlgren S.B. cannon.
References: OR

U.S.S. RODOLPH

Sidewheel Steamboat, Wooden Tinclad Gunboat
Tonnage: 217 (g)
Year Built: 1863
Place Built: Cincinnatti, Oh.
Disposition: Sunk, April 1, 1865, by torpedo in Blakely River, Ala.
Notes: Armament was 2 32-pounders; later 2 30-pound Parrott rifles, 4 24-pound howitzers.
References: OR

UNNAMED LAUNCH

Steam screw, Launch of U.S.S. Cincinnatti.
Disposition: Sunk, April 15, 1865, location in Mobile Bay unknown. Came into contact with torpedo while engaged in clearing channel of torpedoes.
References: OR

R.B. HAMILTON

Steamboat, Rig Unknown, Army Transport
Tonnage: 400 (g)
Disposition: Sunk, May 12, 1865, in Mobile Bay, Ala. Struck torpedo.
Notes: Event not mentioned in OR. Thirteen men killed or wounded
References: Perry (1965:188)

Class 2. Civil War Period Military Vessels and Blockade Runners. Discussion

Of the eleven vessels in the inventory lost as a result of the Civil War there are almost as many types, including two sidewheel steam gunboats (both with auxiliary sail rigging), two ironclad monitors (one single and one double turret), an ironclad floating battery, a troop transport, a small steam launch employed as a ship's boat, and three blockade runners (each differently rigged). The U.S.S. TECUMSEH, listed in the National Register of Historic Places, is probably the best known among these. For most of these vessels there are relevant documents included in the Official Records of the Union and Confederate Navies (Daniels 1921), and other records preserved in the National Archives. A description of the blockade runner ELLA (later U.S.S. PHILLIPI), lost at Mobile Pass during the Battle of Mobile Bay, appears as Appendix A.

It will be noted that the Union vessels U.S.S. MILWAUKEE and U.S.S. RODOLPH were both sunk in shallow water and may have been raised for salvage after the war, although no documentation to this effect has come to light. Other vessels sunk under similar circumstances, including the U.S.S. IDA, the U.S.S. ALTHEA, the U.S.S. PINK, the U.S.S. SCIOTO, and the U.S.S. OSAGE, were definitely raised from the waters of Mobile Bay and Blakely River and sold at public auction between 1865 and 1867 (Daniels 1921 (I-21):237; (II-1):167).

NAME UNDETERMINED
Brig
Disposition: Wrecked, August 25, 1819, at foot of Dauphin Street just east of Water Street, Mobile River, Ala.
References: MR

NAPOLEON
Ship, Ireland
Tonnage: 433 (g)
Year Built: 1835
Place Built: Quebec, Canada
Home Port: Belfast, Ireland
Disposition: Wrecked, March, 1841, on Sand Island, Ala. On Beam's end and bilged.
Notes: Cargo of cotton saved, partially damaged.
References: MR (3-29-1841, 4-2-1841); Lyd

SEINE
Schooner, Blue Water
Disposition: Burned and sunk, "some years" prior to 1856, in Mobile Bay, apparently close to port. The DIXEY hung its anchor on the wreck en route to Havre, 1856.
Notes: Probably the SEINE which appears in Lyd until 1853. A 95 ton schooner built in Whitby, England, in 1838. Possibly marked by the "wreck stake" which first appears on U.S.C. G.S. Chart 188, 1856 edition.
References: MR(5-21-1856); Lyd

ST. DENIS
Ship, Packet
Disposition: Wrecked, January 5, 1855, Mobile, Ala., in gale.
References: MR(6-7-1856)

TEJUCA
Ship, Clipper
Disposition: Wrecked, January 5, 1855, Mobile, Ala., in gale.
References: MR(6-7-1856)

ALPHONSINE 106056
Schooner
Tonnage 23.87 (g); 22.68 (n)
Dimensions: 54.5' x 18.5' x 3.8'
Year Built: 1882
Place Built: Jordan River, Miss.
Home Port: New Orleans, La.
Disposition: Struck old wreck and sank, December 21, 1889, 3 miles east of Grant's Pass, en route New Orleans to Mobile.
References: WPA; LMV

ANNIE M.

Yacht, Type Unspecified

Disposition: Sunk, October 2, 1893, bottom-up, at mouth of Chickasabogue, during gale.

Notes: Supposed to be the largest yacht on the bay. Owned by M.J. Marshall.

References:

CARRIE G. 126904

Sloop

Tonnage 6.15 (g); 5.85 (n)

Dimensions: 33.0' x 12.0' x 2.5'

Year Built: 1888

Place Built: Bayou La Batre, Ala.

Home Port: Mobile, Ala.

Disposition: Reported missing, October 2, 1893, Mobile Bay area. Presumably lost in gale. Removed from LMV 1894.

References: LMV

AGNES 107725

Schooner

Tonnage 8 (g), 7 (n)

Dimensions: 38.2' x 13.0' x 2.8'

Year Built: 1899

Place Built: Gabbeloon, Fla.

Home Port: Mobile, Ala.

Disposition: Stranded, September 27, 1906, Dauphin Island, Ala., during hurricane.

Notes: Crew of 2. None on board.

References: LMV

ALICE GRAHAM

Schooner

Disposition: Sunk, September 27, 1906, at Navy Cove, Mobile Bay, Ala., during hurricane.

Notes: Four died in wreck. One survived. This vessel possibly same as ALICE, LMV 105753, of Mobile. One source gives erroneous date of 1893, gives location as "two miles out from Cedar Point."

References: HLT; LMV

ALINE

Schooner

Disposition: Sunk, September 27, 1906, Mobile Bay area, during hurricane.

Notes: Possibly the ALINA, a 92 ton schooner built in Sable River, N.S. in 1883. ALINA appears in RAFS until 1906 but not afterward.

References: Mobile Chamber of Commerce (n.d.); RAFS

ELINE
Bark, Norway
Tonnage 1313 (g); 1188 (n)
Year Built: 1873
Place Built: Whitehaven, England
Home Port: Molde, Norway
Disposition: Wrecked, September 27, 1906, Mobile, Ala. During hurricane.
References: Mobile Chamber of Commerce (n.d.); RAFS

FALCON 120826
Schooner
Tonnage 11 (g); 10 (n)
Dimensions: 40.8' x 14.9' x 3.8'
Year Built: 1890
Place Built: Fish River, Ala.
Home Port: Mobile, Ala.
Disposition: Sunk, September 27, 1906, at Grant's Pass, Mobile Bay, during hurricane.
Notes: Crew of 2
References: HLT; LMV

GRACE ELLENA (GRACE HELLENA) 85859
Schooner
Tonnage 16 (g); 14 (n)
Dimensions: 51.4' x 15.4' x 3.0'
Year Built: 1884
Place Built: Shell Banks, Ala.
Home Port: Mobile, Ala.
Disposition: Capsized and sunk, September 27, 1906, at Grant's Pass, Mobile Bay, during hurricane.
Notes: Crew of 3
References: HLT; LMV

LILA 141549
Sloop
Tonnage 32.6 (g); 5 (n)
Dimensions: 32.6' x 13.0' x 3.3'
Year Built: 1898
Place Built: Bayou La Batre, Ala.
Home Port: Mobile, Ala.
Disposition: Foundered, September 25, 1906, Dauphin Island Bay, Ala., during hurricane.
Notes: Crew of 1
References: LMV

MAHALA FRANCES (MAHALAY, CORINNE) 91191
Schooner
Tonnage 8 (g); 7 (n)
Dimensions: 42.5' x 12.4' x 3.0'
Year Built: 1865
Place Built: New Orleans, La.
Home Port: Mobile, Ala.

Disposition: Capsized and sunk, September 27, 1906, Mobile Bay, Ala. Blown out into the Bay from anchorage at Shell Banks.
Notes: Not on official list of vessels lost, hurricane of 1906 (Mobile Chamber of Commerce n.d.). As CORINNE, served as U.S. Light House schooner.
References: Wilson and Curren (1981:79); LMV

MARY CRAY 92996
Schooner
Tonnage 8 (g); 6 (n)
Dimensions: 36.9' x 13.6' x 3.2'
Year Built: 1899
Place Built: Bon Secour, Ala.
Home Port: Mobile, Ala.
Disposition: Foundered, September 27, 1906, Dauphin Island Bay, Ala., during hurricane.
Notes: Crew of 2. 4 on board. No lives lost.
References: LMV

OLIVA 19412
Schooner
Tonnage 9 (g); 8 (n)
Dimensions: 40.2' x 13.3' x 3.4'
Year Built: 1871
Place Built: Bon Secour, Ala.
Home Port: Mobile, Ala.
Disposition: Sunk, September 27, 1906, at Grant's Pass, Mobile Bay, Ala., during hurricane.
Notes: Crew of 2
References: Hlt; LMV

OYSTER PLANT 19366
Schooner
Tonnage 13 (g); 12 (n)
Dimensions: 54.0' x 15.4' x 3.7'
Year Built: 1872
Place Built: Mobile, Ala.
Home Port: Mobile, Ala.
Disposition: Sunk, September 27, 1906, lower Mobile Bay. Driven from Heron Bay out toward more open water during hurricane.
Notes: All hands lost. Crew of 2.
References: Hlt; LMV

WARRIOR
Ship, 4th Class, Italy
Tonnage 1651 (g); 1611 (n)
Year Built: 1884
Place Built: River John, N.S.
Home Port: Genoa, Italy
Disposition: Wrecked, September 27, 1906, Mobile, Ala., during hurricane.
References: RAFS; Mobile Chamber of Commerce (n.d.)

NAMES UNDETERMINED

40 to 60 fishing and oystering schooners and sloops, Mobile area

Disposition: Wrecked or sunk, September 27, 1906, Mobile Bay area, during hurricane.

Notes: Only one vessel of entire Heron Bay oyster and fishing fleet survived. Bon Secour fleet was little damaged.

References: Mobile Chamber of Commerce (n.s.); Hlt

EDGAR RANDALL 136430

Schooner, Fishing Smack

Tonnage 62 (g); 59 (n)

Dimensions: 75.3' x 20.0' x 8.2'

Year Built: 1894

Place Built: Essex, Mass.

Home Port: Mobile, Ala.

Disposition: Collided with Dutch steamer DELTA, December 14, 1906, in ship channel, Mobile Bay, about 2 miles south of wharf. Collided while DELTA inbound, E. RANDALL outbound,

Notes: Crew of 7. Owned by Mobile Fish and Oyster Co.

References: MR(12-15-1906); LMV

ALMIRA 1467

Schooner

Tonnage 26 (g); 25 (n)

Dimensions: 47.5' x 17.7' x 4.8'

Year Built: 1868

Place Built: Biloxi, Miss.

Home Port: Gulfport, Miss.

Disposition: Stranded, March 1, 1913, on Sand Island, Ala.

Notes: Crew of 2. 4 on board. No lives lost.

References: LMV

LAURA L. SPRAGUE 141063

Schooner, Blue Water

Tonnage 594 (g); 508 (n)

Dimensions: 154.4' x 36.2' x 11.2'

Year Built: 1890

Place Built: Rockland, Me.

Home Port: Mobile, Ala.

Disposition: Stranded, March 18, 1913, Mobile Bar, Ala.

Notes: Crew of 7

References: Ber; LMV

INDIAN CHIEF

Sailing Vessel, Rig Unknown

Disposition: Sunk, date unknown (prior to 1916), in navigation channel on outer bar, Mobile Bay, Ala. Near inner end of bar channel, between it and Sand Island Lighthouse. Wreck dynamited, 1916-1917, by Corps of Engineers, and a portion of wreck removed.

References: CE

EMMA S. LORD 200095

Schooner, Three-Masted Blue Water
Tonnage 374 (g); 300 (n)
Dimensions: 139.8' x 32.2' x 10.5'
Year Built: 1903
Place Built: Millbridge, Me.
Home Port: Bangor, Me.
Disposition: Capsized and sunk, July 5, 1916, on lower bar, Mobile Bay. Came out of anchorage during hurricane. Masts blown off; capsized in 13' of water.
Notes: Crew of 5. All hands lost. Went down with barge HARRY MORSE.
References: Fed. Reporter (1917:240, 498); MR(7-10-66); Wilson and Curren (1981:108); LMV

J.C. SMITH 75547

Schooner
Tonnage 9 (g); 8 (n)
Dimensions: 44.8' x 14.2' x 3.5'
Year Built: 1873
Place Built: Mobile, Ala.
Home Port: Mobile, Ala.
Disposition: Reported sunk, July 5, 1916, off Fort Morgan, Ala., during hurricane.
Notes: Crew of 2. All hands lost.
References: MR(7-7-1916); LMV

JOSEPH P. COOPER (JOSEPH T. COOPER) 202680

Schooner, Three-Masted Blue Water
Tonnage 315 (g); 288 (n)
Dimensions: 150.4' x 28.2' x 10.2'
Year Built: 1905
Place Built: Sharptown, Mo.
Home Port: Wilmington, Del.
Disposition: Wrecked on wharf, July 5, 1916, Mobile, Ala., during hurricane.
Notes: Crew of 6
References: MR(7-7-1916); LMV

MARGIE

Schooner
Disposition: Reported missing, presumed sunk, July 5, 1916, off Bon Secour, Mobile Bay, Ala., during hurricane.
Notes: No corresponding registered vessel, LMV.
References: MR(7-8-1916)

MISCHIEF 202655

Schooner
Tonnage 8 (g); 7 (n)
Dimensions: 38.0' x 13.2' x 2.6'
Year Built: 1876
Place Built: Biloxi, Miss.
Home Port: Mobile, Ala.

Disposition: Foundered, July 5, 1916, Dauphin Island, Ala., during hurricane.
Notes: 2 on board. No lives lost. Crew of 2.
References: LMV

POL ROS 150769
Sloop
Tonnage 13 (g); 13 (n)
Dimensions: 35.4' x 14.3' x 3.3'
Year Built: 1897
Place Built: Scranton, Miss.
Home Port: Mobile, Ala.
Disposition: Foundered, July 5, 1916, Dauphin Island, Ala., during hurricane.
Notes: Crew of 4. 2 on board. All hands lost.
References: LMV

PRINCESS
Yacht, Type Unspecified
Disposition: Reported missing, presumably lost, July 5, 1916, on Mobile Bay cruise to Dauphin Island, during hurricane.
References: MR

NAME UNDETERMINED
Yacht, Pleasure Craft, Rig Unspecified
Disposition: Presumably lost, July 5, 1916, in Mobile Bay between Fort Morgan and Fort Gaines. Abandoned at anchor prior to hurricane.
Notes: Possibly the CHICAGO. Reportedly flying colors of the Buffalo Yacht Club.
References: MR

NAME UNDETERMINED
Schooner, Blue Water
Disposition: Reported sunk, July 5, 1916, in Navy Cove, Mobile Bay, during hurricane.
Notes: One of three large schooners lost near Fort Morgan in 1916 hurricane.
References: MR(7-7-1916)

DEAN E. BROWN 204658
Schooner, Blue Water
Tonnage 719 (g); 621 (n)
Dimensions: 182.7' x 38.0' x 13.7'
Year Built: 1907
Place Built: Rockland, Me.
Home Port: New Haven, Conn.
Disposition: Foundered, September 17, 1917, Mobile, Ala.
Notes: Crew of 7. 9 on board. All hands lost.
References: Ber; LMV

FLORENCE HARVEY 216393

Schooner, Blue Water
Tonnage 340 (g); 313 (n)
Dimensions: 122.5' x 31.0' x 12.2'
Year Built: 1918
Place Built: Tampa, Fla.
Home Port: Tampa, Fla.
Disposition: Stranded, December 24, 1921, on west side of strip channel near Fort Morgan, Ala. Grounded in 8' of water, on even keel.
Notes: Crew of 6. Incorrect date given in Berman.
References: Ber; MR(1-5-1922); LMV

STRANGER 212738

Barkentine
Tonnage 622 (g); 540 (n)
Dimensions: 149.3' x 348.' x 15.6'
Year Built: 1893
Place Built: Bridgewater, Nova Scotia
Home Port: Mobile, Ala.
Disposition: Burned, April 22, 1923, south-southwest of Mobile Bar Bouy.
Notes: Formerly British. Some incorrect data given in Berman. Crew of 7.
References: Ber; LMV

RACHEL 218082

Schooner, Blue Water, Freight Se[illegible]ce Registration
Tonnage 528 (g); 457 (n)
Dimensions: 147.6' x 34.4' x 14.6'
Year Built: 1919
Place Built: Moss Point, Miss.
Home Port: Mobile, Ala.
Disposition: Stranded, June 29, 1933, near Fort Morgan, Ala.
Notes: Crew of 7
References: Ber; LMV

CHIQUIMULA 215978

Schooner, Four-Masted Blue Water
Tonnage 700 (g); 615 (n)
Dimensions: 176.3' x 36.1' x 14.2'
Year Built: 1918
Place Built: Portland, Ore.
Home Port: San Juan, P.R.
Disposition: Sunk, date unknown (1950s), at mouth of Blakely River.
Notes: Formerly motor-powered. Later converted to four-masted full sail rig. Crew of 8.
References: MR(4-3-1949)

Class 3. Post-Colonial Sailing Vessels. Discussion.

Post-colonial sailing vessels in the inventory are classified by type as follows: there are three sailing yachts, three sloops, eleven fishing and oystering schooners, one brig, one barkentine, one bark, four ships, and four of undetermined type. Of these, quantified data on tonnage and hull dimensions are available for 25 vessels. These data are summarized in Table 3.

Unfortunately there are no quantified data available for any of the three sailing yachts included in the inventory. Presumably these were pleasure craft, since none bears a commercial registration. The three were lost between 1893 and 1916, all as the result of storms. Of these, the yacht ANNIE M. is noteworthy in being reportedly the largest yacht on the Bay at the time of its loss.

The three vessels listed as sloops were probably all engaged in fishing and oystering in the Bay and Gulf. These vessels were only slightly smaller than the schooners engaged in the same commerce, with smaller capacities, and a length-beam ratio of only 2.6:1. The ranges and standard deviations accompanying the dimensional data in Table 3 suggest a low degree of variability among these vessels. A possible exception is the sloop POL ROS which, although with similar hull dimensions, had a displacement double that of the other sloops, and a crew of four rather than the usual one or two for small coastal fishing and oystering craft. A possible explanation is that the POL ROS may have had the hull configuration of a scow sloop.

Also quite uniform are the fishing and oystering schooners, represented in Table 3 by eleven examples. Displacements and hull dimensions for these vessels are comparable to the sloops, although the small schooners are slightly larger and have a slightly higher length-beam ratio. Like the sloops, these are extremely shallow vessels, the small draughts being necessary to navigate the shoal waters of the Bay. All examples of sloops and small schooners in the shipwreck inventory were constructed on the Gulf Coast, more than half locally in Alabama, between 1865 and 1899. In the off-season they were used for freighting timber or vegetables (hence the common appelation "watermelon schooner"), or for charter.

A single example of a larger sail fishing vessel, a schooner-rigged smack or "snapperboat," is included in the inventory. This was a less common vessel type along the northern Gulf of Mexico than the smaller schooner type, primarily because of the large draught and keel which were not well suited for shallow water. This example, the EDGAR RANDALL, was built in New England and was purchased by the Mobile Fish and Oyster Company.

The vessels known informally as "blue water" schooners were ocean-going freight carriers, much larger than the coastal schooner-rigged fishing vessels, but still among the smaller sailing freighters of the time. The inventory sample has a mean gross displacement of 510 tons, with mean dimensions of approximately 153' x 33' x 12'. These were much longer and narrower than similarly rigged fishing craft, with a high mean length-beam ratio of 4.6:1. The examples included have construction dates ranging from 1838 to 1919. One of the latest of these, the large four-masted CHIQUIMULA, was originally motor powered and only later converted to sail.

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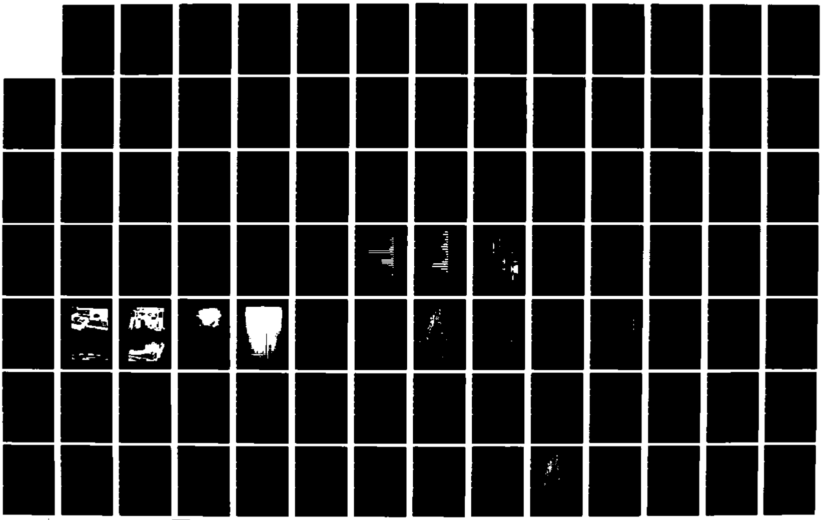

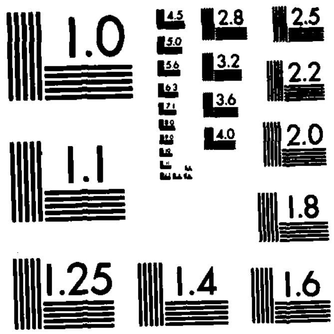

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Table 3. Summary Data. Class 3. Post-Colonial Sailing Vessels.

#	Subclass	n	Modal Crew Size	Tonnage Gross			Tonnage Net			Length Ft.		
				$\bar{X}$	S	Range	$\bar{X}$	S	Range	$\bar{X}$	S	Range
2	Sloop	3	1/4	8.4	4.0	6.0–13.0	8.0	4.4	5.0–13.0	33.7	1.5	32.6–35.4
3	Fishing and Oystering Schooner	11	2	12.7	6.6	8.0–23.9	11.5	6.6	6.0–22.7	44.4	6.5	36.9–54.5
4	Smack	1	7	62.0	–	–	59.0	–	–	75.3	–	–
5	Blue Water Schooner	7	7	510.0	196.6	315.0–719.0	443.1	145.4	288.0–621.0	153.4	20.7	122.5–182.7
7	Barkentine	1	7	622.0	–	–	540.0	–	–	149.3	–	–
8	Bark	1	–	1313.0	–	–	1188.0	–	–	–	–	–
9	Ship	1	–	1651.0	–	–	1611.0	–	–	–	–	–

#	Subclass	Beam Ft.			Depth Ft.			Mean Length Beam Ratio	Median year Built	Percent Built Gulf Coast
		$\bar{X}$	S	Range	$\bar{X}$	S	Range			
2	Sloop	13.1	1.2	12.0–14.3	3.0	0.5	2.5–3.3	2.6: 1	1897	100%
3	Fishing and Oystering Schooner	14.7	2.0	12.4–18.5	3.4	0.6	2.6–4.8	3.0: 1	1876	100%
4	Smack	20.0	–	–	8.2	–	–	3.8: 1	1894	0%
5	Blue Water Schooner	33.2	3.3	28.2–38.0	12.4	1.8	10.2–14.6	4.6: 1	1907	29%
7	Barkentine	34.8	–	–	15.6	–	–	4.3: 1	1893	0%
8	Bark	–	–	–	–	–	–	–	1873	0%
9	Ship	–	–	–	–	–	–	–	1884	0%

Limited data are available for a single barkentine, a single bark, and a single ship (Table 3). The capacity and hull dimensions of the barkentine fall well within the range of the more common blue water schooners, the principal difference being the square rigging of the foremast in the barkentine. The barks and ships, however, were much larger seagoing freight vessels, as demonstrated by gross displacements of 1313 and 1615 tons for the two largest examples included in Table 3. Very few of these freight carriers were built on the Gulf Coast, with the exception of a few blue water schooners. Among the early ship-rigged vessels in the inventory are a packet and a clipper, both lost in 1855.

Class 4. Auxiliary Sail/Motor Vessels. Inventory.

SOUTH CAROLINA
Sailing Packet, Auxiliary Steam, Rig Unspecified
Tonnage 581 (g); (Ber has 580)
Dimensions: 140' x 32' x 20'
Year Built: 1845
Place Built: New York, N.Y.
Home Port: New York, N.Y.
Disposition: Wrecked, January 15, 1859, on Mobile Bar.
Notes: Two decks with deck cabin. Draft: 16'. Hull metaled, August 1858.
References: Ber; RAFS

JOSEPHINE (#2) 76618
Bark, Auxiliary Steam Screw, Freight Service Registration
Tonnage 774 (g); 617 (n)
Dimensions: 165.0' x 31.6' x 19.0'
Year Built: 1886
Place Built: Milwaukee, Wis.
Home Port: Mobile, Ala.
Disposition: Collided with barge BLACK DIAMOND and sunk, Sept-27, 1906, in Mobile River, Ala., during hurricane.
Notes: Crew of 15. None on board.
References: Ber; HLT; LMV

A.L. MANGOLD (A.L. MANGOVE) 203436
Schooner, Two-Masted, Auxiliary Gas Screw, Freight Service Registration
Tonnage 9 (g); 7 (n)
Dimensions: 41.5' x 13.0' x 3.3'
Year Built: 1914
Place Built: Mobile, Ala.
Home Port: Mobile, Ala.
Disposition: Foundered, July 5, 1916, at beach below Monroe Park, Mobile, Ala. "Blown to pieces" on beach, according to MR, during hurricane.
Notes: Crew of 2. 10 hp.
References: MR (7-7-1916); LMV

CHILITKA

Auxiliary Schooner, Motor Rig Unspecified
Disposition: Wrecked at moorings, July 5, 1916, at Mobile Yacht Club, Ala., during hurricane.
Notes: No corresponding vessel registered, LMV
References: MR (7-7-1916)

PALATINE 203198

Auxiliary Schooner, Oil Screw, Freight Service Registration
Tonnage 63 (g); 54 (n)
Dimensions: 66.0' x 20.0' x 8.6'
Year Built: 1906
Place Built: Osterville, Mass.
Home Port: Mobile, Ala.
Disposition: Burned at mooring, April 22, 1927, at Harrison Bros. Shipyard, Blakely Island, Ala.
Notes: Crew of 2. 25 hp. diesel. A former liquor boat.
References: Ber; MR (4-22-1927); LMV

Class 4. Auxiliary Sail/Motor Vessels. Discussion.

Only five vessels from the inventory, all of which combine sail rigging with motor propulsion, comprise this class. There are two subclasses: packet steamships with auxiliary sails, of which there are two examples; and auxiliary schooners, of which there are three examples. Both of the packet steamers and two of the three auxiliary schooners yield quantified data, a summary of which appears as Table 4.

The packet steamers are both large, ocean going vessels, roughly comparable in hull dimensions and displacement to an average blue water schooner or small barkentine of the late nineteenth century. They were built very narrow for speed, the mean length-beam ratio for this small sample being a high 4.8:1. The mean depth of 19.5 feet, however, indicates a deeper draught for these vessels than for sailing vessels of similar size. One of the two vessels of this class in the inventory, the JOSEPHINE, was rigged as a bark. For the other, the SOUTH CAROLINA, the sail rig is unspecified but the hull is known to have been metal plated. A third vessel of this type, the U.S.S. PHILLIPI (formerly the Confederate blockade runner ELLA), has been included elsewhere in Class 2, but compares favorably with these. All are characteristic of the hybridizations of sail and steam which witnessed their greatest popularity in the mid-nineteenth century.

An altogether different type of vessel is the small auxiliary schooner, which arose in the early twentieth century as a product of the transition to motor propulsion among coastal fishing vessels. Summary data concerning the two representatives of this subclass in the inventory are entered separately rather than averaged in Table 4, because these examples suggest two distinct kinds of auxiliary schooners rather than a single type (altogether both are registered as freight carriers). The small A.L. MANGOLD, entered first in Table 4, is closely comparable in capacity, hull dimensions, and probably also rigging, to the typical fishing and oyster schooners of the Bay waters (cf. Table 3). Like the majority of the fishing schooners, the A.L. MANGOLD was locally built, and

Table 4. Summary Data. Class 4. Auxiliary Sail/Motor Vessels.

#	Subclass	n	Modal Crew Size	Tonnage Net		Tonnage Net		Length Ft.	
				$\bar{X}$	Range	$\bar{X}$	Range	$\bar{X}$	Range
1	Packet Steamer, Auxiliary Sail	2	15	677.5	581.0–774.0	617.0	-	150.5	140.0–165.0
2a	Auxiliary Schooner (small)	1	2	9.0	-	7.0	-	41.5	-
2b	Auxiliary Schooner (large)	1	2	63.0	-	54.0	-	66.0	-

#	Subclass	Beam Ft.		Depth Ft.		Length Beam Ratio	Median Year Built	Percent Built Gulf Coast
		$\bar{X}$	Range	$\bar{X}$	Range			
1	Packet Steamer, Auxiliary Sail	31.8	31.6–32.0	19.5	19.0–20.0	4.8: 1	1866	0%
2a	Auxiliary Schooner (small)	13.0	-	3.3	-	3.2: 1	1914	100%
2b	Auxiliary Schooner (large)	20.0	-	8.6	-	3.3: 1	1906	0%

was perhaps originally among the former class, later converted by the addition of a ten horsepower gasoline engine. The other representative of the auxiliary schooner subclass is the PALATINE, data concerning which are entered last in Table 4. The PALATINE was a considerably larger vessel than the A.L. MANGOLD, having a twenty-five horsepower diesel engine. It was built in New England and used as a liquor boat. The displacement and dimensions of the PALATINE compare favorably to those of the full sail fishing smack EDGAR RANDALL, another schooner-rigged vessel imported from New England for use in Gulf commerce (see Table 3).

Class 5. Large Freight and Passenger Steamboats. Inventory.

ARKANSAW
Sidewheel Steamboat, River Packet
Tonnage: 51 (g)
Year Built: 1820
Disposition: Snagged, 1827, upper Mobile Bay, Ala.
Notes: No lives lost.
References: Lyt; Ber; Scr

EMELINE
Sidewheel Steamboat, River Packet
Tonnage: 32 (g); (50 (g) in Nev)
Year Built: 1820 (1827 in Nev)
Place Built: Fairhope, Ala.
Home Port: Mobile, Ala.
Disposition: Burned at wharf, March 8, 1827, Mobile Ala. Abandoned 1836, according to Neville.
Notes: No lives lost.
References: Lyt; Nev; Scr

ELIZABETH
Sidewheel Steamboat, River Packet
Tonnage: 2[illegible] (g)
Year Built: 1819
Place Built: Salt River, Ky.
Home Port: Louisville, Ky.
Disposition: Burned, May 30, 1827, Mobile Ala.
Notes: MR issue missing. No lives lost.
References: Lyt; Ber; Nev; Scr

GENERAL BROWN
Sidewheel Steamboat, River Packet
Tonnage: 224 (g)
Year Built: 1825
Place Built: Beaver, Pa.
Home Port: New Orleans, La.
Disposition: Burned at wharf, February 24, 1830, Mobile, Ala.
Notes: MR issue missing. No lives lost.
References: Lyt; Ber; Nev; Scr

WANDERER

Sidewheel Steamboat, River Packet
Tonnage: 186 (g)
Year Built: 1831
Place Built: New Albany, Ind.
Home Port: Nashville, Tenn.
Disposition: Snagged and sunk, November 11, 1836, Mobile, Ala.
References: Lyt; Ber; Nev

BOGUE HOMER

Sidewheel Steamboat, River Packet
Tonnage: 105 (g)
Year Built: 1836
Place Built: Pittsburgh, Pa.
Home Port: Mobile, Ala.
Disposition: Snagged, July 20, 1837, Mobile, Ala.
References: Lyt; Ber; Nev; Scr

VINCENNES

Sidewheel Steamboat, River Packet
Tonnage: 95 (g)
Year Built: 1833
Place Built: Vincennes, Ind.
Home Port: Louisville, Ky.
Disposition: Snagged, ran ashore, February 10, 1838, Mobile, Ala.
Notes: No lives lost.
References: Lyt; Ber;Nev; Scr

ANDREW JACKSON

Sidewheel Steamboat, River Packet
Tonnage: 98 (g)
Year Built: 1833
Place Built: Steubenville, Oh.
Home Port: Cincinnatti, Oh.
Disposition: Snagged and sunk, May 16, 1838, Mobile, Ala.
References: Lyt; Ber; Nev

PLOUGH BOY (PLOW BOY)

Sidewheel Steamboat, River Packet
Tonnage: 142 (g)
Year Built: 1834
Place Built: Pittsburgh, Pa.
Home Port: Mobile, Ala.
Disposition: Snagged, January 14, 1839, Mobile, Ala.
Notes: MR (1-14-1839) records arrival from Columbus, Miss. No account of snagging.
References: Lyt; Ber; Nev; MR; Scr

EMBLEM

Sidewheel Steamboat, River Packet
Tonnage: 120 (g)
Year Built: 1836

Place Built: Cincinnatti, Oh.
Home Port: Cincinnatti, Oh.
Disposition: Foundered, April 18, 1839, Mobile, Ala.
Notes: Rumor of loss reported in MR (4-20-1839).
References: Lyt; Ber; Nev; MR; Scr

WILLIAM HULBERT (WILLIAM HUBERT)
Sidewheel Steamboat, River Packet
Tonnage: 107 (g)
Year Built: 1836
Place Built: Pittsburgh, Pa.
Home Port: Pittsburgh, Pa.
Disposition: Burned to water's edge, July 26, 1839, 10 miles from Mobile, Ala. Not specified whether north or south. Burned near a marsh.
Notes: Had arrived safely from Montgomery with 52 bales of cotton (MR 7-26-1839). Burned while outbound from Mobile. Passengers rescued by steamer LOGANSPORT, inbound from New Orleans. Scruggs gives two lives lost, but no mention in MR.
References: Lyt; Ber; Nev; MR (7-29-1839); Scr

MARY EXPRESS
Sidewheel Steamboat, River Packet
Tonnage: 54 (g)
Year Built: 1836
Place Built: Mobile, Ala.
Home Port: Mobile, Ala.
Disposition: Burnt, June 10, 1840, Mobile, Ala.
References: Lyt; Ber; Nev; Scr

IVANHOE (#1)
Sidewheel Steamboat, River Packet
Tonnage: 197 (g)
Year Built: 1834
Place Built: Pittsburgh, Pa.
Home Port: Mobile, Ala.
Disposition: Snagged, sunk, August 6, 1840, Mobile, Ala.
Notes: No lives lost.
References: Lyt; Ber; Nev; Scr; Lytle; Berman

DOVER
Sidewheel Steamboat, River Packet
Tonnage: 172 (g)
Year Built: 1833
Place Built: Iron Works, Tenn.
Home Port: Mobile, Ala.
Disposition: Snagged, April 1, 1840, at Mobile, Ala.
Notes: No lives lost.
References: Lyt; Ber; Nev; Scr

CASPIAN
Sidewheel Steamboat, River Packet
Tonnage: 199 (g)

Year Built: 1832
Place Built: Cincinnatti, Oh.
Home Port: New Orleans, La.
Disposition: Snagged and sunk, May 6, 1840, Mobile, Ala.
Notes: No lives lost.
References: Lyt; Ber; Nev; Scr

SUN (#1)
Sidewheel Steamboat, River Packet
Tonnage: 136 (g)
Year Built: 1831
Place Built: Pittsburgh, Pa.
Home Port: Mobile, Ala.
Disposition: Snagged, stranded on bar, August 6, 1840, Mobile, Ala.
Notes: No lives lost.
References: Lyt; Ber; Nev; Scr

FOX
Sidewheel Steamboat, River Packet
Tonnage: 91 (g)
Year Built: 1834
Place Built: Ripley, Oh.
Home Port: Cincinnatti, Oh.
Disposition: Snagged and sunk, August 6, 1840, Mobile, Ala.
Notes: No lives lost.
References: Lyt; Ber; Nev

CHIPPEWA
Sidewheel Steamboat, River Packet
Tonnage: 150 (g)
Year Built: 1832
Place Built: Steubenville, Oh.
Disposition: Snagged, March 25, 1841, Mobile Bay, Ala.
Notes: According to Neville, snagged this date at Cape Girardeau, Mo.
References: Lyt; Mer; Nev; Scr

CHOCTAW (CHOCKTOW)
Sidewheel Steamboat, River Packet
Tonnage: 136 (g)
Year Built: 1831
Place Built: Pittsburgh, Pa.
Home Port: Mobile, Ala.
Disposition: Snagged, February 5, 1842, Mobile Bay, Ala.
References: Lyt; Ber; Nev; Scr

NEPTUNE
Sternwheel Steamboat, River Packet
Tonnage: 133 (g)
Year Built: 1833
Place Built: Jeffersonville, Ind.
Home Port: Mobile, Ala.

Disposition: Burned leaving wharf, February 10, 1842, Mobile, Ala.
References: Lyt; Ber; Nev; Scr

JUNIATA (JUANIATA)
Sidewheel Steamboat, River Packet
Tonnage: 110 (g)
Year Built: 1832
Place Built: Pittsburgh, Pa.
Home Port: Pittsburgh, Pa.
Disposition: Snagged and sunk, October 11, 1842, Mobile, Ala.
References: Lyt; Ber; Nev

CHARLES L. BASS
Sidewheel Steamboat, River Packet
Tonnage: 103 (g)
Year Built: 1836
Place Built: Pittsburgh, Pa.
Home Port: Apalachicola, Fla.
Disposition: Snagged and sunk, November 22, 1842, Mobile, Ala.
References: Lyt; Ber; Nev

DESPATCH
Sidewheel Steamboat, River Packet
Tonnage: 105 (g)
Year Built: 1835
Place Built: Wheeling, Va.
Home Port: Wheeling, Va.
Disposition: Stranded on bar, December 30, 1842, Mobile, Ala.
Notes: No lives lost.
References: Lyt; Ber; Nev; Scr

ROWENA
Sidewheel Steamboat, River Packet
Tonnage: 225 (g)
Year Built: 1842
Place Built: Cincinnatti, Oh.
Home Port: St. Louis, Mo.
Disposition: Burned at port, March 20, 1844, Mobile, Ala. Burning wreck drifted downriver and grounded on Pinto Island.
Notes: Full cargo lost in fire, including 473 bales of cotton and the personal effects of passengers and crew. One iron chest recovered. Scruggs gives nine lives lost, but no mention in MR.
References: Lyt; Ber; Nev; MR (3-22-1844); Scr

NORMA
Sidewheel Steamboat, River Packet
Tonnage: 188 (g)
Year Built: 1839
Place Built: Louisville, Ky.
Home Port: New Orleans, La.

Disposition: Snagged and sunk, June 1, 1846, Mobile Bay, Ala.
Notes: No lives lost.
References: Lyt; Ber; Nev; Scr

LION
Sidewheel Steamboat, Service Undetermined
Tonnage: 160 (g)
Year Built: 1843
Place Built: New Haven, Conn.
Disposition: Burned at wharf, October 5, 1846, Mobile, Ala.
Notes: Confused with EAGLE?
References: Lyt; Ber; Scr

EAGLE
Sidewheel Steamboat, River Packet
Tonnage: 162 (g)
Year Built: 1843
Place Built: New Haven, Conn.
Home Port: Middletown, Conn.
Disposition: Burned leaving wharf, October 15, 1846, Mc ; Ala.
Notes: Same date as PENELOPE
References: Lyt; Ber; Nev; Scr

PENELOPE
Sidewheel Steamboat, River Packet
Tonnage: 121 (g)
Year Built: 1842
Place Built: Pittsburgh, Pa.
Home Port: Pittsburgh, Pa.
Disposition: Burned at wharf, December 15, 1846, Mobile, Ala.
Notes: Same date as EAGLE
References: Lyt; Ber; Nev; Scr

ROBERT EMMET (ROBERT EMMIT)
Sidewheel Steamboat, River Packet
Tonnage: 147 (g)
Year Built: 1846
Place Built: Cincinnatti, Oh.
Home Port: Cincinnatti, Oh.
Disposition: Snagged, May 26, 1847, Mobile, Ala.
Notes: MR missing this date.
References: Lyt; Ber; Nev

NATIVE
Sternwheel Steamboat, River Packet
Tonnage: 45 (g)
Year Built: 1845
Place Built: New Orleans, La.
Home Port: New Orleans, La.
Disposition: Foundered, April 4, 1848, Mobile Bay, Ala.
References: Lyt; Nev

BELLE POULE
Sidewheel Steamboat, River Packet
Tonnage: 157 (g)
Year Built: 1841
Place Built: Cincinnatti, Oh.
Home Port: Cincinnatti, Oh.
Disposition: Snagged, July 2, 1849, Mobile, Ala.
Notes: MR missing this date. Same date as NORFOLK.
References: Lyt; Ber; Nev

NORFOLK (NORFORK)
Sidewheel Steamboat, River Packet
Tonnage: 219 (g)
Year Built: 1838
Place Built: Pittsburgh, Pa.
Home Port: Pittsburgh, Pa.
Disposition: Snagged, July 2, 1849, Mobile, Ala.
Notes: MR missing this date. Same data as BELLE POULE. No lives lost.
References: Lyt; Ber; Nev; Scr

LITTLE HARRIET
Sidewheel Steamboat, River Packet
Tonnage 47 (g)
Year Built: 1843
Place Built: Lawrenceburg, Ind.
Home Port: Cincinatti, Oh.
Disposition: Snagged, August 2, 1849, Mobile, Ala.
Notes: MR missing this date.
References: Lyt; Ber

E.D. KING
Sidewheel Steamboat, River Packet
Tonnage: 108 (g)
Year Built: 1848
Place Built: Marion, Ala.
Home Port: Mobile, Ala.
Disposition: Stranded and destroyed, April 1, 1850, Mobile, Ala.
Notes: Same date as IRENE.
References: Lyt; Ber; Nev; Scr

IRENE
Sidewheel Steamboat, River Packet
Tonnage: 76 (g)
Year Built: 1844
Place Built: Burlington, Oh.
Home Port: Cincinnatti, Oh.
Disposition: Sunk, unknown causes, April 1, 1850, Mobile, Ala.
Notes: Same date as E.D. KING. Scruggs gives date as 4-1-1840.
References: Lyt; Ber; Nev; Scr

MOTIVE

Sternwheel Steamboat, River Packet
Tonnage: 67 (g)
Year Built: 1845
Place Built: McKeesport, Pa.
Home Port: Pittsburgh, Pa.
Disposition: Snagged and sunk, June 20, 1853, near Mobile, Ala.
Notes: Scruggs gives date as 6-26-1850.
References: Lyt; Ber; Nev; Scr

AMBASSADOR

Sidewheel Steamboat, River Packet
Tonnage: 324 (g)
Year Built: 1851
Place Built: New Albany, Ind.
Home Port: Mobile, Ala.
Disposition: Burned, February 25, 1854, at wharf, Mobile River, Ala.
Notes: MR missing this date. Same date as SAM DALE.
References: Lyt; Ber; Nev

SAM DALE

Sidewheel Steamboat, River Packet
Tonnage: 276 (g)
Year Built: 1852
Place Built: Jeffersonville, Ind. (Scruggs has New Albany, Ind.)
Home Port: Mobile, Ala.
Disposition: Burned at wharf, February 28, 1854, Mobile, Ala.
Notes: MR missing this date. Same date as AMBASSADOR.
References: Lyt; Ber; Nev; Scr

DANIEL PRATT

Sidewheel Steamboat, River Packet
Tonnage: 293 (g)
Year Built: 1847
Place Built: New Albany, Ind.
Home Port: Mobile, Ala.
Disposition: Exploded, October 26, 1854, Mobile, Ala.
Notes: MR missing this date. Three lives lost.
References: Lyt; Ber; Nev

HELEN

Sidewheel Steamboat, River Packet
Tonnage: 292 (g)
Year Built: 1850
Place Built: Jeffersonville, Ind.
Home Port: Mobile, Ala.
Disposition: Burned, May 12, 1855, arriving at Mobile, Ala.
Notes: MR missing this date.
References: Lyt; Ber; Nev; Scr

WADE ALLEN
Sidewheel Steamboat, River Packet
Tonnage: 129 (g)
Year Built: 1850
Place Built: Jeffersonville, Ind.
Home Port: Mobile, Ala.
Disposition: Burned, July 30, 1855, Mobile, Ala.
Notes: MR missing this date. One life lost.
References: Lyt; Ber; Nev

SUNNY SOUTH
Sidewheel Steamboat, River Packet
Tonnage: 196 (g)
Year Built: 1847
Place Built: Cincinnatti, Oh.
Home Port: Cincinnatti, Oh.
Disposition: Snagged, October 1, 1855, Mobile Bay, Ala.
References: Lyt; Ber; Nev; Scr

ARKANSAS (ARKANSAW)
Sternwheel Steamboat, River Packet
Tonnage: 246 (g)
Year Built: 1852
Place Built: California, Pa.
Home Port: New Orleans, La.
Disposition: Snagged during low water, January 26, 1856, Mobile, Ala.
References: Ber; Nev; Scr

CORREO
Sternwheel Steamboat, River Packet
Tonnage: 89 (g)
Year Built: 1847
Place Built: New Albany, Ind.
Home Port: New Orleans, La.
Disposition: Snagged, May 20, 1856, Mobile, Ala.
References: Lyt; Ber; Nev

ALAMO
Sidewheel Steamboat, River Packet
Tonnage: 66 (g)
Year Built: 1849, (Neville has 1850)
Place Built: Paducah, Ky.
Home Port: Paducah, Ky.
Disposition: Foundered, June 1, 1856, Mobile, Ala.
References: Lyt; Ber; Nev; Scr

ARKANSAS NO. 5
Sidewheel Steamboat, River Packet
Tonnage: 162 (g)
Year Built: 1845
Place Built: Louisville, Ky.
Home Port: Louisville, Ky.
Disposition: Snagged, June 5, 1856, Mobile, Ala.
References: Lyt; Ber; Nev

EMPEROR
Sidewheel Steamboat, River Packet
Tonnage: 396 (g)
Year Built: 1848
Place Built: Jeffersonville, Ind.
Home Port: Mobile, Ala.
Disposition: Stranded, July 1, 1856, Mobile, Ala.
References: Lyt; Ber; Nev

SALLIE SPANN (SALLIE SPAN)
Sidewheel Steamboat, River Packet
Tonnage: 190 (g)
Year Built: 1852
Place Built: Jeffersonville, Ind.
Home Port: Mobile, Ala.
Disposition: Burned, October 1, 1856, Mobile, Ala.
Notes: MR missing this date.
References: Lyt; Ber; Nev

BEN LEE
Sternwheel Steamboat, River Packet
Tonnage: 122 (g)
Year Built: 1852
Place Built: Cincinnatti, Oh.
Home Port: Memphis, Tenn.
Disposition: Snagged, December 13, 1856, Mobile, Bay, Ala.
Notes: MR missing this date.
References: Lyt; Ber; Nev; Scr

CANONCHET
Sidewheel Steamboat, River Packet
Tonnage: 147 (g),
Year Built: 1851
Place Built: Providence, R.I.
Disposition: Burned, October 16, 1857, near Mobile, Ala.
Notes: Same date as SOUTHERN BELLE, SOUTHERN STAR.
References: Lyt; Ber; Nev; Scr

SOUTHERN STAR
Sidewheel Steamboat, Bay Passenger Service
Tonnage: 525 (g)
Year Built: 1851
Place Built: Jeffersonville, Ind.
Home Port: Mobile, Ala.
Disposition: Burned, October 16, 1857, off Point Clear, Ala.
Notes: Notices appear in MR, 10-17-1857 and 10-18-1857. A lithograph of the SOUTHERN STAR at Point Clear is reproduced in Sulzby's Alabama Hotels and Resorts. This vessel is undoubtedly erroneously listed by Lytle, Berman, Neville, and Scruggs as SOUTHERN BELLE. Possibly also confused with CANONCHET.
References:MR; Lyt; Ber; Nev; Scr

EMMA WATTS
Sidewheel Steamboat, River Packet
Tonnage: 111 (g)
Year Built: 1852
Place Built: Paducah, Ky.
Home Port: Nashville, Tenn.
Disposition: Snagged, September 22, 1858, Mobile, Ala.
Notes: MR missing this date.
References: Lyt; Ber; Nev

ENTERPRISE
Sidewheel Steamboat, River Packet
Tonnage: 70 (g)
Year Built: 1856
Place Built: Jackson, Ala.
Home Port: Mobile, Ala.
Disposition: Snagged, September 22, 1858, Mobile, Ala.
Notes: Samd date as EMMA WATTS.
References: Lyt; Ber; Nev

F.M. STRECK (F.M. STECK, F.W. STRECK)
Sidewheel Steamboat, River Packet
Tonnage: 198 (g)
Year Built: 1844
Place Built: Jeffersonville, Ind.
Home Port: Louisville, Ky.
Disposition: Snagged and sunk, October 6, 1859, Mobile, Ala.
References: Lyt; Ber; Nev; Scr

OSCEOLA
Sidewheel Steamboat, River Packet
Tonnage: 125 (g)
Year Built: 1849
Place Built: West Elizabeth, Pa.
Home Port: New Orleans, La.
Disposition: Snagged, 1859, Mobile, Ala.
References: Ber; Nev

BALTIC
Sidewheel Steamboat, River Packet
Tonnage: 399 (g)
Year Built: 1856
Place Built: New Albany, Ind.
Home Port: Mobile, Ala.
Disposition: Exploded leaving wharf, November 3, 1860, Mobile, Ala.
Notes: 20 lives lost. MR missing this date.
References: Lyt; Ber; Nev; Scr

LE COMPTE
Sidewheel Steamboat, River Packet
Tonnage: 238 (g)
Year Built: 1855

Place Built: Louisville, Ky.
Home Port: Memphis, Tenn.
Disposition: Burned, March 27, 1861, Mobile, Ala.
Notes: MR missing this date.
References: Lyt; Ber; Nev

KATE DALE
Sidewheel Steamboat, River Packet
Tonnage: 607 (g); (428 (g) in Berman)
Year Built: 1855 (1856 in Berman)
Place Built: New Albany, Pa.
Disposition: Burned, May 25, 1865, at Mobile, Ala.
Notes: Unknown number killed, according to Scruggs.
References: Lyt; Ber; Scr

R.B. TANEY
Sidewheel Steamboat, River Packet
Tonnage: 301 (g)
Year Built: 1857
Place Built: Mobile, Ala.
Home Port: Mobile, Ala.
Disposition: Stranded on bar, October 27, 1865, Mobile, Ala.
References: Lyt; Ber; Nev; Scr

NATCHEZ
Sidewheel Steamboat, River Packet
Tonnage: 388 (g)
Year Built: 1849
Place Built: Cincinnatti, Oh.
Home Port: Natchez, Miss.
Disposition: Foundered, April 10, 1866 (Neville has April 4, 1866), Mobile Bay, Ala.
References: Lyt; Ber; Nev

SIR WILLIAM WALLACE
Sternwheel Steamboat, River Packet
Tonnage: 255 (g)
Year Built: 1855
Place Built: California, Pa.
Home Port: Pittsburgh, Pa.
Disposition: Burned, March 27, 1866, Mobile, Ala.
References: Lyt; Ber; Nev

FLIRT
Sternwheel Steamboat, River Packet
Tonnage: 198 (g)
Year Built: 1859
Place Built: Fowl River, Ala.
Home Port: Mobile, Ala.
Disposition: Burned, July 18, 1867, near Mobile, Ala.
Notes: Not registered, LMV, 1867-1868.
References: Lyt; Ber; Nev; Scr

JEWESS 12983

Sidewheel Steamboat, River Packet
Tonnage: 386 (g)
Year Built: 1862
Place Built: Cincinnatti, Oh.
Home Port: Mobile, Ala. (Neville has Cincinnatti, Oh.)
Disposition: Snagged and sunk, December 28, 1868, at mouth of Chickasawbogue Creek, Mobile River, Ala.
Notes: Neville gives incorrect tonnage.
References: Lyt; Ber; Nev; Scr; MR (12-30-1868); LMV

SENECA

Screw Steamboat, Bay Passenger Service
Tonnage: 193 (g)
Year Built: 1843
Disposition: Burned, November 23, 1870, Mobile, Ala., arriving at wharf.
Notes: Not registered commercial, LMV 1867-1870. 13 killed.
References: Lyt; Ber; Scr

OCEAN WAVE

Sidewheel Steamboat, Bay Passenger Service
Tonnage: 221 (g) (LMV)
Year Built: 1854
Place Built: Hoboken, N.J.
Home Port: Perth Amboy, N.J.; later Mobile, Ala.
Disposition: Exploded, August 27, 1871, at Point Clear wharf, Ala. 75 lives lost. "Parts of the wrecked steamer were seen for many years on the bay shore when the tide was low" (Sulzby p. 139).
Notes: Notice appears in MR 8-29-1871. Further materials in vertical file, Mobile Public Library. Scruggs lists erroneous name. Neville gives incorrect tonnage.
References: Lyt; Ber; Nev; LMV; MR; Carr

ELLA MAY (MAY FLOWER) 8371 (?)

Sidewheel Steamboat, River Packet
Tonnage: 262 (g)
Year Built: 1845
Disposition: Burned, October, 1872, Mobile, Ala,
Notes: Formerly MAY FLOWER. Redocumented as ELLA MAY. Possibly the ELLA MAY of New Orleans, La., LMV 8371, 234 tons, 200 hp. engine.
References: Lyt; Ber; LMV

SALMON

Screw Steamboat (Sidewheel in Berman), Service Undetermined
Tonnage: 63 (g)
Year Built: 1867
Home Port: Portsmouth, Oh.
Disposition: Snagged, 1873, Mobile Bay, Ala.
References: Lyt; Ber; LMV

ANNIE 575

Sidewheel Steamboat, Bay Passenger Service
Tonnage: 200 (g); 200 (n)
Dimensions: 145.0' x 23.2' x 8.1'
Year Built: 1863
Place Built: New York, N.Y.
Home Port: Mobile, Ala.
Disposition: Burned, 1889, Mobile Bay near Point Clear, Ala.
References: Lyt; Ber; Scr

R.E. LEE 110101

Sidewheel Steamboat, River Packet
Tonnage: 233 (g); 212 (n)
Dimensions: 175.0' x 32.5' x 4.5'
Year Built: 1873
Place Built: Mobile, Ala.
Home Port: Mobile, Ala.
Disposition: Dismantled and sunk, 1890s, Mobile, Ala.
References: Nev; LMV

MARY SHAW

Sidewheel Steamboat, Service Undetermined
Tonnage: 74 (g)
Year Built: 1862
Place Built: Baltimore, Md.
Disposition: Snagged and sunk, November 3, 1900, Mobile, Ala.
Notes: No corresponding vessel registered LMV.
References: Lyt; Ber; Scr

FAIRHOPE 121193

Single-Screw Steamboat, Bay Passenger Service
Tonnage: 93 (g); 64 (n)
Dimensions: 73.2' x 18.7' x 5.8'
Year Built: 1901
Place Built: Fairhope, Ala.
Home Port: Mobile, Ala.
Disposition: Burned, November 21, 1905, at Fairhope Pier, Ala. Hull was set adrift, settled on a sand bar near Battle's Wharf.
Notes: Notice in MR, 11-23-1905. Crew of 6.
References: Ber; MR; LMV; Carr

HATTIE B. MOORE 95776

Sternwheel Steamboat, River Packet, Passenger Service Registration.
Tonnage: 193 (g); 193 (n)
Dimensions: 171.6' x 31.2' x 5.6'
Year Built: 1883
Place Built: Mobile, Ala.
Home Port: Mobile, Ala.
Disposition: Destroyed, September 27, 1906, Mobile, Ala., during hurricane.
Notes: Not on official list of vessels lost in 1906 hurricane (Mobile Chamber of Commerce n.d.).
References: Nev; LMV; Mobile Chamber of Commerce n.d.

LADY GRACE 140473

Sternwheel Steamboat, Passenger Service Registration
Tonnage: 144 (g); 144 (n)
Dimensions: 134.5' x 28.4' x 4.6'
Year Built: 1881
Place Built: Clinton, Iowa
Home Port: New Orleans, La.
Disposition: Stranded, September 27, 1906, Mobile, Ala., during hurricane.
Notes: Crew if 17. 415 hp. Gulf passenger service? Not on official list of vessels lost, 1906 hurricane (Mobile Chamber of Commerce, nd.).
References: Ber; WPA; LMV; Mobile Chamber of Commerce (n.d.).

CITY OF CAMDEN 126966

Sternwheel Steamboat, River Packet, Passenger Service
Tonnage: 299 (g); 299 (n)
Dimensions: 175.0' x 35.0' x 5.0'
Year Built: 1893
Place Built: Jeffersonville, Ind.
Home Port: Mobile, Ala.
Disposition: Destroyed, September 27, 1906, Mobile, Ala., during hurricane.
Notes: Crew of 20. Not on Holt's list of vessels wrecked, Mobile Harbor, hurricane of 1906 (n.d.).
References: Nev; LMV

MARY 92920

Sternwheel Steamboat, River Packet, Passenger Service Registration.
Tonnage: 198 (g); 138 (n)
Dimensions: 141.0' x 28.0' x 3.6'
Year Built: 1899
Place Built: Jeffersonville, Ind.
Home Port: Mobile, Ala.
Disposition: Foundered at wharf, September 27, 1906, Mobile, Ala., during hurricane.
Notes: Photographs of wreck in Holt (n.d.). Crew of 34.
References: Ber; Nev; LMV; HLT

SUN (#2) 116861

Sternwheel Steamboat, River Packet
Tonnage: 84 (g); 84 (n)
Dimensions: 121.0' x 21.2' x 4.3'
Year Built: 1898
Place Built: Hockingport, Oh.
Home Port: Memphis, Tenn.
Disposition: Sunk, December 15, 1906, on Mobile Bar, on west bank of channel near Sand Island lighthouse. Cause unknown.
Notes: Crew of 24.
References: Nev; LMV; MR (12-15-1906)

GENERAL LEE (O.E. LEWIS, ROCK CREEK) 155271

Screw Steamboat, Bay Passenger Service
Tonnage: 199 (g); 135 (n)
Dimensions: 120.5' x 23.6' x 7.0'
Year Built: 1895
Place Built: Essex, Mass.
Home Port: Mobile, Ala.
Disposition: Burned, December 13, 1910, at Fairhope Pier. Hull probably salvaged.
Notes: Newspaper account (MR 12-14-1910) indicates interference with docking and that wreck would have to be removed.
References: Ber; LMV

AMERICAN 107729

Sternwheel Steamboat, River Packet, Passenger Service Registration.
Tonnage: 190 (g); 190 (n)
Dimensions: 158.0' x 27.6' x 4.2'
Year Built: 1902
Place Built: New Decatur, Ala.
Home Port: Vicksburg, Miss.
Disposition: Burned and sunk, April 4, 1915, in navigation channel opposite Turner Terminals, Mobile River.
References: Ber; Nev; LMV; MR (4-5-1915)

J.P. SCHUH 77474

Sternwheel Steamboat, River Packet and Towboat, Passenger Service Registration.
Tonnage: 117 (g); 112 (n)
Dimensions: 107.0' x 29.0' x 4.4'
Year Built: 1901
Place Built: Mobile, Ala.
Home Port: Mobile, Ala.
Disposition: Sunk in hurricane, September 27, 1906, vicinity of Mobile, Ala. Later apparently rebuilt, sunk again in hurricane, July 5, 1916, in Mobile Harbor, Ala.
Notes: Crew of 9. Photo in Overbey Collection, Mobile Public Library.
References: Nev; LMV

BEAVER (SADIE, CALOOSA) 115999

Sidewheel Steamboat, Bay Passenger Service
Tonnage: 70 (g); 59 (n)
Dimensions: 100.0' x 18.6' x 5.4'
Year Built: 1884
Place Built: Westerly, R.I.
Home Port: Mobile, Ala.
Disposition: Sunk, July 5, 1916, at Pier 4, Mobile, Ala., during hurricane.
Notes: Notice appears in MR, 7-7-1916. Crew of 9 on board. No lives lost.
References: MR; LMV

CITY OF MOBILE 127294

Sternwheel Steamboat, River Packet, Passenger Service Registration.
Tonnage: 209 (g); 209 (n)
Dimensions: 176.0' x 34.0' x 4.2'
Year Built: 1898
Place Built: Mobile, Ala.
Home Port: Mobile, Ala.
Disposition: Wrecked on municipal wharf, July 5, 1916, Mobile, Ala., during hurricane.
Notes: 25 on board. No lives lost.
References: Nev; LMV

BAY QUEEN (HINGHAM, ORIENT) 96338

Sidewheel Steamboat, Bay Passenger Service
Tonnage: 471 (g); 331 (n)
Dimensions: 167.6' x 25.0' x 9.2'
Year Built: 1896
Place Built: Hingham, Mass (Carr); Chelsea, Mass (LMV)
Home Port: Chelsea, Mass.; later Mobile, Ala.
Disposition: Burned, March 27, 1929, at foot of Eslava Street Mobile. Burned to water's edge during overhaul.
Notes: Served as HINGHAM in Boston Harbor; served as ORIENT in Long Island Sound. Operated on Mobile Bay by Fairhope Transportation and Excursion Co. Crew of 22.
References: LMV; Carr

ROBERT RHEA 205579

Sternwheel Steamboat, River Packet
Tonnage: 182 (g); 182 (n)
Dimensions: 149.8' x 30.4' x 4.4'
Year Built: 1908
Place Built: Marietta, Oh.
Home Port: Nashville, Tenn.
Disposition: Burned, July 25, 1931, in Mobile River, Blakely Island, in front of A.T. and N. docks.
Notes: Came to Mobile, August 1927.
References: Ber; Nev; LMV; CE wreck reports.

Class 5. Large Freight and Passenger Steamboats. Discussion.

While there are only two subclasses within this category, river packets and bay/gulf ferryboats, this is the best represented class of vessels in the shipwreck inventory, with 83 entries. Table 5 presents summary data for these vessels.

The large inventory of river packets, available mainly as a result of William Lytle's exhaustive research, is best comprehended by division into three chronological categories by date of construction: 1819-1850; 1851-1870; and 1871-1913. This division, reflected in Table 5, reveals certain indications of technological change in this class.

Hull dimensions unfortunately are not available for river packets built prior to 1871. Those built during the later period, 1871-1913, were

Table 5. Summary Data. Class 5. Large Freight and Passenger Steamboats.

#	Subclass	n	Mean Crew Size	Tonnage Gross $\bar{X}$	Tonnage Gross S	Tonnage Gross Range	Tonnage Net $\bar{X}$	Tonnage Net S	Tonnage Net Range	Lenght Ft. $\bar{X}$	Lenght Ft. S	Lenght Ft. Range
1a	River Packet, 1819-1850	46	-	149.7	80.1	32.0-388.0	-	-	-	-	-	-
1b	River Packet, 1851-1870	16	-	230.2	98.3	70.0-399.0	-	-	-	-	-	-
1c	River Packet, 1871-1913	11	22	197.4	85.2	84.0-372.0	180.5	69.2	84.0-299.0	152.7	24.2	107.0-176.0
2	Bay/Gulf Passenger Ferry	9	14	235.1	158.1	70.0-471.0	155.5	101.0	59.0-331.0	123.5	33.5	73.2-167.6

#	Subclass	Beam Ft. $\bar{X}$	Beam Ft. S	Beam Ft. Range	Depth Ft. $\bar{X}$	Depth Ft. S	Depth Ft. Range	Mean Length Beam Ration	Percent Sidewheel: Sternwheel	Median Year Built	Percent Built Gulf Coast
1a	River Packet, 1819-1850	-	-	-	-	-	-	-	9: 91	1836	9%
1b	River Packet, 1851-1870	-	-	-	-	-	-	-	24: 76	1852	17%
1c	River Packet, 1871-1913	29.8	4.5	27.6-35.5	4.4	0.6	3.5-5.6	5.1: 1	91: 9	1898	36%
2	Bay/Gulf Passenger Ferry	22.9	3.8	18.6-28.4	6.7	1.7	5.4-9.2	5.4: 1	-	1881	13%

very long in proportion to width, with a mean length-beam ratio of 5.1:1. The earlier examples were, on average, more broad and blunt in hull form, and were consequently slower (Hunter 1949).

The size of these vessels, as measured by displacement, was always highly variable. Examples of packets in the inventory range from the small EMELINE of 32 tons to the mammoth BALTIC, with a displacement more than twelve times greater. The largest of the river packets appearing in the shipwreck compilation were built during the middle period, 1851-1870, as reflected in the high mean gross tonnage figure of 230.2 for this interval.

Table 5 illustrates nicely that the relative popularity of sidewheel to sternwheel modes of propulsion underwent a dramatic reversal from the early nineteenth through the early twentieth century. Earlier river packets, including some of very small displacement, were overwhelmingly (91%) fitted with a sidewheel rig. The popularity of sternwheel propulsion increased over the years, however, so that for the latest period of construction, the trend is exactly reversed. Packets built between 1871 and 1913 were overwhelmingly (91%) sternwheelers. For the early period there was a clear size difference between sidewheelers and sternwheelers. The mean gross tonnage of sidewheelers in the sample between 1819 and 1850 is nearly twice that of sternwheelers for the same period (156.0 : 83.5 tons (g)). This size differential rapidly dissolved, however, with the growing prevalence of sternwheel propulsion.

Proportionately few river steamboats in the sample were locally built. A large number were brought to Mobile from ports on the Ohio River, most notably from Pittsburgh, Pennsylvannia, Cincinnatti, Ohio, and from the large steamboat shipyards at Jeffersonville, Indiana. Nevertheless some 13 percent were built in the shipyards at Mobile, Fowl River, and Fairhope, with an occasional example built at the inland river ports of Jackson and Marion, Alabama. Those packets which were locally built prior to the Civil War tended to be quite small, with displacements normally less than 100 tons. Some large packets, however, were built at Mobile after mid-century, an example being the 301 ton packet R.B. TANEY.

A second subclass consists of the large steamboats which served as ferries shuttling between Mobile and nearby ports on Mobile Bay and the Gulf of Mexico. A wide variety of steamships of various sizes and modes of propulsion were put into service as ferryboats during the late nineteenth and early twentieth century. This diversity is reflected in the uniformly high measures of dispersion indicated for the subclass in Table 5. These data show that vessels of much deeper draft than packets of similar size, with depths of up to 9.2 feet, could be used as ferries where they would have been impracticable in the shallow rivers. Another difference from the river packets was the common occurrence of screw propulsion among ferryboats, along with sidewheel and sternwheel rigs. More than half of the sample of Bay and Gulf ferryboats included in the shipwreck inventory were built on the Atlantic coast and brought to Mobile; only the FAIRHOPE was the product of a local shipyard.

A third subclass, consisting of only three entries (not included in Table 5), includes those large steamships for which the commercial service remains undetermined. These are the LION, the SALMON, and the MARY SHAW. Little is known about any of these vessels. They were presumably employed either as river packets or as ferryboats.

Class 6. Harbor Boats. Inventory.

THOMAS SPARKS
Steam Screw, Tugboat, 2nd Rate, Steel Vessel
Tonnage: 380 (g) (RAFS); 373 (g) (Ber)
Dimensions: 206.0' x 22.0' x 9.0'
Year Built: 1854
Place Built: Wilmington, Del.
Home Port: Philadelphia, Pa. (in 1859)
Disposition: Stranded, January 12, 1866, at lower obstructions, Mobile Bay. "Came into contact with the lower obstructions in the Bay . . . almost instantly dashed to pieces . . . machinery may be saved" (MR 1-14-1866).
Notes: Draft, 8' Direct steam engine, 32" cylinder, 28' piston stroke; 1 independent fire pump. Deck cabin and 3 bulkheads.
References: Lyt; Ber; RAFS; MR

JUMBO 76398
Steam Screw, Hydraulic Dredge, Registered as Towboat
Tonnage: 18 (g); 8 (n)
Dimensions: 42.0' x 12.0' x 3.6'
Year Built: 1883
Place Built: Bay Point, Fla.
Home Port: Mobile, Ala.
Disposition: Sunk, November 10, 1903, on outer bar, within channel, Mobile Bay, Ala., while dredging under contract with Corps of Engineers. Corps later blew vessel in half with dynamite, recovered bow portion and leveled the embedded stern.
Notes: Crew of 4.
References: CE, LMV

GAMMA 86664
Sternwheel Steamboat, Tugboat, Freight Service Registration
Tonnage: 89 (g); 89 (n)
Dimensions: 103.2' x 25.3' x 4.4'
Year Built: 1903
Place Built: Mobile, Ala.
Home Port: Mobile, Ala.
Disposition: Foundered, September 26, 1906, Mobile, Ala. Location unknown.
Notes: Crew of 16. Not given in official list of vessels lost in 1906 hurricane, Mobile Chamber of Commerce (n.d.).
References: Ber; Hlt; LMV

AMELIA 107817
Screw Steamboat, Tugboat, Passenger Service Registration
Tonnage: 29 (g); 20 (n)

Dimensions: 74.0' x 16.0' x 5.3'
Year Built: 1903
Place Built: Mobile, Ala.
Home Port: Mobile, Ala.
Disposition: Sunk, September 27, 1906, in Mobile River, Ala., during hurricane.
Notes: Crew of 4.
References: Hlt; LMV

DIXIE 201508

Sternwheel Steamboat, Tugboat, Passenger Service Registration.
Tonnage: 72 (g); 72 (n)
Dimensions: 120.4' x 17.3' x 3.9'
Year Built: 1904
Place Built: Rome, Ga.
Home Port: Mobile, Ala.
Disposition: Sunk, September 27, 1906, in Mobile River, during hurricane.
Notes: 60 hp. Crew of 16.
References: Hlt; LMV

OWENTON

Rig unknown, Tugboat
Disposition: Sunk, September 27, 1906, at foot of St. Francis Street wharf, Mobile Ala., during hurricane.
Notes: No vessel commercially registered under this name. Possibly confused with OVERTON, a tugboat sunk same date in Mobile River, later recovered by Corps of Engineers in 1920 (CE 1920 (I):1888).
References: Hlt; CE

RESOLUTE 202927

Screw Steamboat, Tugboat, Passenger Service Registration
Tonnage: 68 (g); 46 (n)
Dimensions: 89.0' x 17.0' x 6.5'
Year Built: 1906
Place Built: Mobile, Ala.
Home Port: Mobile, Ala.
Disposition: Sunk, September 27, 1906, in Mobile River, Ala., during hurricane.
Notes: 200 hp.
References: Hlt; LMV

SCARRIT 117083

Screw Steamboat, Tugboat
Tonnage: 18 (g); 8 (n)
Dimensions: 40.5' x 11.3' x 3.5'
Year Built: 1901
Place Built: Holley, Fla.
Home Port: Mobile, Ala.
Disposition: Sunk, September 27, 1906, in Mobile River. During hurricane.
Notes: Crew of 6.
References: Hlt; LMV

VOLANTE
Rig unknown, Tugboat
Disposition: Sunk, September 27, 1906, in Mobile River. During hurricane.
Notes: Registration of this vessel is uncertain. There is a VOLANTE, registered as a passenger steamer, Seattle, Wash., 1906.
References: Hlt

ZIYARA (ZAYARA) 28122
Screw Steamboat, Tugboat
Tonnage: 9 (g); 6 (n)
Dimensions: 54.4' x 8.0' x 2.6'
Year Built: 1890
Place Built: Rome, N.Y.
Home Port: Mobile, Ala.
Disposition: Sunk, September 27, 1906, in Mobile River, Ala., during hurricane.
Notes: Crew of 2.
References: Hlt; LMV

CLAUDE 204098
Sidewheel Steamboat, Tugboat, Passenger Service Registration
Tonnage: 47 (g); 32 (n)
Dimensions: 77.4' x 17.8' x 6.9'
Year Built: 1907
Place Built: Scranton, Miss.
Home Port: Mobile, Ala.
Disposition: Sunk, July 5, 1916, at foot of Elmira Street, Mobile, Ala., during hurricane.
Notes: Crew of 8. 250 hp.
References: MR; LMV

MARTHA H. HENNAN 200687
Sternwheel Steamboat, Towboat
Tonnage: 77 (g); 77 (n)
Dimensions: 112.0' x 23.0' x 4.8'
Year Built: 1904
Place Built: Evansville, Ind.
Home Port: Mobile, Ala.
Disposition: Foundered, July 5, 1916, in Mobile River, Ala., during hurricane.
Notes: 2 on board. No lives lost. Crew of 10. 100 hp.
References: LMV

NATIVE 18177
Gas Screw, Tugboat, Registered as Oyster Boat
Tonnage: 8 (g); 8 (n)
Dimensions: 35.0' x 12.6' x 3.0'
Year Built: 1879
Place Built: Mobile, Ala.
Home Port: Mobile, Ala.
Disposition: Sunk, July 5, 1916, at foot of Elmira Street, Mobile, Ala., during hurricane.

Notes: Crew of 1.
References: MR; LMV

WAYFARER 81464

Gas Screw, Pilot Boat
Tonnage: 71 (g); 67 (n)
Dimensions: 76.5' x 21.0' x 9.1'
Year Built: 1894
Place Built: Port Jefferson, N.Y.
Home Port: Mobile, Ala.
Disposition: Wrecked, July 5, 1916, at A.T. and N. docks, Mobile, Ala., during hurricane.
Notes: Crew of 6.
References: MR; LMV

ALARM 205681

Sternwheel Steamboat, Towboat (lumber barges)
Tonnage: 40 (g); 40 (n)
Dimensions: 97.0' x 23.5' x
Year Built: 1908
Place Built: Morgan City, La.
Home Port: Mobile, Ala.
Disposition: Foundered, June 29, 1926, Mobile, Ala.
Notes: Crew of 6. 124 hp
References: LMV

ELIZABETH O 217902

Sternwheel Steamboat, Towboat
Tonnage: 71 (g); 53 (n)
Dimensions: 93.0' x 19.0' x 3.6'
Year Built: 1919
Place Built: Demopolis, Ala.
Home Port: Mobile, Ala.
Disposition: Burned at mooring, April 21, 1927, Harrison Bros. Shipyard, Blakely Island, Ala.
References: MR (4-22-1927); LMV

MARY JANE 212939

Sternwheel Steamboat, Tugboat
Tonnage: 66 (g); 66 (n)
Dimensions: 98.0' x 22.6' x 3.2'
Year Built: 1915
Place Built: Parkersburg, W. Va.
Home Port: Pittsburgh, Pa.
Disposition: Burned at mooring, April 21, 1927, at Harrison Bros. Shipyard, Blakely Island, Ala.
Notes: Crew of 8. 250 hp.
References: MR (4-22-1927); LMV

EDNA BELLE (PEARLE O.) 226558

Oil Screw, Towboat
Tonnage: 46 (g); 26 (n)
Dimensions: 55.0' x 14.2' x 4.6'

Year Built: 1927
Place Built: Mobile, Ala.
Home Port: Mobile, Ala.
Disposition: Burned, April 16, 1938, Mobile, Ala.
Notes: Crew of 4. 100 hp. 7 on board. No lives lost.
References: LMV

NUECES 226630
Oil Screw, Tugboat
Tonnage: 83 (g); 47 (n)
Dimensions: 69.9' x 20.0' x 7.2'
Year Built: 1927
Place Built: Houston, Tex.
Home Port: Port Arthur, Tex.
Disposition: Foundered, March 8, 1956, in Mobile Bay north of Dauphin Island and just north of Dauphin Island Bridge. Sprang leak and sunk en route to Demopolis.
Notes: 360 hp. Owned by Port Arthur Towing Co.
References: Ber; MR (3-9-1956); LMV

BONNE FORTUNE 237031
Oil Screw, Pilot Boat
Tonnage: 98 (g); 44 (n)
Dimensions: 77.5' x 18.7' x 9.1'
Year Built: 1937
Place Built: Madisonville, La.
Home Port: Mobile, Ala.
Disposition: Sunk, October 4, 1964, vicinity of Bouy No. 15, above Sand Island lighthouse, Mobile Bay. During hurricane Hilda.
Notes: 500 hp.
References: Ber; MR (10-5-64); LMV

RAYMOND LEE
Rig unknown, Towboat
Disposition: Sunk, date unknown, 200 yds. east of Mobile channel and 250 yds. north of the GICW sailing line, mile 133.8 EHL. Approximate position: 30-16.4N, 88-02.0W. Sank in 12 feet of water.
Notes: This may be the RAYMOND LEE (295318); see LMV 1979.
References: HN (Jan. 1982)

COLONEL 248775
Oil Screw, Tugboat
Tonnage: 275 (g); 117 (n)
Dimensions: 117.5' x 28.0' x 13.5'
Year Built: 1944
Place Built: City Island, N. Y.
Home Port: Mobile, Ala.
Disposition: Burned, July 10, 1970, on Polecat Bay mud flat north of causeway, Mobile Bay, Ala. Earlier sunk in Pascagoula ship channel; raised and towed to this location approximately 1958.

Notes: Account of burning, with photographs in MR (7-13-1970).
1200 hp. Owned by Mobile Towing and Wrecking Co.
References: MR, LMV

Class 6. Harbor Boats. Discussion.

The inventory includes 22 vessels which served primarily in the capacity of harbor boats, either as towboats, as tugboats, or as pilot boats. Summary data concerning these vessels appears in Table 6.

The capacities and dimensions of the 19 measurable vessels classified as tugboats or towboats are so highly variable that it makes little sense to compute overall mean values. Table 6 therefore arranges these vessels according to three size classes based upon length, for which mean values and measures of dispersion are separately figured.

Size class "a" includes small tugboats and towboats between 35 and 55 feet in length. These vessels are relatively short in proportion to breadth and have a very shallow draft. They are propelled by either steam or gasoline engines.

Size class "b" includes much larger vessels ranging from 69 to 118 feet in length. A mean gross tonnage of 83.4 is more than four times that of size class "a". These vessels are more slender in proportion to length than their smaller counterparts, have a deeper draft, and are powered by a variety of means including sidewheel and sternwheel steam, steam screw, and diesel screw. They were, on average, constructed somewhat later than the representatives of the smaller subcategory.

In a size class by itself is the THOMAS SPARKS, which is also the earliest of the vessels listed as tugboats. This 380 ton vessel had an enormous reported length of 206.0 feet, with a beam of only 22.0 feet, yielding an almost absurdly narrow length-beam ratio of 9.4:1. These dimensions suggest a configuration similar to the narrow steam blockade runners during the Civil War. The THOMAS SPARKS was perhaps originally designed as a seagoing vessel, and only later converted for use as a towboat.

Of particular interest is the versatility of these craft. While all of the representatives in the inventory sample were either registered as tugboats or towboats or operated in this capacity for at least part of their span of service, other uses of the same vessels are also recorded. The JUMBO, for example, worked as a hydraulic dredge although registered as a tugboat. The GAMMA was registered originally for freight service, although it later served as a tugboat. The shallow draught sternwheeler ALARM was owned by a lumber company, and was probably used to convey lumber barges along the interior rivers. The AMELIA, the DIXIE, the RESOLUTE, and the CLAUDE all were registered as small ferryboats in addition to actual service as tugboats.

Table 6. Summary Data. Class 6. Harbor Boats.

#	Subclass	n	Mean Crew Size	Tonnage Gross $\bar{X}$	Tonnage Gross S	Tonnage Gross Range	Tonnage Net $\bar{X}$	Tonnage Net S	Tonnage Net Range	Length Ft. $\bar{X}$	Length Ft. S	Length Ft. Range
1a	Tugboat/Towboat Size Class "a"	5	3	19.8	15.4	8.0–46.0	11.2	8.3	6.0–26.0	45.4	8.9	35.0–55.0
1b	Tugboat/Towboat Size Class "b"	11	10	83.4	66.2	29.0–275.0	59.9	27.9	20.0–117.0	95.6	17.1	69.9–117.5
1c	Tugboat/Towboat Size Class "c"	1	-	380.0	-	-	-	-	-	206.0(?)	-	-
2	Pilot Boat	2	6	84.5	19.1	71.0–98.0	55.5	16.3	44.0–67.0	77.0	0.7	76.5–77.5

#	Subclass	Beam Ft. $\bar{X}$	Beam Ft. S	Beam Ft. Range	Depth Ft. $\bar{X}$	Depth Ft. S	Depth Ft. Range	Mean Length Beam Ratio	Motor Rig Types	Median Year Built	Percent Built Gulf Coast
1a	Tugboat/Towboat Size Class "a"	11.6	2.3	8.0–14.2	3.5	0.8	2.6–4.6	3.9: 1	St.s. (60%) Ga.s. (20%) Ol.s. (20%)	1890	64%
1b	Tugboat/Towboat Size Class "b"	20.9	3.9	16.0–28.0	5.3	3.4	2.8–13.5	4.6: 1	St.w. (55%) St.p. (9%) St.s. (18%) Ol.s. (18%)	1907	-
1c	Tugboat/Towboat Size Class "c"	-	-	-	9.0	-	-	9.4: 1 (?)	St.s.(100%)	1854	0%
2	Pilot Boat	19.9	1.6	18.7 21.0	9.1	0.0	-	3.9: 1	Ol.s. (50%) Ga.s. (50%)	1916	50%

Class 7. Motor Launches, Yachts and Work Boats. Inventory.

ALERT (LUCY F.) 141446

Screw Steamboat, Launch, U.S. Government Revenue Service
Tonnage: 19 (g); 13 (n)
Dimensions: 52.6' x 11.4' x 4.3'
Year Built: 1896
Place Built: Middletown, Conn.
Home Port: Mobile, Ala.
Disposition: Sunk, September 27, 1906, at foot of St. Anthony Street, Mobile, Ala., during hurricane.
Notes: 50 hp.
References: Hlt; LMV

ANONA

Launch, Rig Unknown
Disposition: Sunk, July 5, 1916, ¼ mile below the N.O.M. and C. docks, Mobile, Ala. Vessel abandoned in hurricane.
References: MR (7-7-1916)

BLANCHE MARIE

Launch, Open Cruiser, Rig Unknown
Deposition: Reported missing, presumed sunk, July 5, 1916, in Mobile Bay between Fort Morgan and Fort Gaines. Vessel abandoned at anchor during hurricane.
References: MR (7-8-1916)

BON SECOUR 212602

Gas Screw, U.S. Mail Boat, Passenger Service Registration
Tonnage: 25 (g); 17 (n)
Dimensions: 56.3' x 18.0' x 3.5'
Year Built: 1914
Place Built: Bon Secour, Ala.
Home Port: Mobile, Ala.
Disposition: Wrecked, July 5, 1916, on old city dock at St. Anthony Street, Mobile, Ala. during hurricane.
Notes: Crew of 3. 50 hp.
References: MR; LMV

ECLIPSE 136590

Gas Screw, Freight Service Registration
Tonnage: 22 (g); 19 (n)
Dimensions: 52.0' x 17.2' x 3.4'
Year Built: 1896
Place Built: Dauphin Island, Ala.
Home Port: Mobile, Ala.
Disposition: Stranded, July 5, 1916, Mobile Bay, Ala. during hurricane.
Notes: 2 on board. No lives lost. Crew of 2.
References: LMV

EL RIO 136662

Screw Steamboat, Passenger Service Registration
Tonnage: 16 (g); 6 (n)
Dimensions: 55.3' x 12.3' x 4.9'
Year Built: 1898
Place Built: Mobile, Ala.
Home Port: Mobile, Ala.
Disposition: Foundered, July 5, 1916, Mobile River, Ala. during hurricane.
Notes: 5 on board. No lives lost. Crew of 4.
References: LMV

EUGENE 203187

Screw Steamboat, Passenger Service Registration
Tonnage: 20 (g); 13 (n)
Dimensions: 56.0' x 13.2' x 4.9'
Year Built: 1906
Place Built: Mobile, Ala.
Home Port: Mobile, Ala.
Disposition: Foundered, July 5, 1916, Mobile River, Ala. during hurricane.
Notes: 5 on board. No lives lost. Crew of 4.
References: LMV

IRMA 204703

Gas Screw, Launch, Passenger Service Registration
Tonnage: 18 (g); 16 (n)
Dimensions: 64.7' x 11.0' x 4.2'
Year Built: 1907
Place Built: Mobile, Ala.
Home Port: Mobile, Ala.
Disposition: Reported missing, presumed lost, July 5, 1916, location unknown, Mobile Bay or Harbor, Ala.
Notes: Crew of 3. 56 hp.
References: MR; LMV

KINGFISHER 161191

Gas Screw, Passenger Service Registration
Tonnage: 15 (g); 11 (n)
Dimensions: 43.0' x 15.8' x 3.8'
Year Built: 1901
Place Built: Palatka, Fla.
Home Port: Jacksonville, Fla.
Disposition: Struck dock, July 5, 1916, at Mobile during hurricane.
Notes: Probably sister ship to HARRY LEE, LMV 96302 (see MR 7-7-1916). 3 on board. No lives lost. Crew of 1.
References: LMV; MR

POINT AUX PINES 208280

Gas Screw, Freight Service Registration
Tonnage: 28 (g); 26 (n)
Dimensions: 55.0' x 17.0' x 3.8'

Year Built: 1910
Place Built: Bayou La Batre, Ala.
Home Port: Mobile, Ala.
Disposition: Foundered, July 5, 1916, in Mobile River during hurricane.
Notes: 2 on board. 2 lives lost. Crew of 3. 40 hp.
References: LMV

UNCLE SAM (#2)
Rig Unknown, Mail Boat
Disposition: Reported sunk, July 5, 1916, location unknown, Mobile Bay or Harbor during hurricane.
Notes: No corresponding vessel registered LMV.
References: MR (7-7-1916).

NAME UNDETERMINED
Launch, Rig Unknown
Disposition: Sunk, July 5, 1916, close to the mouth of Three Mile Creek, Mobile River, Ala. during hurricane.
Notes: Owned by the T.J. Rowell estate.
References: MR

FLYING CLOUD (MARGARET) 120951
Gas Screw, Passenger Service Registration
Tonnage: 27 (g); 25 (n)
Dimensions: 53.0' x 15.5' x 6.3'
Year Built: 1893
Place Built: Boston, Mass.
Home Port: Mobile, Ala.
Disposition: Burned, April 17, 1933, in Mobile River, Ala.
Notes: Crew of 3. 48 hp.
References: LMV

LYSISTRATA 236157
Oil Screw, Motor Yacht
Tonnage: 64 (g); 51 (n)
Dimensions: 63.0' x 16.6' x 6.2'
Year Built: 1937
Place Built: Pascagoula, Miss.
Home Port: Mobile, Ala.
Disposition: Burned in boat house, December 1, 1938, at Three Mile Creek, Mobile River, Ala.
Notes: Crew of 2. 200 hp. Owned by Waterman Steamship Corp.
References: Ber; LMV; MR

ANNIE RUTH 239086
Oil Screw, "Miscellaneous" Service Registration
Tonnage: 23 (g); 15 (n)
Dimensions: 43.0' x 13.0' x 5.1'
Year Built: 1925
Place Built: Mobile, Ala.
Home Port: Mobile, Ala.
Disposition: Burned, April 10, 1941, Mobile Bay, Ala.

Notes: Crew of 1. 150 hp. Owned by Mobile Bar Pilots Association.
References: LMV

EMILY 241263
Gas Screw, Motor Yacht
Tonnage: 29 (g); 19 (n)
Dimensions: 48.5' x 12.6' x 6.1'
Year Built: 1935
Place Built: Bayonne, N.J.
Home Port: Washington, D.C.
Disposition: Burned, September 26, 1945, Mobile, Ala.
Notes: Crew of 1. 250 hp.
References: LMV

VIGILANT (HARWELL, MASONITE II, LEV III) 234295
Oil Screw, Yacht
Tonnage: 70 (g); 47 (n)
Dimensions: 76.7' x 15.1' x 7.9'
Year Built: 1935
Place Built: Eastport, Md.
Home Port: Mobile, Ala.
Disposition: Burned, July 14, 1953, at Choctaw Point, Mobile River, Ala.
Notes: Crew of 4. 304 hp.
References: LMV

MARIA ROLAND 246857
Oil Screw, Fishing Vessel
Tonnage: 21 (g); 9 (n)
Dimensions: 41.9' x 13.6' x 5.4'
Year Built: 1944
Place Built: Jacksonville, Fla.
Home Port: Mobile, Ala.
Disposition: Burned, December 24, 1959, at Bon Secour, Ala.
Notes: 80 hp.
References: LMV

TINA REE 285323
Gas Screw, Passenger Service Registration
Tonnage: 9 (g); 7 (n)
Dimensions: 30.1' x 10.2' x 4.2'
Year Built: 1936
Place Built: Algonac, Michigan
Home Port: Mobile, Ala.
Disposition: Destroyed by hurricane, August 17, 1969, at Dauphin Island, Ala.
Notes: Wooden hull. 130 hp.
References: LMV

PEARL D. 292058

Oil Screw, Fishing Vessel
Tonnage: 16 (g); 11 (n)
Dimensions: 42.u' x 13.7' x 3.6'
Year Built: 1928
Place Built: Pascagoula, Miss.
Home Port: Mobile, Ala.
Disposition: Collided, December 2, 1969, with Dauphin Island, Bridge at GICW channel.
Notes: Wooden hull. 100 hp.
References: LMV

GULF VIEW 271484

Oil Screw, Fishing Vessel
Tonnage: 39 (g); 34 (n)
Dimensions: 55.6' x 17.5' x 4.8'
Year Built: 1956
Place Built: Biloxi, Miss.
Home Port: Mobile, Ala.
Disposition: Burned, February 12, 1970, at Dauphin Island, Ala.
Notes: Wooden hull. 165 hp. Owned by B. and P. Seafood Company.
References: LMV

SADIE MAE 251444

Oil Screw, Fishing Vessel
Tonnage: 9 (g); 5 (n)
Dimensions: 36.6' x 11.9' x 3.5'
Year Built: 1946
Place Built: Ocean Springs, Miss.
Home Port: Pascagoula, Miss.
Disposition: Burned, July 9, 1970, in Mobile Bay approximately 8 miles southeast of Dog River.
Notes: 62 hp.
References: LMV

CYTHERE 545399

Oil Screw
Tonnage: 13 (g)
Year Built: 1971
Disposition: Foundered, February 13, 1973, off Dauphin Island, Ala.
Notes: No other data. Tonnage and rig suggest fishing vessel.
References: LMV

EULA LAVANA II 257897

Oil Screw, Fishing Vessel
Tonnage: 19 (g); 13 (n)
Dimensions: 47.4' x 14.0' x 3.8'
Year Built: 1949
Place Built: Bayou La Batre, Ala.
Home Port: Mobile, Ala.
Disposition: Burned, July 14, 1973, Dauphin Island, Ala.
Notes: Wooden hull. 165 hp.
References: LMV

TERRY DEE 284587

Oil Screw, Fishing Vessel
Tonnage: 14 (g); 10 (n)
Dimensions: 40.3' x 11.6' x 5.6'
Year Built: 1945
Place Built: Algonac, Mich.
Home Port: Mobile, Ala.
Disposition: Burned, October 13, 1975, at Dauphin Island Marina, Ala.
Notes: Wooden hull. 165 hp.
References: LMV

SPORTSMAN II 546222

Oil Screw, Passenger Service Registration
Tonnage: 33 (g); 25 (n)
Dimensions: 45.5' x 16.0' x 6.6'
Year Built: 1973
Place Built: Perdido Beach, Ala.
Home Port: Mobile, Ala.
Disposition: Burnt, September 29, 1979, in Bon Secour Bay, Mobile, Ala.
Notes: 450 hp. Wooden hull.

REECI D

Fishing Vessel, Rig Unknown
Disposition: Sunk, date unknown, 30-32.5N 7-54.6W
Notes: Listed as a hazard to navigation. No commercial registration, LMV.
References: HN

NAME UNDETERMINED

Pleasure craft
Dimensions: 20' length, approximate
Disposition: Sunk, date unknown, 3/4 miles east of Dog River Bridge, 30-33.86N 88-04.33W
Notes: Ala. license No. AL-2262-HA
References: HN

Class 7. Motor Launches, Yachts, and Work Boats. Discussion.

Grouped together under this heading is a fairly uniform series of wooden-hulled motor powered boats built between 1893 and 1973. While formally similar with respect to hull dimensions and displacement, these vessels nevertheless were adapted to numerous uses. These uses include passenger ferries, a Coast Guard patrol boat, a mail boat, a freight boat, private yachts, and fishing vessels. Among the fishing vessels are a number of shrimp boats of modern type. Table 7 presents the quantitative summary data for this class, separated into three subclasses based upon the type of motor employed.

Steam screw vessels of this class, which in this sample were most common around the turn of the century, tended to be longer and more slender in plan than their modern diesel counterparts. Gas screw vessels seem to have largely replaced the steam screw rig by the second decade of this

Table 7. Summary Data. Class 7. Motor Launches, Yachts, and Work Boats.

#	Subclass	n	Tonnage Gross			Tonnage Net			Length Ft.		
			$\bar{X}$	S	Range	$\bar{X}$	S	Range	$\bar{X}$	S	Range
1	Steam Screw	3	18.3	2.1	16.0–20.0	10.7	4.0	6.0–13.0	54.6	1.8	52.6–56.0
2	Gas Screw	8	21.6	7.1	9.0–29.0	17.5	6.4	7.0–26.0	50.3	10.3	30.1–64.7
3	Oil Screw	10	30.8	21.0	9.0–70.0	22.0	16.6	5.0–51.0	49.3	12.4	36.6–76.7

#	Subclass	Beam Ft.			Depth Ft.			Mean Length Beam Ratio	Median Year Built	Percent Built Gulf Coast
		$\bar{X}$	S	Range	$\bar{X}$	S	Range			
1	Steam Screw	12.3	0.9	11.4–13.2	4.7	0.3	4.3–4.9	4.4: 1	1898	67%
2	Gas Screw	14.7	3.0	10.2–18.0	4.4	1.1	3.5–6.3	3.4: 1	1909	50%
3	Oil Screw	14.3	2.0	11.6–17.5	5.3	1.4	3.5–7.9	3.4: 1	1945	80%

century. Modern examples are entirely diesel powered, finding typical expression in the common shrimp boat, most of which are the product of Gulf Coast shipyards.

Class 8. Barges. Inventory.

NAMES UNDETERMINED
Barges, Coal, Number Unspecified
Disposition: Sunk, July 5, 1916, at pier 6, Mobile, Ala.
References: MR

NAME UNDETERMINED
Barge (#1)
Disposition: Wrecked, July 5, 1916, in Mobile River at A.T. and N. docks, Mobile, Ala., during hurricane.
Notes: Owned by Murray and Peppers, Co.
References: MR (7-7-1916)

NAME UNDETERMINED
Barge (#2)
Disposition: Wrecked, July 5, 1916, in Mobile River at A.T. and N. docks, Mobile, Ala. during hurricane.
Notes: Owned by Murray and Peppers, Co.
References: MR (7-7-1916)

NAMES UNDETERMINED
Barges, Number Unspecified
Disposition: Wrecked, July 5, 1916, in Mobile River across railroad track from the L. and N., Mobile, Ala. during hurricane.
References: MR

T.C.I.S.G. NO. 1 169751
Barge
Tonnage: 428 (g); 428 (n)
Dimensions: 139.4' x 25.0' x 12.4'
Year Built: 1927
Place Built: Mobile, Ala.
Home Port: Mobile, Ala.
Disposition: Foundered, December 14, 1927, Mobile Bar, Ala.
References: Ber; LMV

TULSA 207058
Schooner Barge, Tanker, Steel Vessel
Tonnage: 607 (g); 607 (n)
Dimensions: 164.8' x 32.1' x 12.8'
Year Built: 1909
Place Built: Port Richmond, N.Y.
Home Port: Wilmington, Del.
Disposition: Foundered, March 10, 1943, off Mobile Bar at 30-09-00N, 88-05-00W.
Notes: Crew of 4.
References: LMV

D.B. 364 175679

Barge, Sulfer, Steel Hull
Tonnage: 321 (g); 321 (n)
Dimensions: 175.6' x 26.2' x 9.7'
Year Built: 1935
Place Built: Neville Island, Pa.
Home Port: New Orleans, La.
Disposition: Stranded, May 7, 1954, Mobile Bay, at entrance to Gulf Intracoastal Waterway.
Notes: NE¼ of intersection, according to local informant.
References: Ber; LMV

A.G.T. NO. 34 172761

Barge, Oil Tanker, Steel
Tonnage: 265 (g); 265 (n)
Dimensions: 128.0' x 32.0' x 7.5'
Year Built: 1937
Place Built: Mobile, Ala.
Home Port: Savannah, Ga.
Disposition: Collided, February 3, 1959, with Dauphin Island Bridge.
References: Ber; LMV

PDC 1 272575

Barge, Steel
Tonnage: 800 (g); 800 (n)
Dimensions: 150.0' x 35.0' x 10.5'
Year Built: 1956
Place Built: Decatur, Ala.
Home Port: Pensacola, Fla.
Disposition: Collided with unknown object, August 16, 1966, Commercial Barge Dock, Mobile River, Ala.
References: Ber; LMV

CBC 21 (FS No 21) 282692

Barge, Steel Hull, Tanker
Tonnage: 1878 (g); 1878 (n)
Dimensions: 280.1' x 50.1' x 12.5'
Year Built: 1960
Place Built: Slidell, La.
Home Port: New Orleans, La.
Disposition: Sunk, 1980 or 1981, location 30-17-00N 88-02-30W.
Notes: Private aid has been removed.
References: HN; LMV

NAME UNDETERMINED

Barge
Disposition: Reported sunk, date unknown, at Pinto Pass, Mobile River, Ala. Approximate position: 30-41.2N, 88-01.8W. "Lies halfway across the north entrance to Pinto Pass; extends 25 yards offshore" (HN Aug. 1982).
References: HN

Class 8. Barges. Discussion.

There are nine individual barges included in the shipwreck inventory, and two other cases of unidentified barges reported as sunk in aggregate, the latter as a result of the hurricane of July 5, 1916. Seven barges in the inventory are identified by name, for which a full data record is available for six. These data are summarized in Table 8.

There is nothing very remarkable about these figures, except to note the wide variability in tonnage, length, and beam in this small sample. Hull construction is not specified for the T.C.I.S.G. NO. 1 and the D.B. 364. It could have been either wood or steel in either case. The three most recent examples are all steel hulled vessels, two of which were tankers. The steel hulled schooner barge TULSA is unique in the sample.

Class 9. Miscellaneous Vessel Types. Inventory.

WM. J. TWINING
Sternwheel Steamboat, U.S. Army Engineers Snag Boat
Tonnage: 370 (g)
Dimensions: 155.0' x 33.0' x 5.3'
Year Built: 1881
Place Built: Mobile, Ala.
Home Port: Mobile, Ala.
Disposition: Wrecked at wharf, July 5, 1916, Mobile Ala., during hurricane.
Notes: Crew of 15. 4 officers.
References: MR (7-7-1916); LMV

NAME UNDETERMINED
Steamboat, Unclassified, Service Unknown
Disposition: Sunk while in tow, (reported) November 14, 1936, in Mobile River immediately above Cochrane Bridge.
Notes: Determined no hazard to navigation. In tow by launch of Murnan Shipbuilding Co. at date of loss. Complaint registered by Peoples Bank of Mobile
References: CE records, wreck reports.

U.S.C.G.C. MAGNOLIA
Steam Screw, Coast Guard Lighthouse Tender
Tonnage: 550 (g); 165 (n)
Dimensions: 165.0' 30.3' x 13.1'
Year Built: 1904
Place Built: Baltimore, Md.
Home Port: New Orleans
Disposition: Rammed and sunk, August 24, 1945, by S.S. MARGUERITA LE HAND, near Fort Morgan, Ala. Location known.
Notes: Crew of 32. Additional materials in vertical file, Mobile Public Library.
References: Ber; MR

Table 8. Summary Data. Class 8. Barges.

#	Class	n	Tonnage Gross			Tonnage Net			Length Ft.		
			$\bar{X}$	S	Range	$\bar{x}$	S	Range	$\bar{X}$	S	Range
1	Barges	6	716.5	601.9	265.0–1878.0	716.5	601.9	265.0–1878.0	173.0	55.2	128.0–280.1

#	Class	Beam Ft.			Depth Ft.			Mean Length-Beam Ratio	Median Year Built	Percent Built Gulf Coast
		$\bar{X}$	S	Range	$\bar{X}$	S	Range			
1	Barges	33.4	9.0	25.0–50.1	10.9	2.1	7.5–12.8	5.2: 1	1936	50%

Class 9. Miscellaneous Vessel Types. Discussion.

The three vessels included here, a U.S. Army Corps of Engineers snag boat, an unclassified steamboat, and a U.S. Coast Guard lighthouse tender, do not correspond to any of the previous classifications. Of these the location of the MAGNOLIA on Mobile Bar is well known. Until recent years its masts protruded above the surface marking the location, and consequently this vessel has been the target of much amateur diving (Mobile Register 10-14-1962).

Supplement. List of Disqualified Vessels.

Included as a supplement to the shipwreck inventory is Table 9, a list of vessels lost in the Mobile Bay area which nevertheless have been determined inapplicable to the present study. These vessels were disqualified for a variety of reasons, having in common only that they are unlikely to have been preserved to the present day as submerged cultural resources within the area delimited. Some have appeared in previous shipwreck compilations, but are excluded from our inventory on the authority of newly discovered facts about their location or the nature of their disposition. The three most common circumstances under which a wrecked vessel was excluded from the inventory are as follows:

1. The vessel was blown ashore in the Harbor, on the shores of Mobile Bay, or on Dauphin Island. Having been wrecked on land, the vessel does not now constitute a submerged resource, whether salvaged or not.
2. The vessel is known to have been fully salvaged, where it is likely that the hull has been raised and removed.
3. The vessel was lost just outside the boundaries imposed for this study.

The entries in Table 9 are listed in alphabetical order.

Distributional Data for Documented Losses of Vessels

We have said that the record of 282 vessel losses for the Mobile area (209 in the inventory plus 73 "disqualified" entries), being necessarily an incomplete sample of the total universe of historic shipwrecks, is biased in certain respects, despite the fact that efforts were made to partially correct these biases during the research. Among the important overrepresentations are steam packets of the nineteenth century and vessels lost during hurricane years. The most important underrepresentation is in small non-merchant craft.

Such biases, however, when taken into account, do not disqualify our compilation as a basis for inferences concerning historical trends among vessel losses, which should be of value in comprehending the accumulative nature of the shipwreck population, and the contribution of various maritime activities to it. While this is not the place for an exhaustive analysis of these data, it will be possible in short space to explore aspects of some of the more basic distributions. The main assumptions, of course, involve the representativeness of the data, both in temporal coverage and in the relative abundance of various vessel classes as an actual reflection of maritime traffic.

Table 9. List of Wrecked Vessels Excluded from Shipwreck Inventory.

Name	Vessel Type	Reason for Exclusion	Date of Loss
ALEXANDER	Sloop	Lost E. of study area	1916
ALTHEA (U.S.S.)	Steamship	Salvaged	1865
APOLLO	Bay ferryboat	Salvaged, repaired	1916
ARENDAL	Schooner	Salvaged (C. of E.)	1925
ARLINGTON	Tugboat, lighter	Salvaged (C. of E.)	1870
ASPHALT	Oil barge	Salvaged (C. of E.)	1935
BEN FRANKLIN	Packet steamboat	Wreck removed	1836
BENNY BOY	Oil screw	Wrecked ashore	1967
BLACK DIAMOND	Barge	Salvaged (C. of E.)	1906
C.W. ANDERSON	Packet steamboat	Presumed salvaged	1892
CARMELINA B.	Oil screw	Lost W. of study area	1972
CHARLES E. CESSNA	Bay ferryboat	Blown ashore	1916
CHIPMAN	Barge	Salvaged (C. of E.)	ca. 1918
CONDOR	Steamship (Nor.)	Blown ashore	1906
CONFIDENCE	Schooner	Lost E. of study area	1916
CORRIERE	Ship	Blown ashore	1906
CRESENT CITY	Bay ferryboat	Blown ashore	1893
DAPHNE	Bay ferryboat	Salvaged, repaired	1916
DIXIE	Tugboat	Blown ashore, repaired	1893
DOON	Bark (Scot.)	Salvaged	1913
DORRIS	Schooner	Blown ashore	1906
DORRISBROOK	Steamship	Blown ashore	1906
DOUGLAS	Gas screw auxiliary	Blown ashore	1906
EMMA	Bark	Blown ashore	1906
FASHODA	Steamship	Blown ashore	1906
FLEET WING	Schooner	Salvaged (C. of E.)	(?) 1896
GAINESVILLE	Packet steamboat	Lost N. of study area	1843
GERTRUDE	Packet steamboat	Salvaged (C. of E.)	1870
GLENAN	Schooner	Blown ashore	1916
GOODWIN	Barge	Salvaged (C. of E.)	ca. 1904
GUSSIE	Ferry steamship	Blown ashore, salvaged	1906
HALLETT NO. 1	Derrick barge	Salvaged	1916
HARRY MORSE	Schooner barge	Salvaged (C. of E.)	1916
HELEN BURKE	Packet steamboat	Lost N. of study area	1932
HELEN MCGREGOR	Packet steamboat	Lost N. of study area	1832
HERALD	Packet steamboat	Lost N. of study area	1832
HEROINE	Bay ferry boat	Scrapped	1906
HORNET	Barkentine	Blown ashore	1906
IDA (U.S.S.)	Steamship	Salvaged	1865
J.C. SMITH	Schooner	Blown ashore	1916
JAMES A. CARNEY	Bay ferryboat	Salvaged	1916
JAS. T. STAPLES	Packet steamboat	Salvaged, rebuilt	1913
JUSTICE	Frigate (Fr.)	Lost S.E. of study area	1715
KING OF AVON	Blue water schooner (Br.)	Blown ashore, repaired	1906
LOTUS NO. 2	Steamboat	Blown ashore	1893

Table 9. List of Wrecked Vessels Excluded from Shipwreck Inventory. (Continued)

Name	Vessel Type	Reason for Exclusion	Date of Loss
LOUISE F. HARPER	Pilot boat	Blown ashore	1906
MAGNOLIA	Auxiliary Schooner	Lost E. of study area	1929
MANUELA PLA	Steamship	Salvaged (C. of E.)	1926
MARGARET B.	Schooner	Blown ashore	1906
MARY WHITAKER	Steamship	Blown ashore	1906
MILLVILLE	Blue water schooner	Lost E. of study area	1913
MIZAPORE	Bark	Blown ashore	1906
MORITA	Ship	Blown ashore	1906
NAME UNDETERMINED	Schooner	Blown ashore	1852
NAME UNDETERMINED	Oyster barge	Salvaged (C. of E.)	1939
NELLIE	Schooner	Blown ashore	1906
NEVERTELL	Schooner	Blown ashore	1906
NEW YORK	Brig	Salvaged (C. of E.)	1848
OSAGE (U.S.S.)	Steamship	Salvaged	1865
OVERTON	Tugboat	Salvaged (C. of E.)	1906
PINK (U.S.S.)	Steamship	Salvaged	1865
PIONEER II	Submarine torpedo boat	Salvaged (C. of E.)	1864
PLEASURE BAY	Bay ferryboat	Salvaged, repaired	1916
PRATT	Barge	Salvaged (C. of E.)	1917
SAINT ANTOINE	Brigantine (Fr.)	Lost S. of study area	1705
SCIOTA (U.S.S.)	Steamship	Salvaged	1865
SEE EM	Schooner	Blown ashore	1906
SLIEDRECHT	Steamship	Blown ashore	1906
THE SPORTSMAN	Oil screw	Lost W. of study area	1972
TRITON	Ship	Blown ashore	1906
TROJAN	Ship	Blown ashore	1906
TUSCALOOSA	Packet steamboat	Lost N. of study area	1847
UNCLE SAM (#1)	Brig	Salvaged	1860
WITTICH	Tugboat	Blown ashore	1906

Figure 3 is a bar graph showing total documented vessel losses from 1780 to present, with the data grouped by decade. Of particular note is the extravagant and apparently erratic range in values from decade to decade, seemingly negating any clear regularities through time.

A brief scanning of the entries which constitute the exotic values, however, quickly reveals the principal sources of this irregularity. More than half of the entries for the decade 1860-1869 are losses directly due to Civil War hostilities. Much greater proportions of the entries for 1900-1919 are attributable to the major hurricanes of September, 1906, and July, 1916. To a lesser extent, the total for the decade 1890-1899 is inflated by the effects of the October, 1893 hurricane, and there are scattered losses from other decades that are hurricane casualties as well.

It is a simple matter to control for the historical capriciousness of the effects of warfare and hurricanes on shipping by deleting those vessels from the graphic display. The result is Figure 4. This gives a more reasonable portrait of trends in vessel losses, showing a definite gradual fluctuation in three modes. The last peak, during the decade of 1970-1979, can probably be disregarded as the product of bias, resulting from much improved record-keeping during the last twelve years. We are inclined to think that the two earlier modalities, however, are a valid result.

The first peak, between 1840 and 1859, reflects maritime activity at antebellum Mobile at its height as a cotton and timber exporting center. Most of the entries for this era are river packet steamboats, showing a dramatically high rate of loss prior to the establishment of governmental safety regulations regarding steamboats in 1856. The clear trough in the graph following the Civil War is undoubtedly correlated with the effects of Reconstruction and the physical degradation of Mobile Bay and Harbor during these years, which had adversely affected foreign shipping until the restoration of the port by the dredging of a ship channel. A second peak appears from 1910 through 1939, reflecting a revival of maritime activity in the Bay. The losses are here due to a variety of causes, and affect vessels of a variety of classes more or less indiscrimately, suggesting that the peak is due more to a general peak in maritime activity than to any more specific cause or causes.

Figure 5 depicts the relative wreck frequency of major vessel classes through time, from 1835 to 1980. For the sake of reliability, data have not been plotted for decades yielding fewer than five entries. The remaining frequency distributions form coherent plots of the predicted "battleship" configuration. Moreover, these data appear to offer a reasonable portrait of the actual frequencies of use for each vessel class represented. The earlier period is of course dominated by sail and steam watercraft. The later period, beginning about the second decade of this century, sees the ascendancy of harbor boats, barges, and motor vessels of various types. Hybrid "auxiliaries" make a strong appearance only briefly during the 1920's.

A few aspects of these distributions deserve special note. The post-colonial sailing vessel class shows a clearly bimodal pattern. This pattern is clarified somewhat by the observation that the earlier mode is

Total Documented Vessel Losses, Mobile Area, 1780 - Present

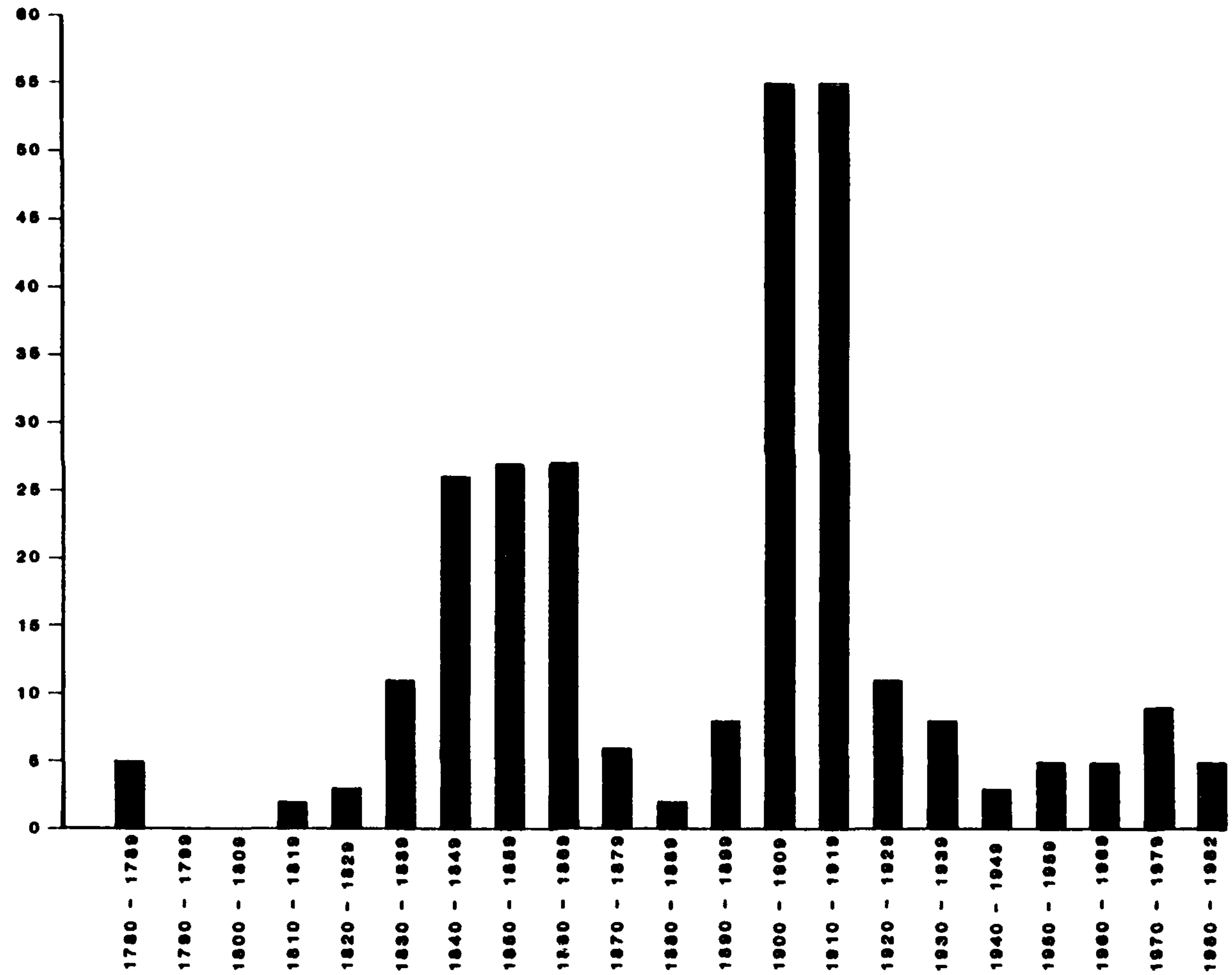


Figure 3.

Documented Vessel Losses Other Than from Hurricanes or Warfare, Mobile Area, 1780 - Present

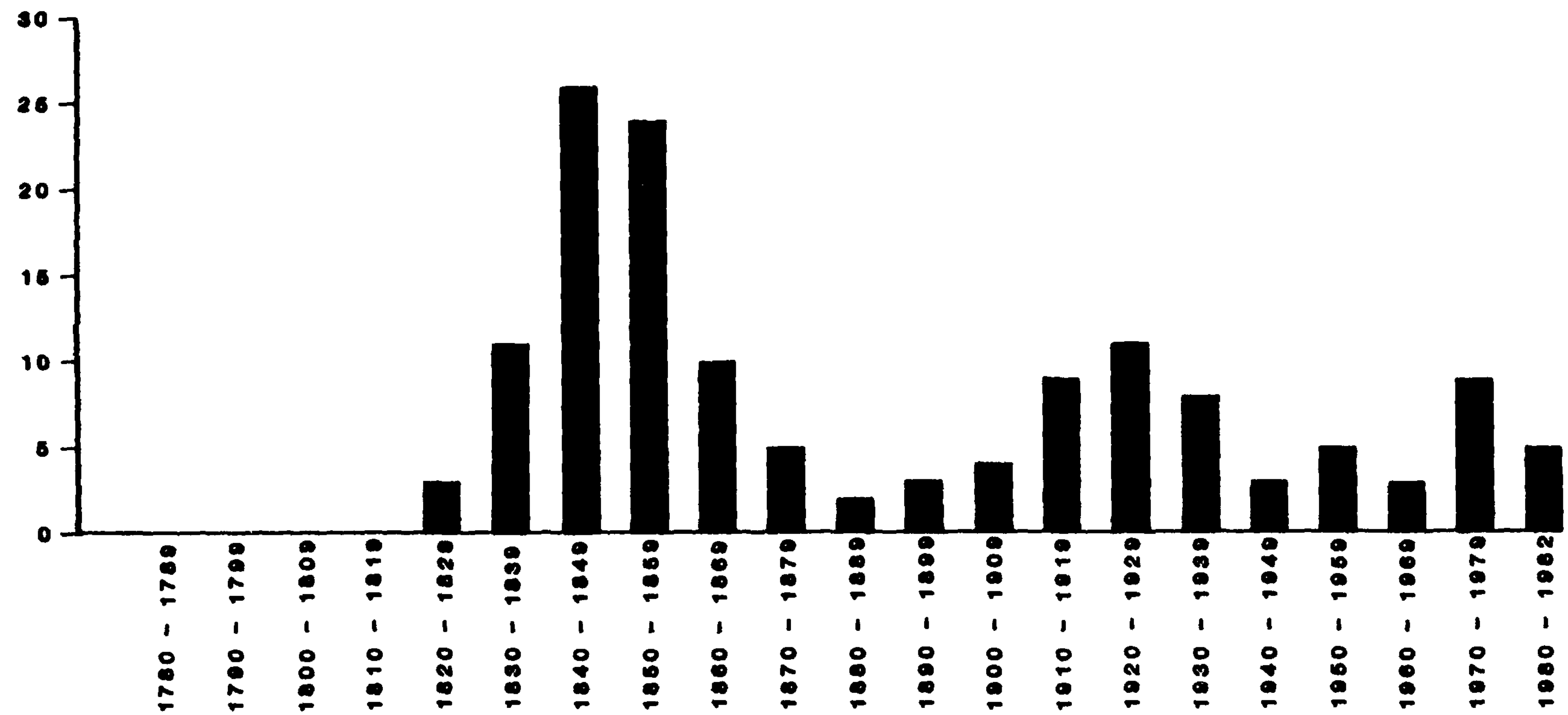


Figure 4.

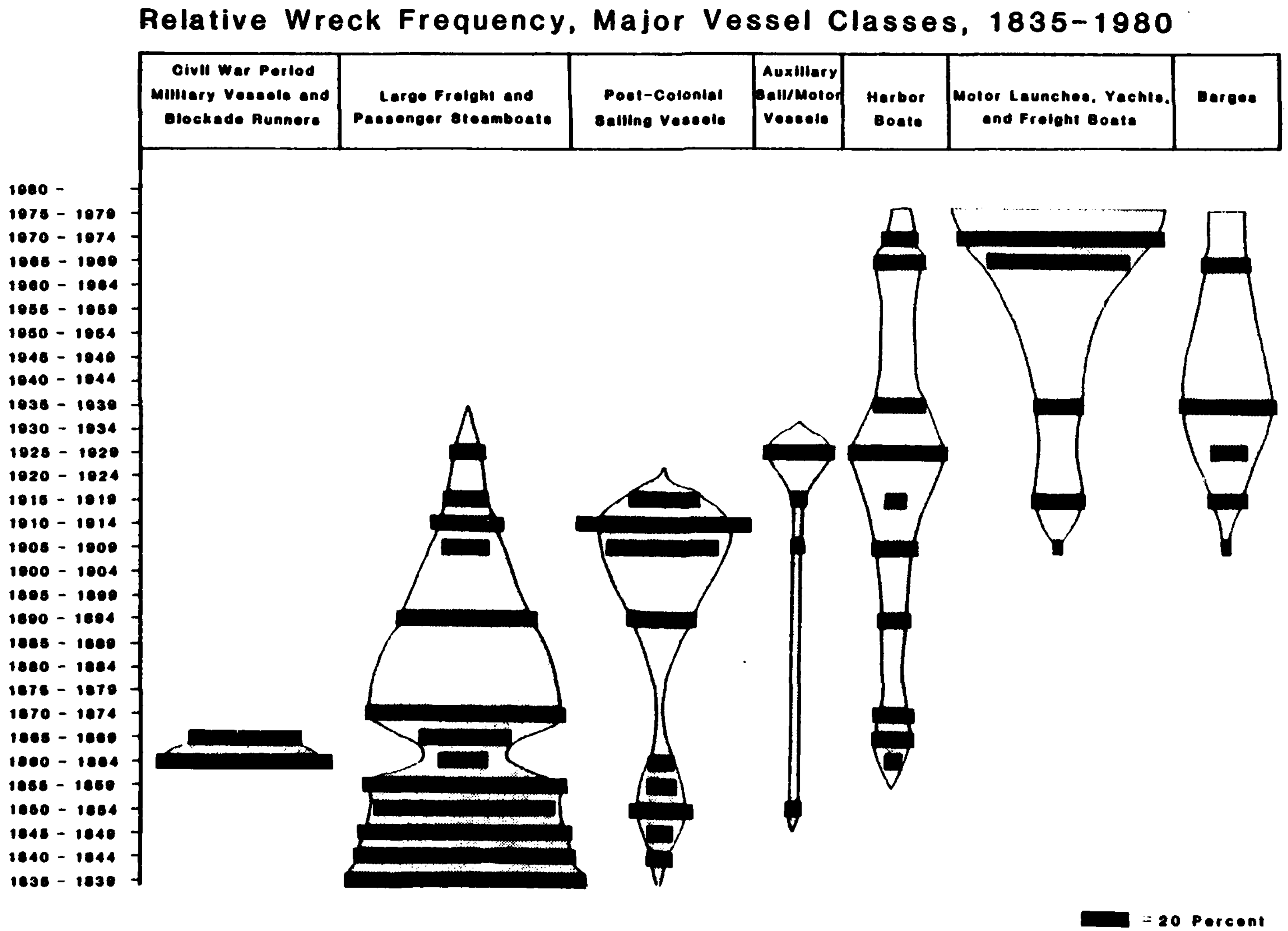

Relative Wreck Frequency, Major Vessel Classes, 1835-1980
Civil War Period Military Vessels and Blockade Runners
Large Freight and Passenger Steamboats
Post-Colonial Sailing Vessels
Auxiliary Sail/Motor Vessels
Harbor Boats
Motor Launches, Yachts, and Freight Boats
Barges
1980 -
1975 - 1979
1970 - 1974
1965 - 1969
1960 - 1964
1955 - 1959
1950 - 1954
1945 - 1949
1940 - 1944
1935 - 1939
1930 - 1934
1925 - 1929
1920 - 1924
1915 - 1919
1910 - 1914
1905 - 1909
1900 - 1904
1895 - 1899
1890 - 1894
1885 - 1889
1880 - 1884
1875 - 1879
1870 - 1874
1865 - 1869
1860 - 1864
1855 - 1859
1850 - 1854
1845 - 1849
1840 - 1844
1835 - 1839
= 20 Percent

Figure 5.

composed almost exclusively of large seagoing sailing vessels, appearing at the peak of maritime activity in antebellum Mobile. The late mode, peaking between 1910 and 1914, is quite different in constitution, being primarily made up of small coastal sailing vessels employed largely in fishing and oystering. The auxiliary sail/motor class similarly combines two functionally separate components, the first being hybrid sail and steam powered seagoing ships, which here appear by 1850-1854, and the second being later sloops and schooners to which motors were added. The latter constitute the late peak in the distribution of this class. Finally, the "waisted" appearance of the large freight and passenger steamboat class distribution, which is essentially a Civil War disruption of an otherwise continuous pattern, is probably explained by the relative immunity of river packet steamboats to Union naval activity in contrast to military and seagoing vessels.

CHAPTER V

SURVEY DESIGN AND METHODOLOGY

Introduction

The research design for the cultural resource survey of Mobile Bay set forth the following objectives:

1) To perform a reconnaissance survey of proposed channel improvement areas, associated turning basin and anchorage locations and open water disposal sites.
2) To interface remote sensing systems with accurate positioning and bathymetric data.
3) To evaluate survey results and correlate with documentary data, as well as make subsequent recommendations for cultural resource management strategies.

The following chapter describes the technical aspects of the reconnaissance survey. It is not intended to be a handbook on marine survey methodology; such guides have been written for both marine and riverine survey (Breiner 1973, Clausen and Arnold 1976, Murphy and Saltus n.d., Saltus 1977). Indeed, it was with the benefit of these previous works that the Mobile Bay survey was designed and accomplished. Rather, this chapter deals with the specifics of the remote sensing system utilized, problems encountered and descriptions of the areas surveyed. It constitutes a descriptive methodology which will hopefully be of benefit to those investigators who in the future perform similar surveys in bay environments.

The Remote Sensing System

To meet the stated objectives, data recovery depended on an integrated system of sophisticated remote sensing gear. This system had to be capable of discovering and providing data on magnetic anomalies, sonar contacts and bottom sediments and determining their positions in both horizontal and vertical planes. This was accomplished through the use of the following system:

Marine Survey Magnetometer: Geometrics G-806 marine survey magnetometer with G-801 marine sensor and tow system. This model magnetometer provides a five digit analog display and interfaces with a Soltec dual-channel strip chart recorder. The permanent data is recorded at 100 and 1000 gamma scales.

Briefly stated, the proton precession magnetometer utilizes the precession (rotation) of spinning protons (hydrogen nucleii) to measure total magnetic intensity. External torque, provided by the earth's magnetic field, causes the protons to precess about their axes. The precession rate is directly proportional to the magnetic field and generates a characteristic frequency in the audio range.

Interfaced with the magnetometer is a sensor head, composed of a sensing coil immersed in kerosene, losol, or gasoline. A strong magnetic field is set up in the coil which polarizes the protons in one direction at a nuclear magnetic moment greater than that of the earth's normal magnetic field. Induced termination of this polarizing field results in precession at a known frequency and a decayed voltage in the sensor coil, which can now be utilized as a detector coil. By amplification of the small induced voltage, a measured frequency is created which reveals the magnitude of the earth's total magnetic field.

In the presence of a magnetized mass (iron or steel), the magnetometer, through the sensor head, measures the subsequent change of magnitude in the earth's magnetic field. This change is revealed in the digital and/or analog readout of the magnetometer, indicating the presence and amplitude of an anomaly in gammas, the unit of magnetic strength (see Plates 13 and 14).

During the survey, the magnetometer was set for a sampling rate of one per second, with boat speed averaging four to six knots, depending on sea state. The strip chart recorder was operated in dual trace mode, measuring on both 100 and 1,000 gamma scales simultaneously. The towed sensor trailed the fiberglass hulled vessel at a distance of 15 m (50 feet). Sensor depth below water varied according to harbor depth, but was sufficient to exclude extraneous noise from propeller or wave action.

Side Scan Sonar: Klein side scan sonar (Hydroscan) and dual-channel recorder model 421, with a Klein model 402 towfish, 100 kHz.

The Hydroscan side scan sonar system is used for the study of seafloor topography, surface sediment delineation, obstacle and search applications. This dual scan system produces a record of seafloor features that is similar to aerial photography resolution. The transducer produces a dual beam signal to produce a graphic record of the seafloor on both sides of the ship track. A broad coverage swath of 600 meters wide can be swept by this system to pick up any seafloor irregularities. However, during this survey coverage was set at 150 m (75 m to port and 75 m to starboard), which has the effect of greatly improving resolution.

The main objective of the side scan sonar was the discovery of objects exposed above the bay bottom. This served two purposes: identification of modern debris, such as cables and pipes, and subsequent exclusion of anomalies associated with these objects, and providing corroborative data on anomalies where the objects revealed by the side scan could not be identified as modern. In addition, the side scan was useful in discovering non-magnetic targets (see Plate 15).

Subbottom Profiler: VRI Mono-Pulser High Resolution Profiler System. The Mono-Pulser is a state-of-the-art marine seismic profiling system using a clean mono-pulse signal to provide very high resolution subsurface data. The data are received via a ten-foot-long multiple array hydrophone. The amplified and processed signals are recorded on a 19-inch graphic recorder.

The Mono-Pulser system acoustic pulse characteristics produce a combination of deep penetration along with high resolution. The monopulse signal contains a broad range of frequency from less than 100 hertz to 6 KHz. The high frequency content provides profiling resolutions of 1 ft or comparable to a 6 KHz pulse. The low frequency content of the mono-pulse signal provides deep penetrations generally exceeding 100 ft in normal marine sediments. The resolution of reflections at depth is dependent on the natural sediment absorption and grain size characteristics. In fine sediments such as some marine clays, reflection resolutions of better than 1 ft are possible in the upper 50 ft and 2 ft at subsurface depths of 100 ft are not uncommon.

The results obtained from the subbottom profiler were somewhat surprising in that no large, buried objects which might be associated with shipwrecks were recorded. This lack of data is indicative of the dispersed nature of wrecks which may be present along the channel. No buried, but intact vessels or hulls were recorded on the profiler system, indicating that vessels in the areas surveyed are likely to be broken up and composed of smaller objects distributed over a large area.

An important product of the subbottom profiler, however, was the record of sediment deposition received. Penetration of bottom sediments was excellent in the lower bay region, but decreased in quality in the mid to upper bay areas, where gaseous organic strata prevented signal penetration. The subbottom record for the lower bay proved to be invaluable for the reconstruction of the past history of the bay presented in Chapter VIII (see Plate 16).

Survey Depth Recorder: Raytheon model DE 719B precision survey depth recorder, side-mounted on a permanent fitting on the survey vessel.

This precision instrument records continuous depth measurements on a strip chart recorder. It serves a dual function in a survey such as this: position determination of a magnetic anomaly and/or sonar contact in the vertical plane and data input into the determination of an anomaly's nature (object distance from the magnetometer sensor being a critical element in the subsequent magnetic signature of an anomaly).

Positioning Equipment: The primary positioning system was a Motorola Mini Ranger IV, consisting of a range console, receiver-transmitter, four reference stations, four solar panels, track plotter, silent 700 terminal/printer, track indicator, Tectronics 4923 data recorder, and data processor. Range error is minimal at ±2 meters. Post-plot maps produced by the Mini Ranger reflect via event number the interface with other components of the remote sensing system.

Survey lines were preplotted and entered into the Mini-Ranger's micro processor. During survey runs, a helmsman's indicator interfaced with the Mini-Ranger enabled the boat captain to direct the vessel down the preplotted line. In addition, the track plotter allowed visual comparison of preplotted lines with actual lines. Range-range conversion to x-y coordinates, along with other data, such as time and event number, were automatically recorded on both printer and magnetic cassette.

An Epsco CNAVXL microprocessed Loran C unit was used in much of the offshore disposal area survey. This was due to the severe interference problems in this location which rendered the use of the Mini Ranger to a marginal category (see survey problems encountered, below). With the Epsco, survey lines were performed on east and west axes with latitude as a constant and continuous update of longitude, time and distance over the bottom. When plotting survey lines, adjustments for Loran-C signal variation and receiver deviations were applied.

Vessels: All equipment was placed on board the primary survey vessel Gamma, a 34 foot diesel-powered boat. The Gamma is a fiberglass hulled design with an operating depth of two feet ten inches. A full-time captain (licensed for 100 tons) was assigned to her for maintenance and operations. For offshore work, a slightly larger vessel, the 42 foot fiberglass hulled Amity, was utilized due to the heavier sea states encountered offshore.

In addition, the survey used a Zodiac MK IV inflatable boat in areas where the larger vessels could not operate (extreme shallow water). The Zodiac was useful in the Brookley Disposal and Turning Basin areas, where water depths were generally three feet or less.

System Interface: Figure 6 illustrates the deployment of the remote sensing system and its interface with the primary positioning system. All remote sensing data were gathered and recorded contemporaneously. Sonar, subbottom, magnetometer and echosounder graphic outputs were all integrated with a common event marker for cross referencing of data (Plates 9-12).

Survey Coverage

Survey lines were spaced at 50 meter intervals for channel areas within the bay. Fifty meter lane spacing is considered maximal, based on investigations into colonial period shipwrecks (Clausen and Arnold 1976). This lane spacing also falls well within the range capabilities of the sidescan and subbottom units. Lane spacing in shallow water areas in the upper bay, such as Brookley Disposal, was reduced to 30 m.

Survey of the Gulf disposal areas was based on a sampling scheme designed to establish high and low probability zones. Lane spacing in the Gulf was set at 150 meter intervals. In effect, this comprised a sampling ratio of approximately 35 percent of these disposal areas when viewed in relation to the 50 meter intervals in the bay area. A sampling technique derived from lane spacing allowed comparative data from the total geographic extent of the gulf disposal areas from which predictive statements of high versus low probability could be derived. This would not be the case if, for instance, a 35 percent contiguous sample of the total area involved in these disposal sites was surveyed on a 50 meter grid pattern.

The total number of survey lines performed in the course of the reconnaissance was 326, representing approximately 2,000 linear miles of coverage. This was split almost equally between the bay areas and the gulf disposal sites. Over 600 magnetic anomalies were recorded, with 92 percent encountered in the bay.

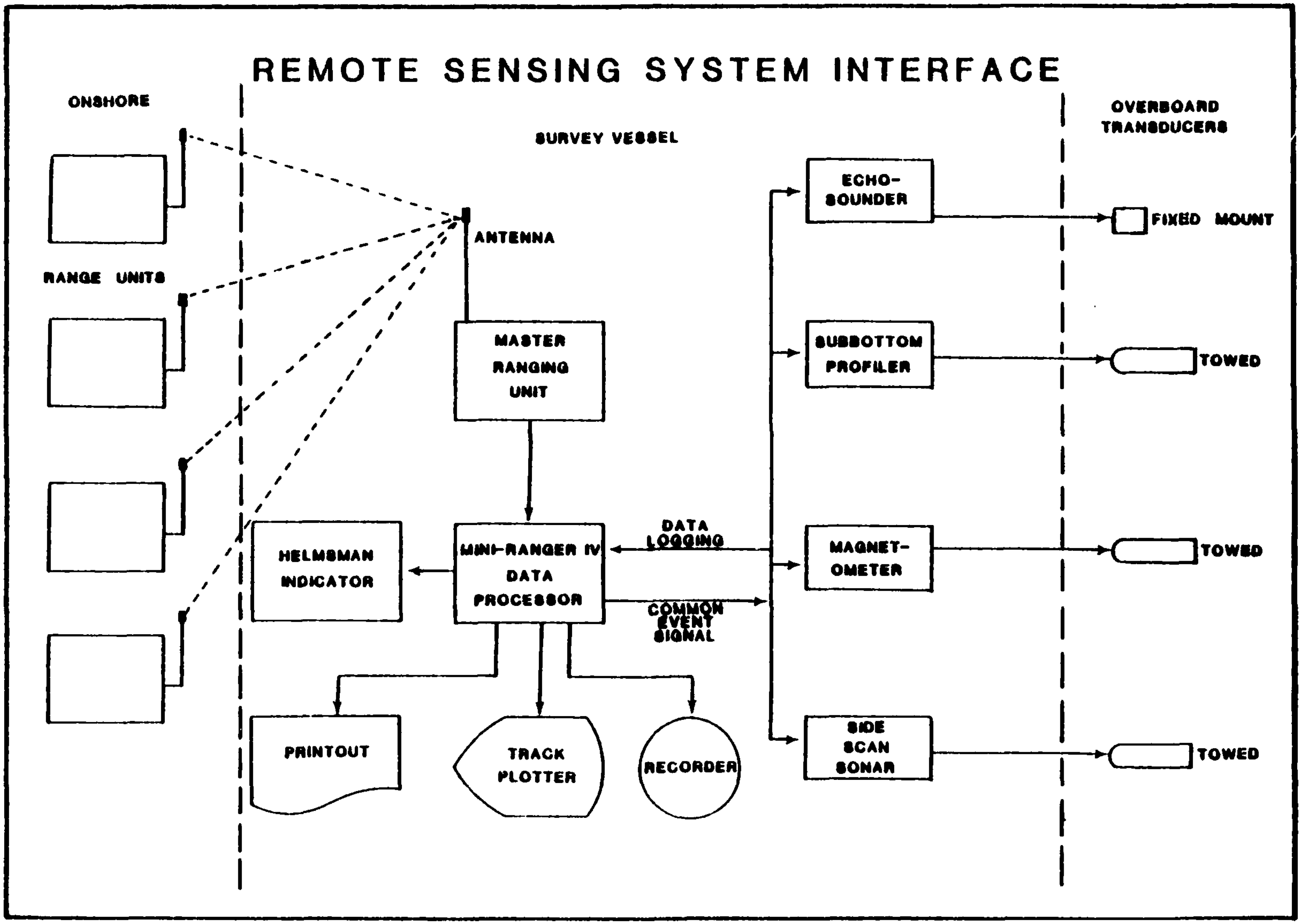

REMOTE SENSING SYSTEM INTERFACE
ONSHORE
RANGE UNITS
SURVEY VESSEL
ANTENNA
MASTER RANGING UNIT
MINI-RANGER IV DATA PROCESSOR
HELMSMAN INDICATOR
PRINTOUT
TRACK PLOTTER
RECORDER
DATA LOGGING
COMMON EVENT SIGNAL
ECHO-SOUNDER
SUBBOTTOM PROFILER
MAGNET-OMETER
SIDE SCAN SONAR
OVERBOARD TRANSDUCERS
FIXED MOUNT
TOWED
TOWED
TOWED

Figure 6.

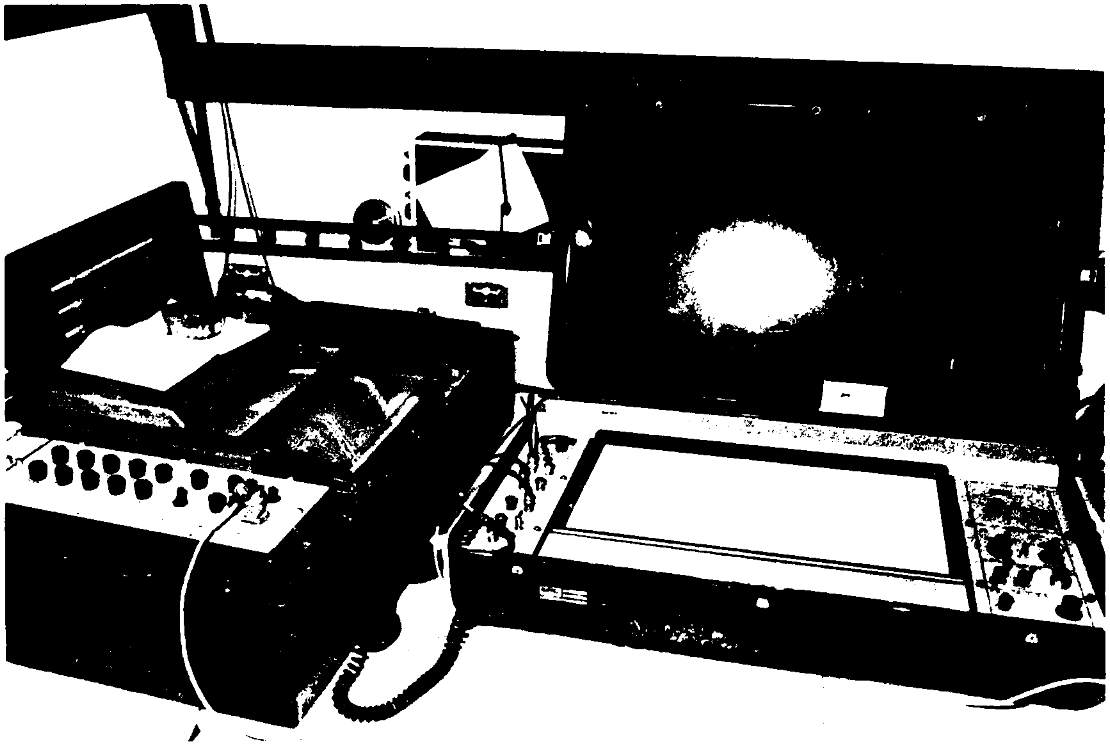


Plate 9. Sidescan (left), Subbottom recorder (right).

Plate 10. Sensor array. R/V Gamma.

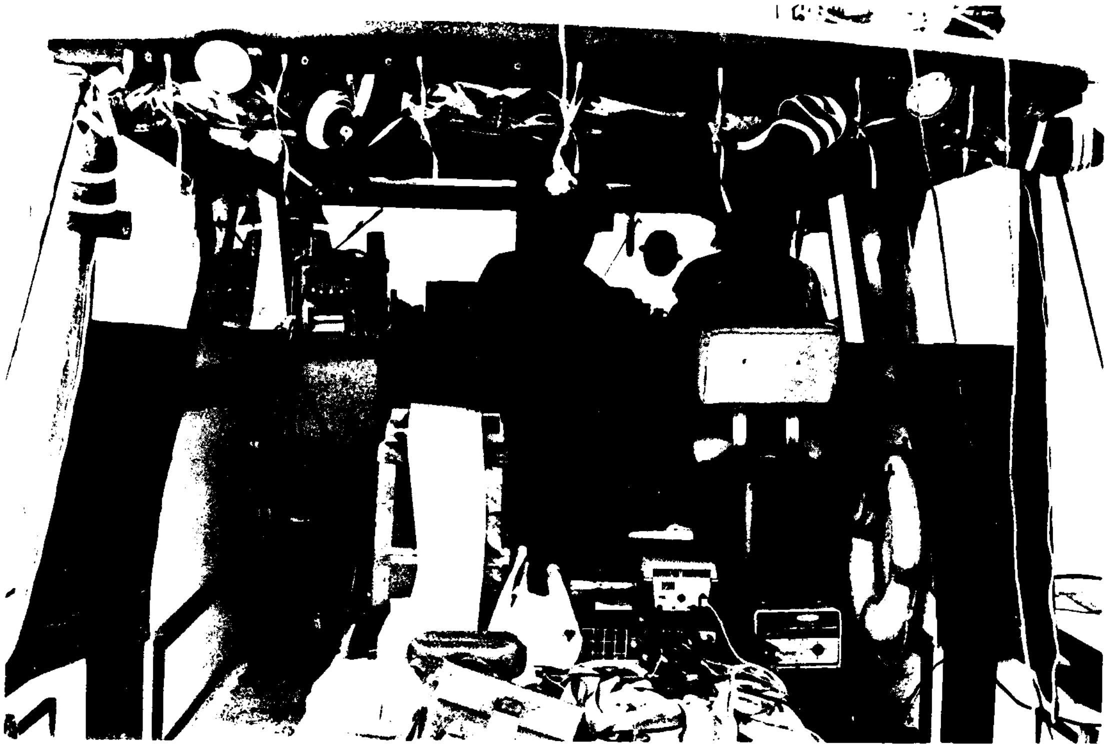


Plate 11. Remote sensing system onboard R/V Gamma. Port side: magnetometer and echosounder. Midship: microproccessed positioning units. Side scan and subbottom units are belowdeck.

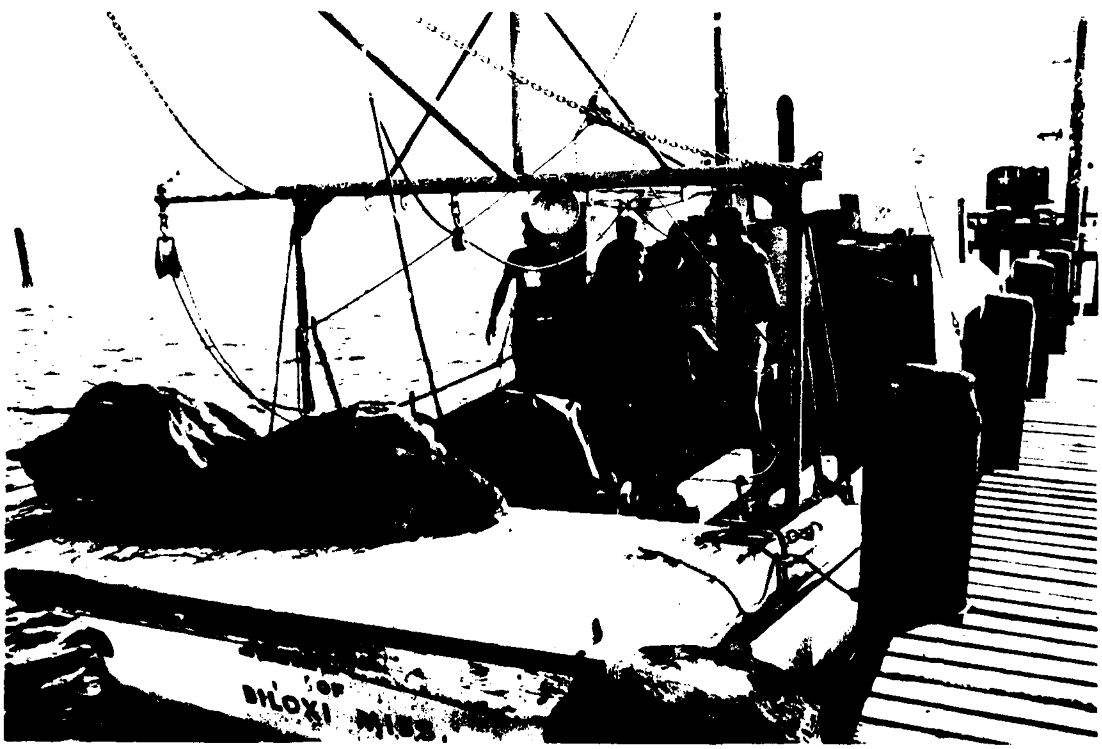


Plate 12. R/V Amity. Preparing for offshore survey.

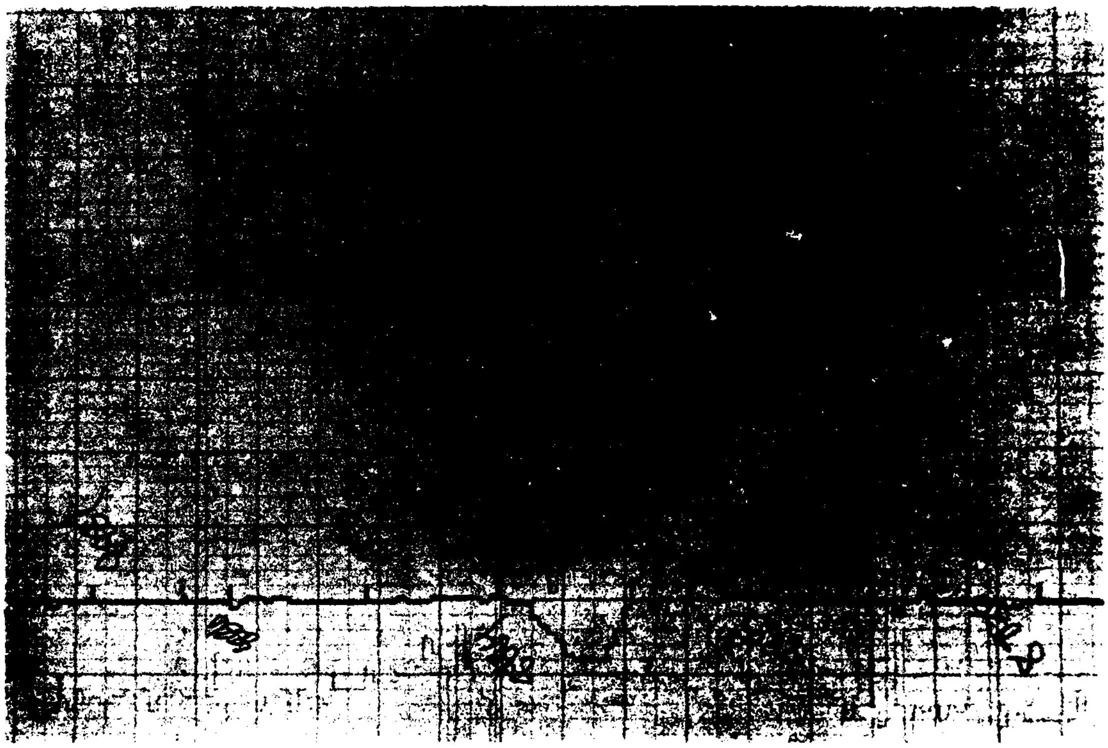


Plate 13. Magnetometer record of Category II anomaly L-92-7, associated with wreck site 25.

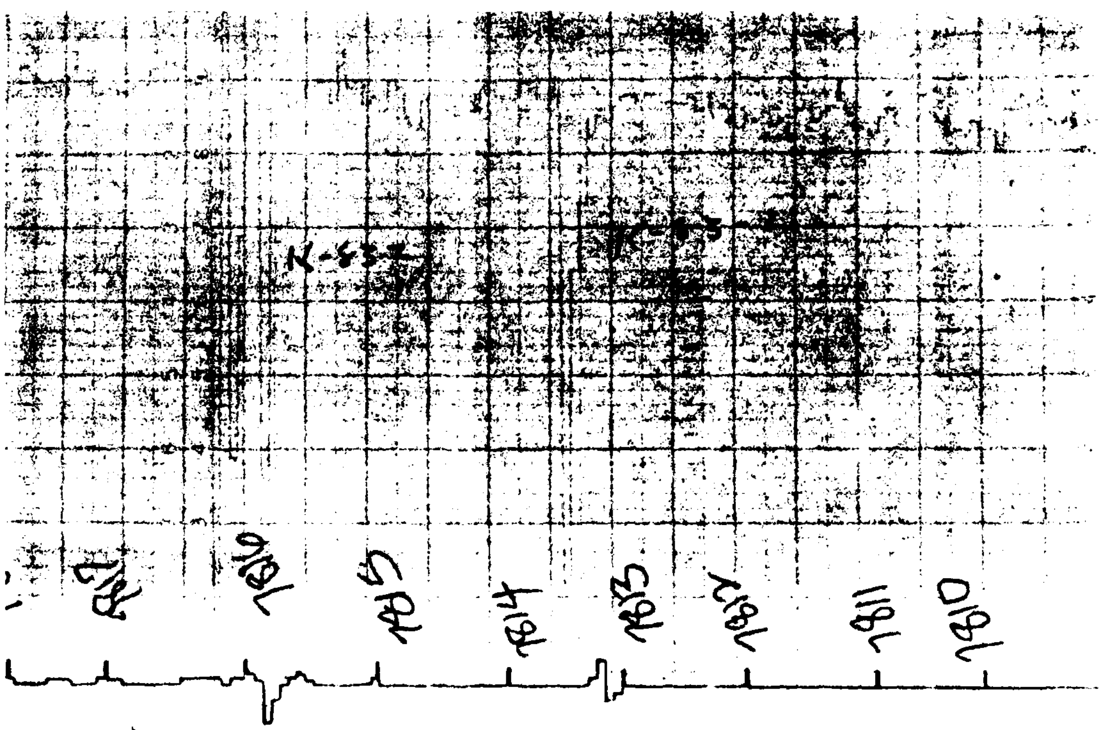


Plate 14. Magnetometer record of Category I anomalies K-83-1 and K-83-2.

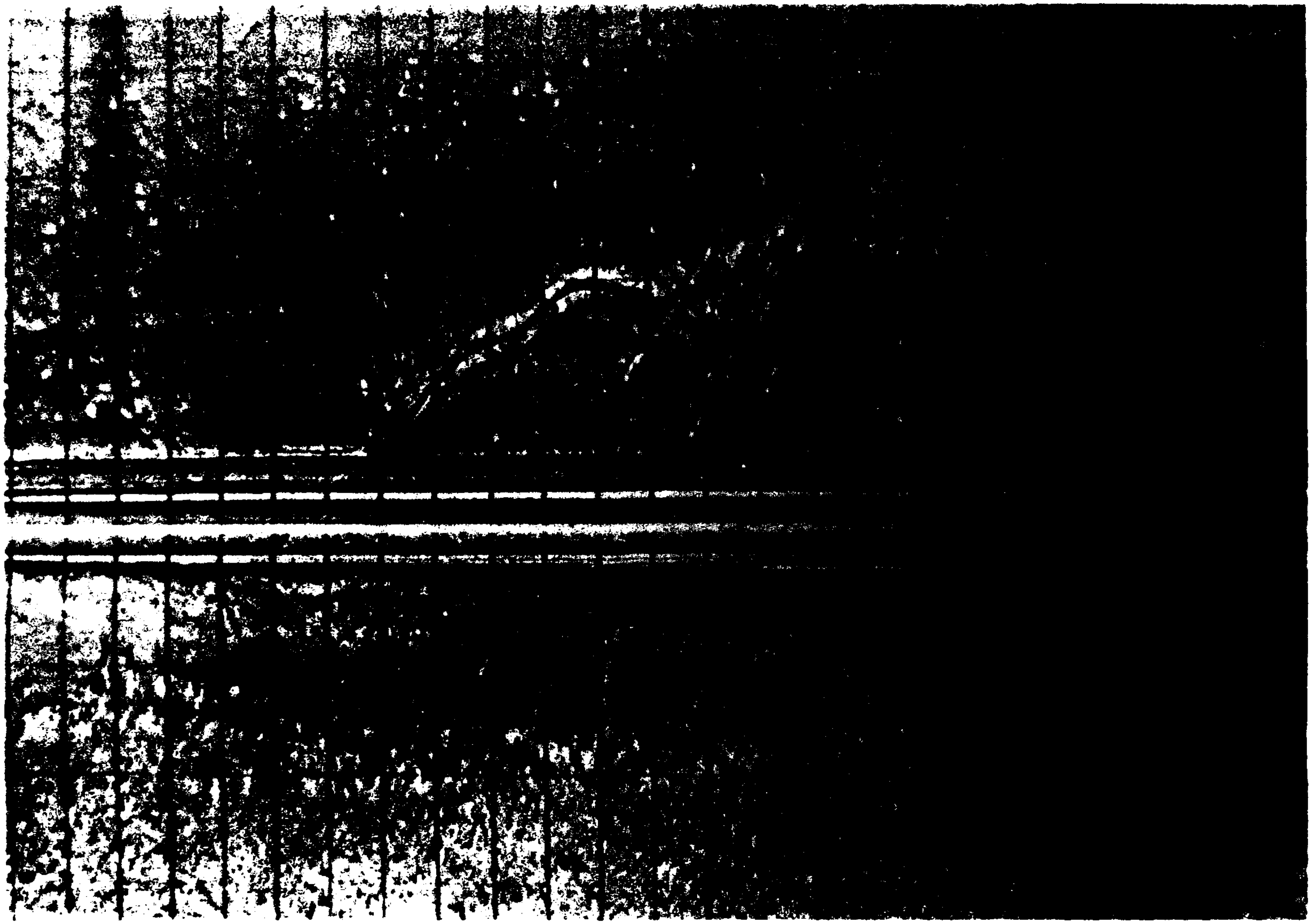


Plate 15. Sidescan sonar record of upper harbor area reflecting anchor and trawl scars, bottom debris.

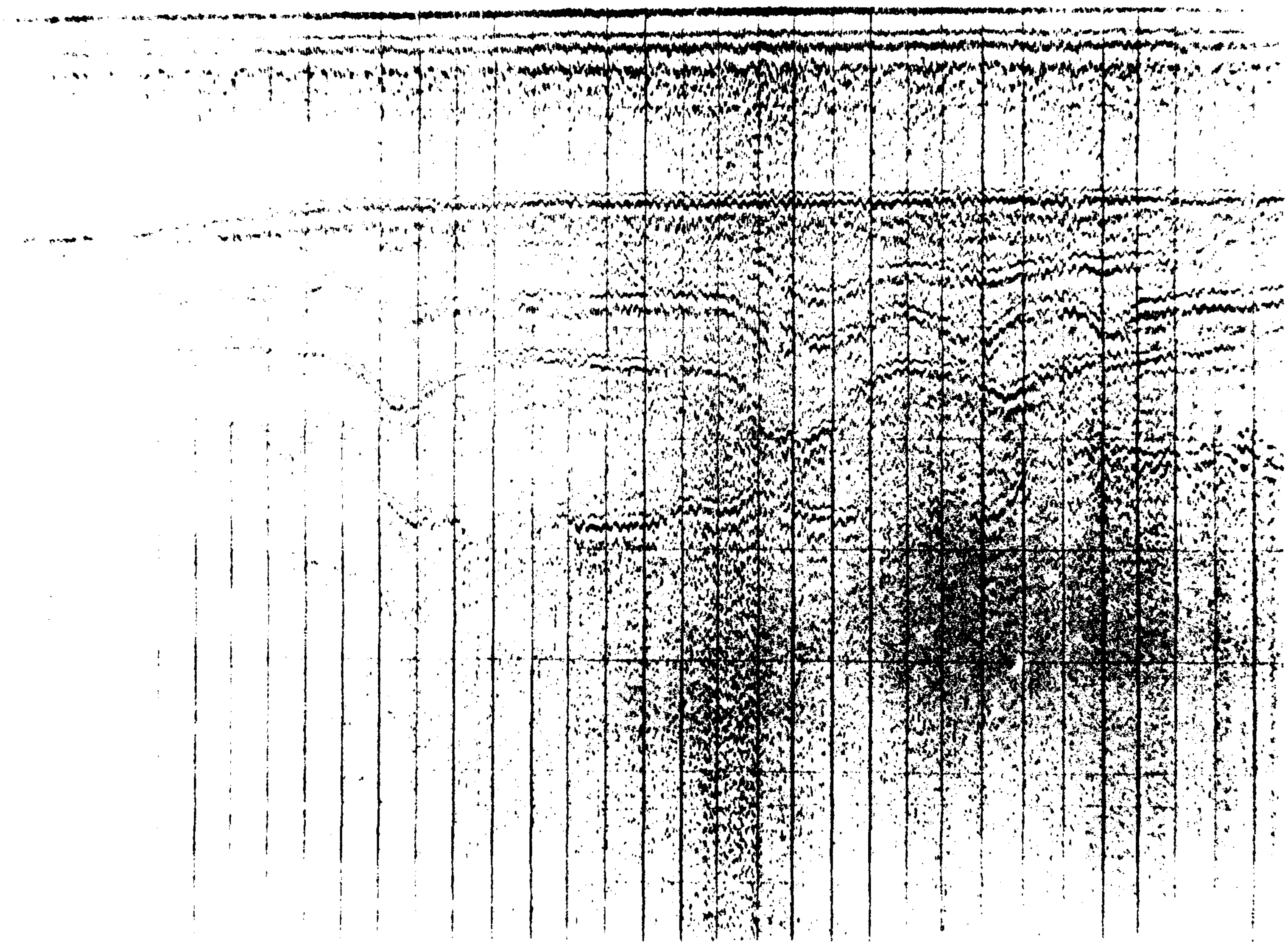


Plate 16. Subbottom profiler record from bay entrance area. Strata represent episodes of Pleistocene glaciation with relic stream channel intrusions.

Area Discussion

The survey for the cultural resources survey of the Mobile Harbor project consisted of the following designated segments, with a survey grid system and line spacing for each segment. These segment designations were dictated by the range and programming efficiency requirements of the positioning system. Refer to Figures 7, 8 and 9 for segment locations.

Segments A and F

Starting from the 57-foot contour of the entrance to Mobile Bay, the first segment, designated Outer Bar channel, ran north for 7.4 miles, ending near the east end of Dauphin Island. The line interval for this segment was 50 meters across a proposed channel width of 700 feet. The actual number of lines across this segment included a center line and 3 offset lines to the east and 3 offset lines to the west of the center line.

Segments B, C, G - L

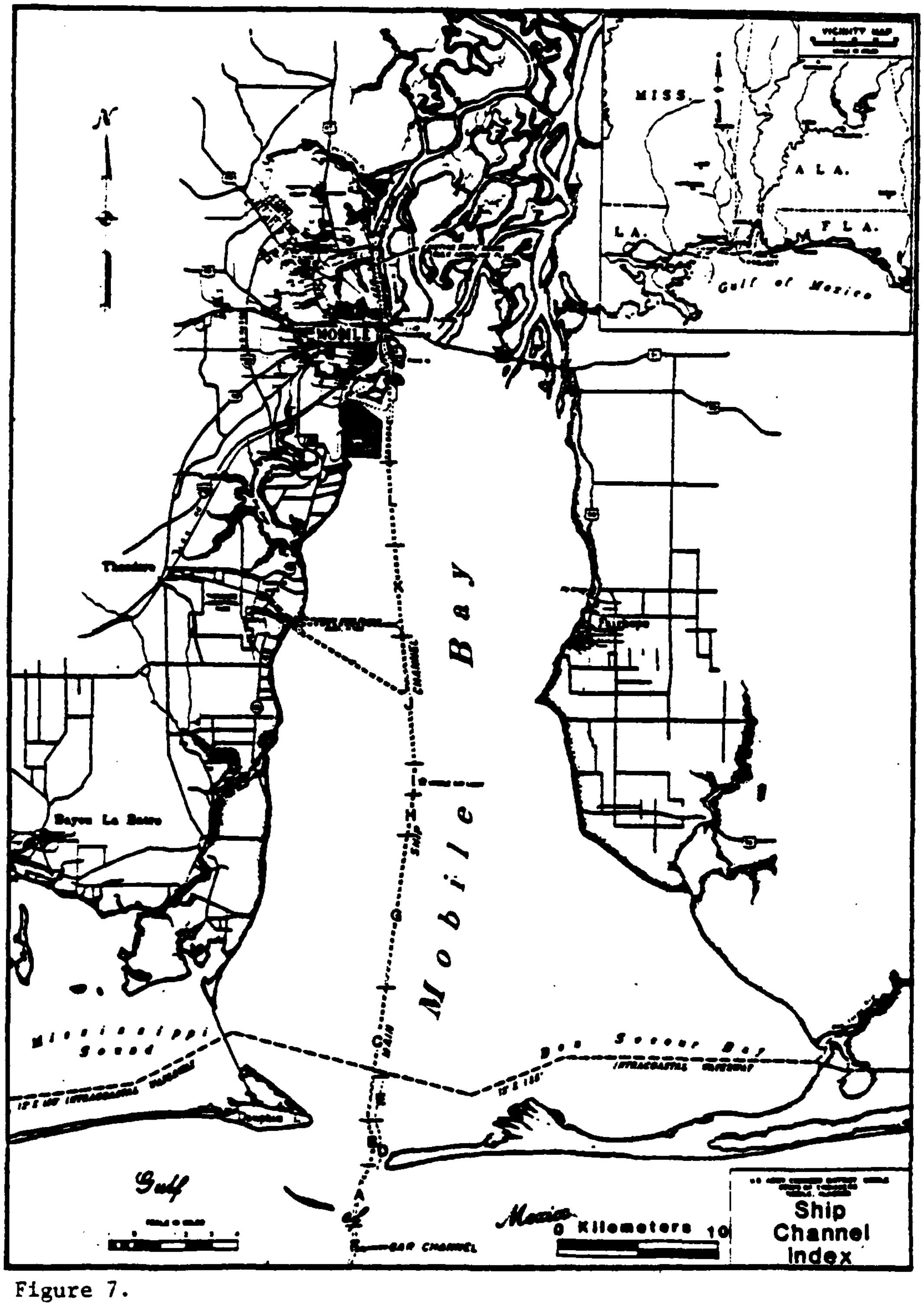
This segment continued northward from a point near the east end of Dauphin Island for about 27 miles to a point 3.6 miles south of the mouth of the Mobile River. The grid consisted of a center line and offset lines east and west to cover a proposed channel width of 550 feet at 50 meter intervals. The actual number of lines in this segment was 7. Because of the length of this segment, the linear distance was divided into several sections, each of which was preplotted and run as a separate entity.

Segments M-O

Continuing north from a point 3.6 miles south of the mouth of the Mobile River and ending in Mobile Harbor at the Interstate 10 tunnel, this segment was 5.6 miles long. The project width in this segment was 650 feet, and the survey grid consisted of a center line and offset lines east and west at 50-meter intervals across this distance. The actual number of lines in this segment was 7. This segment also contained a proposed anchorage area east of the channel, measuring 500 by 4,000 feet. The survey grid was tightened from 50 to 30 meters in this segment, a shallow area considered to have a high potential for historic wrecks. The lines run across this section totaled 5. It was anticipated that magnetic data in the harbor area would be compromised by the proximity to buildings, wharf structures, etc., as well as large ocean-going vessels docked along the harbor facilities. This was indeed the case for the survey in the harbor section.

Brookley Disposal Area

The Brookley Expansion Area (disposal area) adjacent to the Brookley Industrial Complex on the old Air Force facility encompassed an area of 1,710 acres. This shallow water area was preplotted at a 30-meter line spacing. Initially it was proposed that the lines would be run east/west, but after discussion with personnel from the positioning group and a representative from the Mobile District Corps of Engineers, it was decided to run these lines north and south for better control with the Mini Ranger IV equipment. A total of 91 survey lines were completed at Brookley.



N
VICINITY MAP
MISS.
ALA.
LA.
FLA.
Gulf of Mexico
MOBILE
Theodore
Bayou La Batre
Mississippi Sound
Mobile Bay
Bon Secour Bay
INTRACOASTAL WATERWAY
MAIN SHIP CHANNEL
BAR CHANNEL
Gulf of Mexico
0 Kilometers 10
Ship Channel Index

Figure 7.

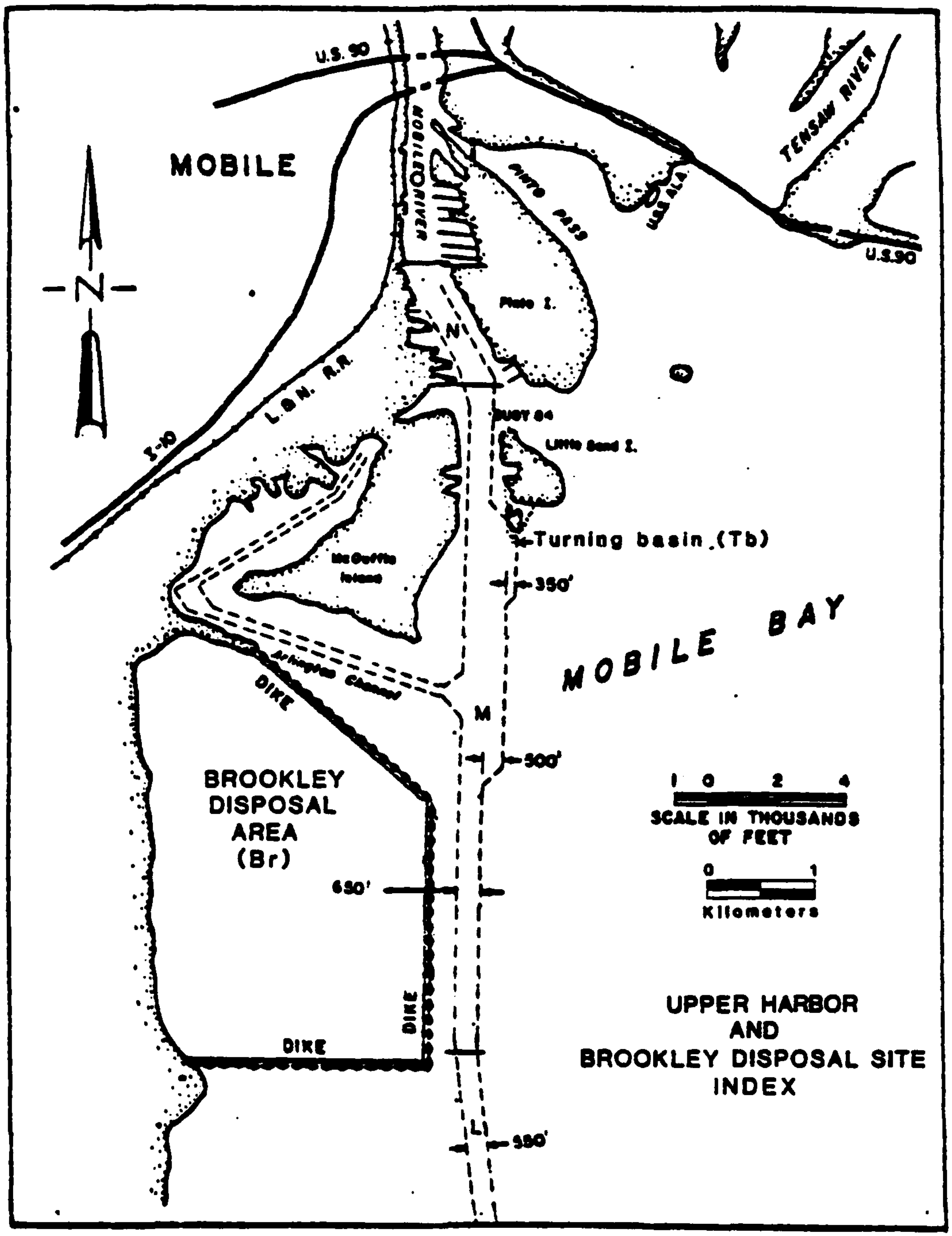

U.S. 90
MOBILE
N
TENSAW RIVER
U.S.90
Turning basin (Tb)
350'
MOBILE BAY
DIKE
M
500'
BROOKLEY
DISPOSAL
AREA
(Br)
650'
DIKE
DIKE
L
550'
SCALE IN THOUSANDS
OF FEET
Kilometers
UPPER HARBOR
AND
BROOKLEY DISPOSAL SITE
INDEX

Figure 8.

Turning Basin

The last area in the Mobile Harbor section was a proposed turning basin, measuring 850 by 1,500 feet. This area was also very shallow, and for the reasons discussed above, the line spacing here was 30 rather than 50 meters. Eight lines were surveyed in the Turning Basin area.

Segments D and E

One additional area surveyed was not in the original contract, but was added as a modification after the survey had begun. This area began at a point .25 miles south of the Gulf Intercoastal Waterway on the eastern side of the existing channel bank, and continued south to a point due west of Mobile Point on the Fort Morgan peninsula. The survey area was .25 miles wide and paralleled the existing channel. As in the other channel segments, a line spacing of 50 meters was preplotted. The number of lines surveyed in this area was 8.

Offshore Disposal Areas

The original offshore disposal areas were changed in a modification to the contract. The modification moved the proposed disposal areas which had been located east of the offshore channel to the west, below the western fairway approaches. The new areas were the same size, but went beyond the original 16-mile limit, with the most distant point in the southern area now some 20 miles south of Dauphin Island.

Survey of the gulf areas was performed on a 150 m lane spacing grid. This part of the survey was run using an EPSCO microprocessed Loran C (model CNAVXL) unit on the survey vessel Amity, using latitude as a constant with a continuous update of longitude, time, and distance over the bottom. This technique provided positioning with shot points and enough accuracy to repeat locational points. One hundred and ten survey lines were completed in the offshore disposal areas.

Field Problems Encountered

Positioning

Several problems in maintaining positional control were encountered in this survey. Mini Ranger systems employ high frequency radar signals ("C" band) which are susceptible to interference from radar systems commonly used by ships, airfields, and coastal radar stations. Microwave telemetry systems can also interfere with Mini Ranger signals.

The high frequency signals can also be reflected by buildings, ships, and drilling rigs, causing either a total loss of signal (if the line of sight between the receiver/transponders is broken) or an altered signal return time, causing erroneous data to be entered into the computer.

Whenever positioning control was lost, the lines or segments of lines were re-run with positive positioning control. In some instances, maintaining accurate positioning required moving the Mini Ranger stations, dampening the antenna on the master unit, waiting for the source of interference to move, or changing the method of computing position (x-y format, range/range format, or chainage/offset format).

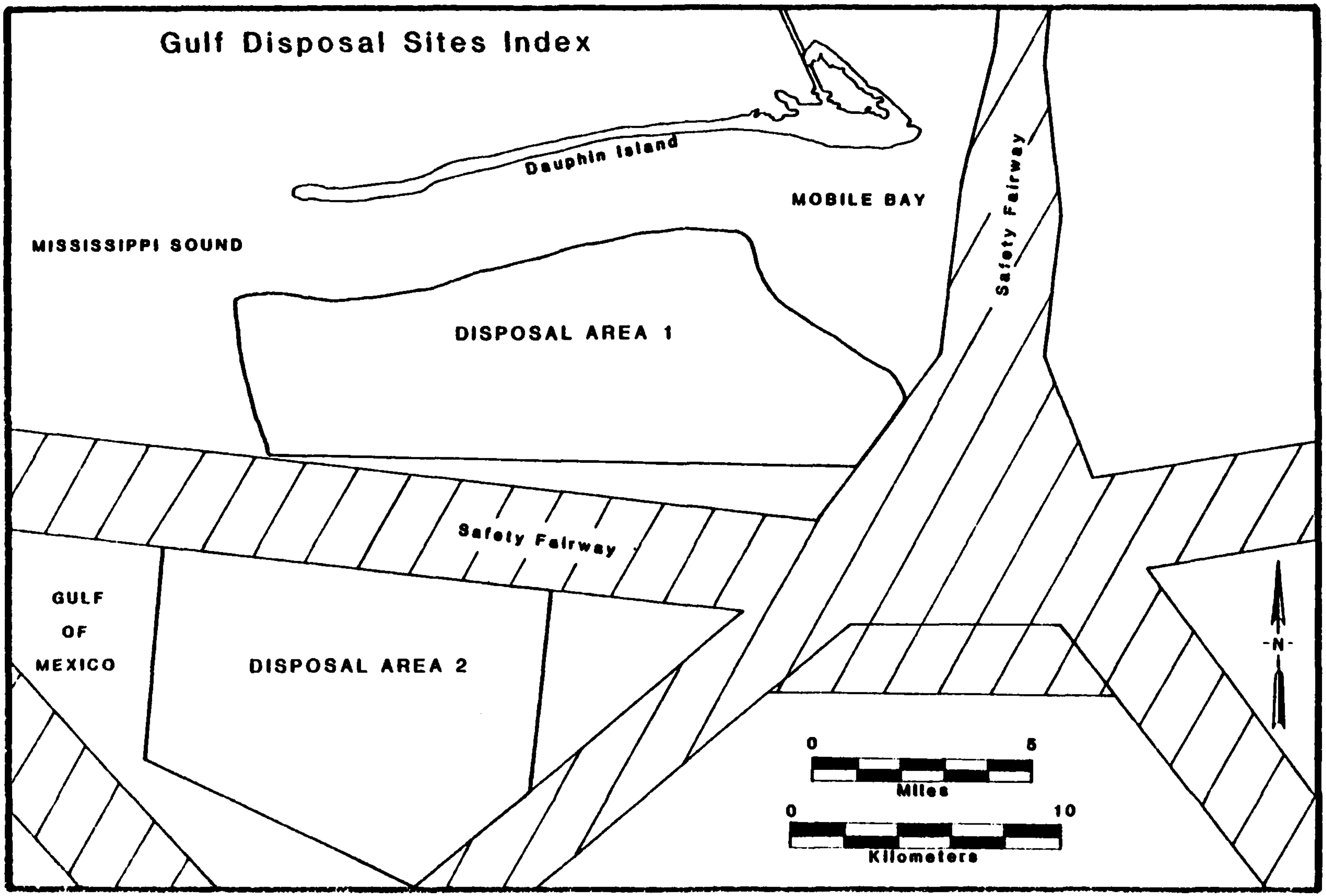

Gulf Disposal Sites Index
Dauphin Island
MOBILE BAY
MISSISSIPPI SOUND
DISPOSAL AREA 1
Safety Fairway
Safety Fairway
GULF
OF
MEXICO
DISPOSAL AREA 2
-N-
0
5
Miles
0
10
Kilometers

Figure 9.

Certain segments of the project area presented more positioning problems than others. Radar interference was strongest in the area known as the Brookley disposal area, signal reflection problems were most prevalent in the Mobile harbor segments and the segments near the mouth of Mobile Bay, and signal interference and blockage were experienced periodically during the passage of vessels in the Mobile ship channel and Outer Bar channel.

Magnetometer

Many factors can affect the quality of magnetometer data, but the chief of these is electrical interference. The Geometrics G806 magnetometer measures the magnetic field with a signal which is measured in millivolts and is highly susceptible to induced electrical currents created by other instrumentation aboard the survey vessel, generators, radio transmissions, atmospheric disturbances, and solar activity.

During this survey, care was taken to isolate the magnetometer console and sensor cable as far from potential sources of noise as possible. All instrument cables were routed in such a way as to eliminate induced currents that could obscure the signal. Data was not collected during electrical storms, and when unexplained noise appeared, the line or line segment was re-run in order to confirm the data collected or identify the noise source and correct the problem, so that all data collected was of a quality within the tolerance specified by the Corps of Engineers.

Subbottom profiler and side scan sonar

The operation of (and the quality of data obtained by) the subbottom profiler is affected mainly by sea state, boat speed, and atmospheric disturbances.

Rough seas or too high a boat speed can cause air to come between the subbottom profiler energy source or hydrophone array and the water. Since the energy source cannot travel through air, this problem introduces noise to the data, and can in extreme cases completely block the signal return and render the data useless. Thunderstorms also cause problems in subbottom profiler data in the form of noise (caused by thunder) and electrical masking of signal return (caused by lightning).

Throughout this survey, the boat speed was altered in accordance with the sea state to provide the least noisy signal returns possible. Thunderstorms cause problems for the magnetometer and positioning systems as well as for the subbottom profiler, and the survey was halted whenever such a storm came close enough to affect any of the three systems.

The quality of the data obtained by the side scan sonar, as well as the area of coverage, is controlled by the depth of the towfish. During this survey, the towfish was lowered as far as was practical without burying it in the mud. In extremely shallow water areas, specifically Brookley and the Turning Basin, water depth was insufficient to operate the side scan and subbottom systems.

CHAPTER VI

MAGNETIC ANOMALIES RECORDED DURING MARINE RECONNAISSANCE SURVEY

Introduction to Tables

The following tables are a compilation of results obtained from the remote sensing survey. Table 10 is a list of all anomalies encountered. Tables 11 and 12 present large and/or complex anomalies in two categories, discussed below. Table 13 lists clusters of anomalies.

The 603 anomalies listed in Table 10 represent the overall findings of the survey. Each anomaly is designated trinomially by survey segment, line number, and anomaly number. For example, A-1-1 represents an anomaly which was the first encountered on survey line number one in segment A. Segment designations were dictated by positioning system requirements and vary in length. Segments A through N are located along the ship channel, the proposed state docks transfer area and the upper channel anchorage area. Tb designates the upper channel turning basin, Br the Brookley disposal site and Gu the Gulf disposal sites. Numerical gaps in the listing, e.g., that between J-69-2 and J-69-4, are the result of the bilevel system of data interpretation employed. The original anomaly tally was produced in the field as data were collected. At the end of fieldwork, all data were more closely inspected and a few "anomalies" originally listed were discarded as artifacts of radar interference, etc. The intensity of the anomaly is expressed as maximum gamma inflection.

Side scan sonar targets were discovered in association with a number of anomalies. These targets are noted in the side scan column for the Mobile channel and Gulf disposal area anomalies. Side scan correlations were not possible in the Turning Basin and Brookley disposal area due to extremely shallow water depths.

Tables 11 and 12 present large and/or complex anomalies in two categories. Category I anomalies listed in Table 11 are those which meet the preliminary criteria for close consideration set forth in the survey research design, i.e., the magnetic signature of the anomaly exceeds 20 gammas (g) in the bay and 40 g in the gulf areas. This was done in an attempt to discard anomalies expressed by isolated, sharp inflections and indicative of the small, scattered pieces of ferrous debris expected in an active bay environment. The anomalies listed in Table 11 were subjected to closer inspection in the second round of data analysis. They do not include a number which were identified through side-scan sonar records as representative of cables or other recognizable modern objects. The inflection pattern of a large number of the Category I anomalies were single peaks of short duration (less than three seconds); indicative of single objects of varying size. These anomalies are not considered significant unless they were further evaluated as Category II or were identified within a complex cluster of anomalies, discussed below.

Category II anomalies are presented in Table 12. Characteristically, the signature of these anomalies exceeds three seconds duration and is expressed as a complex, multiple return. They represent complex targets which are more indicative of shipwreck sites. At least one, Gu-2-2, has been identified through side scan records as a vessel. (This appears to be a recently sunk, small fishing vessel, although the documentary search was unsuccessful in providing a definite identification). Category II anomalies are considered potentially significant sites at this stage of investigation.

An important factor of interpretation reflected in Table 13 is clustering of anomalies. A number of unimpressive anomalies in close proximity to each other can represent a potentially significant site when viewed as a single entity. A cluster is defined here as three or more anomalies which are located within an area of $50,000m^2$. This is based on the typical extent of shipwreck sites on active coasts as reported by Clausen (1965). It is a somewhat liberal definition in view of the more concentrated wreck scatter average for protected bays reported by Arnold (1974). We are inclined toward a liberal definition for two reasons: The paucity of data concerning the extent of wreck scatters and the fact that this investigation was performed at the reconnaissance level.

Given the latitude of the $50,000m^2$ cluster definition, however, few clusters are evident. Thirty clusters have been identified in the channel segments. Several of these are concentrations of small ferrous objects and are not considered significant. Seven clusters have been identified as lengths of cable exposed on the bay bottom. Others center around Category I and II anomalies and are considered potentially significant.

Table 10. Anomalies Encountered.

Segment/Line Number	Gamma Intensity	Side scan Targets	Comments
Mobile Channel (n=308)			
A-1-1	90	Cable	Bipolar
A-2-1	22	-	Broad-based
A-3-1	13	-	Bipolar
A-4-1	8	-	Broad-based
A-4-2	12	-	Broad-based
A-5-1	10	-	Broad-based
A-5-2	7	-	Broad-based
A-6-1	20	-	Broad-based
A-6-2	19	-	Broad-based
A-6-3	8	-	Broad-based
A-7-1	14	-	Multiple peaks
A-7-2	18	-	Broad-based
B-8-1	6	-	Broad-based
B-8-2	12	-	Bipolar
B-8-3	22	-	Multiple
B-10-1	10	-	Broad-based
B-19-1	20	-	Broad-based
B-19-2	6	-	Negative
B-20-1	14	-	Negative
B-20-2	12	-	Negative
B-20-3	100	-	Negative, Broad-based
B-21-1	38	-	Bipolar
B-21-2	13	-	Positive
C-11-1	26	Cable	Multiple peaks
C-11-2	40	Cable	Multiple peaks
C-11-3	8	-	Negative
C-11-4	80	-	Broad-based
C-11-5	10	-	Bipolar
C-11-6	10	-	Positive
C-12-1	10	-	Negative
C-12-2	27	Cable	Negative
C-12-3	44	Cable	Negative
C-12-4	120	Cable	Negative spike
C-12-5	100	Cable	Negative spike
C-12-6	18	Cable	Bipolar
C-12-7	14	Cable	Bipolar
C-12-8	30	Cable	Negative spike
C-12-9	8	Cable	Negative spike
C-12-10	8	Cable	Negative spike
C-12-11	10	Cable	Negative spike
C-12-12	11	Cable	Negative spike
C-12-13	24	Cable	Negative spike
C-12-14	24	Cable	Positive spike
C-12-15	19	Cable	Positive spike
C-12-16	38	Cable	Positive spike
C-13-1	30	-	Broad-based

Table 10. Anomalies Encountered. (Continued)

Segment/Line Number	Gamma Intensity	Side scan Targets	Comments
Mobile Channel (continued)			
C-13-2	24	Dredge debris	Broad-based
C-14-1	8	Sediment dump	Bipolar
C-14-2	16	Unidentified target	Broad-based
C-15-1	24	Cable	Broad-based
C-15-2	18	-	Negative
C-15-3	8	-	Bipolar
C-15-4	19	Cable	Negative spike
C-15-5	810	Cable	Negative spike
C-15-6	26	Cable	Negative spike
C-16-1	60	Double target	Bipolar
C-16-2	950	Complex target	Multiple peaks
C-16-3	22	-	Multiple peaks
C-16-4	12	-	Bipolar
C-16-5	22	Cable	Multiple peaks
C-16-6	60	Cable	Multiple peaks
C-16-7	60	Cable	Positive spike
C-16-8	30	Cable	Broad-based
C-16-9	66	Buried pipeline?	Multiple peaks
C-16-10	10	-	Bipolar
C-16-11	40	Cable	Multiple peaks
C-17-1	100	Double target	Double negative
C-17-2	14	Cable	Bipolar
C-17-3	40	-	Positive
C-17-4	40	-	Bipolar
C-17-5	F/S	Debris	Broad-based
C-48-1	42	Cable	Bipolar
C-48-2	160	Cable	Dual component
C-48-3	60	-	Bipolar
C-48-4	40	-	Negative spike
C-48-5	25	Small target	Negative spike
D-22-1	18	-	Negative spike
D-23-1	16	-	Negative spike
D-23-2	50	Cable	Negative spike
D-24-1	10	Unidentified target	Double negative
D-24-2	70	-	Bipolar
D-27-2	6	-	Positive
D-27-3	8	-	Multiple peaks
D-27-4	18	-	Bipolar
E-28-1	F/S	Scattered debris	Multiple peaks
E-28-2	14	-	Broad-based
E-29-1	60	Cable	Negative
E-29-2	44	Double target	Double peaks
E-29-3	28	-	Broad-based
E-30-1	22	-	Positive spike
E-31-1	100	Cable	Multiple peaks
E-31-2	30	Debris	Bipolar, sharp

Table 10. Anomalies Encountered. (Continued)

Segment/Line Number	Gamma Intensity	Side scan Targets	Comments
Mobile Channel (continued)			
E-31-3	28	-	Bipolar
E-39-1	80	-	Positive spike
E-40-1	16	Debris	Broad-based
F-32-1	12	-	Bipolar, sharp
F-32-2	8	-	Bipolar
F-32-3	16	-	Negative
F-32-4	17	-	Bipolar
F-32-5	40	-	Bipolar
F-32-6	16	Small target	Multiple peaks
F-32-7	50	-	Bipolar
F-35-1	12	-	Broad-based
F-36-1	30	Cable	Negative
F-37-1	12	-	Bipolar, sharp
F-38-1	17	-	Bipolar
F-38-2	150	-	Bipolar
F-38-3	50	-	Dual component
G-41-1	30	-	Bipolar, sharp
G-41-2	28	Cable fragments	Bipolar, sharp
G-41-3	40	Small target	Bipolar, sharp
G-41-4	40	-	Positive spike
G-41-5	560	Cable	Negative spike
G-41-6	40	Linear target	Bipolar
G-41-7	40	Cable	Bipolar
G-41-8	240	Possible pipe	Multiple peaks
G-42-1	14	-	Bipolar
G-42-2	56	Debris	Bipolar
G-42-3	18	-	Bipolar
G-43-1	60	Cable	Negative spike
G-43-2	80	Cable	Bipolar
G-43-3	8	Debris	Broad-based
G-43-4	70	Debris	Bipolar
G-43-5	20	Small target	Negative
G-43-6	20	-	Bipolar
G-43-7	12	-	Negative
G-43-8	40	Debris	Negative
G-43-9	30	Debris	Bipolar
G-43-10	8	-	Bipolar
G-45-1	50	Linear target	Bipolar
G-46-1	15	Debris	Negative
G-46-2	10	-	Bipolar
G-46-3	18	-	Negative spike
G-46-4	120	Shrimp net	Negative spike
G-46-5	30	Debris	Bipolar
G-46-6	100	Cable/debris	Negative spike
G-46-7	42	Cable	Bipolar, sharp
G-46-8	20	-	Bipolar

Table 10. Anomalies Encountered. (Continued)

Segment/Line Number	Gamma Intensity	Side scan Targets	Comments
Mobile Channel (continued)			
G-46-9	150	Cable	Multiple component
G-46-10	55	Channel marker	Bipolar, sharp
G-46-11	32	Debris	Positive spike
G-46-12	160	Debris	Positive spike
G-47-1	18	Linear target	Bipolar
G-47-2	50	-	Bipolar
G-47-3	20	-	Negative
G-47-4	26	-	Bipolar
G-47-5	70	Linear target	Bipolar
G-47-6	28	Cable	Negative
G-47-7	10	Cable	Negative spike
G-47-8	54	Cable	Bipolar
G-47-9	80	Cable	Multiple peaks
G-47-10	10	Cable	Negative
G-47-11	20	Cable	Bipolar
G-47-12	40	Cable	Bipolar, sharp
G-49-1	10	Cable	Bipolar
G-49-2	55	Cable	Bipolar, sharp
G-51-1	18	-	Bipolar
H-53-1	21	-	Broad-based
H-54-2	20	Unidentified target	Multiple peaks
H-54-3	240	Unidentified target	Multiple peaks
H-54-4	85	-	Negative spike
H-54-5	40	-	Bipolar, sharp
H-54-6	28	-	Bipolar
H-56-1	40	Scattered debris	Bipolar, sharp
H-57-1	180	-	Multiple peaks
H-57-2	42	Large unidentified target	Multiple peaks
I-58-1	24	-	Broad-based
I-58-2	12	Scattered debris	Bipolar
I-58-3	12	-	Bipolar
I-61-1	24	Cable	Multiple peaks
I-61-2	24	-	Bipolar
I-62-1	130	Large unidentified target	Bipolar
I-62-2	20	Scattered debris	Bipolar
I-62-3	40	-	Negative spike
J-63-1	10	-	Bipolar
J-64-1	26	Cable	Bipolar
J-64-2	18		Broad-based
J-65-1	10	Multiple small targets	Broad-based
J-65-2	10	Unidentified target	Bipolar
J-65-3	40	-	Spike
J-66-1	60	Debris	Spike
J-66-2	20	Cable	Bipolar

Table 10. Anomalies Encountered. (Continued)

Segment/Line Number	Gamma Intensity	Side scan Targets	Comments
Mobile Channel (continued)			
J-67-1	140	Scattered debris	Multiple peaks
J-67-2	18	-	Bipolar
J-67-3	F/S	Debris	Multiple peaks
J-69-1	10	-	Negative spike
J-69-2	16	Debris	Bipolar
J-69-4	10	-	Bipolar
J-71-1	45	Cable	Bipolar, sharp
J-71-2	20	Cable	Bipolar, sharp
J-71-3	10	Cable	Bipolar
J-72-1	5	-	Bipolar
J-72-2	9	-	Bipolar
J-72-3	10	-	Negative spike
J-72-4	5	-	Negative spike
J-72-5	7	Debris	Double negative
J-73-1	9	-	Negative
J-73-2	64	-	Bipolar
J-73-3	8	-	Bipolar
J-74-1	21	Debris	Negative
J-74-2	7	-	Bipolar
J-74-3	10	-	Bipolar
J-74-4	18	-	Negative spike
J-74-6	48	-	Bipolar, sharp
J-76-1	26	-	Negative
J-76-2	F/S	-	Double negative
J-76-3	10	-	Negative
J-76-4	130	Two small targets	Negative
J-76-5	19	Small target	Positive
J-76-6	14	-	Positive
J-76-7	160	-	Negative
J-76-8	36	-	Positive
J-76-9	12	-	Positive
J-76-10	15	-	Negative
J-77-1	23	Dredge spoil	Bipolar
J-77-2	16	-	Positive
J-78-1	F/S	Double small target	Multiple peaks
J-78-2	16	-	Bipolar
J-78-3	12	-	Negative
J-78-4	18	-	Bipolar
J-78-5	60	Pipe	Negative
J-78-6	26	-	Positive
J-78-7	22	-	Bipolar, sharp
J-78-8	12	-	Bipolar
J-78-9	50	-	Negative
K-79-1	9	-	Bipolar
K-79-2	10		Bipolar
K-79-3	18	-	Bipolar

Table 10. Anomalies Encountered. (Continued)

Segment/Line Number	Gamma Intensity	Side scan Targets	Comments
Mobile Channel (continued)			
K-80-1	10	-	Broad-based
K-80-2	75	Scattered debris	Broad Positive
K-80-3	16	Linear target	Bipolar, sharp
K-80-4	32	-	Broad-based
K-81-1	14	-	Bipolar
K-81-2	80	Cable	Negative spike
K-81-3	24	Debris	Broad-based
K-81-4	30	-	Multiple peaks
K-81-5	24	-	Bipolar
K-81-6	12	-	Negative spike
K-81-7	16	-	Bipolar, sharp
K-82-1	14	-	Broad-based
K-82-2	18	-	Broad-based
K-82-3	8	-	Positive
K-82-4	32	-	Bipolar
K-82-5	8	-	Bipolar
K-83-1	50	-	Negative
K-83-2	70	Debris	Negative
K-83-3	10	-	Broad-based
K-83-4	90	Debris	Negative
K-83-5	60	-	Bipolar
K-83-6	F/S	-	Multiple peaks
K-83-7	28	-	Positive
K-83-8	60	-	Multiple peaks
K-83-9	8	-	Negative
K-84-1	13	Unidentified target	Broad-based
K-84-2	18	Debris	Negative
K-84-3	46	-	Negative
K-84-4	18	-	Bipolar, sharp
K-85-4	31	Debris	Broad-based
L-86-1	12	Debris	Positive
L-86-2	33	-	Negative
L-86-3	19	-	Broad-based
L-87-1	51	-	Broad-based
L-87-2	8	-	Double negative
L-87-3	F/S	Cable	Multiple peaks
L-87-4	16	-	Negative
L-87-5	F/S	Cable	Multiple peaks
L-87-6	14	Cable	Negative
L-87-7	9	Cable	Negative spike
L-87-8	17	Cable	Positive spike
L-87-9	59	Cable	Positive spike
L-88-1	18	-	Bipolar
L-88-2	F/S	Dredge spoil	Multiple peaks
L-88-3	37	Multiple linear targets	Broad-based

Table 10. Anomalies Encountered. (Continued)

Segment/Line Number	Gamma Intensity	Side scan Targets	Comments
Mobile Channel (continued)			
L-89-1	23	Unidentified target	Positive spike
L-90-3	36	Unidentified target	-
L-90-4	100	Dredge spoil	Multiple peaks
L-91-1	110	Large linear target	Negative
L-91-2	380	Debris	Negative spike
L-91-4	9	Debris	Negative spike
L-91-5	36	Debris	Positive spike
L-92-1	30	Unidentified targets	Bipolar
L-92-3	17	-	Bipolar
L-92-4	24	Debris	Negative
L-92-5	34	Debris	Positive spike
L-92-6	50	Channel marker	Negative
L-92-7	81	Unidentified target	Bipolar
M-93-1	9	Debris	Negative
M-93-2	9	Linear target	Positive
M-94-1	8	Dredge spoil	Bipolar
M-95-4	28		Multiple peaks
M-96-1	10	-	Positive
M-96-2	12	-	Positive
M-96-3	15	-	Bipolar
M-96-4	6	-	Positive
M-96-5	7	-	Negative
M-96-6	10	-	Positive
M-97-1	26	-	Bipolar
M-97-2	39	Pipe	Negative
M-97-3	11	Linear target	Negative
M-98-3	40	-	Bipolar
M-99-1	46	Debris	Bipolar
M-99-2	14	-	Negative
M-99-3	12	-	Negative
M-99-4	40	Cable	Bipolar
N-100-2	68	Debris	Positive
N-102-2	48	-	Positive
N-102-3	85	Debris	Negative
N-105-1	56		Broad-based

Table 10. (continued)

Segment/Line Number	Gamma Intensity	Comments
Turning Basin (n=29)		
Tb-1-1	72	Negative spike
Tb-1-2	82	Negative spike
Tb-1-3	26	Positive spike
Tb-1-4	18	Positive spike
Tb-1-5	71	Negative spike
Tb-1-6	123	Multiple peaks
Tb-2-1	9	Bipolar
Tb-2-2	105	Broad-based
Tb-2-3	10	Negative spike
Tb-2-4	20	Broad-based
Tb-2-5	16	Negative spike
Tb-2-6	86	Negative spike
Tb-3-1	46	Positive spike
Tb-3-2	17	Negative spike
Tb-3-3	18	-
Tb-4-1	24	Positive spike
Tb-4-2	53	Negative spike
Tb-4-3	40	Negative spike
Tb-4-4	180	Negative spike
Tb-5-1	12	Negative spike
Tb-5-2	140	Multiple spike
Tb-6-1	8	Negative spike
Tb-6-2	22	Negative spike
Tb-6-3	14	Positive spike
Tb-6-4	195	Bipolar
Tb-6-5	20	Negative spike
Tb-7-1	18	Bipolar
Tb-7-2	20	Bipolar
Tb-7-3	35	Multiple peaks
Brookley Disposal Area (n=220)		
Br-8-1	12	Bipolar
Br-8-3	25	Bipolar
Br-8-4	13	Bipolar
Br-8-5	18	Negative spike
Br-8-6	14	Broad-based
Br-8-7	50	Bipolar
Br-8-8	31	Negative spike
Br-8-9	8	Negative spike
Br-8-10	60	Positive spike
Br-9-1	70	Bipolar
Br-9-2	25	Bipolar
Br-9-3	30	Positive spike
Br-9-4	24	Positive spike
Br-9-5	110	Multiple peaks
Br-9-6	12	Negative spike
Br-9-7	20	Bipolar

Table 10. (continued)

Segment/Line Number	Gamma Intensity	Comments
Brookley Disposal Area (continued)		
Br-9-8	40	Broad Negative
Br-9-9	22	Bipolar
Br-9-10	10	Bipolar
Br-10-1	20	Bipolar
Br-10-2	35	Bipolar
Br-10-3	25	Bipolar
Br-10-4	42	Bipolar
Br-10-5	125	Bipolar
Br-10-6	40	Bipolar
Br-11-1	145	Positive
Br-11-2	24	Bipolar
Br-11-3	34	Bipolar, broad
Br-11-4	25	Bipolar
Br-11-5	19	Bipolar
Br-11-6	13	Bipolar
Br-11-7	25	Bipolar
Br-11-8	16	Positive
Br-11-9	32	Positive spike
Br-11-10	27	Positive spike
Br-11-11	32	Bipolar
Br-11-12	14	Negative spike
Br-12-1	49	Bipolar
Br-12-2	37	Bipolar
Br-12-3	62	Bipolar
Br-12-4	22	Bipolar spike
Br-12-5	14	Bipolar
Br-12-6	25	Bipolar
Br-12-7	48	Positive spike
Br-12-8	38	Bipolar
Br-13-1	38	Bipolar
Br-13-2	20	Bipolar
Br-13-3	24	Bipolar
Br-13-4	41	Positive spike
Br-13-5	F/S	Multiple peaks
Br-13-6	110	Bipolar
Br-13-7	50	Bipolar
Br-13-8	20	Broad-based
Br-13-9	140	Multiple peaks
Br-13-10	160	Bipolar
Br-13-11	45	Bipolar
Br-13-12	35	Bipolar
Br-13-13	110	Bipolar
Br-13-14	60	Positive spike
Br-13-15	50	Bipolar
Br-13-16	860	Multiple peaks
Br-14-1	60	Bipolar

Table 10. (continued)

Segment/Line Number	Gamma Intensity	Comments
Brookley Disposal Area (continued)		
Br-14-2	24	Bipolar
Br-14-3	78	Bipolar
Br-14-4	65	Bipolar
Br-14-5	9	Broad-based
Br-15-1	25	Positive spike
Br-15-2	80	Bipolar
Br-15-3	20	Negative spike
Br-15-4	80	Bipolar
Br-15-5	27	Bipolar
Br-16-1	19	Negative spike
Br-16-2	45	Bipolar
Br-17-1	55	Bipolar
Br-17-2	20	Positive spike
Br-17-3	10	Negative spike
Br-18-1	275	Bipolar
Br-18-2	22	Bipolar
Br-19-1	820	Positive spike
Br-19-2	34	Bipolar
Br-20-1	32	Negatice spike
Br-21-1	80	Bipolar
Br-22-1	8	Negative
Br-23-1	10	Broad-based
Br-23-2	30	Positive spike
Br-24-1	6	Bipolar
Br-24-2	18	Bipolar
Br-25-1	70	Bipolar
Br-26-1	45	Bipolar
Br-26-2	14	Negative spike
Br-26-3	13	Bipolar
Br-27-1	10	Negative spike
Br-28-1	60	Bipolar
Br-28-2	50	Bipolar
Br-28-3	14	Bipolar (Broad)
Br-29-1	20	Bipolar
Br-29-2	25	Bipolar
Br-29-3	20	Negative spike
Br-30-1	26	Positive spike
Br-30-2	35	Bipolar
Br-30-3	330	Multiple peaks
Br-30-4	90	Bipolar
Br-31-1	60	Bipolar
Br-31-2	85	Bipolar
Br-31-3	57	Bipolar (Broad)
Br-31-4	68	Bipolar
Br-32-1	24	Bipolar (Broad)
Br-32-2	41	Bipolar

Table 10. (continued)

Segment/Line Number	Gamma Intensity	Comments
Brookley Disposal Area (continued)		
Br-32-3	90	Bipolar spikey
Br-33-1	21	Bipolar spikey
Br-33-2	40	Spikey
Br-34-1	14	Positive spike
Br-34-2	60	Bipolar
Br-35-1	19	Bipolar
Br-35-2	42	Bipolar
Br-35-3	25	Bipolar
Br-37-1	76	Bipolar
Br-37-2	79	Bipolar
Br-37-3	67	Multiple bipolar
Br-37-4	33	Bipolar
Br-41-1	10	Negative spike
Br-42-1	71	Bipolar
Br-42-2	22	Bipolar
Br-43-1	35	Bipolar
Br-46-1	88	Bipolar
Br-47-1	60	Negative
Br-48-1	47	Negative spike
Br-50-1	23	Bipolar
Br-53-1	30	Negative spike
Br-54-1	50	Negative
Br-54-2	41	Bipolar
Br-54-3	68	Bipolar
Br-55-1	31	Broad Positive
Br-56-1	12	Negative spike
Br-56-2	40	Bipolar
Br-57-1	10	Negative spike
Br-59-1	16	Positive spike
Br-60-1	56	Bipolar
Br-61-1	150	Bipolar
Br-61-2	10	Negative spike
Br-61-3	15	Bipolar
Br-71-1	20	Bipolar
Br-71-2	10	Bipolar
Br-72-1	31	Bipolar
Br-72-2	74	Bipolar
Br-72-3	10	Negative spike
Br-73-1	20	Bipolar
Br-73-2	60	Bipolar
Br-74-1	18	Bipolar
Br-74-2	7	Broad-based
Br-75-1	11	Negative
Br-75-2	11	Negative
Br-75-3	250	Bipolar
Br-75-4	20	Positive spike

Table 10. (continued)

Segment/Line Number	Gamma Intensity	Comments
Brookley Disposal Area (continued)		
Br-75-5	60	Positive spike
Br-76-1	22	Bipolar
Br-77-1	90	Bipolar
Br-77-2	26	Negative spike
Br-77-3	260	Multiple peaks
Br-77-4	16	Bipolar
Br-77-5	19	Bipolar
Br-78-1	74	Bipolar
Br-78-2	76	Bipolar
Br-78-3	31	Bipolar
Br-79-1	15	Bipolar
Br-79-2	65	Multiple peaks
Br-79-3	35	Positive spike
Br-81-1	22	Bipolar
Br-82-1	215	Bipolar
Br-83-1	21	Bipolar
Br-84-1	28	Bipolar
Br-88-1	48	Negative
Br-88-2	42	Negative
Br-89-1	25	Negative spike
Br-89-2	30	Bipolar
Br-89-3	45	Bipolar
Br-90-1	90	Bipolar (Sharp)
Br-90-2	35	Bipolar
Br-91-1	250	Bipolar (sharp)
Br-91-2	280	Bipolar (sharp)
Br-92-1	140	Bipolar
Br-92-2	15	Negative spike
Br-92-3	40	Bipolar
Br-93-1	50	Negative spike
Br-93-2	65	Bipolar (sharp)
Br-93-3	90	Bipolar
Br-93-4	180	Bipolar (sharp)
Br-93-5	30	Bipolar
Br-94-1	31	Positive spike
Br-94-2	32	Negative spike
Br-94-3	130	Bipolar
Br-94-4	31	Negative spike
Br-94-5	80	Bipolar (sharp)
Br-94-6	37	Positive spike
Br-94-7	850	Negative spike
Br-95-1	90	Bipolar
Br-95-2	50	Bipolar
Br-95-3	41	Negative spike
Br-95-4	24	Bipolar
Br-96-1	125	Bipolar

Table 10. (continued)

Segment/Line Number	Gamma Intensity	Comments
Brookley Disposal Area (continued)		
Br-96-2	160	Bipolar
Br-96-3	280	Bipolar
Br-96-4	100	Bipolar
Br-96-5	15	Negative spike
Br-96-6	23	Bipolar
Br-97-1	21	Bipolar
Br-97-2	75	Bipolar
Br-97-3	18	Positive spike
Br-97-4	170	Bipolar
Br-97-5	36	Bipolar
Br-97-6	320	Bipolar (sharp)
Br-98-1	45	Negative
Br-98-2	60	Bipolar
Br-99-1	40	Negative spike
Br-99-2	425	Positive spike
Br-99-3	20	Positive spike
Br-99-4	23	Negative spike
Br-99-5	42	Negative spike
Br-99-6	19	Positive spike
Br-99-7	40	Bipolar

Table 10. (continued)

Segment/Line Number	Gamma Intensity	Side scan Targets	Comments
Gulf Disposal (n=46)			
Gu-0-1	38	-	Bipolar
Gu-1-1	6	Unidentified target	Negative
Gu-2-1	20		Multiple peak
Gu-2-2	37	Vessel	Bipolar
Gu-5-1	6	Pipes (2)	Bipolar
Gu-7-1	10	-	Bipolar, sharp
Gu-7-2	46	-	Negative
Gu-9-1	12	-	Bipolar
Gu-10-1	11		Positive
Gu-10-2	6	-	Positive
Gu-11-1	7	-	Positive
Gu-12-1	13	-	Bipolar
Gu-13-1	5	-	Negative
Gu-13-2	75	Unidentified target	Bipolar, sharp
Gu-14-1	21	-	Positive
Gu-14-2	13	-	Positive
Gu-15-1	25	-	Positive spike
Gu-16-1	55	-	Positive
Gu-16-2	680	Small (5m long target)	Bipolar, sharp
Gu-18-1	13	-	Negative
Gu-19-1	11	-	Bipolar
Gu-23-1	35	-	Bipolar
Gu-25-1	5	-	Bipolar
Gu-29-1	12	-	Positive spike
Gu-29-2	10	-	Bipolar
Gu-31-1	85	Debris	Negative spike
Gu-31-2	12	-	Broad-based
Gu-33-1	41	Possible pipe	Bipolar
Gu-33-2	20	-	Negative spike
Gu-33-3	13	Cable	Negative spike
Gu-35-1	9	-	Bipolar
Gu-36-1	20	-	Bipolar
Gu-38-1	9	-	Bipolar
Gu-39-1	17	-	Bipolar
Gu-39-2	13	-	Broad-based
Gu-40-1	14	-	Bipolar
Gu-41-1	12	-	Positive spike
Gu-57-1	22	Possible pipe	Positive spike
Gu-58-1	16	Possible pipe	Positive
Gu-62-1	16	-	Bipolar
Gu-79-1	12	-	Bipolar
Gu-79-2	132	-	Bipolar, sharp
Gu-79-3	12	-	Bipolar, sharp
Gu-83-1	180	-	Positive spike
Gu-84-1	24	Debris	Positive spike
Gu-87-1	185	-	Bipolar, sharp

Table 11. Category I Anomalies.

Segment/ Line/ Number	Gamma Intensity	Segment/ Line/ Number	Gamma Intensity	Segment/ Line/ Number	Gamma Intensity
Mobile Channel		H-56-1	40	L-91-1	110
B-20-3	100	H-57-1	180	L-91-2	380
C-11-4	80	H-57-2	42	L-91-5	36
C-13-1	30	I-58-1	24	L-92-1	30
C-13-2	24	I-61-2	24	L-92-4	24
C-16-1	60	I-62-1	130	L-92-5	34
C-16-2	950	I-62-2	20	L-92-7	81
C-16-3	22	I-62-3	40	M-95-4	28
C-17-1	100	J-65-3	40	M-97-1	26
C-17-3	40	J-66-1	60	M-98-3	40
C-17-4	40	J-67-1	140	M-99-1	46
C-17-5	F/S	J-67-3	F/S	N-102-2	48
C-48-3	60	J-73-2	64	N-102-3	85
C-48-4	40	J-74-1	21	N-105-1	56
C-48-5	25	J-74-6	48	Turning Basin	
D-24-2	70	J-76-1	26	Tb-1-1	72
E-28-1	F/S	J-76-2	F/S	Tb-1-2	82
E-29-2	44	J-76-4	130	Tb-1-3	26
E-29-3	28	J-76-7	160	Tb-1-5	71
E-30-1	22	J-76-8	36	Tb-1-6	123
E-31-2	30	J-77-1	23	Tb-2-2	105
E-31-3	28	J-78-1	F/S	Tb-2-6	86
E-39-1	80	J-78-6	26	Tb-3-1	46
F-32-5	40	J-78-7	22	Tb-4-1	24
F-32-7	50	J-78-9	50	Tb-4-2	53
F-38-2	150	K-80-2	75	Tb-4-3	40
F-38-3	50	K-80-4	32	Tb-4-4	180
G-41-1	30	K-81-3	24	Tb-5-2	140
G-41-3	40	K-81-4	30	Tb-6-2	22
G-41-4	40	K-81-5	24	Tb-6-4	195
G-41-6	40	K-82-4	32	Tb-7-3	35
G-42-2	56	K-83-1	50	Brookley Disposal	
G-43-4	70	K-83-2	70	Br-8-3	25
G-43-8	40	K-83-4	90	Br-8-7	50
G-43-9	30	K-83-5	60	Br-8-8	31
G-46-5	30	K-83-6	F/S	Br-8-10	60
G-46-11	32	K-83-7	28	Br-9-1	70
G-46-12	160	K-83-8	60	Br-9-2	25
G-47-2	50	K-85-4	31	Br-9-3	30
G-47-4	26	L-86-2	33	Br-9-4	24
G-47-5	70	L-87-1	51	Br-9-5	110
H-53-1	21	L-88-2	F/S	Br-9-8	40
H-54-3	240	L-88-3	37	Br-9-9	22
H-54-4	85	L-89-1	23	Br-10-2	35
H-54-5	40	L-90-3	36	Br-10-3	25
H-54-6	28	L-90-4	100	Br-10-4	42

Table 11. Category I Anomalies (Continued).

Segment/ Line/ Number	Gamma Intensity	Segment/ Line/ Number	Gamma Intensity	Segment/ Line/ Number	Gamma Intensity
Br-10-5	125	Br-21-1	80	Br-76-1	22
Br-10-6	40	Br-23-2	30	Br-77-1	90
Br-11-1	145	Br-25-1	70	Br-77-2	26
Br-11-2	24	Br-26-1	45	Br-77-3	260
Br-11-3	34	Br-28-1	60	Br-78-1	74
Br-11-4	25	Br-28-2	50	Br-78-2	76
Br-11-7	25	Br-29-2	25	Br-78-3	31
Br-11-9	32	Br-30-1	26	Br-79-2	65
Br-11-10	27	Br-30-2	35	Br-79-3	35
Br-11-11	32	Br-30-3	330	Br-81-1	22
Br-12-1	40	Br-30-4	90	Br-82-1	215
Br-12-2	37	Br-31-1	60	Br-83-1	21
Br-12-3	62	Br-31-2	85	Br-84-1	28
Br-12-4	22	Br-31-3	57	Br-88-1	48
Br-12-6	25	Br-31-4	68	Br-88-2	42
Br-12-7	48	Br-32-1	24	Br-89-1	25
Br-12-8	38	Br-32-2	41	Br-89-2	30
Br-13-1	38	Br-32-3	90	Br-89-3	45
Br-13-2	20	Br-33-1	21	Br-89-3	45
Br-13-3	24	Br-33-2	40	Br-90-1	90
Br-13-4	41	Br-34-2	60	Br-90-2	35
Br-13-5	F/S	Br-35-2	42	Br-91-1	250
Br-13-6	110	Br-35-3	25	Br-91-2	280
Br-13-7	50	Br-37-1	76	Br-92-1	140
Br-13-9	140	Br-37-2	79	Br-92-3	40
Br-13-10	160	Br-37-3	67	Br-93-1	50
Br-13-11	45	Br-37-4	33	Br-93-2	65
Br-13-12	35	Br-42-1	71	Br-93-3	90
Br-13-13	110	Br-42-2	22	Br-93-4	180
Br-13-14	60	Br-43-1	35	Br-93-5	30
Br-13-15	50	Br-46-1	88	Br-94-1	31
Br-13-16	860	Br-47-1	60	Br-94-2	32
Br-14-1	60	Br-48-1	47	Br-94-3	130
Br-14-2	24	Br-50-1	23	Br-94-4	31
Br-14-3	78	Br-53-1	30	Br-94-5	80
Br-14-4	65	Br-54-1	50	Br-94-6	37
Br-15-1	25	Br-54-2	41	Br-94-7	850
Br-15-2	80	Br-54-3	68	Br-95-1	90
Br-15-[illegible]	80	Br-55-1	31	Br-95-2	50
Br-15-5	27	Br-56-2	40	Br-95-3	41
Br-16-2	45	Br-60-1	56	Br-95-4	24
Br-17-1	55	Br-61-1	150	Br-96-1	125
Br-18-1	275	Br-72-1	31	Br-96-2	160
Br-18-2	22	Br-72-2	74	Br-96-3	280
Br-19-1	820	Br-73-2	60	Br-96-4	100
Br-19-2	34	Br-75-3	250	Br-96-6	23
Br-20-1	32	Br-75-5	60	Br-97-1	21

Table 11. Category I Anomalies (Continued).

Segment/ Line/ Number	Gamma Intensity	Segment/ Line/ Number	Gamma Intensity	Segment/ Line/ Number	Gamma Intensity
Br-97-2	75	Br-99-4	23	Gu-31-1	85
Br-97-4	170	Br-99-5	42	Gu-33-1	41
Br-97-5	36	Br-99-7	40	Gu-79-2	132
Br-97-6	320	Gulf Disposal		Gu-83-1	180
Br-98-1	45	Gu-7-2	46	Gu-87-1	185
Br-98-2	60	Gu-13-2	75	----	---
Br-99-1	40	Gu-16-1	55	----	---
Br-99-2	425	Gu-16-2	680	----	---

Totals:
Mobile Channel = 105
Turning Basin = 16
Brookley Disposal = 165
Gulf Disposal = 9

Table 12. Category II Anomalies.

Segment/Line/No.	Gamma Intensity	Segment/Line/No.	Gamma Intensity
Mobile Channel (N=27)		Brookley Disposal (Con't)	
C-16-2	950	Br-12-3	62
C-17-1	100	Br-12-8	38
C-17-5	F/S	Br-13-1	38
E-28-1	F/S	Br-13-2	20
F-38-3	50	Br-13-3	24
G-43-4	70	Br-13-5	F/S
G-46-12	160	Br-13-16	860
G-47-2	50	Br-18-1	275
G-47-5	70	Br-25-1	70
H-54-3	240	Br-26-1	45
H-57-1	180	Br-28-1	60
I-62-1	130	Br-30-3	330
J-67-3	F/S	Br-31-3	57
J-76-2	F/S	Br-31-4	68
J-76-7	160	Br-37-3	67
J-78-1	F/S	Br-75-3	250
K-80-2	75	Br-77-1	90
K-83-4	90	Br-77-2	26
K-83-6	F/S	Br-77-3	260
L-87-1	51	Br-79-2	65
L-88-2	F/S	Br-82-1	215
L-90-3	36	Br-92-1	140
L-90-4	100	Br-96-1	125
L-91-1	110	Br-96-2	160
L-92-7	81	Br-96-3	280
M-98-3	40	Br-97-2	75
M-99-1	46	Br-97-4	170
Turning Basin (N=6)		Br-97-6	320
Tb-2-2	105	Br-99-2	425
Tb-4-2	53	Gulf Disposal (N=9)	
Tb-4-3	40	Gu-2-2	37
Tb-4-4	180	Gu-7-2	46
Tb-6-4	195	Gu-13-2	75
Tb-7-3	35	Gu-16-1	55
Brookley Disposal (N=33)		Gu-16-2	680
Br-9-1	70	Gu-31-1	85
Br-10-4	42	Gu-79-2	132
Br-10-5	125	Gu-83-1	180
Br-10-6	40	Gu-87-1	185

Table 13. Magnetic Clusters.

Number	Anomalies	Gamma Intensity	Comments
1.	B-8-1	6	
	B-8-2	12	
	B-19-2	6	
	B-20-1	14	
2.	B-8-3	22	
	B-10-1	10	
	B-19-1	20	
3.	C-11-6	10	Overlaps with cluster 4.
	C-14-1	8	
	C-17-2	14	C-17-2 identified as cable.
4.	C-12-3	44	Overlaps with cluster 3.
	C-16-5	22	All three anomalies identified
	C-16-6	60	as cable.
5.	*C-11-4	80	Overlaps with cluster 6.
	C-12-6	18	C-12-6 identified as cable.
	C-15-6	26	
6.	*C-13-1	30	Overlaps with cluster 5.
	**C-17-1	100	
	*C-48-4	40	
7.	C-11-3	8	C-12-7 identified as cable.
	C-12-7	14	
	C-14-2	16	
8.	C-12-8	30	Cable identified as source of
	C-12-9	8	all three anomalies.
	C-15-4	19	
9.	C-12-10	8	All three anomalies identified
	C-12-11	10	as cable.
	C-16-8	30	
10.	C-11-1	26	Cable identified as source of
	C-11-2	40	7 anomalies in this cluster.
	C-12-13	24	
	C-12-14	24	
	C-12-15	19	
	C-15-1	24	
	C-16-11	40	
11.	E-28-2	14	Debris identified in area of
	*E-31-2	30	E-28-2 and E-31-2.
	*E-31-3	28	

Table 13. Magnetic Clusters. (continued)

Number	Anomalies	Gamma Intensity	Comments
12.	*E-29-2	44	Double target on side-scan at E-29-2.
	*E-29-3	28	
	*E-39-1	80	
13.	F-32-3	16	
	*F-32-7	50	
	**F-38-3	50	
14.	*G-41-1	30	Debris in area of G-46-5, G-46-6 identified as cable.
	*G-46-5	30	
	G-46-6	100	
15.	G-43-6	20	
	G-47-3	20	
	*G-47-4	26	
16.	G-42-1	14	Side-scan revealed small linear target at G-47-5.
	G-43-7	12	
	**G-47-5	70	
17.	G-41-7	40	G-41-7 identified as cable. Debris in area of G-46-11 and G-46-12.
	*G-46-11	32	
	**G-46-12	160	
18.	I-58-3	12	Two large side-scan targets indicated at I-62-1. Smaller targets at I-62-2.
	**I-62-1	130	
	*I-62-2	20	
19.	*J-66-1	60	Side-scan targets at J-66-1 and J-76-4.
	*J-73-2	64	
	J-76-3	10	
	*J-76-4	130	
20.	J-73-1	9	Small target at J-76-5.
	J-76-5	19	
	J-76-6	14	
	**J-76-7	160	
21.	J-72-4	5	Debris identified at J-77-1.
	*J-77-1	23	
	*J-78-6	26	
22.	J-72-5	7	Debris indicated at J-72-5.
	*J-74-6	48	
	*J-78-9	50	

Table 13. Magnetic Clusters. (continued)

Number	Anomalies	Gamma Intensity	Comments
23.	K-79-1	9	Small debris-like targets at K-83-2 and K-84-1.
	K-79-2	10	
	*K-80-4	32	
	*K-83-1	50	
	*K-83-2	70	
	K-84-1	13	
24.	K-79-3	18	Small debris like targets at K-80-3 and K-83-4.
	K-80-3	16	
	K-83-3	10	
	**K-83-4	90	
25.	**K-80-2	75	Debris indicated at K-80-2.
	**K-83-6	F/S	
	*K-83-7	28	
26.	*K-81-3	24	Debris indicated at K-81-3.
	K-84-3	46	
	K-84-4	18	
27.	L-86-1	12	L-87-7 and L-87-8 identified as cables.
	L-87-7	9	
	L-87-8	17	
28.	L-87-5	F/S	Cables identified at L-87- and L-87-6. Debris indicated at L-91-4 and L-91-5.
	L-87-6	14	
	L-91-4	9	
	*L-91-5	36	
29.	L-87-3	F/S	Cables identified at L-87-3.
	L-87-4	16	
	**L-91-1	110	
30.	**L-87-1	51	Cables identified at L-87-1 and L-88-3. Side-scan targets at L-90-4 and L-92-7.
	L-88-3	37	
	**L-90-4	100	
	**L-92-7	81	

* Category I Anomaly
** Category II Anomaly

CHAPTER VII

POTENTIAL WRECK CORRELATIONS

Listed on the following pages are fifteen wreck sites which documentary research indicates are potentially located within areas surveyed over the course of field investigations (Figure 10). Included in the lists are descriptions of the vessels encompassed by these wreck sites, associated magnetic anomalies and a discussion of possible correlations of survey data with the vessels.

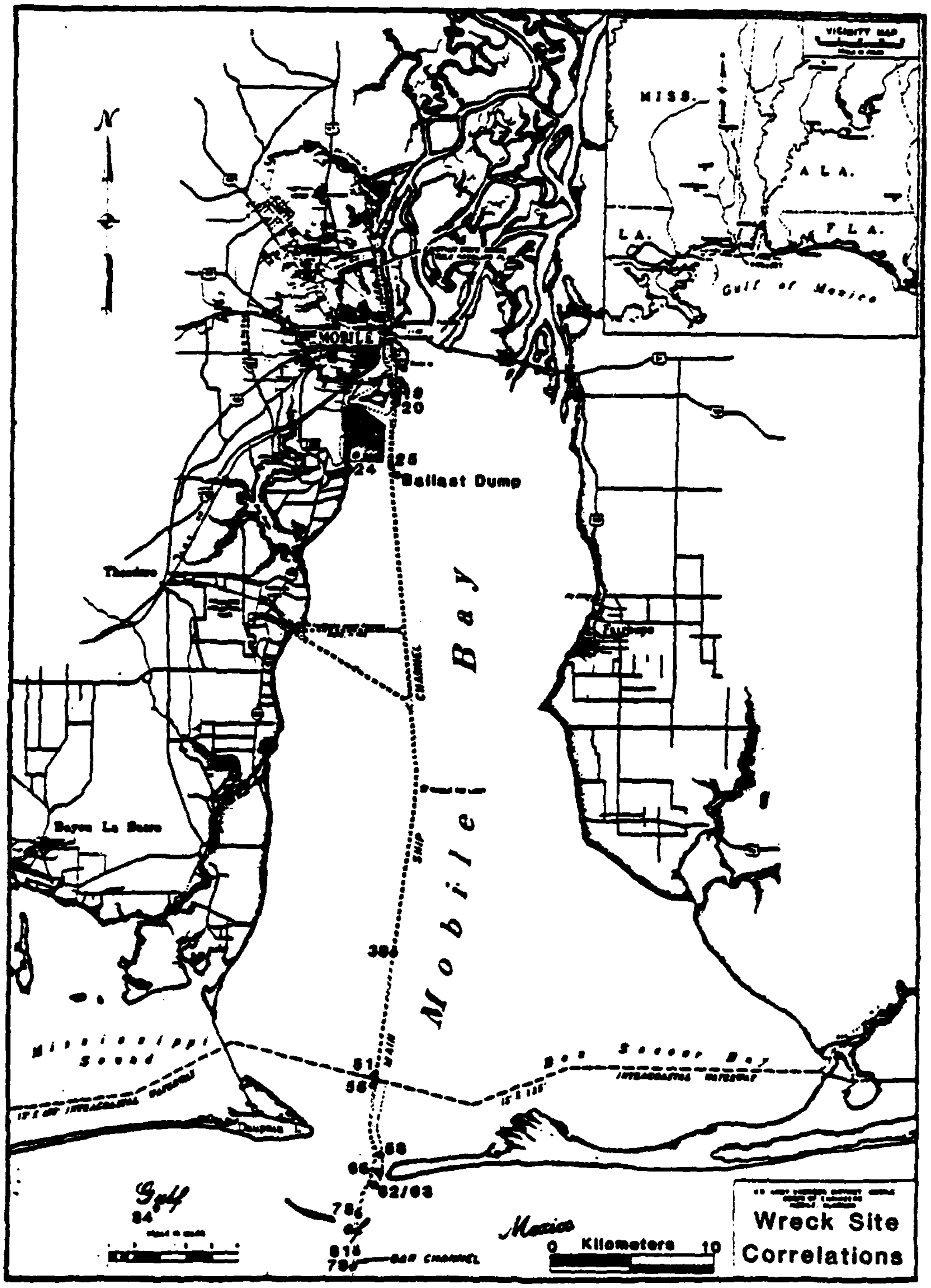
It must be noted that the accuracy of the wreck site locations vary according to the historic documentation available. With locations that are more or less specific, the wreck site delineated encompasses an average of 42 hectares. Locations which are less specific have resulted in the inclusion of much larger areas as potential wreck sites, with an average of 182 hectares. These large areas were justified in the investigators' opinion due to the problems inherent in pinpointing wreck locations. Reduction of the areas specified for correlation with survey data posed the danger of inadvertantly excluding a wreck from further consideration. Ninety anomalies and nine clusters of anomalies are considered in this chapter as possible correlates with wrecks; twelve anomalies and eight clusters are considered worthy of further investigations.

It is also important to recall that over a hundred vessels lost in the bay have no specific recorded wreck location. It is for this reason that the anomalies discussed in this section represent only a part of those which have the potential to represent vessels.

Correlation # 1
Wreck # 19
Description: In this area, below a bend in the pre-1914 ship channel, there are two documented wrecks. The first is the THOMAS SPARKS, a tugboat which ran afoul of the lower Confederate line of obstructions and sank in 1866. The second is the fishing smack EDGAR RANDALL, which collided here with the Dutch steamer DELTA in December of 1906. Also in this locality might be expected remnants of the ballast-filled vessels which made up the lower Confederate line of obstructions during the Civil War.

Associated Anomalies

Cluster	Category II	Category I	Other
None	Tb-2-2	Tb-1-2	Tb-1-4
	Tb-4-2	Tb-1-3	Tb-2-1
	Tb-4-3	Tb-1-5	Tb-2-3
	Tb-6-4	Tb-1-6	Tb-2-4
	Tb-7-3	Tb-3-1	Tb-3-2
	M-99-1	Tb-4-1	Tb-5-1
		Tb-5-2	Tb-6-1
		Tb-6-2	Tb-6-3
		N-102-3	Tb-7-1
			Tb-7-2



MISS.
ALA.
LA.
FLA.
Gulf of Mexico
MOBILE
20
25
24
Ballast Dump
Mobile Bay
38
51
56
68
66
62/63
78
Gulf
84
Mexico
81
79
0 Kilometers 10
Wreck Site Correlations

Figure 10.

Discussion: Twenty-five anomalies were recorded within the large area of wreck site nineteen. They range in intensity from 8 gammas to 195. All but two are located in the proposed turning basin area, which has been sub :t to dumping and enfilling associated with Little Sand Island to the nort... Given the number and variety of anomalies located here, there is a good possibility that the remains of the Sparks and Randall are present, as well as small vessels associated with the Civil War obstructions. All six Category II anomalies have been recommended for Phase II Testing.

Correlation # 2
Wreck # 20
Description: At this point, sounding charts between 1856 and 1893 show a "wreck stake" marking a hazardous shipwreck on the west side of the former channel. This wreck is perhaps identifiable as the SEINE, a large schooner sunk a few years prior to 1856.

Associated Anomalies

Cluster	Category II	Category I	Other
None	Tb-4-4	Tb-1-1 Tb-2-6	Tb-2-5 Tb-6-5 Tb-7-1 Tb-7-2

Discussion: The seven anomalies located within Wreck Site 20 are located immediately to the south of Wreck Site 19, with a small area of overlap. These anomalies are concentrated in the northern position of the site, which is situated in the shallow waters of the proposed turning basin. It is quite possible that these anomalies are associated with the schooner Seine. Anomaly Tb-4-4, a 180 gamma Category II anomaly, is located in the center of the anomalies listed above and has been recommended for Phase II Testing.

Correlation # 3
Wreck # 25
Description: A wreck first appears in this position, on the eastern margin of the ship channel, on the 1920 edition of Chart 1266, which incorporates information through 1918. The symbol appears on all subsequent editions of Chart 1266 until 1962, and continues up to the present on U.S. Army Corps of Engineers charts of Mobile Channel. The identity of the wreck is undetermined.

Associated Anomalies

Cluster	Category II	Category I	Other
C-30	L-90-3	M-95-4	L-86-3

Discussion: Cluster 30, containing four large anomalies and three independent anomalies, is located in the area of Wreck Site 25. Two of the anomalies in Cluster 30 have been identified as cable through side scan sonar. The remaining two have been correlated through side scan sonar with two unknown objects on the bay bottom, as has anomaly L-90-3. These may well represent debris from the unidentified wreck located at this site. Both the cluster C-30 and the Category II anomaly L-90-3 have been recommended for Phase II Testing.

Correlation # 4
Wreck # 4
Description:

Associated Anomalies

Cluster	Category II	Category I	Other
C-29	None	None	None

Discussion: The 1877 ballast dump can be expected to contain an assortment of materials, ranging from stones to pig iron. Cluster 29, composed of three anomalies, one of which has been identified as cable, is located to the west of the ballast dump location. The current ship channel separates the two. It is possible that dredging has resulted in ballast dumped to the west of the channel. On the other hand, Cluster 29 may represent a cultural resource not associated with the dump. It has been recommended for Phase II Testing.

Correlation # 5
Wreck # 38
Description: A wreck first appears here on the Little Dauphin Island U.S.G.S. quadrangle for 1958. It subsequently appears on the 1959 (revised 1960) and 1961 editions of Chart 1266, but is removed the following year. Its identity is undetermined.

Associated Anomalies

Cluster	Category II	Category I	Other
C-15	G-47-2	G-41-3	None

Discussion: The identity and disposition of the wreck indicated at this site are undetermined. It is possible that the wreck has been removed or disintegrated to such a degree that it no longer presents a navigation hazard. In either case, the anomalies recorded in this location may represent portions of the vessel or its cargo. Cluster 15 is composed of three anomalies in the twenty gamma range, while G-47-2 is a 50 gamma bipolar. A vessel of 1950's vintage is too recent to be of historical significance. However, consideration must be given to the fact that the 1958 date is merely the year the wreck appears on a navigation chart, while the vessel may be of much earlier origin. In addition, until identification of the anomalies is performed, it cannot be positively stated whether they are indicative of the 1958 wreck or a separate, possibly significant cultural resource. For these reasons, Cluster 15 and anomaly G-47-2 have been recommended for Phase II Testing.

Correlation # 6
Wreck # 51
Description: In the vicinity of the intersection of the G.I.W.W. with the Mobile Bay ship channel, reportedly in the northeast quarter of the intersection, is the probable location of the barge D.B. 364, stranded in 1954.

Associated Anomalies

Cluster	Category II	Category I	Other
C-3 C-4 C-11	None	C-13-2 C-16-3 C-17-3	C-11-5 C-12-2 C-16-4 E-40-1

Discussion: The location of Wreck Site 51 encompasses a large area in the vicinity of the Intercoastal Waterway, with a number of anomalies recorded within its boundaries. Clusters three and four are the result of cable on the bay bottom. Cluster 11 is composed of three anomalies associated with debris of unknown identity. The remaining seven anomalies in this locale are small and highly dispersed. Given the imprecise location of the wreck, it is difficult to attempt strong correlations with the anomalies present. Cluster 11 has been recommended for Phase II Testing, but not in relation to this wreck site, due to the recent nature of the barge.

Correlation # 7
Wreck # 55
Description: A wreck in this vicinity is reported on the 1888 edition of Chart 188. Its identity is undetermined.

Associated Anomalies

Cluster	Category II	Category I	Other
None	C-16-2	C-17-4	C-12-1 E-29-1

Discussion: The reported location of Wreck Site 55 is fairly compressed in areal extent, with four associated anomalies. Side scan sonar indicates anomaly E-29-1 is a portion of cable. Anomalies C-12-1 and C-17-4 are small in intensity, while C-16-2 is a large, 950 gamma target which may be associated with the wreck. It has been recommended for Phase II Testing.

Correlation # 8
Wreck # 58
Description: This wreck is first noted on the 1916 edition of Chart 188. Since this chart incorporates information through 1910 only, the wreck presumably predates 1910. The wreck is unidentified, but it may represent one of many 1906 hurricane losses. It disappears on the 1920 edition and subsequent issues of Chart 1266.

Associated Anomalies

Cluster	Category II	Category I	Other
None	None	D-24-2	B-21-1 D-23-2 D-24-1

Discussion: Wreck Site 58 is the location of an unidentified boat which for an unknown reason is no longer a threat to navigation. Anomaly correlation with the site is weak, with four widely scattered sources present. D-23-2 has been identified with cable on the bottom, while the remaining three are small to medium intensity anomalies with short duration signatures indicative of small ferrous objects. Correlations in this case are considered too weak to recommend any of these anomalies for Phase II Testing.

Correlation # 9
Wreck # 62/63
Description: In this vicinity, in shallow waters near Mobile Poin', the Spanish packet boat and hospital ship ROSARIO was stranded in February of 1780. The pilot boat BONNE FORTUNE sank here, in the vicinity of Bouy No. 15, during hurricane Hilda in 1964.

Associated Anomalies

Cluster	Category II	Category I	Other
C-1 C-2	None	None	A-6-3 B-21-2 D-22-1 D-23-1 D-27-2 D-27-3

AD-A126 467 CULTURAL RESOURCES SURVEY OF MOBILE HARBOR ALABAMA(U) 3/3
OSM ARCHAELOGICAL CONSULTANTS INC MOUNDVILLE AL
T S MISTOVICH ET AL. 1983 DACW01-82-C-0132

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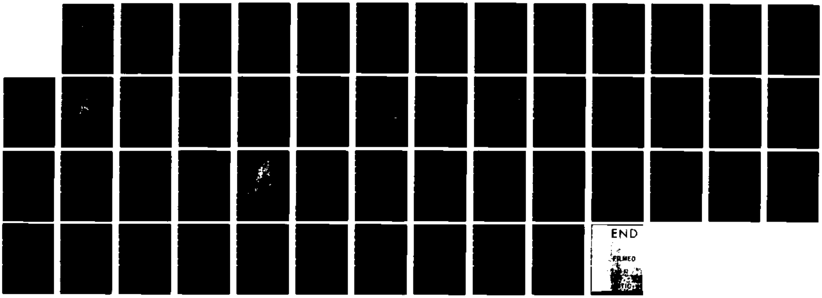

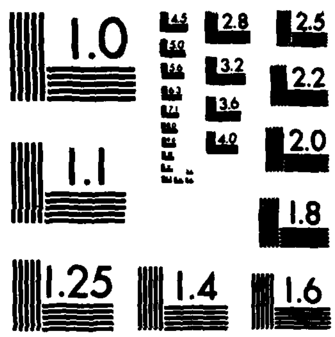

MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Discussion: Two vessels, the eighteenth century ROSARIO and the twentieth century BONNE FORTUNE are reported lost in this vicinity. Exact locations are unknown, however, resulting in a combined wreck site extent of approximately two million square meters. Two clusters and six widely scattered anomalies were recorded within this area. The six dispersed anomalies are all of short duration and less than twenty gammas. Clusters 1 and 2, while composed of anomalies of small intensity, are located in close proximity and may well represent a shipwreck scatter. Both have been recommended for Phase II testing.

Correlation # 10
Wreck # 65
Description: Latour's map of 1815 shows this as the position of the H.M.S. HERMES when it exploded during the first battle for Fort Bowyer in September of 1814. The location has not been confirmed.

Associated Anomalies

Cluster	Category II	Category I	Other
None	None	None	A-4-2 A-7-1

Discussion: Magnetic returns within this wreck site are extremely limited. Anomalies A-4-2 and A-7-1 are widely separated (366 m) and less than 15 gammas in intensity. Correlations with the HERMES can only be tenuous, but given the significance of the ship, it is recommended that the two anomalies be tested. While they may not represent the location of the hull, they could be associated with vessel debris or armament and thus aid in the determination of the Hermes' location.

Correlation # 11
Wreck # 75
Description: In this vicinity, on the west side of the bar channel near Sand Island lighthouse, the sternwheel steam packet SUN sank in December of 1906.

Associated Anomalies

Cluster	Category II	Category I	Other
None	None	None	A-2-1 A-3-1 A-4-1 A-5-1 A-5-2 A-6-1 A-6-2 A-7-2

Discussion: Definitive anomaly correlations with Wreck Site 75 are not possible. The eight anomalies recorded in this general location are widely scattered along a one mile stretch proceeding northwest from the lighthouse. This is within a buried cable area, a probable source for at least some of the anomalies recorded. There are no distinctive concentrations of magnetic returns as would be expected from a steamboat. Given the very tenuous nature of any correlations advanced, it is felt that the site of the SUN is not in the channel segments surveyed in this locale.

Correlation # 12
Wreck # 81
Description: In this vicinity an unidentified vessel carrying a cargo of steel rails was sunk some time prior to the First World War. U.S. Army Corps of Engineers records reveal that a private firm later attempted to obtain salvage rights to the cargo.

Associated Anomalies

Cluster	Category II	Category I	Other
None	None	F-32-5	F-32-6

Discussion: Only two anomalies were recorded within the suspected wreck site location. A load of steel rails, combined with the ferrous content of the vessel, should produce a large and complex return on the magnetometer, even if the wreck is somewhat dispersed. Inaccurate location or salvage of the vessel and cargo are possibilities to consider. Based on the remote sensing survey of this area, no definitive correlation is possible.

Correlation # 13
Wreck # 79
Description: The hydraulic dredge JUMBO was sunk in the process of dredging the bar channel in November of 1903. The wreck was subsequently dynamited and the bow portion removed by the U.S. Army Corps of Engineers.

Associated Anomalies

Cluster	Category II	Category I	Other
C-13	None	F-38-2	F-32-1 F-32-2 F-32-4 F-36-1 F-37-1

Discussion: Wreck Site 79 encompasses a large area of potential location. Recorded in this area were six dispersed anomalies and one cluster.

Historic documentation indicates that only a portion of the JUMBO remains on the bottom. Cluster 13, composed of three anomalies with a side scan target associated with one anomaly, represents the best possible correlation and has been recommended for Phase II Testing.

Correlation # 14
Wreck # 24
Description: This unidentified wreck first appears as partially submerged on the 1940 edition of Chart 1266. On subsequent charts the wreck is shown as fully submerged, but it has disappeared on recent editions.

Associated Anomalies

Cluster	Category II	Category I	Other
None	None	Br-31-1	Br-29-1
		Br-32-3	Br-57-1
		Br-33-2	Br-72-3
		Br-35-2	Br-74-1
		Br-35-3	Br-77-4
		Br-37-1	
		Br-72-2	
		Br-75-5	
		Br-77-5	

Discussion: The fate of the unidentified wreck at Site 24 is not known. Fourteen anomalies were discovered within the suspected location. These are all within the shallow waters of the Brookley disposal site, an area which has been subjected to repeated dumping of debris. A sample based testing strategy has been recommended for Brookley and the Wreck 24 locale has been included in this strategy, with the anomalies associated with it to be treated as an area of magnetic concentration.

Correlation # 15
Wreck # 84
Description: This wreck, which appears only on modern charts, remains unidentified, although the oil screw CYTHERE is a good candidate. The CYTHERE reportedly foundered off Dauphin Island in February, 1973.

Associated Anomalies

Cluster	Category II	Category I	Other
None	None	None	None

Discussion: Surveying of the gulf disposal sites was performed within the constructs of the sampling scheme described in Part IV. As no anomalies were recorded in the vicinity of Wreck 84, it must be assumed the vessel location lay between sample lanes and was missed by the survey. This wreck location is, however, situated in the high probability area delineated by the sample survey. Disregarding Wreck 84, recommendations have been made to avoid the high probability zone as a potential disposal site. Given the recent nature of the CYTHERE, it is not considered historically significant.

CHAPTER VIII

POTENTIAL FOR SUBMERGED PREHISTORIC SITES

Introduction

The warming trend which marked the end of the Pleistocene epoch and the beginning of the Holocene altered the terrestrial character of the continents in a variety of ways, the most notable of which was the outline of coastlines and adjacent interior regions. Vast areas of the continental shelves were inundated by the glacial melt waters entering the ocean basins. Within the North American continent, this eustatic change in sea level coincided with man's earliest occupations of the land. The implications of prehistoric man's retreat before the gradually rising waters have become apparent to the archaeological community only within the past two decades. The issue gained widespread attention with Emery and Edwards (1966) article entitled "Archaeological Potential of the Atlantic Gulf Shelf", which was followed by a series of regionally oriented contributions (Salwen 1967, Bullen 1969, Powell 1971). The issue thus raised, the last decade has been marked by the first serious investigations of submerged sites throughout the coasts of North America. The results have been clear: prehistoric peoples, particularly those represented by the Paleo Indian and Archaic Periods, occupied areas which are now inundated by the waters of oceans, bays and rivers. The areas they occupied are now often covered by bottom sediments as well, but they do exist.

This chapter deals with the potential for such sites within the Mobile Bay area. It is composed of two sections: a geological reconstruction of the bay's history by geologist Dr. George M. Lamb and a consideration of the subsequent potential for submerged archaeological sites.

Changes In The Coastline And The General Geomorphology Of The Mobile Bay Area Since 15,000 Years Before The Present

Sea Level Changes. The most important factor in the changes that have affected the Mobile Bay area and the Alabama Gulf Coast in the past 15,000 years was the changes in sea level, and therefore erosion and/or deposition brought about by the advances and retreats of the continental glaciers which covered much of North America in the late Pleistocene time. The position of Late Quaternary sea levels in the Gulf of Mexico are based on the presence of submerged shoreline depositional features. The supporting data are reviewed by Poag (1973), who uses data from three different sources to produce the curves shown in Figure 11. In this figure the solid curve is based on data from McFarlan (1961), the dotted curve is based on data from Curray (1965) and the dashed curve is based on data from Ballard and Uchupi (1970). While these curves show some general agreement, they also show a wide discrepancy in details. One reason for the discrepancies in the details of the data shown on the three curves is that the evidence was gathered from different places in the Gulf of Mexico, and along with the general rise in sea level, there has been subsidence in the Gulf, with some areas subsiding more than others, and there

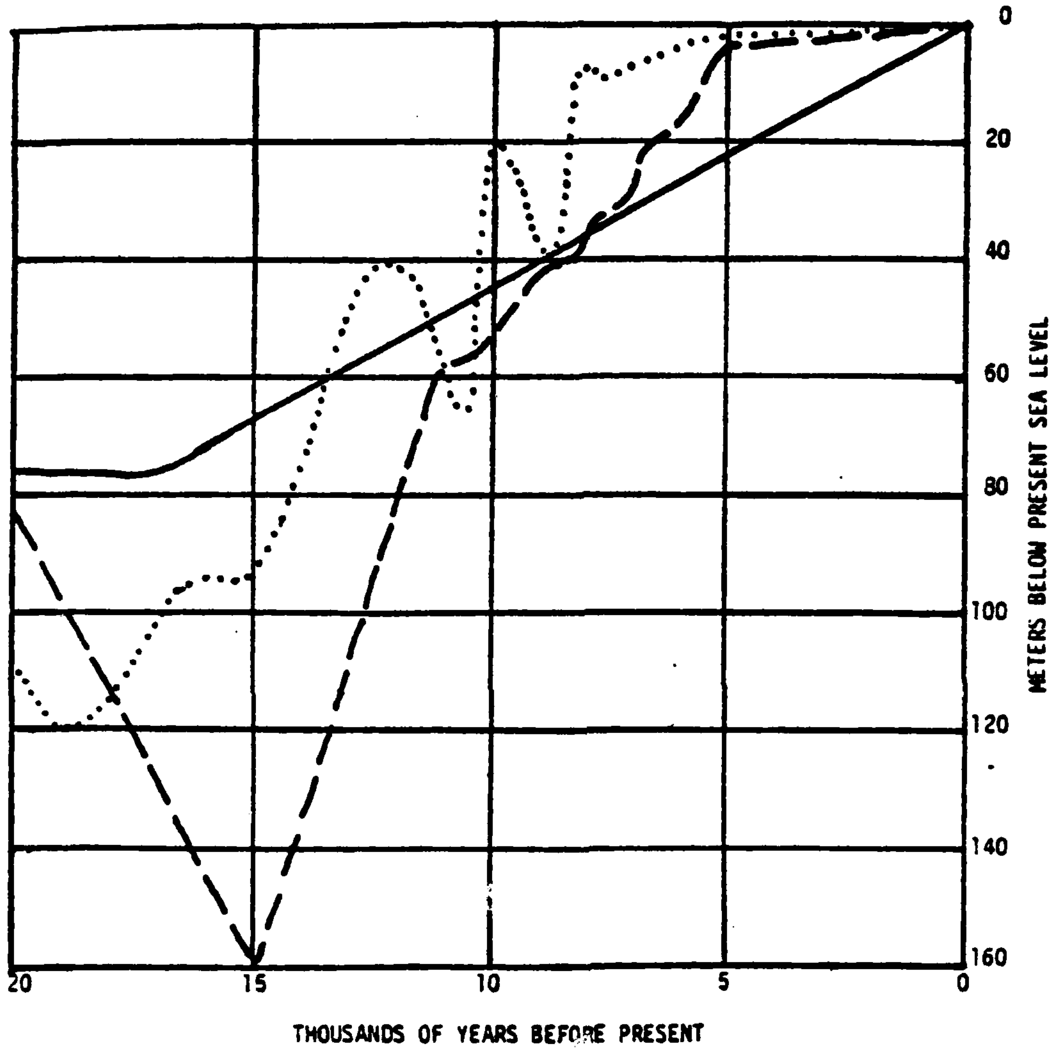

Figure 11. Late Quaternary sea level curves for the northern continental shelf of the Gulf of Mexico. (After Poag, 1973).

being a great deal of difficulty in determining the amount of subsidence at any one locale. While there is considerable disagreement as to where sea level stood 15,000 years b.p., there is more general agreement for the last 12,000 years. All evidence points toward a general rise in sea level over the past 15,000 years, with sea level at the beginning of that time being anywhere from 66 to 148 meters below present sea level. Such a level would put the shoreline at that time over 100 kilometers seaward of the present mouth of the bay, and Mobile Bay would have been a relatively deep river valley. As sea level began to rise with the melting of the continental glaciers, the shoreline retreated northward, and the river began to deposit material, gradually filling the valley. The rise in sea level was interrupted by at least two regressions according to Curray (1965). The Valders readvance occurred around 11,800 b.p., and the Cochrane readvance between 9,500 and 7,500 b.p., but these were only fluctuations in the general rise in sea level. Approximately 6,000 years b.p. the rise in sea level slowed, and it is not certain whether the present sea level was reached 3,000 to 5,000 years ago or only recently (Curray 1965).

As mentioned above, there are distinct problems in recognizing the changes brought about by simultaneous changes in sea level and subsidence of the Gulf Coast Basin, and the problem is further complicated by data from various parts of the basin. In the Mobile Bay area, some of the most definitive data are presented by May (1976). He shows samples from oyster shell material from the upper part of the bay to be more than five thousand years old. These samples (May 1976:12, Table 1) are anywhere from 7.3 meters to 11.6 meters below present sea level, and range in age from 3900 to 5900 years old, with most of the samples being more than 5000 years old. All were buried under various thicknesses of sediment. This would indicate that saline water had moved up into the old river system at least to the head of the bay as long as 5000 years b.p. Whether the current depth of these samples is completely due to further rise in sea level and sedimentation, or whether some of it is due to subsidence of the bay area is, at the present time, yet a matter for conjecture. Certainly this would indicate that much filling of the river valley that formed the bay has gone on in the past 5000 years. It would necessitate the taking of a prohibitively large number of samples to completely reconstruct the infilling of the river valley that is now Mobile Bay.

Rates of Sedimentation. As the sea advanced into the ancestral Mobile River valley, converting it into an estuary, the valley began to fill with sediment, and this process is continuing with large amounts of sediment entering the bay each year. Ryan (1969) made the first attempt to address the rate of sedimentation in Mobile Bay. This and later data are reviewed by May (1976), who presents some radioactive age dates from both shell and woody material at various depths and places throughout the bay. Most of his data is from borings taken in conjunction with highway construction at the upper limit of the bay, and in the delta to the north. These data are summarized in a sedimentation rate curve shown in Figure 12, and on the cross section shown in Figure 13 (see also Riccio, et al. 1972). The stiff Miocene clays into which the Pleistocene channels were cut, and upon which the later Pleistocene sediments were deposited, occur at various depths at the head of the bay, ranging from 12 to 33 meters below present

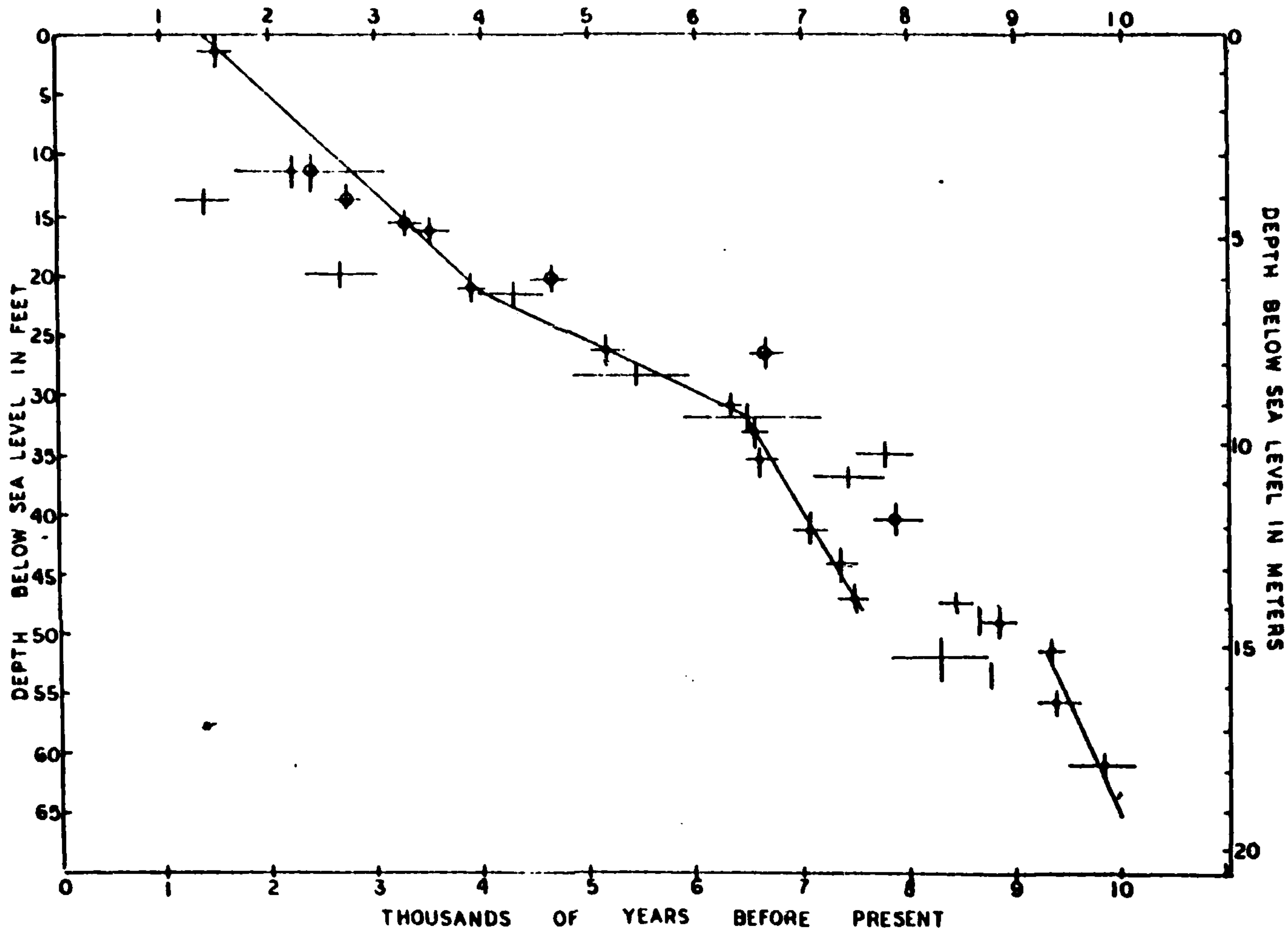

Figure 12. Sedimentation rate curve for Mobile Bay at the proposed interchange of Highway 90 and I-10 based on radiocarbon dates of wood, charcoal and shells. Line connects dotted samples taken from same hole. Other dates are from nearby holes except those circled are from I-65. Vertical lines are depth range of sample. Horizontal lines are statistical variability of dates. (From May, 1976)

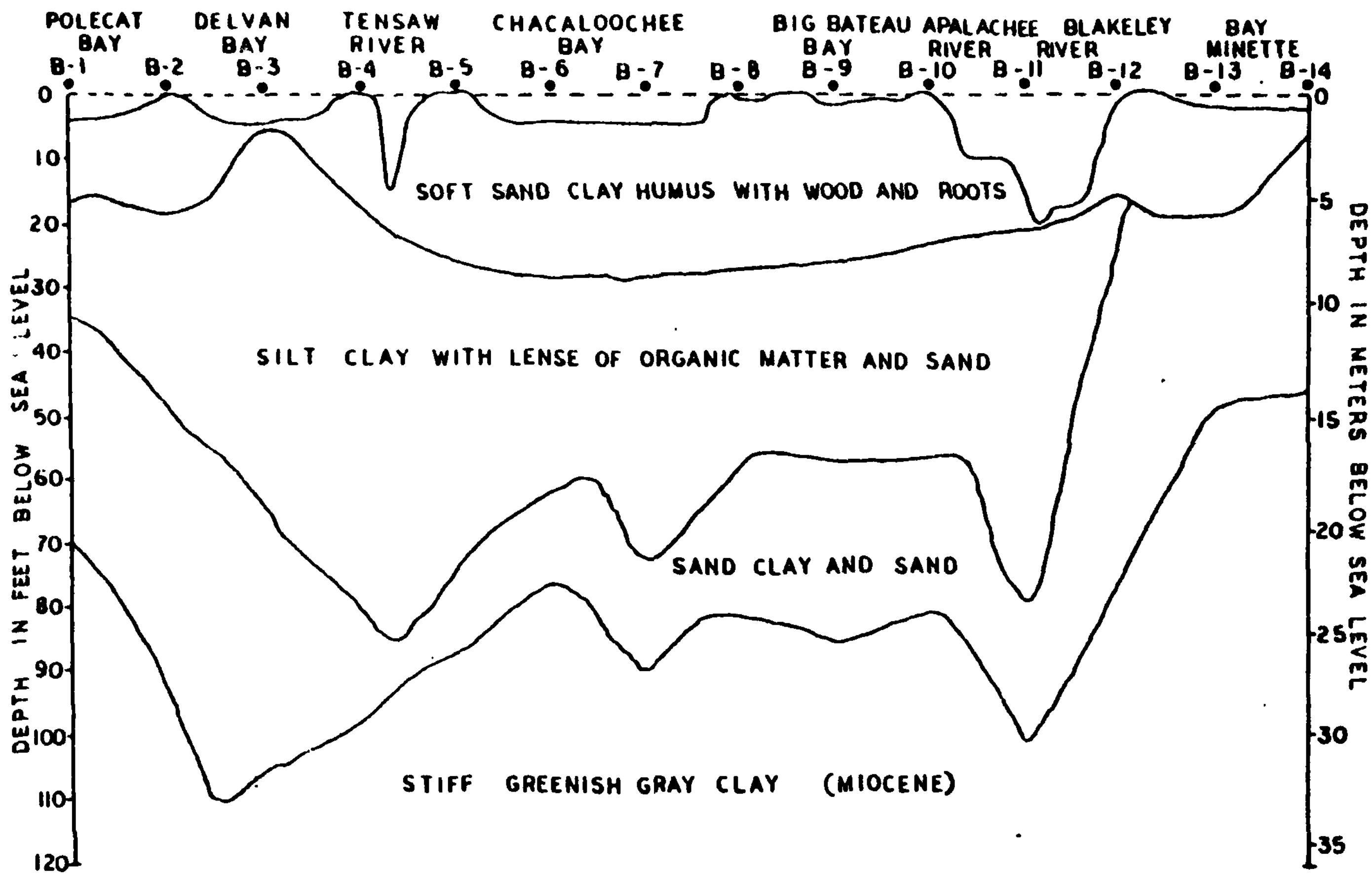

Figure 13. Vertical cross sectional profile of sediments from borings along the site of I-10 at the head of Mobile Bay. (From May, 1976).

sea level, with an average depth of about -24 m. In the buried river channel, the clay occurs at a depth of -36 m (May, 1976, p. 6). While the lines of borings along the present sites of I-65 to the north and I-10 to the south delineate the old river channels very well in these areas, there has never been enough core, or drilling, information to follow these old channels throughout the bay. The data in Figure 13 suggest almost 20 m of sediment being deposited within the last ten thousand years. This is probably a maximum, being at the front of the delta. Further down the bay, the rate of sedimentation was probably much lower. May (1976) discusses several episodes of sedimentation, which are less than perfectly documented. However, these zones show up on his cross sections, and similar zones show up on shallow seismic profiles as reflecting horizons. Certainly old channels are apparent on these profiles, although the density of coverage is not sufficient to completely map these channels at any horizon.

Changes in Geomorphology. As the area now covered by Mobile Bay was converted from a river valley to an estuary, there were profound changes in the geomorphology of the area. The two most profound were: (1) the drowning, and filling, of not only the ancestral channel of the Mobile River itself, but also of tributaries that must have entered that river in the area now covered by the bay; (2) the shoreline deposition that formed the present day Fort Morgan Peninsula (Mobile Point) and Dauphin Island.

When the Mobile River channel was at its lowest elevation, before the last major rise in sea level, the streams draining eastern Mobile County and western Baldwin County had a much steeper gradient than they do today, and undoubtedly cut relatively deep valleys under the area now covered by the bay. Both Kwon (1969) and Otvos (1973) have offered evidence that both the Fort Morgan Peninsula and Dauphin Island were relic Pleistocene ridges, which would imply that there were tributaries to the Mobile River flowing essentially in east-west directions during the time before the rise in sea level filled that area which is now Mississippi Sound and the lower bay. The tributary coming from the east would be a continuation of the present day Magnolia-Fish River system which presently empties into Weeks Bay and Bon Secour Bay in the southeastern corner of Mobile Bay. The present day Bon Secour River, further south, could have contributed. On the west side it is more than probable that a stream occupied the lowland presently filled by the waters of Mississippi Sound. There is evidence, largely in the late Pleistocene delta formed in the Bayou Cumbest area along the Alabama-Mississippi state line, that the Escatawpa River emptied southeastward into Mississippi Sound, and has only recently become a tributary of the Pascagoula. This ancestral Escatawpa River would have been fed by such streams as Bayou La Batre, Bayou Coden and the West Fowl River, which drain southern Mobile County. Further to the north, the ancestral Mobile River would have tributaries in East Fowl River, Deer River and Dog River on the western side of the bay, the Fly Creek, D'Olive Creek and Bay Minette Creek on the eastern side of the bay. A hypothetical map of the main channel and its tributaries some 15,000 years b.p. is shown in Figure 14. As sea level rose, these channels would be covered and filled, along with the main channel. Before they were filled, the decrease in gradient that would accompany the rise in sea level, would bring on increased meandering of the channels of all of the tributaries. As mentioned above, these channels can be seen on seismic profiles, at several levels, although there is not sufficient seismic data

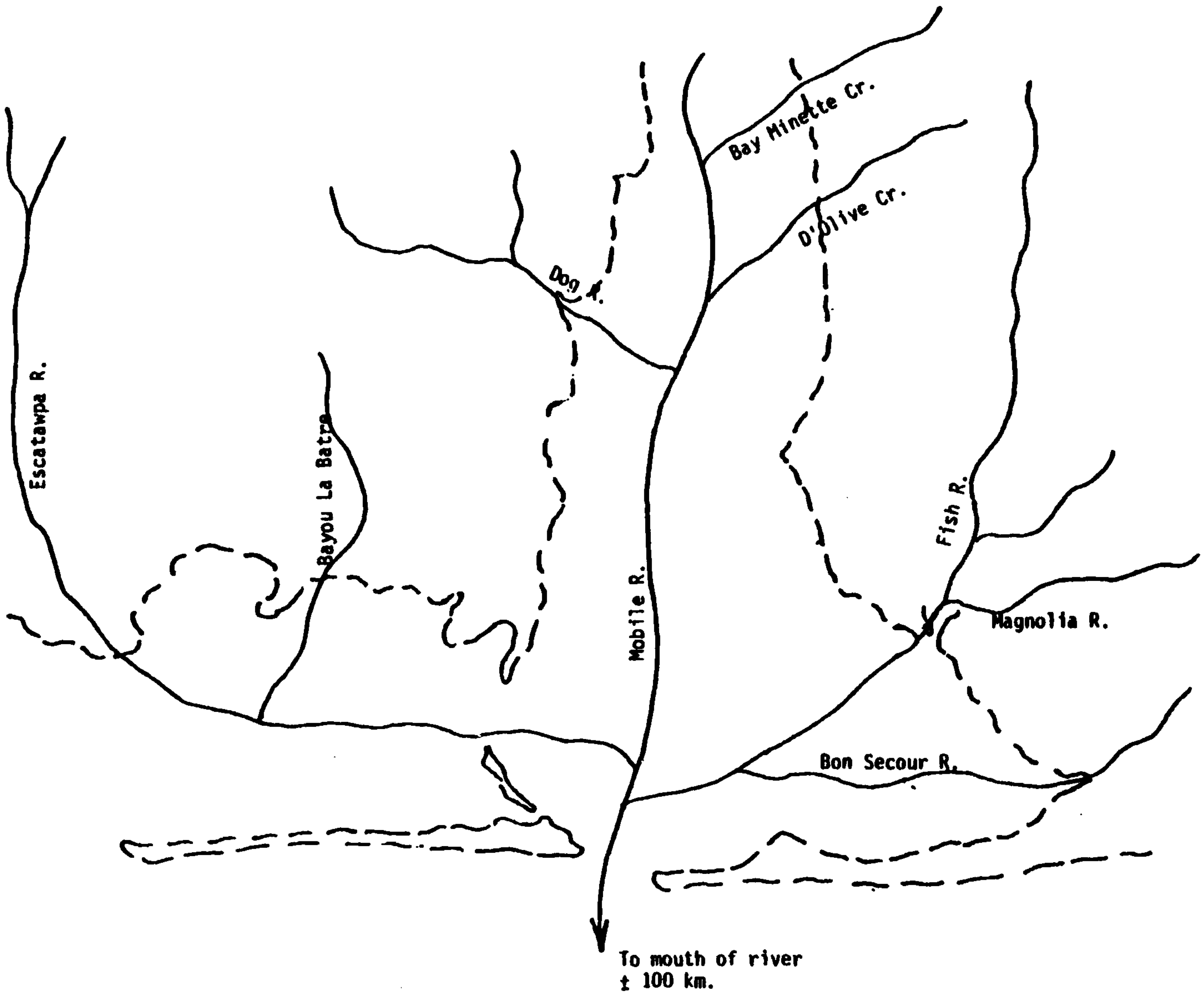

Figure 14. Hypothetical drainage pattern 15,000 years b.p., with sea level more than 65 meters lower than present. Present shoreline shown as dashed line.

to trace them throughout their length across, or beneath, the area now covered by the bay.

The other major change in the geomorphology of the area involves the formation of the Fort Morgan Peninsula and Dauphin Island, the present day shoreline. Although there is evidence that Pleistocene ridges existed in both of these areas, the buildup of the beach ridges, beaches and shorelines that we see there today could not begin until sea level approached that of the present. May (1976:14) points out that the barrier sands overlie mud at about 9 to 11 meters below sea level, and reviews several publications which indicate that the formation of the barriers along the Gulf Coast began anywhere from 5,000 to 2,000 years ago. Multiple ancient shorelines are evident on aerial photographs of the Fort Morgan Peninsula, and indicate a complex history of growth.

Radiocarbon dates on oyster shell deposits presented by May (1976: 12) indicate that there has been a bay for more than 5,000 years. If there were oysters essentially as far north as the present day head of the bay, that would indicate that any stream channels in the area now covered by the bay would have already been covered, and would be at least in the process of being filled with sediment. It would also mean that the major change for the past 5,000 years would be the building of the delta and the infilling of the bay. May (1976: 13) points out that the progradation of the delta is taking place at a rate of 20 centimeters per century, and that at that rate the bay will be filled with alluvial sediment in less than 1,500 years.

Implications For Submerged Sites In Mobile Bay

The preceding geological reconstruction of the Mobile Bay region has several implications for the archaeological record. It presents a picture of a gradually receding coastline, beginning as far as 100 km (at 15,000 B.P.) from the current coast, when Mobile Bay was nonexistent and deeply entrenched ancestral rivers marked its future location. The nature of the shoreline changed gradually but inexorably as, through the processes of rising sea level and sedimentation, the low lying river valleys were inundated to form the largest bay on the northern Gulf Coast by approximately 5,000 B.P. Throughout the thirteen millenia of submergence, there is inferential evidence that man occupied and continually adapted to his changing environment. The potential for such sites is an issue which has been noted in the past for Mobile Bay (Curren 1976, Trickey and Holmes 1971, Lazarus 1965, Stowe and Fuller 1979), but which has seen little opportunity for serious investigation.

Comparative data for such occupation are abundant along the Florida Gulf Coast, but perhaps most prolifically at the geologically similar Tampa Bay. In a series of remarkable articles beginning in 1963, Lyman O. Warren, later joined by Albert C. Goodyear, related their discovery of Paleo and Archaic Period chipped stone tools associated with oyster shell dredged from the bay. Eventually, over 200 artifacts were recovered from shell spoil which had been dredged over a period of forty years. Several points which have merit in this discussion were illuminated: 1) 99 percent of the shells dredged were Crassostrea virginica, an edible bivalve. 2) The oyster reefs from which the artifacts almost certainly originated ranged in thickness from 10 to 40 feet, with the upper surface an average of 10 feet below the bay waters. 3) The reefs' locations are adjacent to a series of Late Pleistocene or Post-Pleistocene river channels. 4) At least 20 more examples of dredged up sites were noted in the vicinity of Tampa Bay alone (Warren 1964, 1972, Goodyear and Warren 1972). Since the work of Warren and Goodyear, additional evidence of submerged sites in sinks (Clausen 1975, Cockrell 1974), rivers (Waller 1970), relic beach-lines (Ruppe 1980) and offshore areas (Neill 1964) have added the strength of corroborative evidence to their assertion that the oyster reefs of Tampa Bay were, at least in part, shell middens created by the occupancy of man.

In applying these findings to Mobile Bay, it is important to establish the presence of similar key elements, i.e., areas which exhibit a high potential for prehistoric occupation and which were subsequently inundated, and evidence of marine related subsistence in the form of reefs which contain a high percentage of edible bivalves. This is not to assert that only these conditions are necessary for the presence of submerged sites. Certainly there is potential for a wide range of sites related to a diverse set of subsistence economies throughout the period in question. The intent here, however, is to establish locations of high probability for site presence, given the specific data available.

The preceding geological discussion included a reconstruction of the dendritic river system which existed at 15,000 B.P. It was noted that with the general rise in sea level, these channels would have gradually filled, producing increased meandering of the channels. Furthermore, it was postulated that the current bay is at least 5,000 years old. For purposes of this discussion, we are left with a possible occupational span of at least 10,000 years, or 13,000 to 3,000 B.C., encompassing Paleo to Middle Archaic Periods. This is a similar range to that represented by the bulk of cultural materials recovered from Tampa Bay (Goodyear and Warren 1972:58-60). River terraces have long been recognized as attractive areas for occupation, as they offer access to flora and fauna from a diversity of marine and terrestrial environments. As Trickey and Holmes (1971: 116) have succinctly stated for the Mobile Delta region, multiple occupancy occurs at sites with the attributes "water, food and high ground". River confluences in effect multiply the attributes present along a single river channel. As predictive models for site location in this region are nonexistent, it is necessary to base our judgement of these confluences as high probability areas on models derived from interior regions, along with the circumstances present at the Tampa Bay reef sites. Figure 14 outlines five river confluence areas: the Dog River, D'Olive and Bay Minette Creeks with the Mobile River in the upper bay and the Escatawpa and Fish Rivers with the Mobile in the lower bay.

Turning to the occurrence of edible bivalves, the most comprehensive mapping of Crassostrea virginica was perfromed by The Alabama Marine Resources Laboratory beginning in 1968 (May 1971). Over 3,000 acres of oyster reefs were located within Mobile Bay, primarily in the upper bay and in large deposits north of Dauphin Island. Coring samples were taken to establish the location of buried shell deposits, the majority of which were found to occur in the upper half of the bay (Figure 15). Carbon-14

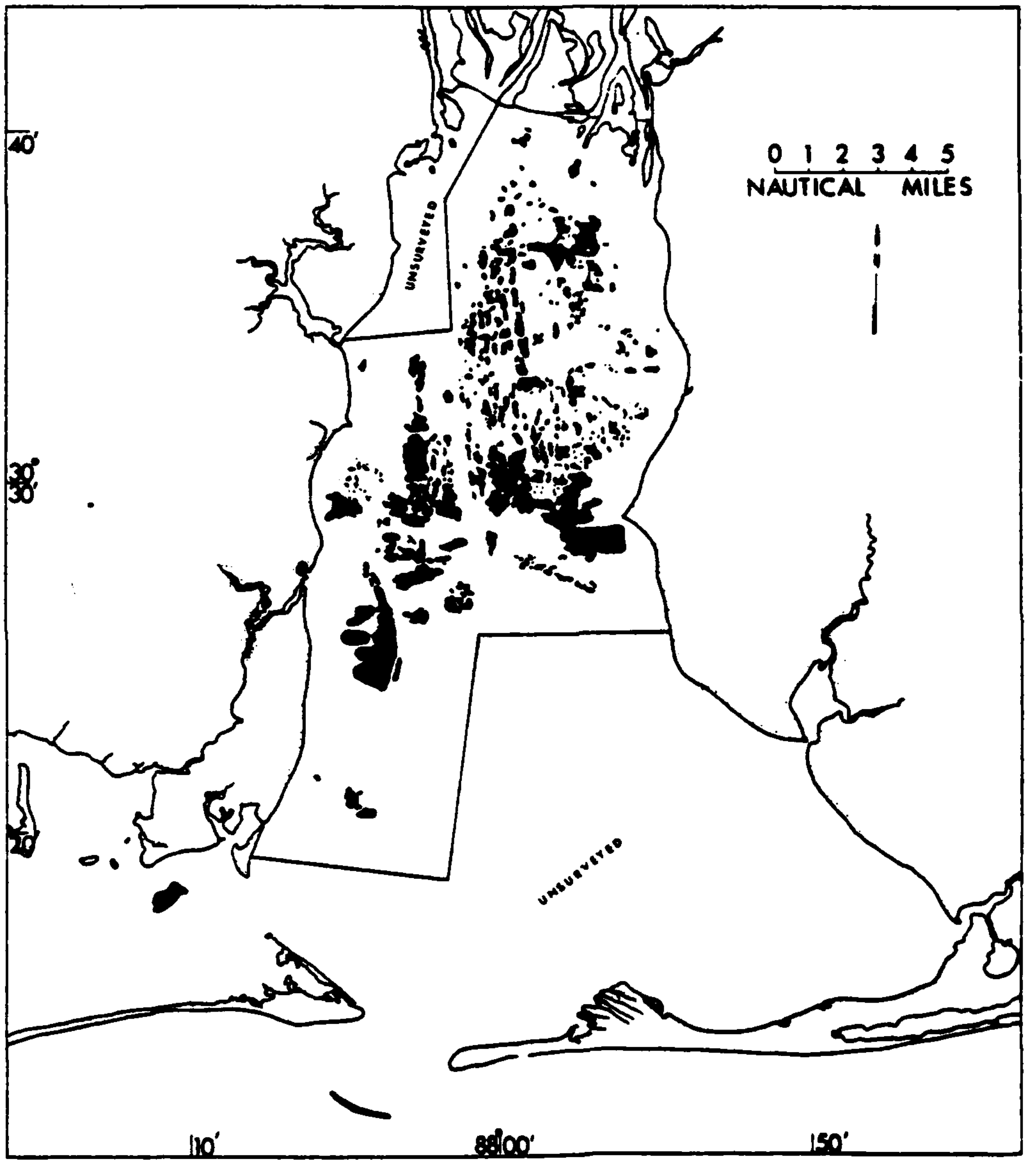

Figure 15. Distribution of buried shell deposits as originally surveyed since 1965. (Data from Radcliff Materials, Inc., as reported by Ryan 1969).

dates from these upper bay reefs range from less than 140 years B.P. at 12 feet below the present surface of the bay to 5710 ± 220 B.P. at 38.5 feet below surface (Ryan 1969). As May (1971:12) states, these represent the oldest deposits in the bay:

> The species Crassostrea virginica became established in Mobile Bay early in its geological history. Carbon-14 dates indicate that oysters became established in the head of the bay in the area of the present delta between 5,000 and 6,000 years ago and have progressively migrated down-bay. This trend is typical of oyster reefs throughout the Gulf Coast and corresponds to a rapid rise in sea level about 6,000 years ago. The general pattern of shell distribution and depth is similar to other Gulf bays. As seaward barriers began to form and the bay delta progressed, salinities favorable for oysters advanced farther down the bay leaving vast deposits of shells buried by sediments. The oldest deposits in the upper part of Mobile Bay are buried under about 25 feet of overburden. Farther down-bay the reefs are younger and are buried under less sediment. Most deposits in the lower half of Mobile Bay and Mississippi Sound have less than 3 feet of overburden.

The profuse upper bay deposits literally cover the high probability areas for site location in the upper bay, i.e., the channel of the Mobile River and its confluence with the Dog River and Bay Minette and D'Olive Creeks (See Figure 14). The C-14 dates gathered from the reef would indicate the possible harvesting of these reefs and formation of shell middens by aborigines at least as far back as Middle Archaic times, and quite possibly earlier.

The absence of significant deposits of oysters in the lower bay areas does not detract from the potential for submerged sites in this area. Oysters represent the product of the bay's most recent configuration. It is possible that more deeply buried and as yet undiscovered oyster reefs are located in this lower bay region, representative of that point in time when this would have been the early bay's northernmost extent. In addition, the history of the bay since 15,000 B.P. is marked by continual environmental change. The shift from river valley to marshland and finally to bay all occur during the period of potential occupation by man. This variegated series of environments would have presented man with a gradually changing set of subsistence economies (cf. Lazarus 1965). The fact that the Mobile Bay basin has provided such a complex range of environmental settings implies that submerged sites can occur virtually anywhere in the bay.

In an attempt to grapple with this theoretical situation for the lower bay area, however, we turn once again to the simplistic model of high probability areas for site location based on river confluences. For the lower bay, this centers around the ancient channels of the Escatawpa and Fish Rivers and their confluence with the Mobile River (Figure 14). As this area is the oldest in terms of bay formation, it can be postulated that potential submerged sites should generally predate those of the upper bay regions. Evidence of subsistence should be in the form of riverine biota, e.g., Rangia shells. These in turn may be overlaid by deeply buried oyster reefs marking the initial incursion of bay formation. Another inference of early occupation would be the presence of Pleistocene faunal remains (Curren 1977). A number of Pleistocene remains were recovered from the same Tampa Bay reefs which produced cultural remains, although a direct association could not be established (Warren 1964:230; 1972:50).

In summation, there is strong inferential data that submerged prehistoric sites may be present in Mobile Bay. Two areas of high probability have been outlined. The lower bay area should be the oldest and the most deeply buried. The upper bay area may be considerably younger, offering a wider range of cultural remains and easier access to those materials. A method of treating these potential areas is presented in Chapter IX of this report.

CHAPTER IX

RECOMMENDATIONS FOR PHASE II TESTING

INTRODUCTION

The preceding chapter on potential wreck correlations included specific statements on anomalies and clusters which were recommended for Phase II Testing. It was also noted that additional anomalies which could not be correlated with known wreck locations should be further examined, based on the fact that over 100 shipwrecks do not have recorded locations. This chapter will deal specifically with those anomalies recommended for Phase II Testing, as well as pointing out research goals to be addressed, methodologies for a testing program and time estimates for such work. The inventory of recommended anomalies is divided into four sections: the Mobile channel segments, the upper bay turning basin, Brookley disposal area and the gulf disposal sites. As all significant anomalies are considered in this chapter, the totals presented differ from those listed previously relating only to wreck correlations.

Inventory

Mobile Channel

Twenty magnetic clusters and sixteen individual anomalies are recommended for further investigations. The majority of these are located in areas of heavy historic use, i.e., the bay entrance and upper bay. Included are anomalies situated in the proposed state docks transfer station and the upper bay anchorage area.

Anomaly Clusters (n=20)

Number	Segment	Number	Segment
1*	B	18	I
2*	B	19	J
5	C	20	J
6	C	22	J
11*	E	23	K
12	E	24	K
13*	F	25	K
15*	G	26	K
16	G	29*	L
17	G	30*	L

Individual Category II Anomalies (n=14)

Number	Number
C-16-2*	J-67-3
C-17-5	J-76-2
E-28-1	J-78-1
G-43-4	L-88-2
G-47-2*	L-90-3*
H-54-3	M-98-3
H-57-1	M-99-1*

Other Individual Anomalies

Number	Number
A-4-2*	A-7-1*

*Indicates possible correlation with re-
corded shipwreck sites.

Turning Basin

The shallow water turning basin area is a moderately dense magnetic locale, containing 29 anomalies in a 29.3 acre area. It is located in the heavy traffic area of the upper bay, associated with the pre-1914 navigation channel, and may contain at least two sunken vessels. Six Category II anomalies are recommended for Phase II investigations, constituting a 21 percent sample. Five of these anomalies are associated with Wreck Site 19 and are concentrated within a relatively small area. This has been designated Area 1. Anomaly Tb-4-4 is associated with Wreck Site 20 and is treated as an individual anomaly.

Anomalies recommended (n=6):

Area 1:

Tb-2-2*	Tb-6-4*
Tb-4-2*	Tb-7-3*
Tb-4-3*	

Individual anomalies:

Tb-4-4*

Brookley Disposal

The Brookley disposal area is similar to the turning basin in that it is a magnetically dense area located in shallow water. The area has been used repeatedly as a dumping ground for a variety of materials, many ferrous in nature. Recommendations for Phase II investigations constitute a sampling approach centered around Category II anomalies. These 33 anomalies constitute 15 percent of the 220 discovered in Brookley.

Figure 16 illustrates the relative distribution of the sample, comprised of two areas of concentration, containing 15 and 12 anomalies, and 6 individual anomalies dispersed throughout the area. In addition, fourteen anomalies associated with Wreck Site 24 are recommended for testing. This approach combines investigation of the most significant concentrations of anomalies with a sample of dispersed anomalies. The result should be a sound understanding of past activities in the Brookley disposal area.

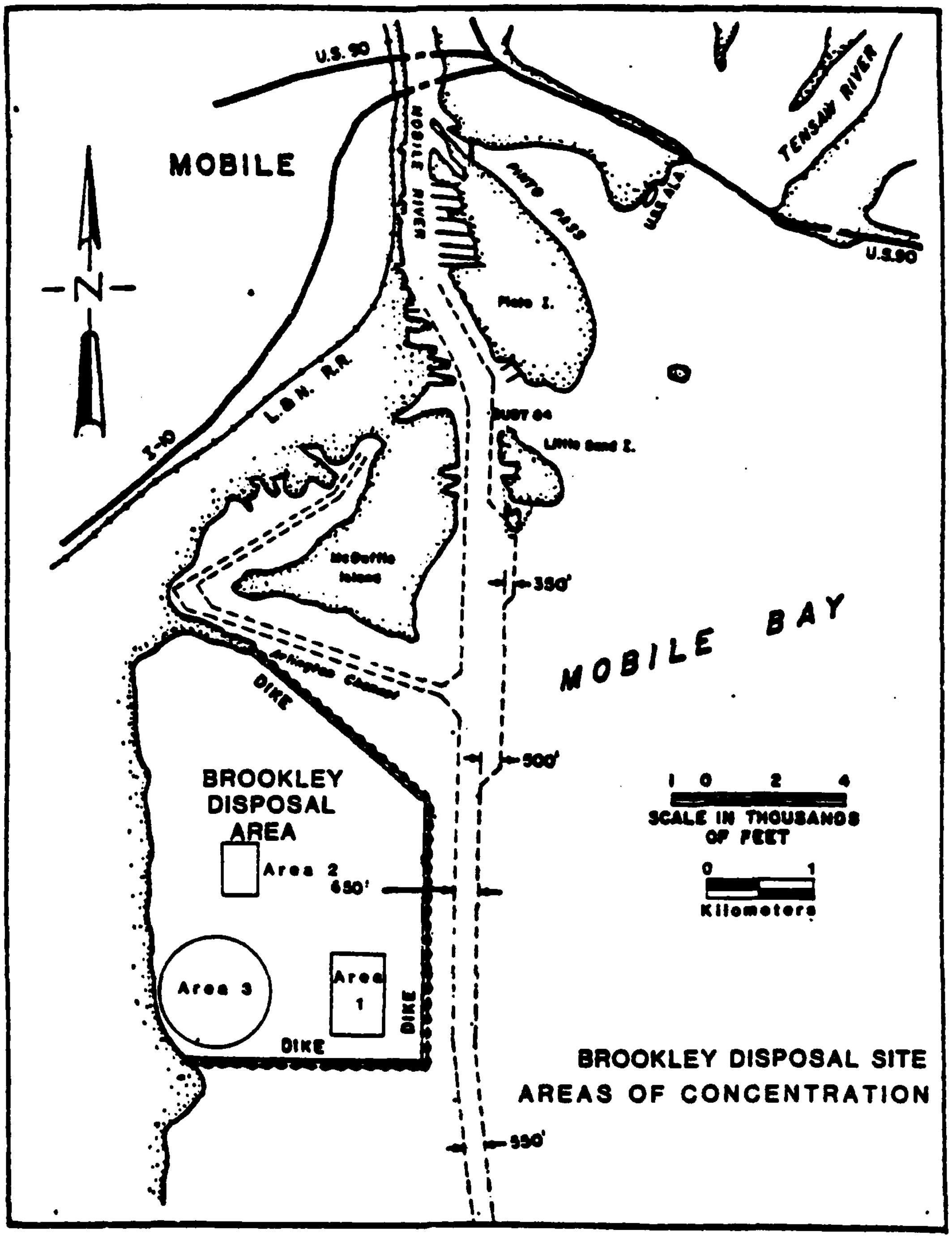
U.S. 90
MOBILE
N
MOBILE RIVER
TENSAW RIVER
PINTO PASS
U.S.90
L.&N. R.R.
I-10
MOBILE BAY
350'
500'
650'
550'
DIKE
BROOKLEY
DISPOSAL
AREA
Area 2
Area 3
Area 1
DIKE
DIKE
1 0 2 4
SCALE IN THOUSANDS
OF FEET
0 1
Kilometers
BROOKLEY DISPOSAL SITE
AREAS OF CONCENTRATION

Figure 16.

Anomalies recommended (n=47)

Area 1:

Br-9-1	Br-13-5
Br-10-4	Br-92-1
Br-10-5	Br-96-1
Br-10-6	Br-96-2
Br-12-8	Br-96-3
Br-13-1	Br-97-4
Br-13-2	Br-97-6
Br-13-3	

Area 2:

Br-25-1	Br-75-3
Br-26-1	Br-77-1
Br-28-1	Br-77-2
Br-30-3	Br-77-3
Br-31-3	Br-79-2
Br-31-4	Br-82-1

Individual Anomalies:

Br-12-3	Br-37-3
Br-13-16	Br-97-2
Br-18-1	Br-99-2

Area 3 - Anomalies associated with Wreck Site 24:

Br-29-1	Br-57-1
Br-31-1	Br-72-2
Br-32-3	Br-72-3
Br-33-2	Br-74-1
Br-35-2	Br-75-5
Br-35-3	Br-77-4
Br-37-1	Br-77-5

Gulf Disposal Areas

Survey of the Gulf disposal areas constituted a high level sample (33 percent) to ascertain high versus low probability zones. Forty-six anomalies were recorded. Figure 17 presents the three high probability zones delineated by the survey. Zone 1, containing 33 anomalies (72 percent), is the area of greatest concentration, reflecting its position along the coastal shipping lanes. Zones 2 and 3, containing three and four anomalies, respectively, are smaller concentrations located in disposal area two. Six isolated anomalies are dispersed throughout the disposal areas. The high probability zones should be avoided during disposal operations, if possible. Barring avoidance, Phase II investigations of the following Category II anomalies is recommended.

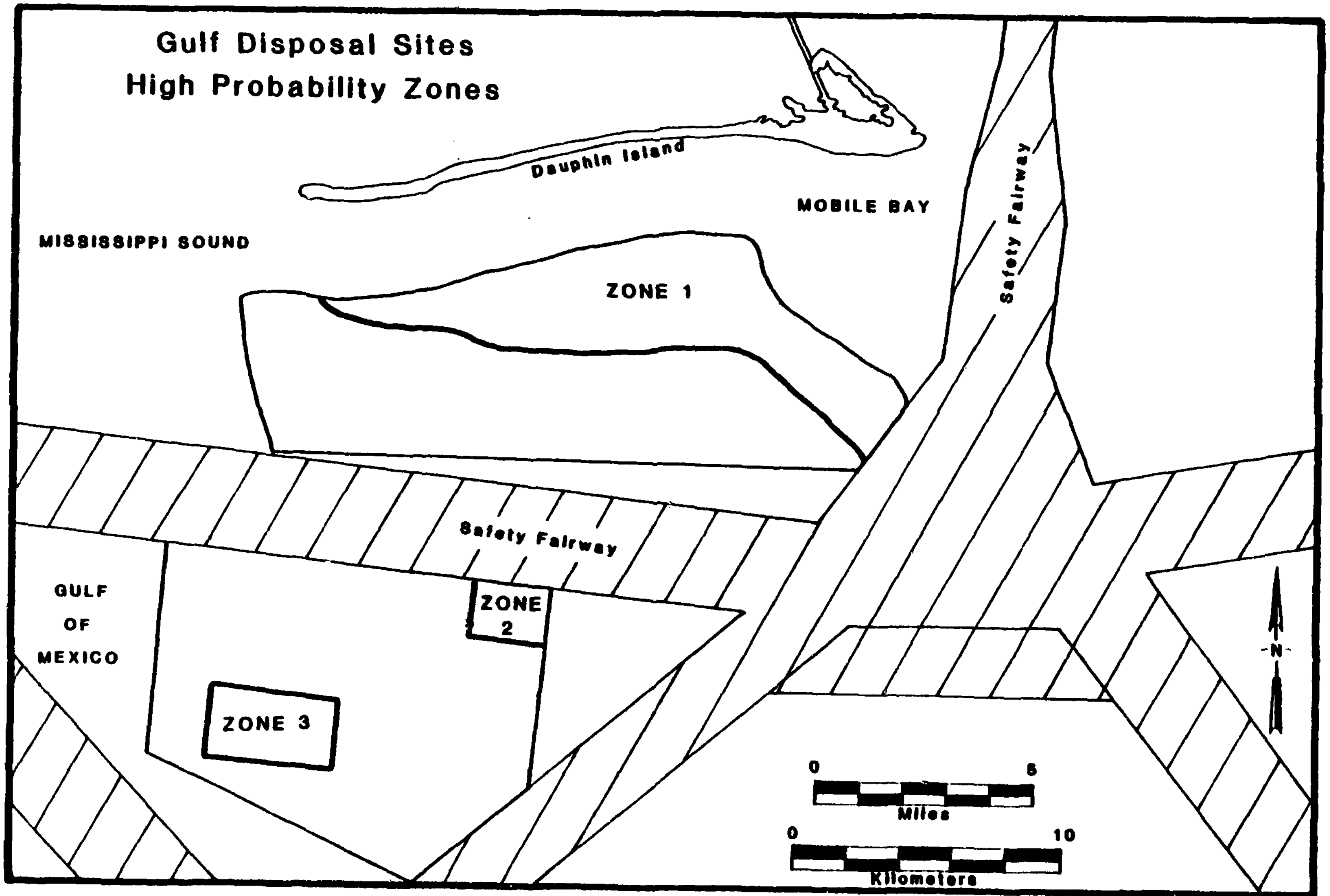
Gulf Disposal Sites
High Probability Zones
Dauphin Island
MOBILE BAY
MISSISSIPPI SOUND
ZONE 1
Safety Fairway
Safety Fairway
GULF
OF
MEXICO
ZONE
2
ZONE 3
N
0
5
Miles
0
10
Kilometers

Figure 17.

Anomalies recommended (n=9):

Zone 1:

Gu-2-2*	Gu-16-1
Gu-7-2	Gu-16-2
Gu-13-2	Gu-31-1

Zone 3:

Gu-79-2
Gu-83-1

Individual Anomalies:

Gu-87-1**

*Gu-2-2 has been identified through side scan records as a small vessel, possibly a fishing boat.

**Gu-87-1 is an isolated anomaly in disposal area two. Avoidance is recommended, if possible.

Summary

Twenty clusters and seventeen individual anomalies in the channel and associated areas have been recommended for Phase II testing. If the concentrations outlined for the turning basin and Brookley are managed as clusters, which is suggested for reasons of efficiency and cost, the total number of cluster areas is twenty-four. Six individual anomalies from Brookley are recommended, bringing the individual anomaly tally to twenty-three. If avoidance of the nine anomalies recommended for Phase II in the gulf is not possible, the total for individual anomalies is thirty-two. The following sections deal with study goals, methodology and scheduling for Phase II testing of these anomalies.

Study Goals

Preliminary research in the Mobile Bay project has operated outside the constructs of a specific research design. It is not our intention here to devise a long-term, detailed research design into which further investigations in the bay can be incorporated. Rather, it is to specify a variety of study goals which can be addressed in the testing and mitigation phases.

Shipwrecks are often referred to as "time capsules", in that the vessel and its cargo are reflective of a brief time period and thereby represent a slice of culture from that period. Clausen (1967) has noted that wrecks constitute a series of tightly dated sites, often allowing temporal placement to the hour of the day. Many times in the wreck cargo, a cross-sectional sample of material culture may be found. Otherwise perishable items are often preserved by overburden, offering rare opportunities for the study of material culture (Harnett 1965, Franzen 1966, Clausen 1967, Petsche 1974). Of equal importance is the nature and construction of the vessel itself. On both synchronic and diachronic levels of investigations, shipwrecks can add both specific and general knowledge to the realms of culture, technology, history, communications and trade.

On a general level, a number of research questions may be addressed during subsequent testing and mitigation:

1. What was the nature of the elements of marine oriented cultures in the Mobile Bay locale? As an important Gulf Coast harbor, second only to New Orleans in historic periods, Mobile Bay offers an excellent opportunity to study the relationships of the people involved in the transfer of goods and ideas from gulf to bay and upriver to the interior and vice versa and the effect of these transitions on the character of Mobile.
2. Railroad competition eventually destroyed steamboat traffic into the interior areas. What changes in coastal traffic patterns and vessel construction did this situation induce? This applies especially to local vessel construction, a facet of marine archaeology which has been inadequately addressed. Fortunately, a literary search into local vessels has been conducted for Mobile Bay (Wilson and Curren 1981). Inwater investigations have the potential to add significantly to this body of knowledge.
3. What effect did waterborne transport of cargoes have on the economics and industries of the area served? Not only should differences in local and exotic goods in cargoes be recognized, but the causal relationships inspected. Were exotic goods so cheaply transported as to cancel the benefits of local manufacture or were exocentric demands involved? Did the nature of exotic goods change drastically through time?
4. Marine activity patterns for Mobile Bay are evident from documentary research. Will the potential shipwrecks to be investigated be indicative of this pattern? What are the specific effects of later activities, such as dredging, on this activity pattern?

Outside the realm of anthropological/historical research, continued investigations in Mobile Bay offer an opportunity to improve the methods employed in marine archaeology. As Gramling (1980:385-388) has pointed out, improvement of remote sensing capabilities is in itself an important research goal. It is with the improvement of techniques and the introduction of new strategies and equipment that the difficulties and costs of marine archaeology will be reduced. Remote sensing may never be capable of positive anomaly identification, but an alternative is available. Comparable data on anomaly signatures as they relate to shipwrecks and their dispersion, made available to and studied by responsible marine archaeologists, may eventually allow the formulation of the predictive models which are needed to balance the inadequacies of remote sensing technology.

Recommendations for Phase II Investigations

The phased approach to marine archaeological endeavors has proven to be an efficient method of investigation and is becoming the standard among governmental agencies and contractors. This method is generally composed of three phases:

Phase 1 - reconnaissance survey through remote sensing.
Phase 2 - site delineation and in-water evaluation.
Phase 3 - mitigation of sites assessed as significant and in danger of adverse impact.

Some investigators have delineated four phases, essentially dividing phase two into two distinct phases (cf. Murphy and Saltus n.d.:30). This division has been advanced as more efficient, in that site delineation may indicate that the site is outside of or below slated construction limits, e.g., dredge cut, and, thus would not require in-water evaluation. This point has merit, especially on a specific site basis, in that site delineation should always precede in-water investigation, thereby possibly negating the need and subsequent costs of assembling a diving effort.

The four phase approach is not planned for the Mobile Bay project for several reasons. Construction plans are fairly rigid and the reconnaissance survey covered only those areas slated for potential impact. Anomaly locations are accurately positioned in the horizontal plane and, given the proposed channel depth of 55 feet, few will be located below impact in the vertical plane. The overriding reason, however, is the extremely limited time frame envisioned for construction, thereby creating a compressed schedule of cultural resource investigations. An analogous situation existed during phase one when the extensive literature search was performed contemporaneously with field investigations, rather than preceding them.

With both site delineation and in-water evaluation included in a Phase II framework, the following procedures should be performed:

Relocation
↓
Contouring
↓
Surface Search
↓
Subsurface Testing

Relocation. Magnetometer, fathometer and positioning systems are required to relocate the anomaly or cluster to be investigated. This procedure is not as superficial as it would seem considering that wave and current action or impact from boat traffic, shrimping, etc., can cause an anomaly to move, if that anomaly is exposed on the bottom. Relocation is essential in not only "rediscovering" the site, but in ascertaining that the site location has remained stable since its original discovery.

Contouring. Following relocation, the anomaly should be inspected more closely by the remote sensing system. A grid pattern composed of 50 feet (15 m) lane intervals should be preprogrammed into the positioning system's microprocessor. The remote sensing system, composed of fathometer, magnetometer, side scan sonar and subbottom profiler, can then be utilized to investigate the anomaly or cluster following the grid pattern. All systems should be interfaced via event marker to assure comparison of data. Data recovered should then be reduced to produce a magnetic contour map of the site, with accompanying notes on side scan and subbottom targets. The contour map serves to delineate the site horizontally, determine its characteristics, including individual target location, and more accurately determine its position. The investigative team should have in hand a precise contour map of the site prior to any diving activities. A specific target or a number of targets within a cluster may then be determined and buoyed prior to diver investigation.

Surface Search. The initial step of in-water investigation is the surface (bottom) search. Concentric search patterns out from the buoy position will determine if objects are exposed above bottom. This is especially important in regard to small objects which could not be discerned on the side scan record. The second purpose of the surface search is to provide more input into the location of magnetic concentrations which are buried under sediments. This may be accomplished with an underwater metal detector, with the diver flagging any areas which register on the detector. The surface search procedure is the first in which there is actual human contact with the site area, providing information which can not be derived from the remote sensing system and information essential to the subsequent subsurface testing of the site. If it can be ascertained that the source of the anomaly is exposed on the bottom, the surface search procedure may be the final step involved in the evaluation.

Subsurface Testing. The contouring and surface search procedures will resolve several investigative issues: the limits of the site, whether the source of the anomaly is above or below the bottom and the area or areas of highest magnetic inflection and steepest gradient, indicative of target source. If procedures to this point have not resolved the nature of the anomaly, a strategy of subsurface testing must be devised.

It can be presupposed that many of the anomalies located during this survey will be buried below bottom sediments. This is based on two operative factors: forces affecting shipwrecks and the geomorphological nature of a bay environment. It has been demonstrated that during sinking and initial breakup of a vessel, heavier objects such as machinery, armament, ballast and heavy cargo remain near the sunken hull (Clausen 1965, CEI 1978:85). These objects along with the hull (if intact) tend to descend through bottom sediments until they meet a resistant stratum. Lighter objects disperse downcurrent from the wreck site. The areal extent of this scatter is dependent on the buoyancy of the objects and velocity of the current. This phenomenon has been observed in marine environments (Clausen 1965, 1967) protected bays (Arnold 1974) and riverine environments (Murphy and Saltus n.d.). The recognition of anomaly clusters, although often ambiguously defined in the literature, is performed in the data reduction phase of investigation in light of this dispersion effect.

Once a shipwreck has settled, it is still subjected to a variety of hydraulic and biotic forces: current and wave action, storms, biological organisms, chemical activity, cycles of sedimentation and scouring, and dredging activity. Within the generally protected Mobile Bay, the major effects should be from the scouring action of river and tidal currents and the immense sediment load which is discarded by the Mobile River as it enters the bay. From a geological standpoint, Mobile Bay is undergoing the gradual process of enfilling from river sediments. This process has the effect of obscuring sites with overburden. While current scouring, particularly at the bay entrance, will at times remove portions of overburden to expose these sites, it can be anticipated that most sites in the bay will be sealed below sediments most of the time. This situation increases the importance of a strategy of subsurface testing in evaluating an anomaly.

One method of testing which has met with success combines jet probing and test trench dredging. A jet probe is composed of a small (1 in to 1 1/2 in) metal probe through which water is injected under high pressure, thus facilitating sediment penetration. Probing is useful in locating solid objects buried in sediment, the areal extent of scatter, determining the amount of overburden, and, in experienced hands, the material nature of an object (wood vs. metal). As probing is less labor intensive than trench excavation, it is an efficient method for investigating a site so as to determine the optimum placement of subsequent test trenches (Grambling 1980:10, Murphy and Saltus n.d.).

The placement of test trenches should be predicated on data garnered from all previous procedures. Subsurface trenches are difficult to excavate underwater, particularly where current action causes continuous slumping of the trench walls. A variety of devices are available for excavation of trenches. Large suction dredges are efficient, but require constant supervision to avoid impact to the site (cf. Grambling 1980:11). Induction dredges work well as long as the water intake is adequately filtered and can be efficiently controlled by a single diver (cf. Murphy and Saltus n.d.). Airlifts have been widely utilized, but are inefficient in shallow water. The key element in the use of any of these systems is efficient placement of trenches so as to avoid unnecessary impact to the site. Once an anomaly is identified through subsurface testing, trenches should be refilled and the evaluation of significance process begun.

Projected Time Table for Phase II Testing

Table 14 presents estimates of time required to conduct Phase II testing on the anomalies recommended for further investigation. The basis of the estimates is the time required to evaluate a single anomaly. Phase II investigation of an anomaly is estimated to require 5 days, one for relocation and delineation, one for data reduction and interpretation of magnetic contours, and three for surface search and subsurface testing. The five day total represents a single work unit.

Clusters, because of their areally concentrated nature, can be more efficiently investigated than a number of widely dispersed anomalies. Time estimates for clusters are based on the following formula:

$$Ct = 1m + 1c + 2s + (2 X n)e$$

Wherein, Ct is the time estimate, computed by adding one day for relocation and delineation (m), one day for contouring (c), two days for bottom search(s), and two days for evaluating (testing) each anomaly in the cluster (X n)e. This is converted to work units by dividing by five.

Areas of magnetic concentration outlined for the turning basin and Brookley disposal contain an average of 11.5 anomalies. As with clusters, the concentrated nature of these areas lend them towards more efficient investigation. Areas differ from clusters in that, while occupying more space, only specific anomalies within the area are recommended for investigation, rather than all anomalies. Also, as these areas are all located in shallow water, search and testing procedures should be less difficult than in deep water. Time estimates for areas of concentration are derived from the following formula:

$$At = 2m + 2c + 1s + 10e$$

Wherein, At is the time estimate, computed by adding two days for relocation and delineation (m), two days for contouring (c), one day for bottom search (s) and ten days for evaluation through testing (e). Each of the four areas of concentration will require fifteen days or three work units for Phase II.

Table 14 is presented in three segments: single anomalies, clusters, and areas of magnetic concentrations.

Table 14. Schedule for Phase II Testing.

I. Single Anomalies		II. Clusters		III. Areas of Concentration	
Anomaly No.	Work Units	Cluster No.	Work Units	Area No.	Work Units
C-16-2	1.0	1	2.4	Tb-Area 1	3.0
C-17-5	1.0	2	2.0	Br-Area 1	3.0
E-28-1	1.0	5	2.0	Br-Area 2	3.0
G-43-4	1.0	6	2.0	Br-Area 3	3.0
G-47-2	1.0	11	2.0		
H-54-3	1.0	12	2.0		
H-57-1	1.0	13	2.0		
J-67-3	1.0	15	2.0		
J-76-2	1.0	16	2.0		
J-78-1	1.0	17	2.0		
L-88-2	1.0	18	2.0		
L-90-3	1.0	19	2.4		
M-98-3	1.0	20	2.4		
M-99-1	1.0	22	2.0		
A-4-2	1.0	23	3.2		
A-7-1	1.0	24	2.4		
Tb-4-4	1.0	25	2.0		
Br-12-3	1.0	26	2.0		
Br-13-6	1.0	29	2.0		
Br-18-1	1.0	30	2.4		
Br-37-3	1.0				
Br-97-2	1.0				
Br-99-2	1.0				
Gu-2-2	1.0				
Gu-7-2	1.0				
Gu-13-2	1.0				
Gu-16-1	1.0				
Gu-16-2	1.0				
Gu-31-1	1.0				
Gu-79-2	1.0				
Gu-83-1	1.0				
Gu-87-1	1.0				
TOTALS:	32.0		43.2		12.0

Total Estimate = 87.2 units x 5 days per unit = 436.0 days.

Survey and Testing of Potential Submerged Sites

In Chapter VIII of this document, a case was presented for the potential of submerged prehistoric sites in Mobile Bay. Five high probability areas, based on river confluences and the presence of shell fish resources, were outlined. These areas are: 1 - Bay Minette Creek/Mobile River confluence, 2 - D'Olive Creek/Mobile River confluence, 3 - Dog River/Mobile River confluence, 4 - Fish River/Mobile River confluence, and 5 - Escatawpa River/Mobile River confluence (Figure 18). Three of these (areas 3, 4, 5) are located along the ship channel and will be impacted by channel expansion activity.

The difficulty in locating and investigating these potential sites is evident. With the possible exception of late cultural components associated with upper bay oyster reefs, it is probable that these sites will be deeply buried beneath sediment and shell overburden. It must also be noted that the density of cultural materials associated with early sites will be of a low order and possibly dispersed by hydraulic forces prior to submergence. In addition, modern day disturbances such as channel and shell dredging may have impacted these sites to some degree. Cognizant of these complications, the following discovery methods are recommended.

1) Bottom search - The upper bay area (3) should be systematically searched by divers. There is a potential for exposed cultural materials related to more recent occupations. In addition, former dredge cuts offer excellent opportunities for inspection of stratigraphic profiles of the shell reefs.

As a dredge cut normally fills with sediment in one to twelve months (May 1973:76), the sediment may have to be removed through the use of an induction dredge.

2) A systematic sample of core drills can be utilized to test these high potential areas. This procedure would be essential for the lower bay areas for two reasons. These potential sites are anticipated to be deeply buried, with locations not expressed on the surface in the form of later shell reefs. As this negates the utilization of a divers' bottom search, it may be the only efficient method of discovery available. Coring would also be essential in establishing the depth of any site so discovered. This information can then be compared with the planned construction dredge depth of 55 ft below the water surface to ascertain whether these sites will in fact be impacted.

Coring of the upper bay area should follow bottom search, dependent on the findings of the divers.

Core drilling is recognized as a hit or miss approach in this type of investigation (cf. Binkley 1978). It is essential that a large number of cores be drilled within the constructs of a sampling scheme. Despite the inherent disadvantages of the method, core drilling is advanced here as a reasonable testing approach in light of the enormous effort and cost involved in alternatives such as cofferdamming.

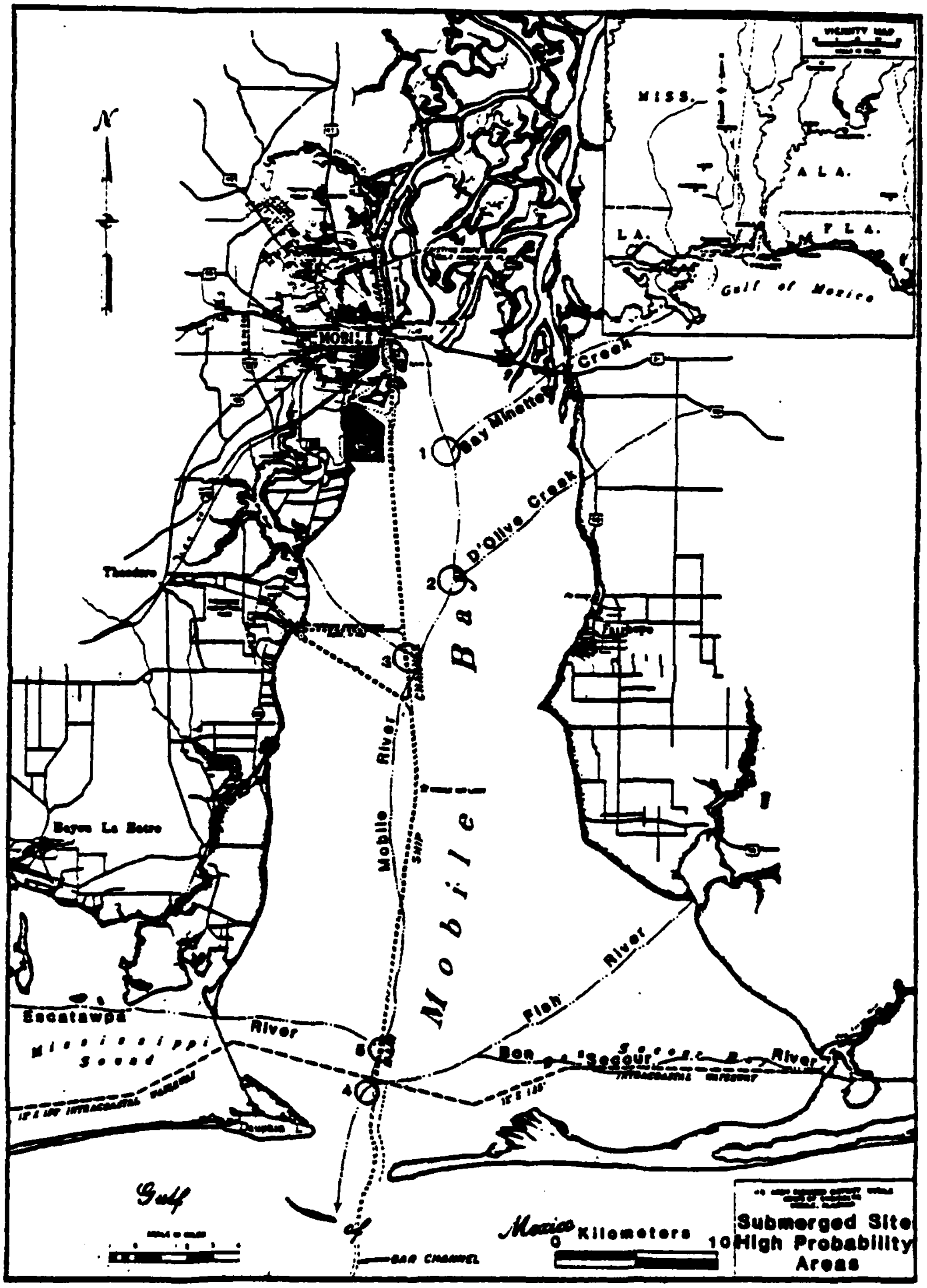
MISS.
ALA.
LA.
FLA.
Gulf of Mexico
MOBILE
Bay Minette Creek
D'Olive Creek
Theodore
Bayou La Batre
Mobile River
SHIP CHANNEL
Mobile Bay
Fish River
Escatawpa River
Mississippi Sound
Bon Secour River
Gulf of Mexico
BAR CHANNEL
Kilometers
0
10
Submerged Site High Probability Areas
1
2
3
4
5

Figure 18.

3) As the bottom search and core drilling methods outlined are to be employed only in high probability areas, a program of monitoring construction dredging is suggested. The discussion of submerged sites in the bay presented earlier stated that, given the varied environmental character of the area through time, there exists a potential for submerged sites virtually anywhere in the bay. Monitoring of the construction dredging by a qualified archaeologist would insure that a fortuitous discovery of such a site by the dredge would not go unrecognized.

For the high probability area outlined for the upper bay, a ten day schedule of investigation is proposed; five days for bottom search and removal of sediment where needed and five days for core drilling. As search procedures are not anticipated for the lower bay areas, a five day program of exploratory core drilling is suggested for each area. The total amount of time required for the three areas is twenty days.

REFERENCES CITED
(with notes on major sources)

Abernethy, Thomas P.
1922 *The Formative Period in Alabama: 1815-1825.* Brown Printing Company. Montgomery, Alabama.

Alabama Anthropological Society
1910 *Handbook of the Alabama Anthropological Society*, compiled by Thomas M. Owen. Brown Printing Company, Montgomery.

American Bureau of Shipping (American Lloyds)
1867-1980 *Record of American and Foreign Shipping.* New York.

Arnold, J. Barto, III
1974 A Magnetometer Survey of the Nineteenth Century Steamboat *Black Cloud.* *Bulletin of Texas Archaeological Society* 45:225-230.

Ballard, Robert C., and Elazar Uchupi
1970 Morphology and Quaternary History of the Continental Shelf of the Gulf Coast of the United States. *Bulletin of Marine Science* 20:547-559.

Bass, George F.
1972 *A History of Seafaring.* New York: Walker and Company.

Bathe, Basil W.
1978 *The Visual Encyclopedia of Nautical Terms Under Sail.* New York: Crown Publishers, Inc.

1973 *Seven Centuries of Sea Travel - From the Crusaders to the Cruises.* New York: Tudo Publishing Company.

Berman, Bruce D.
1972 *Encyclopedia of American Shipwrecks.* The Mariners Press, Boston.

An extensive but selective compilation of U.S. shipwrecks. Excludes all vessels of less than 50 tons.

Binkley, Kenneth
1978 An Evaluation of Core Drilling as a Search and Localization Tool for Locating Sunken Steamboats in the Yazoo River, Mississippi between SRM 75.6 and SRM 107.8. Report on file at University of Mississippi, Center for Archaeological Research. University.

Bisbort, Harold E.
1957 Mobile Harbor and Ship Channel. *Journal of the Waterways and Harbors Division: Proceedings of the American Society of Civil Engineers.* Paper 1241.

Boone, Peter A.
1974 Geology of Coastal Alabama. In: The Environment of Offshore and Estuarine Alabama. Geological Survey of Alabama Information Series 51. University, Alabama.

Borja Medina Rojas, Francisco de
1980 Jose de Ezpeleta: Gobernador de la Mobila 1780-1781. Escuela de Estudios Hispanoamericas, Sevilla.

Breiner, Stanley
1973 Applications Manual for Portable Magnetometers. Geometrics. Sunnyvale.

Bullen, Ripley P.
1969 Further Comments on Emery and Edward's "Archaeological Potential of the Atlantic Continental Shelf". American Antiquity 34(3):331-332.

Cabeza de Vaca, Alvar Nunez
1871 Relation of Alvar Nunez Cabeca de Vaca. Translated by Buckingham Smith. New York.

Carr, Roland P.
1970 Steamboats on Mobile Bay. Steamboat Bill, Fall, 1970. pp. 153-254.

Chappelle, Howard I.
1951 American Small Sailing Craft: Their Design, Development and Construction. New York: W.W. Norton and Company, Inc.

1976 The National Watercraft Collection. Second Edition. Smithsonian Institution Press. Washington, D.C.

Chase, David W.
1972 Evidence of Bayou La Batre - Archaic Contact. Journal of Alabama Archaeology, 18(2). University.

Chermock, R.L.
1974 The Environment of Offshore and Estuarine Alabama. Geological Survey of Alabama Information Series 51. University, Alabama.

1976 Hurricanes and Tornados in Alabama. Geological Survey of Alabama, Information Series 46. University.

Chronicle, The
1966 The Pas Captain Recalls Sailing to Cuba in '22. Pascagoula and Moss Point, January 16. (No author)

Clausen, Carl J.
1965 A 1715 Spanish Treasure Ship. Contributions of the Florida State Museum, Social Sciences, No. 12. Gainesville.

1967 Some Comments on Pre-1800 Sites: Maritime. Historical Archaeology 1:44-46.

Clausen, Carl J., H.K. Brooks and A.B. Wesolowsky
1975 The Early Man Site at Warm Mineral Springs, Florida. Journal of Field Archaeology 2(3):191-212.

Clausen, Carl J. and Barto J. Arnold, III
1976 The Magnetometer and Underwater Archaeology. Magnetic Delineation of Individual Shipwreck Sites, A New Control Technique. International Journal of Nautical Archaeology 5(1): 158-169.

One of the seminal works on controlled grid magnetometer surveying, Clausen and Arnold's investigation into colonial shipwrecks in a marine environment is the source of the 50 m lane-spacing now considered standard in reconnaissance lavel surveys.

Coastal Environments, Inc.
1978 Cultural Resources Evaluation of the Northern Gulf of Mexico Continental Shelf. Volume II. Report to National Park Service. Washington.

1982 Cultural Resource Survey, Block 71 and 72, Mississippi Sound Area, Offshore Alabama. Report to Mobil Oil Co. Houston, Texas.

Cockrell, W.A.
1974 Current Status of Early Man Research at Warm Mineral Springs Florida (8So19). Paper presented to the 5th International Conference on Underwater Archaeology. Berkeley.

Coker, William S.
1979 John Forbes and Company and The War of 1812 in the Spanish Borderlands. W.S. Coker, ed., Hispanic-American Essays in Honor of Max Leon Moorhead, pp. 61-97. Perdido Bay Press. Pensacola.

1981 The Last Battle of the War of 1812: New Orleans. No, Fort Bowyer! Alabama Historical Quarterly 43:43-63.

Coker, William S. and Hazel P. Coker
1981 The Siege of Pensacola, 1781, in Maps, with Data on Troop Strength, Military Units, Ships, Casualties, and Related Statistics. Spanish Borderlands Series 8. The Perdido Bay Press, Pensacola.

1982 The Siege of Mobile, 1780, in Maps, with Data on Troop Strength, Military Units, Ships, Casualties, and Prisoners of War including a Brief History of Fort Charlotte (Conde). Spanish Borderlands Series 9. The Perdido Bay Press, Pensacola.

Copeland, Charles W.
1968 Geology of the Alabama Coastal Plain; A Guidebook. Geological Survey of Alabama Circular 47. University, Alabama.

Cruzat, Heloise H. and Henry P. Dart
1931 The Great Storm of 1722 at Fort Louis, Mobile. Louisiana Historical Quarterly 14(4):567-568.

Curray, Joseph R.
1965 Late Quarternary History, Continental Shelves of the United States. In: H.E. Wright, Jr., and David G. Frey, eds., The Quaternary of the United States. Princeton University Press, Princeton.

Curren. Cailup B., Jr.
1976 Prehistoric and Early Historic Occupation of the Mobile Bay and Mobile Delta Area of Alabama With an Emphasis on Subsistence. Journal of Alabama Archaeology 22(1).

1977 Paleo Indian and the Pleistocene of Alabama. The University of Alabama. Tuscaloosa.

1978 The Zooarchaeology of the D'Olive Creek Site (1Ba196), Baldwin County, Alabama. Journal of Alabama Archaeology 24:33-51.

Dames and Moore
1981 Geologic Hazards and Cultural Resources Surveys of Proposed Mobile Bay Project, Mobil Oil Exploration and Producing Southeast Inc. Houston, Texas.

1982 Impact Minimization Plan for Potentially Significant Anomalies for Proposed Mobile Bay Project. Report to Mobil Oil Corporation. Houston, Texas.

DeJarnette, David L.
1952 Alabama Archeology: A Summary. In Archeology of Eastern United States, edited by James B. Griffin, pp. 272-284. The University of Chicago Press. Chicago.

DeJarnette, David L. (editor)
1976 Excavations at Two Sites of the French Colonial Period, Baldwin County, Alabama. Alabama State Highway Department. Mound State Monument, Moundville, Alabama.

DeJarnette, David L. and John L. Buckner
1937 Preliminary Report on a Group of Mounds in Lower Baldwin County, Alabama. Unpublished report to the National Park Service.

DeJarnette, David L., Harold V. Anderson, and Steve B. Wimberly
1941 Report on a Gulf State Park Shell Bank, 1Ba81, in Baldwin County, Alabama. National Park Service. Alabama Museum of Natural History, University.

Delaney, Caldwell
1962 The Story of Mobile. Gill Printing Company. Mobile, Ala.

Emery, K.O. and R.L. Edwards
1966 Archaeological Potential of the Atlantic Coast Shelf. American Antiquity 3(5):733-737.

Although eustatic changes in sea levels had been considered previously by coastal geologists, Emery and Edwards were among the first to address this phenomenon in relation to submerged prehistoric sites. Their article was pivotal in stimulating archaeological interest in nonshipwreck marine resources.

Fairhope Currier, The
Steamboats on Mobile Bay, by Roland P. Carr. February 15, 1973.

Fiske, John
1901 The Discovery of America. Houghton and Mifflin. Boston, Massachusetts.

Fite, Emerson D. and Archibald Freeman
1926 A Book of Old Maps Delineating American History, from the Earliest Days down to the Close of the Revolutionary War. Harvard University Press.

Floyd, Robert J.
1981a Proton Magnetometer Survey of the Proposed Dredge Areas Permit Modification to Dredge within 1500' of the Mobile Ship Channel, Alabama. Report submitted to Radcliffe Materials, Inc., Mobile, Alabama.

1981b Archaeological Assessment of Geophysical Survey Data, Portions of Blocks 113 and 132, Northwest Gulf Area, Offshore Alabama. Report to Shell Oil Company. Houston, Texas.

Franzen, Anders
1966 Le Vasa, Vaisseau du Roi. Norstedts Bonniers, Stockholm.

Futato, Eugene
1982 Some Notes on the Distribution of Fluted Points in Alabama. Archaeology of Eastern North America 10:30-33.

Galvez, Bernardo de
1780 Bernardo de Galvez to J. de Galvez, No. 2, March 20, 1780, with Diary, March 18, 1780. AGS GM 6912.

Gardner, John
1977 Building Classic Small Craft. Camden, Maine: International Marine Publishing Company.

Goodyear, Albert C. and Lyman O. Warren
1972 Further Observations on the Submarine Oyster Shell Deposits of Tampa Bay. Florida Anthropologist 25(2):52-66.

Capitalizing on earlier works by Warren (1964, 1965) concerning early cultural material in Tampa Bay shell reefs, Goodyear and Warren synthesize earlier data and advance new conclusions. The geologic similarities of Tampa and Mobile Bays make this an excellent comparative example.

Grambling, Robert B.
1980 Criteria for Underwater Cultural Resource Significance Assessment. In: Cultural Investigations in the Apalachicola and Chattahoochee River Valleys in Florida, Alabama and Georgia, edited by Jon L. Gibson. University of Southwestern Louisiana, Center for Archaeological Studies, Report No. 6.

Hale, John R.
1966 Age of Exploration. New York. Time Incorporated.

Hall, Henry
1884 Report on the Ship-Building Industry of the United States. Washington, D.C.: Department of the Interior, Census Office.

Hamilton, Peter J.
1904 Was Mobile Bay the Bay of Spiritu Santo? Alabama Historical Society Transactions (1899-1903). pp. 73-93.

1910 Colonial Mobile. Houghton, Miflin and Company. Boston and New York.

1913 Mobile of the Five Flags. Gill Printing Company, Mobile, Alabama.

Harnett, Charles B.
1965 Preliminary Report, Discovery and Excavation of a 17th Century Wreck off Cape Canaveral, Florida. The Florida Anthropologist 18(1).

Harper, Roland M.
1943 Forests of Alabama. Geological Survey of Alabama Monograph No. 10. University of Alabama.

Harris, Donald A. and Jerry J. Neilsen
1972 Archaeological Salvage Investigations at the site of the French Fort Conde, Mobile, Alabama. Final report submitted to the Alabama Highway Department. Mound State Monument, Moundville, Alabama.

Harrisse, Henry
1892 The Discovery of North America: A Critical Documentary, and Historic Investigation. N. Isreal, Amsterdam.

Higginbotham, Jay
1977 Old Mobile: Fort Louis de la Louisiane 1702-1711. Museum of the City of Mobile, Alabama.

Holmes, Jack D.L.
1972 Research in the Spanish Borderlands: Alabama. Latin American Research Review 7(2):6-7.

Holt, David
n.d. Scenes and Stories of the Storm. Commercial Printing Co., Mobile, Alabama.

Hudson, Jack C.
1974 A Magnetometer Survey of the Theodore Ship Channel and Barge Channel Extension, Mobile Bay, Alabama. Report to U.S. Army Corps of Engineers, Mobile. Gulf South Research Institute. Baton Rouge.

1981 Magnetometer Survey, Areas of Blocks 71, 72, 73, 89, 90, 91, Northwest Gulf Area, Alabama. Report to Phillips Petroleum. Cultural Resources Services, Inc. Seabrook, Texas.

Hunter, Louis C.
1949 Steamboats on the Western Rivers. Harvard University Press. Cambridge.

Kirkpatrick, Kirk and Dorothy Kirkpatrick
1981 Lafitte Skiff is the Only Way to Travel on Bayous. National Fisherman (62):75-76.

Knight, Vernon J., Jr.
1976 The Mobile Bay-Mobile River Delta Region: Archaeological Status Report. Journal of Alabama Archaeology 23:137-154.

n.d. Late Prehistoric Adaptation in the Mobile Bay Region. In Perspectives on Gulf Coast Prehistory, edited by Dave D. Davis. University of Florida Press. In press.

Kwon, H.J.
1969 Barrier Islands of the Northern Gulf of Mexico: Sediment Source and Development. Louisiana State University Coastal Studies Series 25.

Lankford, George E. III
1981 A Documentary Study of Native American Life in the Lower Tombigbee Valley. Unpublished manuscript.

Larson, Lewis H.
1980 Aboriginal Subsistence Technology on the Southern Coastal Plain during the Late Prehistoric Period. Ripley P. Bullen Monographs in Anthropology and History, Number 2. The Florida State Museum. Gainesville.

Latour, Arsene L.
1816 Historical Memoir of the War in West Florida and Louisiana in 1814-15. John Conrad and Co., Philadelphia.

Lazarus, William C.
1965 "Effects of Land Subsidence and Sea Level Changes on Elevation of Archaeological sites on the Florida Gulf Coast." Florida Anthropologist, Vol. 28, No. 1.

Lloyd, James T.
1856 Lloyd's Steamboat Directory, and Disasters on the Western Waters. James T. Lloyd and Company. Cincinnatti.

Lloyds of London
1760– *Lloyd's Register of British and Foreign Shipping*. J. and H. Cox and Wyman, London.

Lobley, Douglas
1972 *Ships Through the Ages*. New York: Octopus Books.

Ludlum, David M.
1963 *Early American Hurricanes 1492-1870*. American Meteorological Society. Boston, Massachusetts.

Lytle, William M.
1931 *Merchant Steam Vessels of the United States, 1807-1856*. United States Department of Commerce, Bureau of Navigation. Washington, D.C.

An exhaustive listing of data concerning U.S. merchant steam vessels of all types, 1807-1856. Compiled from official merchant marine documents and other sources.

1952 Merchant Steam Vessels of the United States, 1807-1868, "The Lytle List." Edited with an introduction by Forrest R. Holdcamper. *Steamship Historical Society of America, Publication* 6. Mystic, Connecticut.

Lytle, William M. and Forrest R. Holdcamper (comp.)
1975 *Merchant Steam Vessels of the United States, 1790-1868, the "Lytle - Holdcamper List."* The Steamship Historical Society of America, Inc. Staten Island, N.Y.

Updating of Lytle (1952).

McFarlan, Edward, Jr.
1961 Radiocarbon Dating of Late Quaternary Deposits, South Louisiana. *Geologic Society of America Bulletin* 72(1):129-158.

McLaurin, Melton and Michael Thomason
1981 *Mobile: The Life and Times of a Great Southern Seaport*. Windsor Publications, Woodland Hills, California.

McWilliams, R.G.
1981 *Iberville's Gulf Journals*. University of Alabama Press, University.

Margry, Pierre
1888 *Decouverte et Etablissement des Francais dans L'Ouest et dans le Sud de L'Amerique Septentrionale*. Vol. 5. D. Jouaust, Paris.

Marine Environmental Sciences Consortium
1979 Remote Sensing Archaeological Survey of Proposed Well Sites in Mobile Bay, Alabama. Report submitted to Mobil Oil Corporation.

May, Edwin B.
1971 A Survey of The Oyster and Oyster Shell Resources of Alabama. Alabama Marine Resources Bulletin No. 4.

May's extensive survey of shell reefs in Mobile Bay is the primary source on the nature and distribution of the edible bivalve crassotrea virginica within the study area.

1973 Environmental Effects of Hydraulic Dredging in Estuaries. Alabama Marine Resources Bulletin No. 9.

1976 Holocene Sediments of Mobile Bay, Alabama. Alabama Marine Resources Bulletin No. 11.

Millar, John F.
1978 American Ships of the Colonial and Revolutionary Periods. New York: W.W. Norton and Company, Inc.

Mistovich, Tim S.
1981 Cultural Resources Evaluation of Reef Shell Techniques, Mobile Bay, Alabama. Report to Radcliffe Materials, Inc., Mobile. OSM, Inc. Moundville, Alabama.

Mobile Chamber of Commerce
n.d. Mobile: Statement of Water-Borne Commerce of Port and Rivers. Mobile Chamber of Commerce and Maritime Exchange and Shippers Association.

Mobile (Commercial, Daily, Press) Register
1825 - present Microform copies on deposit at Mobile Public Library, Local History and Geneology Section. Mobile, Alabama.

Mobile Evening News
1865 - 1870 Microform copies on deposit at Mobile Public Library, Local History and Geneology Section. Mobile, Alabama.

Mohr, Charles
1881 Aboriginal Soapstone Quarry and Shell-Heaps in Alabama. Annual Report of the Smithsonian Institution. Washington, D.C.

Moore, Clarence B.
1905 Certain Aboriginal Remains of Mobile Bay and Mississippi Sound, Journal of the Academy of Natural Sciences of Philadelphia, Second Series, Vol. XIII, Part 2, Philadelphia.

Morris, E.P.
1927 The Fore-and Aft Rig in America, A Sketch. New Haven: Yale University Press.

Morris, Paul C.
1979 American Sailing Coasters of the North Atlantic. New York: Bonanza Books.

Murphy, Larry and Allen R. Saltus, Jr.
n.d. Phase II Identification and Evaluation of Submerged Cultural Resources in the Tombigbee River Multi-Resource District, Alabama and Mississippi. Draft: Report of Investigations No. 16. The Office of Archaeological Research. The University of Alabama. Tuscaloosa.

While cursory in its treatment of the results of this extensive Phase II investigation, this volume is a worthwhile compendium of underwater techniques and methodology and contains an excellent history of steamboat development.

Neill, Wilfred
1964 The Association of Suwanee Points and Extinct Animals in Florida. Florida Anthropologist 17:17-32.

Neville, Bert
1962 Directory of River Packets in the Mobile-Alabama-Warrior-Tombigbee Trades, 1818-1932. Coffee Printing Co. Selma, Alabama.

Otvos, E.G., Jr.
1973 Geology of the Mississippi-Alabama Coastal Area and Near-shore Zone. New Orleans Geologic Society, New Orleans, La.

Owen, Thomas A.
1922 Some Notes on the Shell Banks of the Alabama Coast. Arrowpoints 4(1).

Perry, Milton F.
1965 Infernal Machines: The Story of Confederate Submarine and Mine Warfare. Louisiana State University Press, Baton Rouge.

Petsche, Jerome E.
1974 The Steamboat Bertrand, History, Excavation, and Architecture. Report on file at National Park Service. Washington.

Phillips, Ulrich B.
1968 The Slave Economy of the Old South: Selected Essays in Economic and Social History. Edited by Eugene D. Genovese. Louisiana State University Press. Baton Rouge.

Poag, C. Wylie
1973 Late Quaternary Sea Levels in the Gulf of Mexico. Transaction of the Gulf Coast Association of Geologic Societies, 23rd Annual Convention, Houston, Texas, p. 394-400.

Potter, John S., Jr.
1960 The Treasure Diver's Guide. Doubleday. New York.

Powell, B.W.
1971 Notes on Salwen's Comments on "Archaeological Potential of the Atlantic Continental Shelf". American Antiquity 36(2):212-13.

Racal-Decca Survey Inc.
1981 A Multi-Sensor Engineering Survey of Offshore Alabama, Mobile Bay Area Northwest Gulf Blocks 111 and 112 for Exxon Company, U.S.A. Houston, Texas,

1982 A Multi-Sensor Engineering Survey of Offshore Alabama, Lower Mobile Bay Area, Block 62. Report for Exxon Company, U.S.A. Houston, Texas.

Riccio, J.F., W.C. Isphording and C.A. Gazzier
1972 Neocene Sediments of Mobile County, Alabama In: W.L. Scarbrough, ed., Recent Sedimentation Along the Alabama Coast: Alabama Geological Society. University, Alabama, p. 46-79.

Rowland, Dunbar and Albert G. Sanders
1929 Mississippi Provincial Archives 1701-1729, French Dominion, Volume II. Press of the Mississippi Department of Archives and History, Jackson.

Royce, Charles C. (comp)
1899 Indian Land Cessions in the United States. Bureau of American Ethnology, Annual Report 18(2). Washington.

Ruppe, Reynold J.
1980 The Archaeology of Drowned Terrestrial Sites: A Preliminary Report. Bureau of Historic Sites and Properties Bulletin No. 6. Division of Archives, History, and Records Management. Tallahassee, Florida.

Ryan, J.J.
1969 A Sedimentologic Study of Mobile Bay, Alabama. Sedimentological Research Laboratory, Dept. Geology, Contribution 30. Florida State University, Tallahassee.

Saltus, Allen R.
1977 Performance of a Cultural Resources Survey, Tennessee-Tombigbee Waterway, Tombigbee River Channel, Alabama and Mississippi. Report on file at Gulf South Research Institute. Baton Rouge.

1978 Performance of a Cultural Resource Survey Pinto Pass Disposal Area, Mobile Bay, Mobile, Alabama. Report submitted to U.S. Army Corps of Engineers, Mobile District.

Salwen, Bert
1967 A Comment on Emery and Edwards' "Archaeological Potential of the Atlantic Continental Shelf". American Antiquity 32(4): 546-47.

Scaife, Walter B.
1892 America: Its Geographical History, 1492-1892. The John Hopkins Press. Baltimore, Maryland.

Scruggs, J.H., Jr. (comp)
1953 Alabama Steamboats, 1819-1869. Privately published.

A compilation of outline data concerning Alabama river packets and bay boats during 1819-1869. Makes extensive use of the Lytle list with some supplementary information. Some data conflict with Neville's similar compilation.

Shomette, Donald G.
1973 Shipwrecks of the Civil War. Doric Ltd., Washington, D.C.

Smith, Buckingham (trans.)
1968 Narrative of De Soto in the Conquest of Florida. Palmetto Books, Gainesville, Florida.

Smith, Hale
1971 The Spanish Gulf Coast Cultural Assemblage, 1500-1763. In Spain and her Rivals on the Gulf Coast, edited by E.F. Dibble and E.W. Newton. Historic Pensacola Preservation Board. Pensacola, Florida.

Stein, Jess, editor
1969 The Random House Dictionary of the English Language. New York: Random House.

Stowe, Noel R.
1979 A Preliminary Cultural Resources Assessment of Mobile Point. Report to Alabama Historical Commission. University of South Alabama.

1981 A Cultural Resources Assessment of the Mobile-Tensaw Bottomland, Phase II. Report to Alabama Historical Commission. University of South Alabama.

Stowe, Noel R. and Richard S. Fuller
1979 A Cultural Resources Literature Search for Four MOEPSI Oil and Gas Exploration Wells Proposed for Construction in Mobile Bay, Mobile and Baldwin Counties, Alabama. University of South Alabama Archaeological Research Laboratory, Mobile.

Sulzby, James F.
1960 Historic Alabama Hotels and Resorts. University of Alabama Press, University.

Summersell, Charles G.
1949 Mobile: History of a Seaport Town. University of Alabama Press. University.

Surrey, Nancy M.M.
1916 The Commerce of Louisiana During the French Regime, 1699-1763. Columbia University Press, N.Y.

Toops, Connie
1980 The Biloxi Schooners. Woodenboat 37:80-84.

Trickey, E. Bruce
1958 A Chronological Framework for the Mobile Bay Region. American Antiquity 23(4):388-396.

Trickey, E. Bruce and Nicholas H. Holmes, Jr.
1971 A Chronological Framework for the Mobile Bay Region. Journal of Alabama Archaeology 17(2).

U.S. Army Corps of Engineers
1867-1938 Report of the Chief of Engineers. Governement Printing Office. Washington.

United States Bureau of Customs
1866-1967 Merchant Vessels of the United States. Government Printing Office, Washington, D.C.

United States Coast Guard
1968-present Merchant Vessels of the United States. Government Printing Office, Washington, D.C.

Annual listing of merchant vessels continuing the U.S. Bureau of Customs Series (1866-1967).

U.S. Congress
1917 Federal Reporter. pp. 240, 498. Washington D.C.

United States Navy Department
1971 Civil War Naval Chronology, 1861-1865. Government Printing Office, Washington.

Villiers, Alan
1973 Men, Ships and the Sea. Washington, D.C.: National Geographic Society.

Von Scheliha, Viktor E.K.R.
1868 A Treatise on Coast-Defense. E. and F.N. Spon, London.

Waller, Ben I.
1970 Some Occurrences of Paleo-Indian Projectile Points in Florida Waters. The Florida Anthropologist (23)4:129-134.

Walthall, John A.
1980 Prehistoric Indians of the Southeast: Archaeology of Alabama and the Middle South. University of Alabama Press. University.

Warren, Lyman O.
1964 Possibly Submerged Oyster Shell Middens of Upper Tampa Bay. Florida Anthropologist 17(4):227-230.

1972 Commercial Oyster Shell of Tampa Bay, 1966 Progress Report. Florida Anthropologist 25(2).

Lyman Warren's early investigations of the Tampa Bay reefs drew attention to the possible presence of submerged sites in this locale and formed the basis of his later synthesis with Goodyear (1972).

Wilson, Eugene M. and Cailup B. Curren
1981 Watercraft of the Northern Gulf Coast. Unpublished manuscript submitted to the Alabama Historical Commission.

Wimberly, Steve B.
1960 Indian Pottery from Clarke County and Mobile County, Southern Alabama. Alabama Museum of Natural History, Museum Paper 36. University.

Wimberly, Steve B. and Harry A. Tourtelot
1941 The McQuorquodale Mound: A Manifestation of the Hopewellian Phase in South Alabama. Geological Survey of Alabama, Museum Paper 19. University.

Winsor, Justin H.
1884 Narrative and Critical History. Houghton and Mifflin, Boston, Massachusetts.

Works Progress Administration
1938 Wreck Reports - A Record of Casualties to Persons and Vessels on the Mississippi River, its Tributaries, on Lakes and other Waterways of the U.S. Customs District, Port of New Orleans, 1873-1924. Unpublished manuscript.

Appendix A

Description of a Blockade Runner, the ELLA (a.k.a. U.S.S. PHILLIPI), Sunk Near Mobile Point in 1864

Description of the Steamer "ELLA"

The steamer "ELLA" now lying at St. Georges, Bermuda Island, was built of oak timbers at Brooklyn, State of New York, in 1863, is a side wheel low pressure Steamer Schooner rigged, copper fastened and copper bottomed, will carry about four hundred bales of cotton on about eight feet of water, is a fine model, round stern and built for a sea-going Steamer.

Her machinery is entirely new, two hundred and eighty (280) horse power, of the most substantial kind, a boiler capable of bearing sixty (60) pounds of steam, twenty five (25) pounds being the highest pressure necessary, if chased thirty (30) pounds of steam will carry her thro' the water at the rate of about twelve (12) knots per hour at sea heavy loaded, if light or in ballast would make fourteen (14) to sixteen (16) knots per hour. Her American tonnage is three hundred and sixty eight (368). She has a comfortable passenger cabin for four persons, neatly fitted up, and provisions on board for two months. About forty (40) tons anthracite coal. She has also a fresh water condenser for the ships use capable of making about two hundred gallons of fresh water per day. Has also a blower engine for the purpose of increasing her speed if chased, an independent engine for pumping purposes, extinguishing fires etc. etc. Her sails and appurtenances of every discription entirely complete and new.

The vessel is considered a perfect model of sea-going Steamer and has her Captain and crew all on board ready for sea.

Montgomery Aug 29th 1863
Signed
Werner Forss
Trustee and Manager

Appendix B

Von Scheliha's Account of Confederate Obstructions Placed in Mobile Bay

"Sunken Vessels. In 1854, the Russians obstructed the entrance to the Bay of Tchernaia by sinking most of the ships composing their Black Sea flotilla. The Confederates, in 1861, had no men-of-war thus to dispose of; but many a fine merchantman, useful coaster, and swift-sailing fishing-smack were scuttled and sunk to form an obstruction in the approaches to Mobile and other southern sea-ports. The objections to such a course are obvious:--

1. The means of active defence are thereby weakened.
2. An obstruction of this class is the most expensive of all.
3. The amount of transportation is considerably lessened, a circumstance which has made itself very seriously felt during the late North American war. The engineers of Charleston, Savannah, and Mobile found themselves very often seriously embarrassed for want of suitable crafts in which to send building material, sand-bags, etc., to detached points with which communication was only possible by water.

This method of obstructing a channel should therefore be used only in case of the most urgent emergency. But if used, the vessels should be well filled with materials the weight of which will keep the sunken vessel in its place. Brick or brickbats, sand, if protected against the action of the water, burnt clay and stone, are suitable materials for this purpose. (During the late American war, even pig-iron was often used for loading vessels that were to be sunk). The vessels should also be fastened together by heavy cables, and should be cut down to the water's edge, else the attempts of the enemy to open a gap in the obstruction by dragging or by blowing up one of the vessels, might have some chance of success. After the Federal fleet had passed Fort Morgan, the Phoenix, an unfinished ironclad, was sunk near the north-east corner of the line of obstructions below Mobile, for the purpose of closing a newly-formed channel, which had here a depth of 13 feet, not sufficient to cover the deck of the vessel. The enemy, taking advantage of the first dark night, boarded her, placed several kegs of powder under her deck, and succeeded in partly destroying the value of the vessel as an obstruction.

Obstructions formed by Piles may be advantageously used if the depth of the channel does not exceed 25 feet, and the nature of its bottom renders the driving of piles not an impossible or too tedious a work. Confederate engineers gave this kind of obstruction the preference over all others, wherever the depth of the channel would admit of its being used. The bottom of the channels consisting, in most instances, of mud followed by a stratum of sand, a method of placing piles was adopted which, though it may perhaps not be an entirely original one, is probably not generally known. To the boiler of the steam-boat loaded with the piles which were to be placed, a two-inch hose was attached; a valve rendered it possible to admit or shut off steam at will; the end of the hose not attached to the boiler had a long and strong nozzle fastened to it. A pile having been attached to this nozzle by means of a noose, the valve was opened; the steam rushed from the boiler through the hose and the nozzle, which was pointed on the surface of the water, and pressed the water aside. The pile was allowed to follow the stream till this had gradually reached the surface of the bottom, which, being soft, gave way to the pressure of the steam, by which a funnel shaped hole was opened, into which the pile was made to slide. The steam was allowed to play until the funnel had reached a depth of four and even five feet, when the noose was detached from the pile and the valve shut. So soon as the pressure of steam ceased, the mud closed the funnel-shaped hole in the bottom around the pile, which stood now as firmly as if driven by a good steam pile-driver. This method of setting piles requires, besides the engineer of the boat, three men: one for holding and pointing the nozzle, and two for handling the pile. It is more expeditious than the ordinary manner of driving piles by at least one-third, and was also found more convenient, for the reason that it was not necessary to suspend work on account of a moderate sea, in which it would have been impossible to work an ordinary pile-driver. The whole line of pile obstructions between the eastern bank and Fort Gaines (in the lower bay of Mobile) was thus set in an incredibly short time.*

The piles most generally used for obstructions during the North American war were of yellow pine. They were always set with their bark on, and had a diameter of from twelve to fifteen inches, whilst their length varied with the depth of the channel. When placed, they were visible only in time of ebb or at a low stage of the water. There were three methods of closing a channel by piles:--

But inasmuch as continuous rows of piles, opposing to the current a large and unbroken surface, caused it to take another direction and flow with increased velocity, thereby washing out a new channel through the soft mud, a third plan for pile-obstructions was often adopted: diamond-shaped piers, containing a hundred and more piles driven closely together, were placed, at a distance of about 30 feet from centre to centre, in two and more rows and in echellon across the channel. The space between two rows was about 10 feet: in it floated a boom, constructed of long and heavy logs, which at one end was attached to one of the piers by a chain long enough to allow the boom to fall and rise with ebb and flood. Additional strength was given to this obstruction by a system of strong braces connecting the piers with each other.

The obstructions in the upper bay of Mobile consisted chiefly of piles, which, according to the locality, had been placed in one or the other of the methods above described. Their strength was hardly appreciated by even the engineer who had made the plan for these obstructions, till very serious accidents had happened to vessels which, in attempting to pass through the gap in foggy weather, had run on the piles. The Confederate gun-boat Selma, especially, was very severely damaged in this way. Admiral Farragut, as above mentioned, considered it impossible to take Mobile by a naval attack till these obstructions were removed." (Von Scheliha 1868:189-192).

Ed. Note: This work was performed at least in part by the steamer ELLA (a.k.a. PHILLIPI), which later sank in the pass between Fort Morgan and Fort Gaines (see Appendix A).

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