



**Wilmington Harbor, North Carolina
Navigation Improvement Project**

**Integrated
Section 203 Study
&
Environmental Report**

**APPENDIX G
CULTURAL RESOURCES**

June 2019

REPORT OF FINDINGS

**SUBMERGED CULTURAL RESOURCES SURVEY
AND DIVER INVESTIGATION OF TARGETS,
WILMINGTON NAVIGATION CHANNEL
INNER HARBOR AND OFFSHORE AREAS,
NEW HANOVER AND BRUNSWICK COUNTIES,
NORTH CAROLINA**

APRIL ♦ 2018

ABSTRACT

The North Carolina State Port Authority is conducting a feasibility study of potential navigation improvements to the Wilmington Harbor Navigation Improvement Project. Subsequently, Panamerican Consultants, Inc. of Memphis, Tennessee, was subcontracted by Dial Cordy and Associates, Inc. to jointly conduct comprehensive cultural resources investigations of the proposed navigation improvements Area of Potential Effects. The focus of the current investigation entailed two survey areas: (1) the “Wilmington Harbor Entrance Inshore” section (“Inner Harbor Area”), a 26-mile stretch of the channel from the Cape Fear River mouth up to the City of Wilmington; and (2) the “Wilmington Harbor Cape Fear Entrance Extension” section (“Offshore Area”), an approximately 16-mile stretch that includes the Outer Bar Channel and Channel Extension. Performing both remote sensing survey and archaeological diver investigation of selected targets, Panamerican Consultants, Inc. was responsible for determining if any potential cultural resources were located within the Area of Potential Effects, and if so, were eligible for listing on the National Register of Historic Places.

Performed between 5 and 15 April 2017, the remote sensing survey of the Inner Harbor Area of Potential Effects utilized a magnetometer, sidescan sonar, and subbottom profiler. The survey recorded 1,288 magnetic anomalies, 241 sidescan sonar contacts, and no subbottom paleofeature within the Inner Harbor Area. Subsequent analysis of the data consisted of assessment of all anomalies and acoustic targets including correlation with other anomalies or contacts; assessment of clustering; and correlation with known documented cultural resource sites, as well as shoreline infrastructure in Geographic Information System. The analysis identified seven targets as potentially significant. Subsequent diving investigations of the seven targets, which was conducted between 20 and 26 September 2017, found that of the seven targets, one was identified as an old wooden revetment, three as modern debris, one as a natural ridge, one as the remains of a navigation buoy, and one as the paddle wheel shaft from the wreck of the CSS *Kate* a Confederate blockade runner. Of these targets, only the paddle wheel shaft is considered potentially significant and is recommended for avoidance—if it will be adversely affected by project activities. If avoidance is not possible, archaeological recovery from the Area of Potential Effects is recommended.

The survey of the Offshore Area, which was conducted between 1 November 2017 and 21 January 2018, recorded 205 anomalies and 21 sidescan sonar contacts, and no subbottom paleofeature; none of which has the potential to represent historically significant cultural resources.

In addition to these findings, subbottom records indicated the potential for Prehistoric sites throughout the survey area is very low.

ACKNOWLEDGEMENTS

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The authors would also like to thank the survey crew who partook in this investigation. For the Remote Sensing Survey: Mr. Duke Hunsaker, with Dial Cordy and Associates, Inc., acted as vessel captain; both Mr. William Wilson, M.A., RPA, and Mr. Jeff Pardee, M.A., RPA, served as Remote Sensing Specialists at various times during the survey and processed the captured data; Wilson analyzed the data and produced maps; and Mr. Stephen R. James, Jr., M.A., RPA verified this analysis. For the Diving Investigation phase: Mr. James Hargrove, with Dial Cordy and Associates, Inc., acted as vessel captain; and the diving crew consisted of Wilson as Field Director, Pardee as Dive Supervisor, and Ms. Loren Clark, M.A., RPA, and Mr. James Duff, M.A. (ABT) as Archaeological Divers.

In-house Panamerican Consultants, Inc. personnel, who must be thanked for their assistance with this report production, include Kate Gilow, Office Manager, and Anna Hinnenkamp-Faulk, Editor.

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I. INTRODUCTION

The North Carolina State Port Authority (NCSPA) is conducting a feasibility study (Study) of potential navigational improvements to the Wilmington Harbor Federal Channel Project, referred to as the “Wilmington Harbor Navigation Improvement Project” (WHNIP). The Study was carried out under the authority granted by Section 203 of Water Resources Development Act (WRDA) of 1986, as amended by Section 1014(a) of the Water Resources Reform and Development Act (WRRDA) of 2014, which provides for a non-Federal entity to perform the necessary investigations and submit the completed Study to the Assistant Secretary of the Army (Civil Works) for review and potential recommendation to Congress for project authorization.

As designed, the Study involves the preparation of an integrated Section 203 Feasibility Study/Environmental Impact Statement (FS/EIS) that fully complies with all Federal laws and regulations applicable to deep draft navigation feasibility studies. The Study requirements and technical investigations identified in the Section 203 FS/EIS Project Management Plan dated 19 July 2016 include cultural resources, as the Study must consider the effects that the project activities will have on potentially significant cultural resources.

Subsequently, Panamerican Consultants, Inc. of Memphis, Tennessee (Panamerican), was subcontracted by Dial Cordy and Associates, Inc. (DC&A), to jointly conduct comprehensive cultural resources investigations of the proposed WHNIP navigation improvements Area of Potential Effects (APE). The focus of the current investigation entailed two survey areas: (1) the Wilmington Harbor Entrance Inshore section (“Inner Harbor Area”), a 26-mile stretch of the channel from the Cape Fear River mouth up to the City of Wilmington; and (2) the Wilmington Harbor Cape Fear Entrance Extension section (“Offshore Area”), an approximately 16-mile stretch that includes the Outer Bar Channel and Channel Extension (Figure 1-01). Performing both remote sensing survey and archaeological diver investigation of selected targets, Panamerican was responsible for determining if any potential cultural resources were located within the APE, and if so, were eligible for listing on the National Register of Historic Places (NRHP). The Federal statutes regarding these responsibilities include: Section 106 of the National Historic Preservation Act of 1966, as amended (PL 89-665); the National Environmental Policy Act of 1969; the Archaeological Resources Protection Act of 1987; the Advisory Council on Historic Preservation’s *Procedures for the Protection of Historic and Cultural Properties* (36 CFR Part 800); and the Abandoned Shipwreck Act of 1987 (National Park Service 1990:50, 116–50, 145).

Performed between 5 and 15 April 2017, the remote sensing survey of the Inner Harbor APE utilized a magnetometer, sidescan sonar, and subbottom profiler. The survey recorded 1,288 magnetic anomalies, 241 sidescan sonar contacts, and no subbottom paleofeatures. Subsequent analysis of the data consisted of assessment of all anomalies and acoustic targets including correlation with other anomalies or contacts; assessment of clustering; and correlation with known documented cultural resource sites, as well as shoreline infrastructure in Geographic Information System (GIS). The analysis identified seven targets as potentially significant. Subsequent diving investigations of the seven targets, which was conducted between 20 and 26 September 2017, found that of the seven targets, one was identified as an old wooden revetment, three as modern debris, one as a natural ridge, one as the remains of a navigation buoy, and one as the paddle wheel shaft from the wreck of the CSS *Kate* a Confederate blockade runner. Of these targets, only the paddle wheel shaft is considered potentially significant and is recommended for avoidance—if it will be adversely affected by project activities. If avoidance is not possible, archaeological recovery from the APE is recommended.

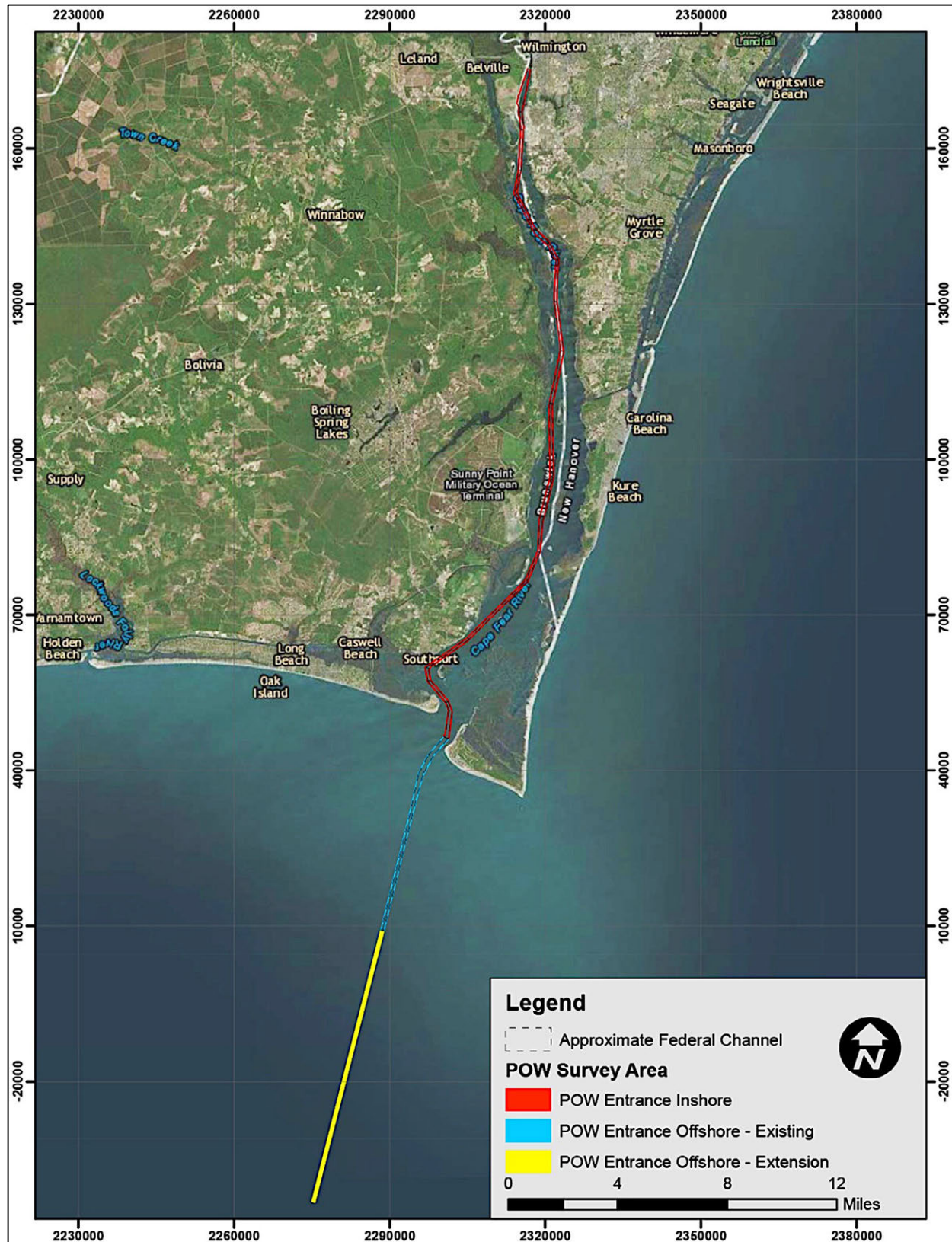


Figure 1-01. Survey location map with the Wilmington Harbor Entrance Inner Harbor Area (red) and Offshore Area (blue and yellow) indicated (map courtesy of Dial Cordy and Associates, Inc.).

The survey of the Offshore Area, which was conducted between 1 November 2017 and 21 January 2018, recorded 205 anomalies and 21 sidescan sonar contacts, and no subbottom paleofeature; none of which has the potential to represent historically significant cultural resources.

In addition to these findings, subbottom records indicated the potential for Prehistoric sites throughout the survey area is very low.

Divided into chapters on Historical Context, Methods, Investigative Findings, Conclusions and Recommendations, References Cited, and Appendices, the following report presents the methods and results of the Study.

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II. HISTORICAL CONTEXT

The project archival investigations were conducted utilizing both primary and secondary sources. Besides well-known and updated published maritime histories of the area, references included numerous cultural resources remote sensing survey reports, as well as survey reports from other marine environments. Published shipwreck compilations, in the form of references and reports, which identified wreck locations in and adjacent to the APE were reviewed. Additionally, remote sensing survey reports from other parts of the country were accessed. Those reports dealt with specific problems or aspects inherent in identifying resources in remote sensing data and are thus, applicable to the Study.

The information gleaned from these sources has been synthesized into a Prehistoric and Historic overview that, when employed during the assessment of actual remote sensing data, enables the researcher to determine the types of resources that may be encountered within the APE, and thus, allow a more accurate interpretation of the data. Presented below, the archival information has been divided into discussions of environmental setting, Prehistoric period, Historic period, previous investigations, archaeological site and shipwreck inventory, and cartographic review.

GEOLOGIC AND ENVIRONMENTAL SETTINGS

Wilmington Harbor sits within the lower Atlantic Coastal Plain and contains North Carolina's largest deep-water port along the Cape Fear River. New Hanover and Brunswick counties border the Cape Fear River and the APE. The river itself begins at the convergence of the Deep and Haw Rivers and spans 320 miles including the Deep River. The Cape Fear River has a total drainage basin of 9,140 square miles. At the start of the APE in Wilmington, the river measures 600 feet wide and broadens more downstream:

"Its width increases gradually downstream to one mile at a point just below the mouth of the Brunswick River; thence, to the ocean, it varies from one mile to 2 ¼ miles. The ocean bar is about 2 miles seaward of the river mouth. Frying Pan Shoals extends outward from Cape Fear, creating a navigation hazard. Below Wilmington the river is a tidal estuary 28 miles long, with an incremental drainage area of about 350 square miles" [Jackson 1996:7].

The climate of the APE is characterized as mild, temperate, and humid. Warm weather temperatures average about 74° Fahrenheit, while winters average about 54° Fahrenheit. A typical year has about 216 sunny days and annual precipitation, which is slightly heavier during the summer, normally exceeds 50 inches. These modern climatic conditions have existed for about 1,500 years, but during earlier prehistoric periods they did not. The terminal Pleistocene climate (15,000 to 12,000 before Common Era [BCE]) was much cooler and drier and was followed by warmer and drier conditions that culminated in the Altithermal period (7000 to 3000 BCE). A period of fluctuating, but generally cooler and wetter, conditions followed the warmer, drier Altithermal, which led to the modern conditions described above (Frelund and Johnson 1993; Muto and Gunn 1982).

During the Pleistocene era (up to 1,000,000 radiocarbon years before present [RCYBP]) a series of glacial and interglacial climatic episodes occurred, causing substantial sea level fluctuations. Glacial periods brought about substantial lowering of sea levels, as glaciers locked up seawater. During glacial periods sea levels fell as much as 100 to 200 meters, resulting in increased stream velocity, erosion of stream valleys, and deposition of sediments. Rapid rises in sea level were associated with interglacial periods and resulted in flooding of stream valleys and bays, which greatly reduced stream velocity and filled valleys with drifting sediments. The shallow waters of the Atlantic also regularly formed barrier islands during the Pleistocene interglacial periods.

Each succeeding interglacial period resulted in relatively lower sea levels; previous peninsulas and barrier islands became incorporated into the mainland and former sounds and bays became filled with sediments.

Coastal deposition is clearly noted in Cape Fear's soils, which include depositional types such as "barrier, backbarrier, marsh-swamp, open ocean, or marginal marine" (Jackson 1996:8). Holocene-aged barriers are found along the Atlantic Coast of Cape Fear. The area features three rock and soil groups: surficial sand (Holocene); Pleistocene sediments; and Castle Hayne limestone. Claude Jackson III explains in her comprehensive review of Cape Fear River that the "Holocene sands may be indistinguishable from the underlying buff-colored Pleistocene-aged Socastee sand that is most often found near the coast" (Jackson 1996:8). The Canepatch formation follows the Socastee layer, with sandy blue to gray clay present along with mixtures of sand, clay, silt, peat, and potential coquina as well. Waccamaw and Bear Bluff formations make up the final Pleistocene sediments and form the marine sand aquifer with green-gray to blue gray sand featuring shell. The Castle Hayne formation proves to be the most fossiliferous and "is a poorly to well-cemented limestone, sometimes argillaceous in places" (Jackson 1996:8).

The potential for prehistoric resources within the APE is directly related to the geologic morphology of the area as a result of post-Pleistocene sea-level changes. The last of the Pleistocene glacial stages was the Wisconsin glaciation; the study area lies south of the maximum southerly limit of this glaciation (Ferguson 1986). Between 18,000 and 14,000 years before present (YBP), sea level was more than 100 meters lower than at present. Depending on the source quoted, by 12,000 YBP sea level had risen to between 60 and 30 meters below its current level. With human occupation believed to have begun in this area circa 12,000 YBP (albeit a conservative estimation), current speculation suggests that the offshore APE may have been available for Prehistoric occupation (Ferguson 1986:6).

PREHISTORIC CONTEXT

Consideration of the potential for cultural resources within the APE focuses on two distinct types: Prehistoric sites and Historic shipwrecks. Although the location of shipwreck sites can be realized through the employment of an array of remote sensing equipment like that currently being utilized within the APE, the location of submerged Prehistoric sites with current technology is highly unlikely. Rather, the emphasis during a study of this nature is more hypothesis than reality, the investigation basing potential submerged site location on known above current sea level site locational parameters (land forms such as river terraces), as well as data on Pleistocene environments and resources for the area (estuaries, food types, etc.); however, it is possible to identify relic submerged landforms (i.e., river valleys) to some extent with the sidescan sonar, and then apply known parameters from above-sea-level sites to these landforms.

Data indicate that a portion of the reported sites in the waters of North Carolina is Prehistoric. Well over 800 submerged archaeological sites are located in North Carolina, a vast majority being Historic shipwrecks, and landings. Approximately 50 (less than 6%) of these sites are from a Prehistoric context. Most if not all of these come from a lacustrine or riverine context (Richard Lawrence, personal communication 2002). Thus, the presence of known marine Prehistoric resources in North Carolina is exceedingly rare. Although rare, there is the potential for Prehistoric resources to be found in a marine context. Other regions have produced underwater Prehistoric sites.

To the immediate north, a study of Virginia's underwater cultural resources indicated that there were 283 underwater sites on file. While 90 have Prehistoric components, only three are totally submerged. The bulk is eroding out of modern shorelines (Blanton and Margolin 1994:ii). Further north, it is believed that past dredging activity off of Sandy Hook, New Jersey, may have

exposed and redeposited portions of a Prehistoric site. An assemblage of over 200 Prehistoric artifacts was collected in an area that had been re-nourished by material dredged from an area approximately 1 mile offshore in depths of 35 to 40 feet below mean low water. It is believed that the artifacts came from a layer within the first 5 feet of the seabed from the Weeks 1 Borrow Area (U.S. Army Corps of Engineers-New York District Memo, 21 September 1995). Other artifactual materials in the New England/Long Island Sound area were located due to dredging activity; many were assigned to the Archaic period (Stright 1990:441-442). In Florida, several submerged Prehistoric sites have been found and investigated. Most artifacts have not been found by archaeologists, but by diver/collectors. Some of the extinct faunal remains found in a submerged context show evidence of butcher cuts and other evidence of human shaping (Faught 2001); however, in general, the modern Florida environment is much more benign than the conditions found off the Cape Fear River. Thus both to the north and south of North Carolina, it is known that Prehistoric submerged sites have been located or intuited through the evidence.

PALEOINDIAN (BEFORE CA. 10,000 YBP)

Despite recent claims of finds of pre-Paleoindian deposits along the Savannah River dating to 50,000 years ago (Walton and Coren 2004), the earliest evidence of human settlement in the North American Southeast dates from the Paleoindian period. The Paleoindian period in the Southeast has been defined through isolated finds of fluted projectile points and associated hearths or ephemeral features. Models of Paleoindian culture, adaptations, and subsistence are typically based on more substantial data from a series of archaeological sites in western North America, and modern anthropological studies of existing gatherer-hunter groups. Paleoindians are viewed as primarily nomadic hunters, focusing on large game. However, although evidence is sparse, it is doubtful that the hunting of large Pleistocene mammals was the exclusive focus of Paleoindian populations. As in modern gatherer/hunter populations, the exploitation of wild plant foods and smaller game likely comprised a significant portion of Paleoindian subsistence. Populations were sparse across most of the Southeast. There are, however, some areas with concentrations of Late Paleoindian sites that indicate either a denser population or repeated seasonal use of local resources.

Over most of North America, Paleoindian period sites are marked by a distinctive tool assemblage. Most characteristic of this period are fluted lanceolate projectile points/knives (PP/Ks). These tools average 7.5 centimeters in length, and exhibit parallel or slightly convex sides, concave bases, and a distinctive narrow, vertical flake (or flute) removed from each face of the blade. Other somewhat less distinctive features of Paleoindian lithic assemblages include bifacially flaked knives, end scrapers, burins, and gravers (Griffin 1967; Kelly 1938, 1950; O'Steen et al. 1986).

The climate during the Paleoindian period was colder and drier than at present. Typical vegetation patterns likely consisted of spruce-pine forests prior to the arrival of Paleoindians to southeastern North America (Davis 1976; Watts 1971; Wright 1971), but had changed to mixed deciduous forests (oak, hickory, walnut, elm, willow, maple) by 10,000 YBP (Anderson et al. 1996; Delcourt and Delcourt 1981, 1983; Ward and Davis 1999). Additionally, the coast was located 355 to 480 kilometers to the east of its present-day location, and any sites that may have been occupied are now inundated (Phelps 1983). Throughout the North Carolina Coastal Plain, less than 50 Paleoindian sites have been identified and many sites consist of isolated finds of single PP/Ks (Ward and Davis 1999). Specifically in the Wilmington area, very few Paleoindian or Early Archaic sites have been located. In addition, some of these sites in New Hanover and Brunswick counties may have been misinterpreted and belong with other periods (Abbott et al. 2003; Martin et al. 2017).

With that said, two fluted points have been reported in Camden County, indicative of a Paleoindian occupation, while the Currituck County site files list two Paleoindian component

sites (Novick 1995). Along the Pasquotank River in Pasquotank County, is perhaps the best-recorded Paleoindian site along North Carolina's Coastal Plain. Site 31PK1 (the Pasquotank site) has a large lithics collection, including:

“...projectile points, bifaces, limaces, side scrapers, graters, and possible end scrapers. The Paleoindian component consists of a late stage lithic reduction area that is inferred to be a toolkit maintenance site. About 70 percent of the lithic assemblage is siliceous metavolcanic stone that is most likely non-local in origin. The remaining lithics are made of chert and jasper (Daniel et al. 2007). This assemblage is similar to other Paleoindian sites occupied by highly mobile bands using sophisticated toolkits” [Martin et al. 2017].

ARCHAIC PERIOD

EARLY ARCHAIC (10,000 TO 8,000 YBP)

The Archaic period represents a time of adaptation to the early Holocene environment. At this time, intervals of hot dry weather were punctuated by periods of increased precipitation and cooler temperatures. The oak-hickory forest was firmly established by the end of the Paleoindian period (Watts 1971; Whitehead 1973). Archaic populations' subsistence strategies were focused on seasonally available floral and faunal resources, including hickory nuts, acorn, and mammalian resources like deer (Anderson and Hanson 1988; Ledbetter 1992). The Early Archaic is generally believed to end with the onset of the Hypsithermal interval (8,000 to 4,000 YBP), a warming period marked by an advance of pine forests on the Coastal Plains and the creation of extensive riverine swamps and wetlands (Anderson et al. 1996; Delcourt and Delcourt 1981, 1983).

The Early Archaic subperiod is distinguished from the preceding Paleoindian period on the basis of the technological change from large fluted projectile points to simpler, smaller, and more diverse tools. Characteristic lithic artifacts associated with Early Archaic sites include ovate, stemmed, notched, and beveled quartz bifaces. Diagnostic point types identified by Coe (1964) are found throughout the Carolinas and other areas of the Southeast as well.

Recent scholarship has produced different models to explain the movements of Early Archaic settlements. One model put forth by Anderson and Hanson (1988) suggests small bands of Early Archaic people (50 to 150 individuals per band) focused on river drainages, moving their settlements seasonally to take advantage of readily available resources. Daniel (1998; 2001) proposes a different model, suggesting these populations were “tethered” to good-quality lithic sources and moved their settlements relative to a few major outcroppings of rhyolite and chert. Both models are based on modern hunter-gatherer studies, though, and may not be entirely accurate if the environment was as resource-rich relative to modern conditions as others researchers have suggested (Ward 1983).

Surface scatters located near water sources typify Early Archaic sites from the Coast and Coastal Plain. Base camps and temporary procurement camps make up the range of known site types for the Archaic period on the coast, reflecting exploitation of various resources in diverse environments (Ward and Davis 1999). Resource procurement sites outnumber base camps nearly 10:1 (Phelps 1983).

MIDDLE ARCHAIC (8,000 TO 5,000 YBP)

During the Middle Archaic subperiod, the post-glacial Altithermal brought warmer temperatures and a drier climate. The favorably temperate climate is thought to have influenced settlement patterns, subsistence strategies, and technological innovations during this time period (Dragoo 1975). The Middle Archaic appears to show an increase in more permanent settlements, particularly in the large river valleys. It is likely that band-level organization prevailed, and that

gathering and hunting on a seasonal schedule continued. Major traits seen among Middle Archaic sites in North Carolina include their large numbers, the location of such sites in nearly all topographic settings, and the low artifact frequency and diversity of assemblages from these sites.

Characteristic artifacts of the Middle Archaic include stemmed, Stanly and Morrow mountain types, and bifurcated PP/Ks such as McCorkle, Lecroy, and St. Albans (Martin et al. 2017:17; Moser et al. 2007:24). The Middle Archaic is also known for the earliest extensive use of groundstone technology (i.e., grooved and polished axes). Local lithic sources became the preferred material for flaked stone tool production (Johnson 1989; Ledbetter et al. 1981), suggestive of limited mobility of populations.

LATE ARCHAIC (5,000 TO 3,000 YBP)

The Late Archaic subperiod is seen as a time of major technological shifts, diversification in settlement types, and increased sedentism. In the Piedmont and Coastal Plain regions of the Carolinas and Georgia, the primary development that distinguishes the Late Archaic from preceding subperiods is pottery manufacture. Stallings Island pottery is tempered with Spanish moss that would be carbonized upon firing, resulting in a rather porous vessel (Ward and Davis 1999; Culpepper et al. 2000). This earliest pottery type is sometimes decorated with punctuations, incising, and pinching. The roughly contemporaneous sand-tempered Thom's Creek ceramic series is found as a minority type in southern Coastal Plain assemblages, but does not appear to have extended into the northern Coastal Plain of North Carolina (Herbert 2003). A third ceramic type, Hamp's Landing, is a crushed limestone or marl-tempered ware with surface treatments including thong marked, cord marked, net impressed, fabric impressed, and simple stamped. Three radiocarbon dates associated with Hamp's Landing sherds place the type in the Late Archaic subperiod (Jones et al. 1997; Sanborn and Abbott 1999), although other researchers continue to suggest Hamp's Landing dates to the Early and Middle Woodland subperiods due to stratigraphic evidence (Herbert 1999; Jones et al. 1997; Mathis 1999; Ward and Davis 1999). Lastly, excavations at Site 31CB114 recovered a New River sherd with a cremation yielding a radiocarbon date firmly at the beginning of the Late Archaic subperiod, which suggests that coarse-sand tempering may have had earlier beginnings than previously thought (Sanborn and Abbott 1999). The use of non-fiber tempering so relatively early may have been a functional response by populations living in areas where Spanish moss is not as readily available.

Large residential base camps or villages are present for this period (Anderson and Joseph 1988), and these settlements are focused along both major rivers and their tributaries. Smaller, less-intensively occupied sites include terrace and upland hunting and gathering camps, and quarries. The subsistence systems did not change substantially between subperiods, although there is evidence of emergent horticulture at Late Archaic sites in the Southeast and Midwest (Chomko and Crawford 1978; Cowan 1985). There was also an increase in reliance on riverine resources.

One Archaic site has been recorded north of Aydlett on the western shore of Currituck Sound. Site 31CK40 has Early through Late Archaic components, but because of a lack of integrity due to erosion, is not recommended as eligible for listing on the NRHP.

WOODLAND PERIOD

As noted by Ward and Davis (1999), archaeological research along the North Carolina coast has long supported the notion of studying the northern and southern coastal regions as distinct, separate areas. This is as apparent and useful a designation in the Woodland period as it is in the later Historic period. Part of the reason for this divide between the north and south regions can be explained by environmental factors (Gunn 2002; Ward and Davis 1999). Barrier islands (the Outer Banks) along the embayed north coastal region are located farther from the coast than in

the south, providing greater access to estuarine resources but little protection from wind and cold. Conversely, the south coastal region is limited in the quantity of estuarine resources due to the nearness of sea islands to the mainland. Inlets of the New, White Oak, and Cape Fear rivers, among others, bisect islands along the southern coast but do not form the large bays and sounds found to the north; however, the southern coast, though “unembayed,” is more protected from wind and cold than the north coastal region.

These environmental differences are caused in part by the underlying geology of the area (Gunn 2002). Somewhat simply put, sediments piled against Piedmont bedrock formations were in place by 100,000,000 years ago (Upper Cretaceous), to be acted upon by riverine and oceanic currents; however, an episode of geologic uplift centered on the southern Coastal Plain began around 50,000,000 years ago (Cenozoic), lifting this region and resulting in a somewhat drier, drought-prone climate.

EARLY WOODLAND (3,000 TO 2,300 YBP)

During the Early Woodland, horticultural activities focused on the exploitation of domesticated plants, such as squashes, gourds, chenopodium, sunflower, and amaranth. Foraging activities continued to exploit wild plant foods, with a variety of nuts being heavily relied upon (Fritz 1988). Storage and cooking pits began to be used (Caldwell 1958), and large collections of acorn, hickory, and walnut remains have been recovered from such pits (Bowen 1982). The domestication of plant foods is believed to be associated with a more sedentary settlement system (Ward and Davis 1999; Wood and Ledbetter 1990). Villages with semi-permanent domestic structures were located along rivers and creeks. Small, short duration sites in upland areas, rock shelters in the uplands, and isolated circular structures in the flood plains are also commonly identified as Early Woodland habitation sites.

The Early Woodland subperiod on the northern Coastal Plain has been designated the Deep Creek phase (Loftfield 1976; Martin 2008), a cultural identification useful in separating it from the New River phase common to the southern Coastal Plain (Phelps 1983; Herbert 2003). Both of these phases have undergone considerable refinement, particularly in terms of the ceramic series identified with each (as is the case with the entirety of the ceramic sequencing on the North Carolina coast). New River phase ceramics include a predominance of Deep Creek ceramics that correspond to the Thom’s Creek fine sand-tempered ceramics and Deptford wares of South Carolina. Common surface treatments include: plain; cord-marked; net-impressed; and fabric-impressed.

MIDDLE WOODLAND (2,300 TO 1,200 YBP)

The Middle Woodland subperiod represents a time of continued population growth and increased cultural complexity; however, evidence of dense middens, refuse/storage pits, and permanent structures are rare for the Middle Woodland subperiod in the study area. Sites are located in more diverse locations and are more dispersed than during the Early Woodland subperiod, and suggest populations focused on a variety of estuarine and riverine resources. Many of these were shell-collecting locations, as evidenced by the quantities of shell present at these sites. Ward and Davis (1999:205) note, however, that it seems unlikely that Middle Woodland populations did not also target mammalian resources, particularly deer, for hides (clothing), sinew and other tissues, as well as bones and antlers (tools, fishhooks). Groups likely moved inland during the fall for hunting and gathering nuts (Cantley and Cable 2002). Additionally, the “practice of horticulture increased in importance during this period, with plants such as maygrass, goosefoot, knotweed, and sunflower being harvested” (Martin et al. 2017:22).

The Middle Woodland subperiod along the northern Coastal Plain is identified with the Mount Pleasant phase ceramics that are composed of sand and grit in a clay body with surface treatments of net- and fabric-impressed, cord-marked, and plain. The triangular Roanoke PP/K

is common to this subperiod, and burials include flexed and semi-flexed, as well as cremations. An increase in the use of local quartzite for lithic tools at this time may have diminished mobility and altered settlement patterns (Culpepper et al. 2000). This subperiod is marked elsewhere in the Southeast by exotic artifacts, such as copper panpipes, earspools, cut mica, shark tooth pendants, engraved shell and bone, and platform pipes (Butler 1979; Chapman and Keel 1979; Jefferies 1976; Sassaman et al. 1996; Ward and Davis 1999).

LATE WOODLAND (1,200–350 YBP)

Described as a transitional subperiod elsewhere in the Prehistoric Southeast, the Late Woodland represents a continuing expansion of agricultural subsistence patterns. Late Woodland artifact assemblages are marked by groundstone tools recovered with increasing regularity, reflecting the ever-increasing dependence on plant food processing. This is contrary to what the archaeological record contains for much of the North Carolina Piedmont, Coastal Plain, and Coastal regions, where Late Woodland cultural practices lasted until European contact.

Late Woodland cultural traditions on the northern North Carolina coast are usually defined as either Cape Fear (sand-tempered) or Oak Island (shell-tempered). Other types have been noted associated with Late Woodland sites along the coast: Cashie; Colington; Hanover/Wilmington (named after Wilmington, Georgia); and Mount Pleasant (Moser et al. 2007:27; Martin et al. 2017:23). Specific to the APE these types of ceramics:

“...are tempered with either shell, sand, or grog, and typically contain cordmarked or fabric-impressed surface treatments. Wilmington cordmarked pottery is found more frequently on the southern South Carolina and Georgia coasts, whereas Hanover fabric impressed pottery is found more often on the northern South Carolina and North Carolina coasts, although there is substantial overlap between the two ranges (Herbert and Mathis 1996:149). Cape Fear pottery is nearly identical to the Hanover series, but is tempered with sand rather than grog. Also cordmarking seem to be more common on Hanover sherds, while fabric impressing is more common on the Cape Fear pottery” [Herbert and Mathis 1996].

Representative of the Carolina Algonquians, which would be potentially present within the geographic swath of the APE, cultural markers include shell-tempered ceramics.

Settlement patterns for the Late Woodland include widely spaced villages consisting of several longhouses each (Mathis 1995). While these structures may be evidence of year-round occupation of the coast, seasonal exploitation of gathered, hunted, and fished resources (rather than a reliance on domesticated plants) were still elements of the preferred subsistence strategy, at least until the end of the fifteenth century.

Group-oriented ceremonialism was an aspect of Late Woodland life along the North Carolina coast, as evidenced by the construction of sand mounds and communal ossuaries. Sand mounds dot the southern Sandhill region and Coastal Plain, and contain primary tightly flexed burials and secondary interments of bundle burials, scattered loose bones, and cremations (Irwin et al. 1999). Some individual interments are associated with burial goods, while other artifacts have been recovered in the mound fill but with no direct association with any burial.

Examinations of Historic accounts and careful excavation of numerous ossuaries and burials along the North Carolina coast has resulted in a working hypothesis to explain the sequence of events between death and burial (Mathis 1993a, 1995; Ward and Davis 1999). Historic accounts from the seventeenth-century record the “Feast of the Dead,” as conducted by the Huron in the Great Lakes region. While using these accounts as a direct analogy for Algonquian or Algonquian-related groups on the northern North Carolina coast may be a bit of a stretch, the similar use of mass graves by both groups may imply similar cultural practices. Following death, a body may have been placed upon a scaffold or buried in a temporary pit for de-fleshing.

Pits containing a few small human bones or bone fragments and little else may be evidence of these temporary pits. Scaffolding may be harder to identify in the archaeological record, but the incompleteness of secondary burials in the ossuaries is strong evidence that the bodies were defleshed in a place or way that resulted in the loss of smaller skeletal elements.

According to historic accounts, after a certain number of years (8 to 12), all of the community members who had died since the last ceremony were interred in mass graves following several days of ritual preparations. “Cemeteries” were emptied of their remains, bones were cleaned (adhering flesh removed), and the bundles of bones were wrapped in skins or robes. The recently deceased were similarly dressed but left “in the flesh” (as it were). If the remains were those of commoners or lower status individuals they were placed into one or more large, open pits. Ossuary pits on the North Carolina coast have been recorded as being 1.5 to 3 meters across (Mathis 1993b). If the person was of a higher status in the community, the body may have been interred separately and been accompanied with grave goods (e.g., ceramic vessels, shell cups and beads, etc.). Mathis (1993b) speculates that completeness of the skeleton may also be an indication of higher status, suggesting the bodies were cared for better during defleshing. Lastly, accounts of the Huron ritual mention that food offerings were placed above the pit. This may have also occurred along the North Carolina coast, as evidenced by quantities of shell sometimes found capping the interments (Mathis 1993b).

Three linguistic groups interacted across the North Carolina Coastal Plain region in the Late Woodland and Historic periods, although only two of these may have directly impacted the study area. At the time of European contact, Iroquoian-speaking groups occupied the northern inner Coastal Plain, their territory ending at approximately the Neuse River. These Iroquoian sites are commonly identified with the Cashie phase (1,200 to 350 YBP), with distinctive pebble-tempered ceramic wares. Algonquian speaking groups dominated the coast, with recent research suggesting this territory extended as far south as the Cape Fear River (Loftfield 1987; Mathis 1995). This southern expression of Algonquian culture seems to date to at least 1,100 YBP, and is differentiated from the historically better-known Algonquian groups in Virginia with the moniker “Carolina Algonquian” (Mathis 1995). Early English exploration of the Carolina and Virginia coasts (1500 to 1584 Common Era [CE]) may coincide with a “retraction” of Carolina Algonquian groups from the southern North Carolina coast, although Mathis (1995) speculates that they may have begun earlier than this time period. In any case, Carolina Algonquian groups were abandoning their villages south of the Neuse River, or were assimilating to expanding Iroquoian and Siouan cultures, or both, to the extent that later sites are not distinctly “Carolina Algonquian.”

HISTORIC INDIAN PERIOD

While a review of the Historic period for the Southeast typically begins with Spanish exploration and settlement, the Historic period for the study area begins somewhat later than the rest of North Carolina. For instance, early exploration by Hernando De Soto (1540 CE; Hudson 1997) and later incursions by Juan Pardo (1566 to 1568 CE; Hudson 1990) were limited in their contact to only those native groups occupying the Piedmont and western Appalachian and Blue Ridge regions of the state. Direct contact between native coastal groups and Europeans did not occur until numerous English settlement attempts of the late 1580s. Following the abandonment of the “Lost Colony” in 1589, sustained contact between Indians and Europeans along the North Carolina coast was halted until Virginia settlers began moving southward in the middle of the seventeenth century (Ward and Davis 1999). Settlements along the southern Coast were short-lived, including attempts by Puritans from Massachusetts and English colonists from Barbados to settle at the mouth of the Cape Fear River.

Conflict between Europeans and Natives along the coast came to a head in the early 1700s, but the roots of these disputes reached back into the late 1600s (Ward and Davis 1999). Settlements from Virginia sprung up around Albemarle Sound, and traders and colonists beat back Natives

groups into the northern Coastal Plain. Land appropriations for settlements and farms, combined with a brisk and illegal Native slave trade, pushed the Tuscarora populations to request permission to move to Pennsylvania. This deal soured, however, when the North Carolina colonial government refused to testify to the past good behavior of the Tuscarora. The Natives rose up in September 1711, killing 130 colonists in the first day of fighting; however, after three years the Natives had suffered over 1,000 casualties to the colonists' 200, and nearly 1,000 other Natives were sold into slavery. The remaining Native groups were forced to abandon their homes, and many moved to Pennsylvania and New York. The Carolina Algonquian language was essentially silenced from coastal Carolina at this time (Mathis 1995).

NAVIGATIONAL HISTORY

European settlement of the present day Cape Fear region began as early as 1526, when Lucas Vásquez de Ayllón led an expedition from Florida into the Cape Fear region. One of the Spanish vessels was recorded lost near the mouth of the Cape Fear River, referred to by the Spanish as the Jordon River. During the brief existence of the Spanish settlement, the area was known as the "Land of Ayllón" (Lee 1965:3-4).

The next attempt to settle the Cape Fear region was almost a century and a half later with the arrival of the English. Settlers from the New England colonies came to the area eager to establish a Puritan colony in the less harsh climate of the South. Under the leadership of Captain William Hilton, a group arrived in the summer of 1662 to find a suitable location. Arriving at the river and "Cape Fear" as he called it, the group remained for three weeks during which time they purchased the surrounding area from the Indians. The Puritan settlers that followed during the winter of 1662 remained in the Cape Fear vicinity for only a brief time before abandoning the area (Lee 1965:4-5).

In early 1663, King Charles II granted territory south of Virginia to eight noblemen in tribute for restoring the Stuart Dynasty to the monarchy. That conveyance included the area from Georgia to the Albemarle Sound region of North Carolina. The territory was divided into three counties: Albemarle (Albemarle Sound area); Clarendon (Cape Fear region; Figure 2-01); and Craven (South Carolina). Shortly after, the Lords Proprietors received a proposal from a group of Barbadians for a settlement within the Cape Fear region. In late spring 1664, a group of 200 settlers, under the command of John Vassall, established a colony at the confluence of the Charles (modern Cape Fear) River and Town Creek (Potter 1993:5-6). The capital, Charlestown, was the first English town in Carolina (Lee 1965:5). The colony was reported to have reached a population of 800 and extended some 60 miles along the river at its zenith.

In October 1665, a second expedition by the Barbadians was launched with the intent of establishing a colony in the vicinity of Port Royal. A small fleet consisting of a frigate, sloop, and flyboat, under command of Sir John Yeamans, stopped at the Charlestown settlement after an arduous journey from Barbados. While entering the river, the flyboat, carrying the new colony's armament, ran aground on the shoals on the western side of the channel (modern Jay Bird Shoals) and was lost (Potter 1993:9, 29). The loss of this important cargo abruptly ended the Port Royal venture. Within another two years, Charlestown would also be abandoned. Difficulty in obtaining supplies, differences between the proprietors and settlers over land policies and hostilities with the Natives resulted in the colony being generally deserted by late 1667 (Potter 1993:10-11).

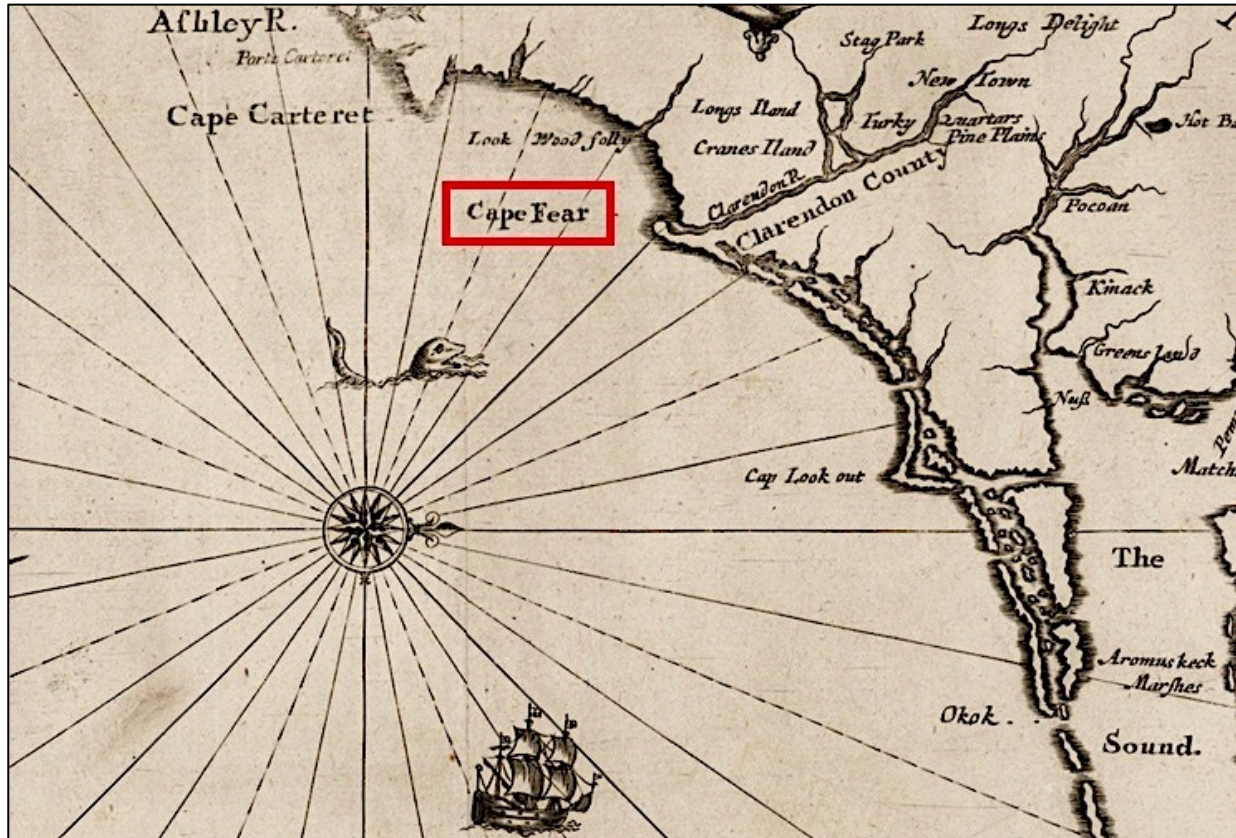


Figure 2-01. 1671 John Ogilby map illustrating the location of Cape Fear and the Cape Fear River.

In 1726, permanent settlements on the lower Cape Fear were established by South Carolina and upper North Carolina colonists (Lee 1977:7). On the western bank of the river, about 12 miles above its mouth and several miles below a shoal in the river called “the Flats,” Maurice Moore established the town of Brunswick. A shoal located at the mouth of Town Creek impeded larger ships from venturing further upstream. Situated below the Flats, Brunswick Town (shown in Figure 2-02) was accessible to vessels of large or small size (Lee 1977:12). In April 1733, another community was established 15 miles upstream from Brunswick. The new settlement became known as “New Town” or “Newton” to distinguish it from the “old town” of Brunswick. In 1740, the town was incorporated and the name was changed to Wilmington (Lee 1977:12).

As hostilities with France and Spain grew during the 1740s, Governor Gabriel Johnston authorized the construction of a fort along lower Cape Fear to protect the burgeoning towns of Brunswick and Wilmington. Construction began in July 1745 on a small bluff overlooking the mouth of the river. Johnston’s Fort, as it was called, was still uncompleted in 1748, when two Spanish vessels entered the river and raided Brunswick (Carson 1992:20). Efforts to finish construction intensified after the raid, and in less than a year the fort was completed. The resulting structure was small and poorly constructed. It was manned by only three men and armed with four rusty cannons (Carson 1992:20). In 1751, the fort was assigned to double as a quarantine station.

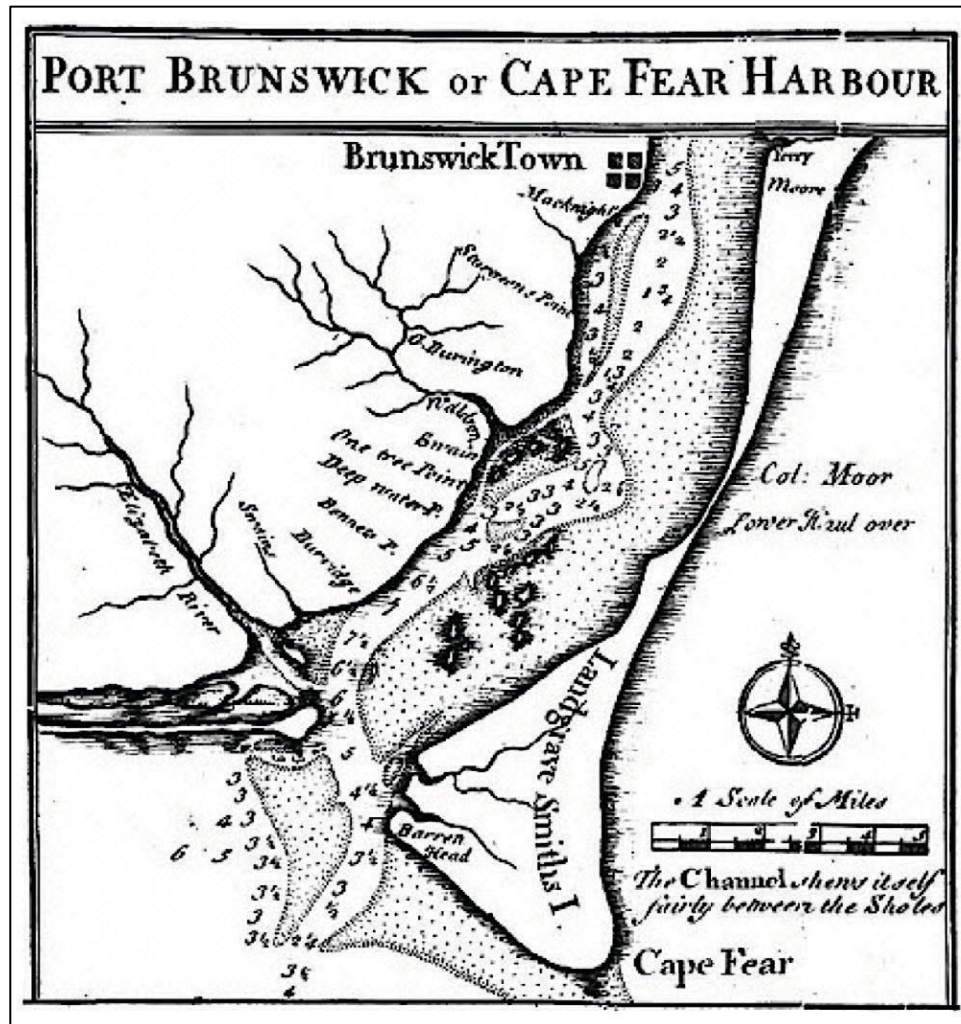


Figure 2-02. 1733 Moseley map showing the Cape Fear Inlet explaining, "The Channel shows itself fairly between the Shoals."

Development based upon a maritime economy played a major role in the growth of both Wilmington and Brunswick during the eighteenth century. Vessels of varying size entered Cape Fear from other coastal ports, the West Indies, and Europe. Larger vessels, unable to cross over the Flats, called at Brunswick, while vessels of smaller size could travel further up the river to Wilmington. Consequently, Brunswick was established as the center for overseas shipping and Wilmington as the center for local and West Indian trade (Lee 1977:16-17).

Rice, cattle, swine, lumber, and naval stores made up the majority of the exports from the port district of Brunswick. Prior to the American Revolution numerous ships left the Cape Fear River for other ports. The West Indies served as the main destination of these ships with English ports following a close second. A lesser number carried cargo to coastal ports, mostly in the northern colonies, but occasionally some ventured south, down the coast to Charleston (Lee 1977:33).

The Cape Fear region played a minor role in the events of the American Revolution. In June 1775, Royal Governor Martin fled from New Bern to Fort Johnston, then under the protection of the British man-of-war *Cruizer*. Growing patriot activity in the area forced the governor to relocate to the warship a month later. All portable materials were transferred to the ship and the

fort's guns were spiked and pushed into the river (Carson 1992:22). Local forces later burned the fort and its outbuildings.

Knowing that a large number of Loyalists inhabited the interior of the colony Governor Martin initiated a plan to subjugate the region using a combination of British and Loyalist forces (Sprunt 2005:113). British reinforcements arrived off the North Carolina coast by the end of March, but by then the opportunity to subdue the colony had passed; however, threats of Loyalist attacks still persisted. In 1776, William Gause applied to the Wilmington-New Hanover Safety Committee on behalf of "the Inhabitants of Challootee (Shallotte) and Lockwoods Folly setting forth their apprehensions of Danger from the people of Waggamaw and requesting of this Committee a small supply of powder to enable them to Act in their own defense in case they should be Attacked" (Wilmington-New Hanover Safety Committee Minutes, 20 January 1776). As a consequence, the committee ordered 20 pounds of gunpowder to be supplied from the stock. A month later, on 27 February 1776, Colonel James Moore and the First North Carolina Continentals with a group of militia defeated a contingent of Scottish Loyalists at the battle of Moore's Creek Bridge. This battle, called the "Lexington and Concord of the south," kept the British from occupying the South at the beginning of the war (Powell 1989:180-182).

Naval operations were of limited importance in the Cape Fear region. In mid-1776, British warships began taking up regular station over the mouth of the river. Foraging parties in small vessels worked their way along the smaller streams and rivers in North Carolina. Forty head of cattle were seized in the vicinity of Lockwoods Folly and it was feared British sloops could cross the bars at Little River or Shallotte Inlet (Rankin 1971:72). In May of the following year, two British men-of-war entered the Cape Fear River and destroyed a number of colonial vessels at anchor (Watson 1992:29). To counter the threat posed by British warships the General Assembly voted to purchase and arm three brigs for the defense of the Cape Fear River. However, these vessels proved inadequate for the task and suggestions were made for either selling them or sending them on trading or privateering expeditions (Watson 1992:29).

Due to the exposed position of Brunswick to the British, the General Assembly passed an act in 1779 to move the county seat to Lockwoods Folly (Rankin 1971:81). This same act provided for a courthouse, jail, and stocks near the bridge over the Lockwoods Folly River. Beginning in March 1779, the court met at the house of John Bell until the courthouse was completed. In spite of insufficient funds due to wartime inflation, the court finally met in the new courthouse on 26 June 1786 on a tract of land purchased from John Bell's son, Robert, on 7 April 1787. By 1792, the "new" courthouse was in need of repairs and in January 1797, the court adjourned to the tavern of Daniel Bellune.

In 1781, General Henry W. Harrington requested intelligence regarding "the arrival of the Fleet of our Allies" (Clark 1896:685). His letter gives insight into the fishing and maritime activities along the coast:

"I have engaged a Person to go to the Sea-shore, to Lockwood's folly, and to the Boundary-house, & as far southward along the Sea coast as he can, with safety to himself; to make all possible enquiry of the Fishermen, the Sailing Boats & of all others, of the certainty of the said Fleet's being off this Coast" [Clark 1896:685].

Lower Cape Fear remained quiet until 1781, when Major James H. Craig was dispatched by Lord Cornwallis in Charleston to take Wilmington. Craig, with a force of 18 vessels and 400 troops, quickly captured the defenseless town (Sprunt 2005:114). From Wilmington, Craig dispatched parties throughout the countryside to rally local Loyalists and to obtain supplies for Cornwallis's troops, then marching through North Carolina. After being checked by Colonial forces in the battle of Guilford Courthouse, the British retreated to Wilmington to recoup and replenish supplies. Later, when Lord Cornwallis moved north to suppress Virginia, Craig

remained behind in Wilmington to disrupt Colonial activity in that region. News of Cornwallis's surrender at Yorktown made the British position in Wilmington untenable, and on 17 November Major Craig evacuated the city.

After the conclusion of the war there was a shift in the maritime development of the Cape Fear region. Almost all the ships that left Cape Fear now went to Charleston, with the rest going to England or the West Indies (Lee 1977:33). Inbound ships now proceeded up to Wilmington. This shift brought about the decline of the town of Brunswick, as was indicated by the change in name of "Port of Brunswick" to "Port of Wilmington" (Lee 1977:34).

During the last decades of the eighteenth century, the area that would become the town of Southport consisted of little more than the remains of Fort Johnston and the homes of local river pilots. The region's potential, however, was realized by three men from Wilmington, Joshua Potts, John Brown, and John Husk, who viewed the area, with its salubrious sea breezes, as an ideal spot for a new town. Though the men's initial petition was rejected in 1790, the group persevered and on 15 November 1792, the General Assembly issued a charter for the establishment of a town on the bluff overlooking the mouth of the river.

The town was named Smithville, after Benjamin Smith who introduced the bill into the legislature. The town was laid out with lots offered for sale in Wilmington and Fayetteville newspapers. The charter specified that no person could purchase more than six lots in their name and the purchase price of lots was to be 40 shillings per lot (Carson 1992:26). The town plan also reserved space for Fort Johnston, which was rebuilt in 1804.

With the growing amount of vessel traffic sailing up to Wilmington there arose a need for improvements in the navigability of the river. As early as 1784, measures were taken to improve the conditions of the lower Cape Fear River (Lee 1977:36). Improvements were needed at the treacherous entrances to the river, at the Bar and upstream at New Inlet. Three major shoals between Wilmington and the sea also caused problems for ships trying to navigate the river. The "upper shoal," located near the foot of Clarks Island, off the southern tip of Eagles Island, had 8.5 feet of water. The "middle shoal," also known as the Flats, had 9 feet. The "lower shoal," at the foot of Campbell Island, had 9.5 feet. The main channel of the river was then located in a narrow passage between Campbell Island, Clarks Island and the western bank (Lee 1978:112).

In addition to the shoals, ships deliberately sunk during the American Revolution as obstructions needed to be removed (Lee 1977:36-37). Around 1819, Hamilton Fulton, a noted English engineer, was hired to make improvements on the Cape Fear River mainly between Wilmington and the ocean where a system of jetties was planned. Work continued for six years until financial limitations halted this project. Some improvements were made on the river up until the start of the Civil War with sporadic financing by the state and local Wilmington businessmen (Lee 1977:37).

Steam vessels first appeared on the Cape Fear River in 1817. The first steamboat to arrive was the sidewheel *Prometheus*, built in Beaufort for a firm in Wilmington that intended to run the vessel from Wilmington to Fayetteville and Southport. The following year the Clarendon Steamboat Company was established at Wilmington. The company held the exclusive right to operate steamboats on Cape Fear for a period of seven years provided that it kept one boat in service. In addition to the *Prometheus*, the sidewheel *Henrietta* also made regular runs between Wilmington and Fayetteville (Lee 1977:37-38). By 1822, a second steamship venture, the Cape Fear Steamboat Company, had begun service on the river. With time the number of steamboats on the river increased significantly (Lee 1977:38). By the 1850s, nearly a hundred vessels of all types were in Wilmington at the same time. Many of the ships were large square-rigged foreign craft, while others were sidewheel steamers. Most, however, were American schooners engaged in the coastal trade (Lee 1978:116).

Development of the Cape Fear region was soon disrupted by the Civil War. After Confederate forces in South Carolina attacked the U.S. garrison at Fort Sumter, President Abraham Lincoln declared a state of open rebellion and called for volunteers to preserve the Union. Lincoln also issued a proclamation on 19 April 1861 establishing a blockade of Confederate ports in South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and Texas. Eight days later, Lincoln extended the blockade to include ports in Virginia and North Carolina. With North Carolina's withdrawal from the Union, Governor John W. Ellis ordered the occupations of forts Johnston and Caswell.

Union naval forces were inadequate to properly enforce the blockade at the onset of the war. In 1861, U.S. Navy registers listed 90 vessels, 50 of which were propelled by sail and were considered obsolete for the task at hand. The remaining 40 were steam, but several of the deep draft vessels proved unsuitable for the shallow southern waters. Eight others were laid up while 22 vessels remained at station off foreign shores and would require at least six months travel to reach the U.S. (Browning 1980:24); however, within a few months of Lincoln's proclamation, Secretary of the Navy Gideon Welles took steps to implement an effective blockade off the southern coastline.

The Navy department bought or leased nearly any vessel that could be of service. In nine months, U.S. Navy agents purchased 136 ships, constructed 52, and commissioned and repaired another 76 (Engle and Lott 1975:180). The Union blockade in turn gave rise to the practice of blockade running. At the beginning of the blockade, practically any vessel was considered suitable for breaking through the Atlantic squadrons to carry cargo in or out of the isolated southern ports. The most successful of the early runners were steamers that had belonged to the Southern Coasting Lines and were idle due to the outbreak of the war. The illicit trade carried on by these ships reaped considerable profit, but failed to compare with the great capital resources brought in during the latter part of the war.

Wilmington provided North Carolina with a deep-water port. By 1860, Wilmington had emerged as a modern shipping center with excellent internal communication. Three railroads ran through the city and daily steamboat service to Charleston and New York, as well as, up the Cape Fear River to Fayetteville. With the capture of New Bern, Roanoke Island, and Beaufort, Wilmington was the only North Carolina port left open for the importation and exportation of goods. As long as supplies were imported through the two inlets of the Cape Fear River and transported along the railroad lines, which connected with Lee's army in Virginia, the Confederacy had a lifeline. Wilmington soon became the most vital seaport in the "Southern Cause" (Pleasants 1979:15).

Wilmington became the key port for "runners" largely because of the area's topography. Located 28 miles from the mouth of the Cape Fear River, the port had access to the Atlantic through two separate entrances: eastward through New Inlet; and southward through the river mouth (Figure 2-03). Although the two entrances were only 6 miles apart, Smith's Island, a strip of sand and shoal, lay in between. Continuing along Cape Fear were the dangerous Frying Pan Shoals, which extended 10 miles further into the Atlantic, making the distance by water between the two entrances a little less than 40 miles (Soley 1883:91).

This geographical configuration proved highly advantageous for blockade-runners and the initial blockade of Wilmington proved ineffective. When the *Daylight*, the first (and at the time the only) Union vessel sent to blockade these waters, arrived, it immediately experienced the difficulties associated with guarding the dual entrances of the Cape Fear River. While pursuing a steamer out of the western bar entrance, the *Daylight* inadvertently allowed several other small vessels to pass out of the New Inlet entrance. Within three months of the *Daylight's* arrival, 42 vessels either entered or cleared Wilmington (Browning 1980:27).



Figure 2-03. Chart depicting the previous “New Inlet” entrance into the Cape Fear River (U.S. Department of the Navy 1901:38).

The blockade-runner *Elizabeth* (ex-*Atlantic*), owned by the Southern Steamship Company was confiscated at New Orleans in January 1862 (Watts 1986). The ship was a wood hull steamer constructed in New York in 1852 by William Collyer (Wise 1988:138, 289). The 216-foot long, 28-foot beam hull was fitted with a vertical-beam condensing engine and two fire-tube boilers supplied by Morgan Iron Works and Quinpard Merrit and Company, both of New York (Watts 1986). After Confederate agents in New Orleans determined that the ship would not be suitable for fitting out as a cruiser, the vessel was sold and privately operated as a blockade-runner.

Under the command of Captain Thomas Lockwood, the *Elizabeth* left Nassau on 19 September 1863, with a cargo of steel and saltpeter for Wilmington (Gaines 2008:118; U.S. Department of the Navy 1899:234). Just 12 miles from the protection of Fort Caswell and the mouth of the Cape Fear River, the *Elizabeth* grounded on a shoal on the east edge of Lockwoods Folly Inlet.

Finding it impossible to get the ship free, Captain Lockwood ordered the vessel burned on the morning of 24 September.

The wreck of the *Elizabeth* contributed directly to the loss of the blockade-runner *Bendigo*. Mistaking the *Elizabeth* for a blockader, the *Bendigo* attempted to run between the wreck and the land, where she ran aground (U.S. Department of the Navy 1899:386). After being unloaded through the surf, the vessel was set on fire by her crew. The *Bendigo* was an iron paddle-wheel steamer of approximately 178 tons.

The *Bendigo* was discovered by the USS *Fahkee* on 3 January 1864, with “smoke issuing from her” (U.S. Department of the Navy 1899:385). Several attempts were made to refloat and move the *Bendigo* off the shoal. Due to the presence of Confederate artillery and infantry on shore, Rear-Admiral S.P. Lee ordered the *Bendigo* destroyed. This destruction was detailed to Lee on the morning of 4 January:

“They report her hull and boilers riddled by shot and shell, several feet of water in her hold, and firmly bedded in sand. The woodwork in her forward part, as well as her after, was entirely consumed by fire” [U.S. Department of the Navy 1899:386].

On 9 January, several vessels, including the *Iron Age*, *Daylight*, *Montgomery*, *Aries*, and *Governor Buckingham*, under orders from Read-Admiral Lee, attempted to refloat the vessel and pull her off the shoal (U.S. Department of the Navy 1899:396-8). While assisting the *Montgomery*, the *Iron Age* ran aground on 10 January. When efforts to refloat the *Iron Age* also failed, the vessel was set afire and destroyed by an explosion on 11 January.

This activity contributed to the loss of a third blockade-runner. Shortly after the *Iron Age* was blown up, a vessel was sighted beached and burning less than 1 mile west of Lockwoods Folly Inlet (U.S. Department of the Navy 1899:402). The ship proved to be the new, iron, paddle-wheel steamer *Ranger*. No doubt trapped by the vessels attempting to save the *Iron Age*, the *Ranger* had been run aground and set afire to avoid capture. Efforts to save the *Ranger* were equally unsuccessful and the ship was shelled to complete destruction of the hull and machinery.

During a two-year period (January 1863 to November 1864), Confederate naval sources listed numerous vessel stations on the Cape Fear. These vessels were identified as: the ironclad sloop *North Carolina*; the floating battery *Arctic*; the steam gunboat *Yadkin*, the steam gunboat *Equator*, the torpedo boat *Squib*, and the ironclad sloop *Raleigh*, and two, long one-gun cutters. In November 1864, Confederate Secretary of the Navy Stephen Mallory also reported to Confederate President Jefferson Davis that two new torpedo boats were under construction at Wilmington (U.S. Department of the Navy 1921:528-532, 630, 743-745).

The capture of Wilmington proved difficult because both entrances to Cape Fear were guarded by powerful fortifications and lesser works. Collectively those fortifications became known as the Lower Cape Fear Defense System. The central point of that system was Fort Fisher, located on Confederate Point. That fortification was originally a small earthworks constructed to protect New Inlet. By 1864, Fort Fisher had become the largest seacoast fortification in the Confederacy. Shaped like an inverted “L,” Fort Fisher’s land face ran 628 yards and was guarded by 20 of the heaviest seacoast guns. The sea face included a 130-pound Armstrong rifle and a 170-pound Blakely, both from England (Browning 1980:35).

Extending from the land face was a string of torpedoes, which could be exploded from inside of the fort (Pleasants 1979:22). Mound Battery, towering to a height of 60 feet with two mounted heavy guns, stood near the end of Confederate Point. Augusta Battery, which stood behind Mound Battery, was located near the river (Pleasants 1979:24).

Fort Holmes, on the other side of New Inlet on Smith's Island, shared the protection of Smith's Inlet in the Cape Fear River with the batteries at Oak Island. Oak Island, located opposite Fort Holmes, held another series of forts and batteries, such as Fort Campbell, Fort Caswell and Battery Shaw (Pleasants 1979:24). Fort Caswell guarded the western bar entrance. Captured by Confederate militia on 14 April 1861, Caswell was renovated into a strong casemated work with new armament consisting of seven 10-inch, four 8-inch Columbiads, and a 9-inch Dahlgren gun (Browning 1980:35; Pleasants 1979:24). Both Fort Caswell and Fort Holmes were responsible for shelling union vessels in the Middle Ground area, including the stranded tug *Violet*, which went aground off the Western Bar Channel on the night of 7 August 1864.

After his tug struck the shoal, Ensign Thomas Stothard requested assistance from the crew of the nearby 866-ton brig USS *Vicksburg* to attempt to re-float the *Violet*. Despite their quick response, the extra manpower and effort proved fruitless as Stothard was ordered to fire the *Violet* after midnight. In response to a court of inquiry investigation, Captain Stothard submitted an incident report to Captain B.F. Sands of the USS *Fort Jackson* and offered this account:

"After all preparations for sending officers, crew, and ship's effects off in boats that he (Lieutenant-Commander Braine of the USS *Vicksburg*) and Acting Volunteer Lieutenant Williams, of the *Emma*, had sent, all of which I did, sending property, a list of which you will find enclosed, also a list of crew, I made preparations for her destruction as follows: I put a lighted slow match to a powder tank in the magazine and closed the door, then filled a large, fine drawer with shavings and straw taken from pillows and mattresses, partially covered it with another, and sprinkled two quarts of spirits of turpentine over all and on the woodwork around it; hung up an oilcloth from the table, one corner hanging in the shavings, which I touched with a lighted match (in the wardroom), after all the boats, but mine in waiting, had left the side, and I followed about 2:00 o'clock a.m. this morning. The explosion of the magazine containing about 200 pounds of powder occurred within half an hour afterwards, and by daylight she was effectually consumed. One 12-pounder was thrown overboard, one left on the forecastle, spiked with rat-tail file, and the 24-pounder was directly over the magazine aft when it exploded, so that it was thrown into the sea" [U.S. Department of the Navy 1900:343-344].

Rear-Admiral Lee recommended that no action be taken to discipline the acting officer of the *Violet*. Rear-Admiral Lee remarked to Union Secretary of the Navy Gideon Welles, that: "Stothard is a very intelligent and efficient officer, notwithstanding this casualty" (U.S. Department of the Navy 1900:344). Prior to its destruction, the *Violet* (ex-*Martha*) was described as a fourth-rate, wooden screw steamer measuring 85 feet in length, with a beam of 19 feet. The 166-ton tug housed one, inverted, direct-acting engine with a 30-inch diameter cylinder and one return flue boiler (U.S. Department of the Navy 1921:233).

Farther up river from the *Violet* wreck site there were a series of forts and batteries used as secondary defenses for Wilmington and as protection for blockade-runners outbound from Smith's Inlet. Fort Lamb was located on the west side of the Cape Fear River on Reave's Point. Above Fort Lamb was Fort Anderson, the most important of the secondary defenses. Partially built from the ruins of Old Brunswick Town, Anderson consisted of a series of trenches and earthworks approximately 1 mile long. Three smoothbore 24-pounders, three rifled 32-pounders, and six smoothbore 32-pounders comprised the fort's armaments. By 1864, Fort Anderson had become an inspection station for all craft heading up the Cape Fear River to Wilmington (Pleasants 1979:25). Several lesser forts, including Stokes, Lee, French, Campbell, Strong and Sugarloaf, were situated on the eastern side of the river (Pleasants 1979:25).

In addition to this impressive array of forts, a naval construction program was initiated in Wilmington to contribute to the defenses of the harbor. The success of the ironclad ram CSS *Virginia* in the March 1862 battles at Hampton Roads demonstrated the superiority of armored warships to naval officers of both the North and South. In late March 1862, Confederate Secretary of the Navy Stephen R. Mallory, sent "instructions relative to gunboats" to Commander

William T. Muse, the ranking naval officer at Wilmington. Shortly thereafter, the navy began building two ironclads in the city, the *Raleigh* at James Cassidy's shipyard at the foot of Church Street, and the *North Carolina* at the Beery shipyard on Eagles Island (Still 1985:5-17, 79-92).

Both vessels utilized a design based on plans conceived by naval constructor John L. Porter. The plans called for a tightly framed hull, with a slight deadrise and a hard chine. The vessels were to be 174 feet long (150 feet between perpendiculars) with a draft of 13 feet. Amidships, a 105-foot long casemate, angled at 35° and covered with 4 inches of iron plate, protected the gun deck. Two boilers provided steam for the vessel's two horizontal engines, which were geared to a single 10-foot screw. The first ironclad built on this design, the CSS *Richmond*, was completed in Richmond in 1862. Known as the "Richmond class," this group, consisting of five vessels, was numerically the largest standardized class of ironclads constructed by the Confederacy (Holcombe 1993:63-64).

The two Cape Fear ironclads entered into active service by late 1863/early 1864 (*North Carolina* in December 1863 and the *Raleigh* in April 1864) after numerous delays resulting from material shortages, strikes, and epidemics; however, the usefulness of these two vessels to the Confederacy's war effort was limited. The *Raleigh* grounded on a shoal near the mouth of New Inlet and was destroyed after a sortie against the blockading squadron on 7 May 1864, less than a month after entering service. The *North Carolina*, on the other hand, was reduced to serving as a floating battery; its deep draft and lack of motive power rendered the vessel ineffective as a ram.

The ironclad was further hampered by the use of unseasoned timber in its construction. Warping and splitting timbers caused the ship to leak incessantly and an infestation by *teredo navalis* worms ("shipworms") further weakened the hull. For most of its career, the ironclad remained at anchor near Smithville, positioned to support the nearby forts in the defense of Wilmington. The *North Carolina* finally sank at its moorings in September 1864. Though useless as an offensive weapon, the *North Carolina* served as a deterrent, preventing the U.S. Navy from entering and seizing the lower Cape Fear until the fall of Fort Fisher in the closing days of the war.

When hostilities ended in 1865, so did some of the regular river trade. The prewar steamer service between Wilmington, Charleston, and Savannah was not resumed, since rail service had been established. Steamship service did, however, resume to the northern cities of Baltimore, Philadelphia and New York (Lee 1977:91). The coastal trade also revived and was conducted mainly by schooners ranging between 150 and 600 tons. Because of the decimation of American shipping during the war international commerce was carried in foreign bottoms, usually of British, German or Scandinavian origins (Sprunt 2005:501).

Industry had been severely interrupted during the war, but was beginning to make a comeback. Naval stores and lumber continued to be the principal exports with the addition of some cotton. Exports recorded for the year 1871 amounted to some 95,000 bales of cotton, 100,000 bushels of peanuts, 112,024 barrels of spirits of turpentine, 568,441 barrels of rosin, 37,867 barrels of tar, and 17,963 barrels of turpentine (Sprunt 2005:513-514). Without the use of slave labor the rice industry declined dramatically (Lee 1977:86-87). By the turn of the century, a decrease in the availability of pine trees resulted in a decline of the naval stores industry. With improvements in cultivation and transportation, cotton became a major industry in Wilmington until its decline in the 1930s. Guano from the West Indies was brought in for the new fertilizer plants. The production of creosote impregnated wood also helped increase shipping in the region (Lee 1977:87-88).

During the last quarter of the nineteenth century efforts were undertaken to develop Smithville into a port city. In 1886, the North and Southern Railroad Company announced plans to extend rail service from Wilmington to Smithville. Developers, envisioning a port that would rival Charleston and Norfolk, requested that the town's name be changed to Southport to draw

attention to the “Port of the South” (Carson 1992:61). In anticipation of the expected development the town’s dirt roads were paved in crushed shell and the dredge boat *Woodbury* began deepening and straightening the channel to accommodate increased vessel traffic. However, the proposed rail line did not materialize and Southport remained a small town relying on fishing and tourism for its economic livelihood. The Wilmington, Brunswick and Southport Railroad eventually extended a line to the town in 1911.

Improvements to navigation on the Cape Fear River had deteriorated during the war. Continual silting reduced the navigable channel. By 1870, Federally financed projects were again started to improve the conditions of the river. One such project was the closure of one of the two inlets. New Inlet was closed in 1881 with the belief that the increased force of the concentrated flow would sweep out the channel. The closure was accomplished by placing a rock dam that extended for more than 1 mile from Federal Point to Zeke’s Island. The dam was completed in 1881 and later became known as “the Rocks.” Another rock barrier was later built between Zeke’s Island and Smith’s Island. The channel depth was dredged to accommodate the deeper draft vessels (Lee 1977:91).

Two life-saving stations were established near the mouth of the Cape Fear River during the 1880s. Those stations included the Cape Fear Station (built 1882) at the eastern end of Bald Head Island and the Oak Island Station (built 1889) located west of Fort Caswell. Each station was equipped with line-throwing guns and self-righting surfboats (Sprunt 2005:527). Surfmen maintained a constant vigil of the sea from the station house and conducted regular nightly beach patrols; additional patrols were conducted in daylight during stormy weather. Both stations remained active until the 1930s, when new Coast Guard facilities were constructed to replace them.

On 20 July 1895, the U.S. Marine Hospital Service appropriated \$25,000 for the construction of a quarantine station at Southport. The new station was to be located on the river on the eastern side of the channel between the upper end of Battery Island and Price’s Creek Lighthouse (Carson 1992:73). The entire station was to be built on a pier 600 feet long and to consist of a hospital building, a disinfecting house, attendant’s quarters, and a kitchen. The station opened for service by the middle of 1897 with Dr. J.M. Eager appointed as the station’s first Quarantine Officer. A report for the fiscal year 1907 illustrates the level of activity at the station:

“[Eighty-six] vessels spoken and passed; 19 steamers and 1 sailing vessels inspected and passed; 2 steamers and 3 sailing vessels disinfected; and 485 crew on steamers, 125 crew on sailing vessels, and 3 passengers on sailing vessels inspected. The vessels disinfected were from Bahia, Portobello, Santos, Rios, and Barbados” [Brown 1974].

By 1937, the station had become obsolete and was placed on caretaker status. As the facility was located on water and not a navigation hazard it was left to deteriorate and on 19 August 1951, the abandoned station was destroyed by fire (Brown 1974).

The fishing industry provided the financial stamina for the economy on lower Cape Fear during the early years of the twentieth century. The principal source of income for Southport was the menhaden fisheries. Most catches were processed into oil, which was used in the manufacture of paints, linoleum, tanning solutions, soaps, and waterproof fabrics (Carson 1992:96). Leftover scrap was ground up for fertilizer and feed for livestock. The Southport Fish Scrap and Oil Company and the Brunswick Navigation Company established processing plants along the Elizabeth River while additional plants could be found above the town on the Cape Fear River.

World War I (WWI) initiated a revitalization of the economy with the establishment of the Carolina Shipyard in May 1918. At about the same time, the Liberty Shipyard started producing steel ships as well as experimental concrete ships. The success of the shipyards was short-lived

and the economy fluctuated for several years until it fell during the 1930s. Though Wilmington saw moderate success in shipping and shipbuilding after the war, most of the yards had closed by the mid-1920s and competition from Norfolk and Charleston slowly relegated the city to an import distribution center catering mainly to regional trade (Watson 1992:145).

This trade averaged 200,000 or more tons through most of the 1920s, but with the coming of the Great Depression, the amount fell to 94,007 tons by 1932 (Watson 1992:150). Wilmington's economy would not fully recover from the effects of the depression until the end of the decade. Despite this economic uncertainty, foundations were laid for future development. By the beginning of World War II (WWII), Wilmington boasted 54 wharves, piers, and docks, and the opening of the Atlantic Intracoastal Waterway (AICWW) expanded the city's trade with its hinterland and increased its role in the coastal trade (Watson 1992:148-9).

With war in Europe and German submarines prowling the east coast during the early 1940s protection and defense of the coast became a top priority in Washington. The vulnerability of the Cape Fear had been confirmed during WWI and U.S. Navy officials were anxious to be prepared for future enemy intrusions (Gannon 1990:242-243). On 17 November 1941, the U.S. Navy reacquired the 248.8-acre Fort Caswell reservation, sold into private hands in 1929. The old fort grounds were to be used for training, communications and submarine tracking (Carson 1992:126).

The U-boat threat finally reached the Cape Fear region in early 1942. On 16 March, the 11,641-ton tanker *John D. Gill* was torpedoed in the coastal waters off the mouth of the river. As a result of the high number of vessel losses during the early stages of the war, defensive measures were put into place. Coastal communities were systematically blacked out, a more efficient convoy system was devised and additional planes and patrol vessels were put into service along the North Carolina coast (Stick 1952:237-239).

In addition to the menace that Axis submarines and aircraft represented during the conflict, a significant hurricane struck the project area in late summer 1944. On 1 August, the tropical storm made landfall near Southport and the Oak Island U.S. Coast Guard station reported maximum wind speeds of 80 miles per hour. To the north, "substantial damage" occurred in Wilmington and Wrightsville Beach and the combined losses of real estate and crops amounted to \$2,000,000 (Galecki 2005:133-134).

WWII also brought renewed growth to the shipyards and relief to the area (Lee 1977:88-90). The increased jobs and higher wages allowed Wilmington's economy to increase and become stable. After the war, many of the people brought in to build ships chose to stay and make Wilmington their home. In 1945, the State Port Authority was formed, promoting ports in Wilmington and Morehead City and creating new jobs. In 1955, the military established the Sunny Point Army Terminal ("Military Ocean Terminal Sunny Point"). The facility serves as a terminal for shipping military hardware and ammunition to American forces around the globe. The base is a major employer in the area and local service and retail industries serving the military contribute to the economic prosperity of the region.

A number of seaside communities have been incorporated since 1950 (Lee 1978:229). Long Beach, on Oak Island was the first in 1953. By 1960, the population of Southport was reported as 2,034 residents. At that time, the town boasted a popular bookmobile, a new water tank, a "lighted" athletic field, and a picnic area at the community park. Maritime news included the launch of a "big, new charter boat," the *Riptide*. Herman Sellers constructed the vessel for Glenn Trunnell of Southport. Other local commercial fishermen commenced discussions on the merits to install an artificial reef near the town. In September 1960, Hurricane Donna struck the region and fortunately caused only minimal damage in Brunswick County (Reaves 1999:169,172).

In early February 1970, the Atomic Energy Commission approved construction of a \$385,000,000-nuclear power plant to be situated north of Southport. The downtown also experienced a significant economic boost when First-Citizens elected to build a bank in Southport, its first branch in Brunswick County. At the same time, waterfront interests offered services to the public such as the modern 150-seat restaurant Herman's and the new 450-foot long "fishing and pleasure pier" (Reaves 1999:243).

Today, the Cape Fear region presents a strong economy with a state port facility that is frequented daily by international cargo vessels. The economy is further augmented by the military and commercial fisheries, which provide an important source of income to area residents. In addition, Southport and the coastal communities on Oak Island and Holden Beach are popular tourist destinations. The area's offshore waters are a sportsman's paradise catering to recreational boaters and sport fishermen alike.

PREVIOUS INVESTIGATIONS

One of the best tools for accurately assessing the potential for unknown submerged cultural resources is to compare the APE with findings and results of previous investigations, including both remote sensing and cultural resources surveys that have been completed in or near the APE. Varying in degree of applicability to the current research, these studies allow for the identification of potentially significant resources, and the studies aid in the recognition of specific problems or aspects inherent in the assessment of the present survey data and in the identification of potential resources.

In order to ascertain the presence of submerged archaeological sites and investigations in or adjacent to the APE, the North Carolina Office of State Archaeology's Underwater Archaeology Branch (UAB) Master Site Files and Archaeological Reports were reviewed. A number of historical and archaeological research studies have been conducted relative to the presence of shipwreck remains in the Study vicinity. An enormous amount of archaeological research has been performed by UAB and by marine cultural resources management (CRM) firms. Two companies stand out having produced a hefty number of reports over the decades in the Cape Fear region: Tidewater Atlantic Research, Inc. (TAR), led by Gordon Watts; and Mid-Atlantic Technology and Environmental Research, Inc. (M-AT), led by Wes Hall.

These reports are listed with the most comprehensive studies first, followed by cultural resources investigations from the Wilmington Harbor and the Cape Fear River to Southport, and finally the Cape Fear Inlet and offshore area. Due to the overwhelming amount of archaeological work performed along the Cape Fear River, the following investigations in this discussion are found immediately nearby the APE and have been initiated within the last 30 years. Projects completed prior to this date, can be found listed in the UAB's comprehensive studies of the Cape Fear River (Overton et al. 1996:7-28).

COMPREHENSIVE STUDIES

A 1983 survey conducted by the North Carolina Underwater Archaeological Unit, entitled *Cape Fear Civil War Shipwreck District National Register of Historic Places* (Wilde-Ramsing 1985), was the first comprehensive study of vessels in the Cape Fear River. The survey spent two weeks documenting wrecked and abandoned vessels in the Cape Fear River in proximity to Wilmington at low-water. Thirty-seven sites were documented and several categories of watercraft were recognized. The variety of craft found aided in indicating the varied and complex maritime environment that evolved on the Wilmington waterfront vis-a-vis the Cape Fear River and offshore approaches.

The North Carolina Underwater Archaeological Unit in conjunction with the U.S. Army Corps of Engineers (USACE)—Wilmington District (Overton et al. 1996), conducted another study of

the maritime heritage of the region. The study was comprehensive and encompassed resources from fortifications, shipwrecks, plantations, ferries, bridges and any pertinent area of maritime activity along approximately 34 miles of river. Entitled *The Cape Fear-Northeast Cape Fear Rivers Comprehensive Study: A Maritime History and Survey of the Cape Fear and Northeast Cape Fear Rivers, Wilmington Harbor, North Carolina*, the two-volume study indicates the profound connection of the Cape Fear region to maritime pursuits, therefore giving rise to a large submerged historic cultural material base. These two volumes capture the entirety of the current APE and list a majority of the archaeology sites encountered during our survey work.

WILMINGTON HARBOR AND THE CAPE FEAR RIVER TO SOUTHPORT

The North Carolina Department of Cultural Resources issued Dennison K. Breese and the Fortuna Foundation, Inc. in 1983 to search for the remains of a Spanish sloop that sank off Brunswick Town in 1748. In 1985, Breese worked with the UAB to recover a single 4-pound cannon out of the Upper Midnight Channel Range. No other wreckage or cultural remains was found after the remote sensing survey by Breese and the UAB (Hall 2007). The isolated find was recorded as site number CFR0050 (discussed further in *Shipwreck* section below).

In the 1990s, TAR performed four surveys of the Cape Fear River for the USACE who planned to improve portions of the main shipping channel into Wilmington using dredging and blasting (Watts 1990, 1995a, 1998a, and 1999). The USACE–Wilmington District then carried out their own magnetometer survey and analysis, which located 68 anomalies. TAR was contracted in 1990 to review these anomalies with acoustic sonar and further document three of the turns (Figure 2-04). The 1990 survey correlated 28 magnetic targets with sonar images and identified an additional 15 targets. From this survey, eight targets were considered to have potentially significant characteristics of submerged cultural resources and were recommended for further investigation. These eight targets were the focuses of TAR’s diver assessment work in 1995. Divers recorded the targets as being modern debris or natural features (coquina outcrops or scours) and no additional investigation was recommended (Watts 1995a).

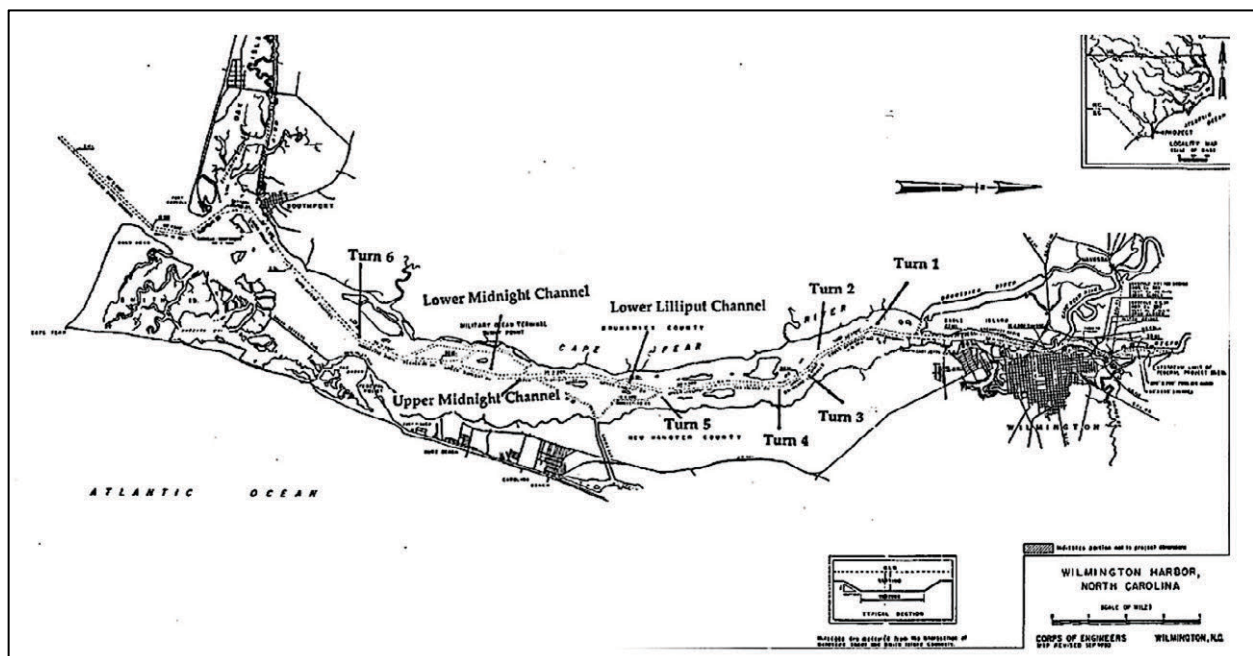


Figure 2-04. Tidewater Atlantic Research, Inc.’s 1990 survey of the Cape Fear River featuring six proposed turns and three passing lanes to be widened (Watts 1990:2).

TAR returned to the Cape Fear River in 1998 for supplementary survey of three proposed channel wideners planned to be blasted (Watts 1998a). Figure 2-05 shows the proposed widener sections for the 1998 and 1999 surveys: Turns 2, 3, and 4. In total, 32 anomalies were found in the three turns but only four anomalies (all found in Turn 4) were considered significant. TAR revisited the survey area the following year for diving (Watts 1999). The North Carolina Department of Cultural Resources however “concurred that 13 of the targets [of the original 28 anomalies] could be dismissed on the basis of their signature characteristics, the agency recommended that a twenty-five percent sample, or four, of the 15 remaining targets be identified by diver investigation to assess the reliability of record analysis” (Watts 1999:69). Of the eight total anomalies, one could not be relocated and the rest were identified as modern debris. Watts recommended no further investigations since the planned blasting would not affect any submerged cultural resources.

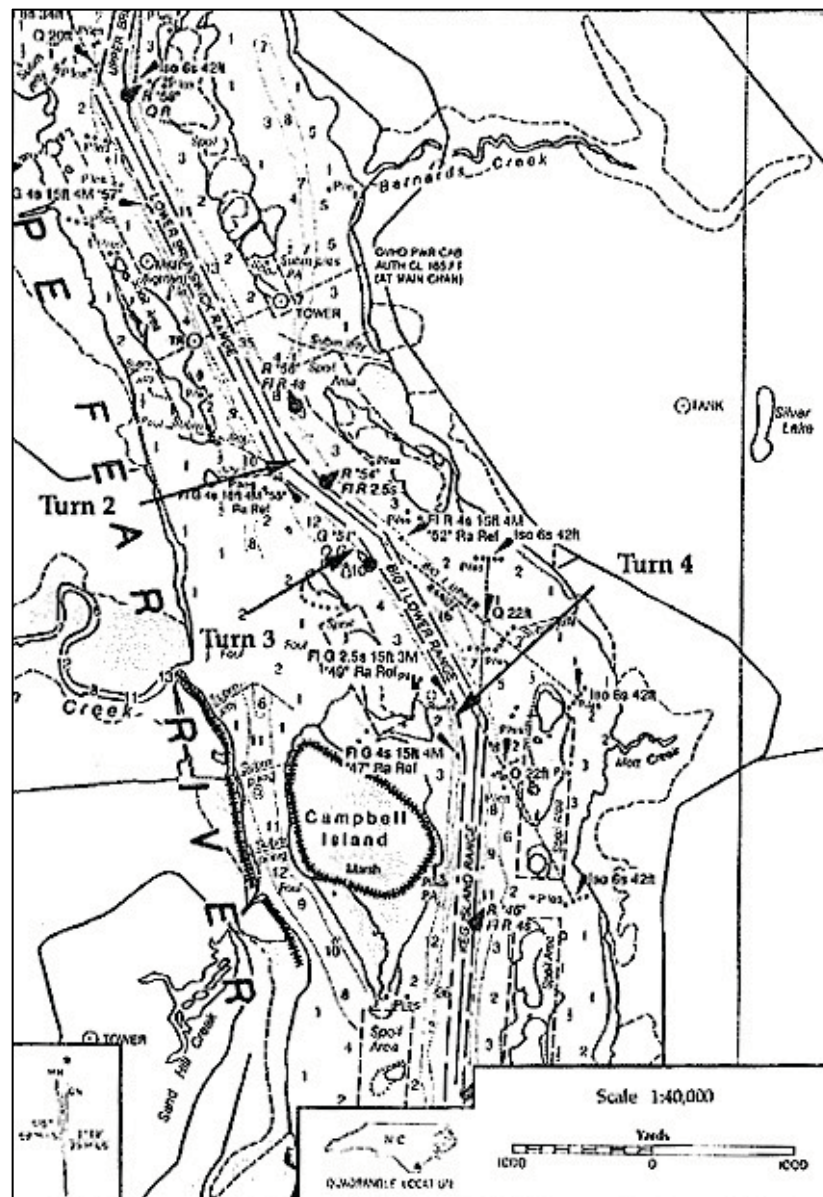


Figure 2-05. Tidewater Atlantic Research, Inc.'s 1999 final survey and dive assessment off Campbell Island showing the proposed turns (Turns 2, 3, and 4) for widening (Watts 1999:3).

One of the earliest projects off the Military Ocean Terminal Sunny Point (MOTSU) in the Lower Cape Fear River was conducted by TAR in 1992 (Watts 1993a). The USACE, Wilmington District, proposed channel improvements that included deepening and widening entrance channels and turning basins (Figure 2-06). The survey identified three noteworthy targets for additional diver investigation. Two of these targets were modern debris and the source of the third eluded the divers. The missing target was recommended to be monitored when dredging occurred.

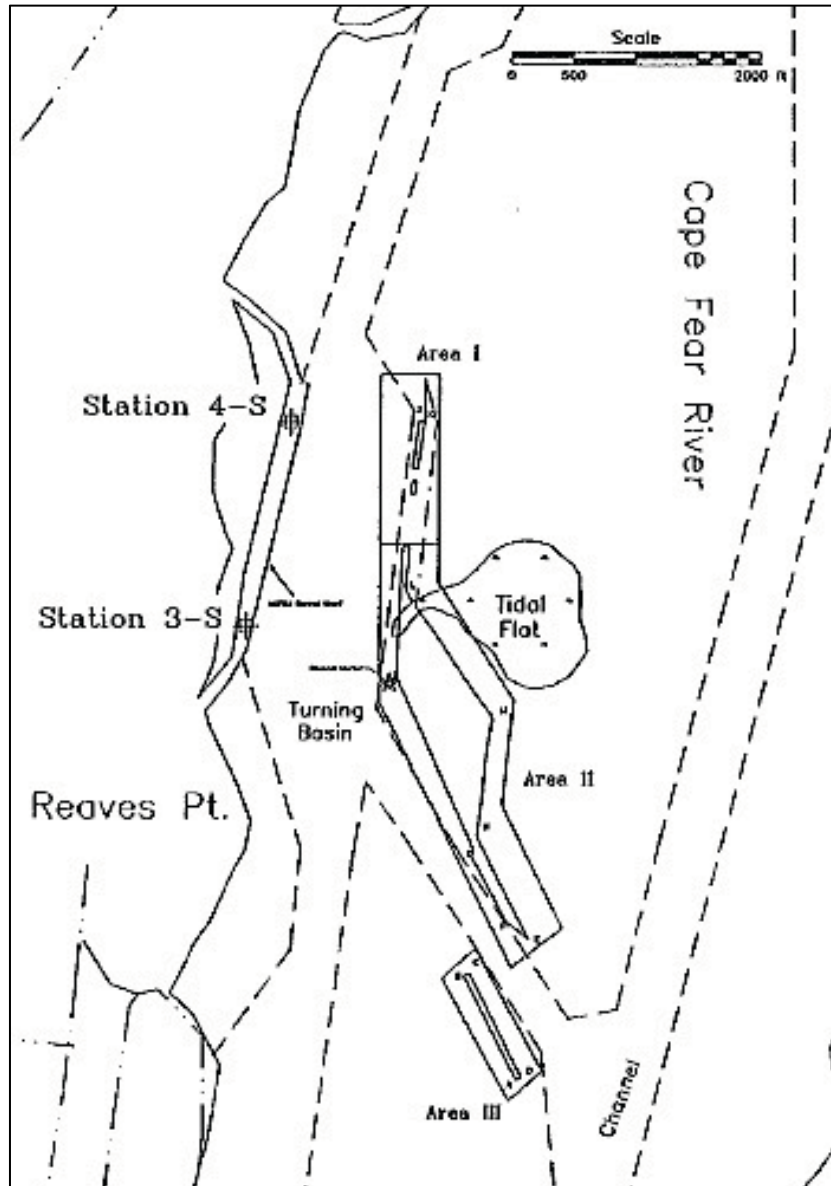


Figure 2-06. Tidewater Atlantic Research, Inc.'s 1993 remote sensing survey project area of Reaves Point for the Military Ocean Terminal; west of the Area of Potential Effects (Watts 1993a:5).

Just off the Horseshoe Shoal Channel, rest the remains of the Richmond-class Confederate ironclad, the *CSS North Carolina*. In 1995, the UAB inspected a staging and storage area used by a dredging operation and found the operation had impacted the hull remains of the ironclad with a 15,000 pound anchor. The USACE contracted TAR to evaluate the damage of the ironclad's structure (Watts 1996). Watts explained that the:

“...anchor had damaged the keelson forward of amidships and destroyed the port side of the bow. Several iron tanks, previously identified by the UAU [UAB] were also destroyed. Continued vessel traffic in the immediate vicinity of the wreck also washed away sediment that protected the surviving hull remains and destabilized the wreck environment” [Watts 1998b:66].

Upon the USACE’s receipt of Watt’s report, TAR was further asked to document the surviving hull remains for the preservation of the vessels construction. This research was completed in 1997 and submitted in 1998 (Watts 1998b).

In 2004 at the southern end of the Reaves Channel Range, a USACE vessel was removing an older “dredge range marker” when it recovered a nineteenth-century wooden stock anchor (Hall 2004). The anchor was found 700 feet northeast of the CSS *Raleigh* and recognized as potentially associated with the Confederate ironclad. Mid-Atlantic Technology (M-AT) was contracted for a marine remote sensing survey and diver investigation of the anchor site to locate any other cultural resources. Survey revealed two anomalies, A and B. Target A “was identified as group of depressions and at least two mostly buried 8-inch I-beams of undetermined length. The depressions were most likely the result of snagging activities created by the *Snell* while removing debris from the Range Tower site” (Hall 2004:4). Target B was wire rope. The anchor was not determined to belong to any cultural resources in the immediate area however, the isolated find was assigned a site number (CFR0107).

M-AT returned to the Cape Fear River for survey and diver inspection in 2006 after a channel-widening project was completed adjacent to the historic Brunswick Town and west of the APE. The USACE, Wilmington District, desired a survey of the river bottom in an area approximately 3500 feet long by 1000 feet wide along the western shore (Hall 2007). Survey identified twelve anomaly clusters and five sonar targets with significant signatures. Of these, one twentieth-century shipwreck was identified (BW721), two sonar targets appeared to a part of Brunswick’s wharf structures, and a site (Target ST 107) was identified during the draft report phase after diving was completed. Wreck site number BW721 is found in the same location as a wreck appearing on the 1966 nautical chart (featured below, in the last section) and outside the current APE. M-AT’s historical research suggests the vessel “is associated with the remains of a 1920s to 1940s menhaden processing plant wharf” (Hall 2007:45). Hall recommended archaeological investigation for any work to be performed with 500 feet of the Brunswick Town shoreline and for additional investigation on the sonar target ST 107 for assessment.

TAR performed a small survey just south of the northern MOTSU wharf for a planned small boat dock facility near the shoreline (Watts 2009a). Seventeen magnetic targets were detected with three having a related acoustic image. All targets were identified as modern debris and no additional investigation was warranted.

CAPE FEAR INLET AND OFFSHORE AREA

An early cultural resources survey was completed in 1993 by TAR entitled *A Submerged Cultural Resource Survey for Bald Head Shoal Channel Vicinity of Wilmington, North Carolina* (Watts 1993b). The study was undertaken to examine the area of a proposed deepening of an existing navigation channel of Bald Head Shoal. Eight targets were identified with the remote sensing data, but only two were considered to need diver examination. One of the targets was believed to be a navigation buoy, while the other was found to be a concrete casting with piping (Watts 1993b:22). No historic materials were considered to be within the survey area.

A later survey by TAR focused on the offshore Wilmington Harbor Fishery Enhancement Disposal Site for the proposed planning of dispersing rock dredged from the Bald Head Shoal Channel (Watts 1994). Entitled *A Remote Sensing Survey and Diver Investigation at Wilmington Harbor Offshore Fishery Enhancement Structure, Vicinity of Wilmington, North Carolina*, the

survey investigated two areas located in the middle of the current (specifically Bald Head Shoal Reach 3). One was approximately 6,000 feet by 4,000 feet, and the other was smaller at 1,200 feet by 900 feet. These two offshore areas encompassed in total approximately 580 acres. Only two anomalies were located within the project area. Both anomaly source areas were dived and found to be wire cable (Watts 1994:5-6). Although there was only a target density of one anomaly per 290 acres, an appended table lists 29 possible lost vessels in the region that may have been represented by the anomalies.

In 1995, TAR investigated a small area of proposed channel expansion of the Smith Island Channel, approximately 1,000 feet long and 50 feet wide (Watts 1995b). Both sides of the channel (Figure 2-07) were examined; the eastern portion was clear of any remote sensing indications of cultural material. The west side of the area examined contained eleven magnetic anomalies. Thirty-three vessels were noted as being lost in the Smith Island area, thus there was the potential that some anomalies could be representative of these shipwrecks. Four of the eleven anomalies were considered to have sufficient characteristics to be considered potentially significant. Diver investigations concluded that the anomaly source material “revealed that all of the targets are the result of modern debris or natural features” (Watts 1995b:36). The investigated material was found to be at the toe of the slope of the channel, a natural area for material to collect.

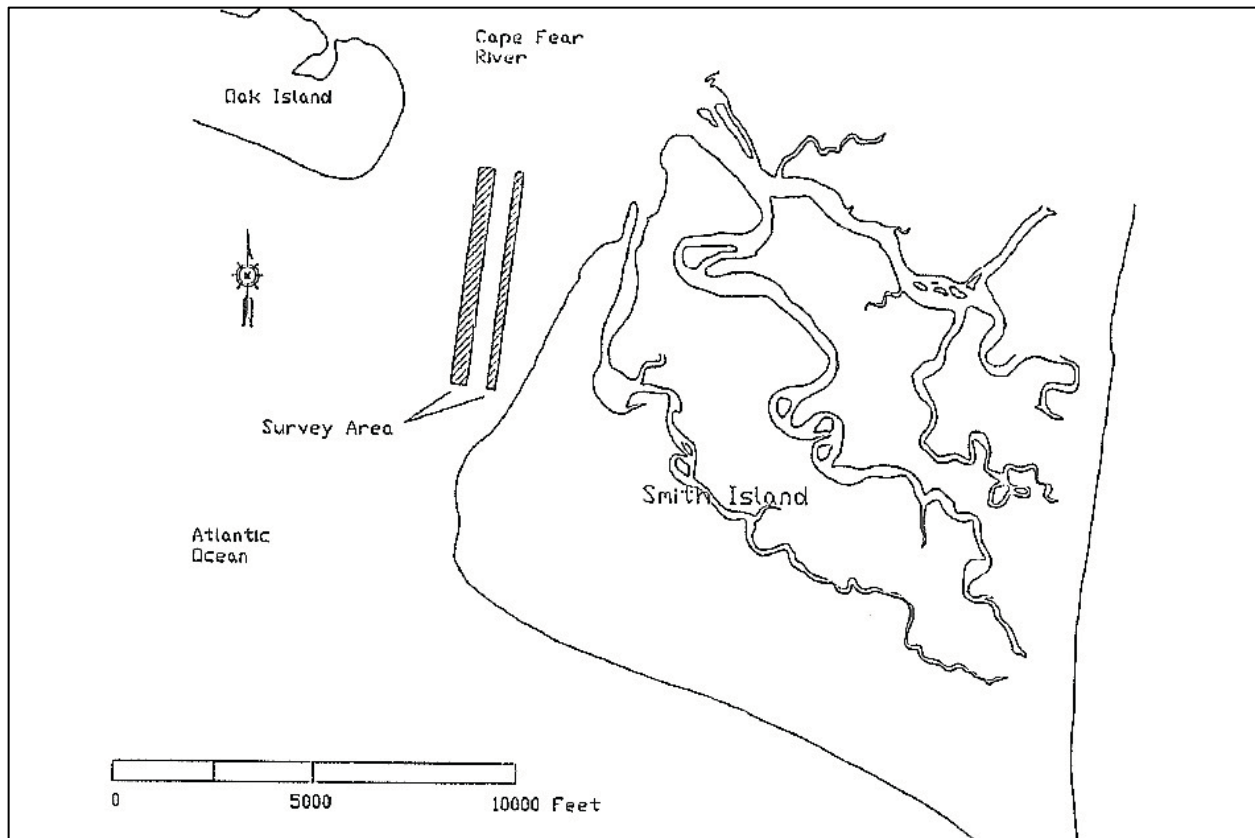


Figure 2-07. Tidewater Atlantic Research, Inc.'s 1995 remote sensing survey and diver investigation project area of the Smith Island Channel (Watts 1995b:3).

A one square mile block approximately two miles off Bald Head Island and east of the current APE was examined by Watts (1998c). The project was initiated after a trawler recovered the remains of a historic steam winch. Several vessels were reported to have been lost in the area, and it was noted that two vessels, believed to be the *Ella* and the *La Rosa de Bilbao*, were the

focus of previous archaeological research. The survey located only one magnetic anomaly and sidescan sonar target located in the project area. It was located to the southwest of the project area center point. The target was a 10 foot by 10 foot riveted metal square protruding three feet above the sea bed. Although an exact identification of the target was never made, it was considered that it was not associated with shipwreck remains and no further archaeological activity was warranted (Watts 1998c:13). One anomaly in a one square mile area creates an anomaly density of one per 640 acres.

Wes Hall performed a Phase I survey of channel alternatives and a dredged disposal area at the mouth of the Cape Fear River, shown in Figure 2-08. Entitled *Phase I Remote Sensing Archaeological Survey: Proposed Cape Fear River Entrance Channel Alternatives, Ocean Dredged Material Disposal Site, and Navigation Channels Near Southport, North Carolina*, the research was conducted in August 1999 by M-AT (Hall 1999a). The current channel into Cape Fear River is listed here as the proposed channel realignment areas. Several environments were examined, ranging from active river channel to offshore areas. In total, 113 remote sensing targets were located. This study, as it contains parts of the present APE, contains some of the most relevant comparative data.

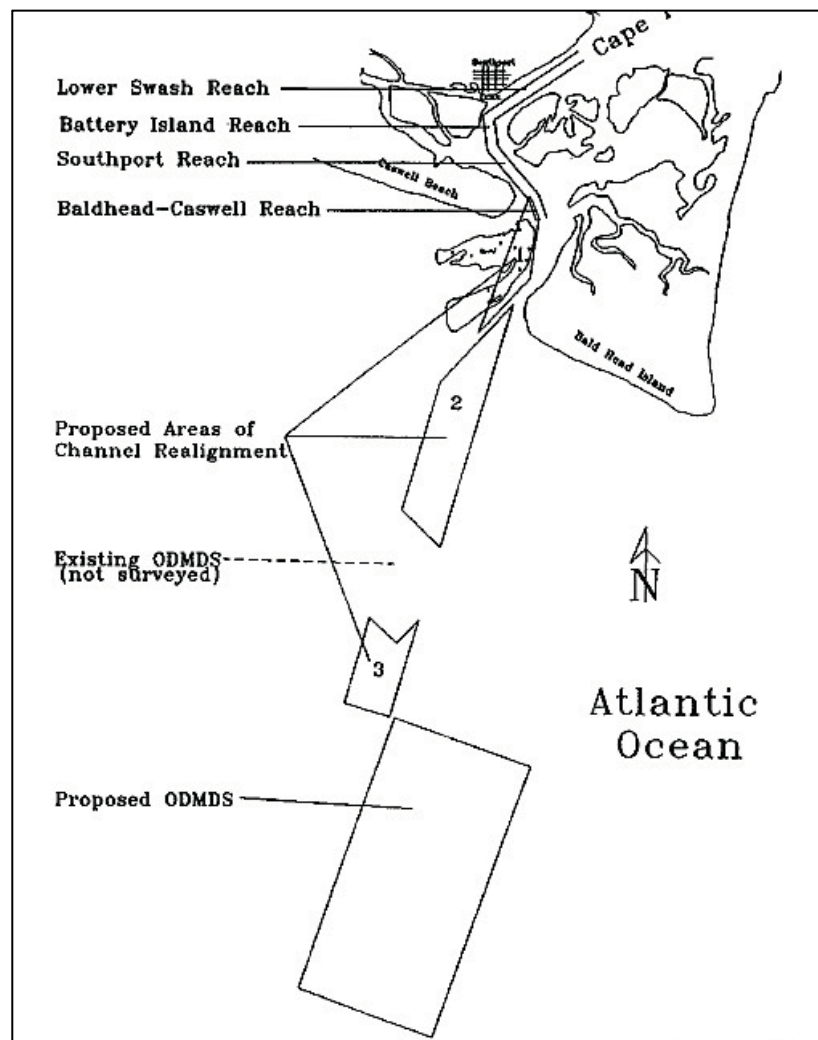


Figure 2-08. Mid-Atlantic Technology and Environmental Research, Inc.'s 1999 remote sensing survey project areas covering the Lower Swash Reach out to Baldhead Caswell Reach and offshore (Hall 1999:4).

Subsequent to the previous investigation, an underwater identification of the targets considered potentially significant was undertaken by TAR. Again completed by Hall in November of 1999(b), the study is entitled *Underwater Archaeological Identification Survey at the Cape Fear River Entrance Channel Alternatives, Ocean Dredged Material Disposal Site, and Navigation Channels Near Southport, North Carolina*. In total, 113 anomalies were located during the previous survey portion and 35 were recommended for investigation. Of the 35 remote sensing targets inspected, only one proved to be a Historic shipwreck. Target Realignment 1-14 is now identified as “Wes Hall Site R1-14 (CFI0007)” in the North Carolina Master Site Files. The site is described as the wooden hull of an unknown sailing vessel found nearby the Smith Island Channel and Baldhead Shoal/Reach 1. The remains are located in 10 feet of water and test excavations “conducted at the site suggest the lower hull is at least partially, if not wholly intact” (Hall 1999b:33; the vessel’s coordinates are provided in the following section). All other targets were identified as man-made objects (modern debris) or natural a geologic features.

M-AT returned to the inlet in 2001 to conduct a survey for the Carolina Power and Light Company who planned to move a submarine power cable across the river between Oak Island and Bald Head Island (Hall 2001). Laying the cable required burial across the river channel and Jay Bird Shoal. A 200-foot wide survey of the area, shown in Figure 2-09, detected five magnetic anomalies with no accompanying acoustic images. The five anomalies were not considered significant submerged cultural resources and no additional investigation was warranted.

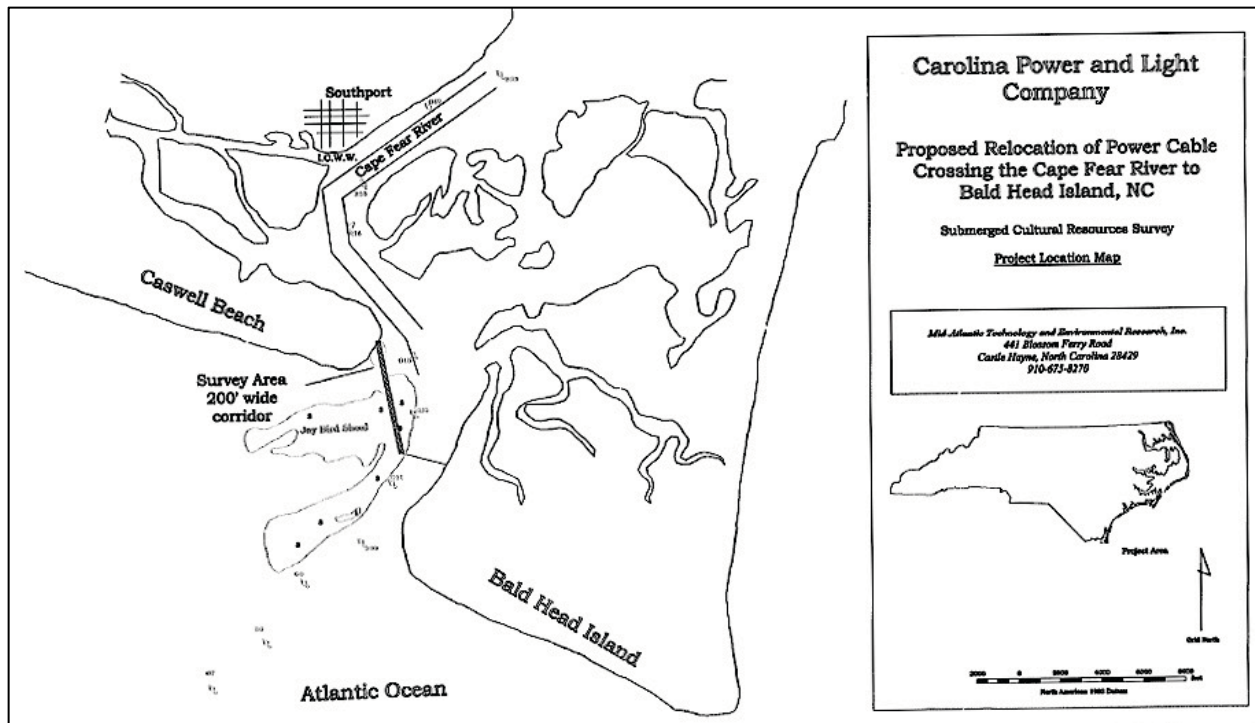


Figure 2-09. Wes Hall’s 2001 survey across Jay Bird Shoal for the Carolina Power and Light Company (Hall 2001:3).

In 2002, archaeologists from Panamerican conducted an intensive remote sensing survey over portions of the proposed and expanded Ocean Dredged Material Disposal Site (ODMDS), off the Cape Fear River (Tuttle 2002). Identified as requiring investigations due to proposed dredging operations, the purpose of the examination was to determine the presence or absence of any remote sensing targets that might represent potentially significant submerged cultural resources.

Performed under contract for the USACE–Wilmington District, the survey covered two work areas (Figure 2-10) and entailed running 492 line miles over 331 survey transects. In total, eight magnetic anomalies were identified with the magnetometer. No anomaly met the 50-nanotesla deviation/80-foot duration that has been developed to indicate the presence of potentially significant cultural resources. It was the opinion of the Principal Investigator that the project area was free from any historically significant cultural material, and no further archaeological activity was required within the bounds of the project area. East and outside of the present APE were the reported remains of the historically significant, Civil War-era blockade-runner *Virginus*. A supplementary magnetometer and sidescan sonar survey were conducted over the area to insure that none of the remains entered the project area. An observed above-seabed structure with a large magnetic signature (located at -7720 Northing 2299720 Easting) was considered the center-point for the vessel's remains. It was noted that the remains of the wreck reside within approximately 580 feet from the eastern border of the ODMDS. The remains were perceived with the remote sensing equipment with a minimum radius of 300 feet of the center-point.

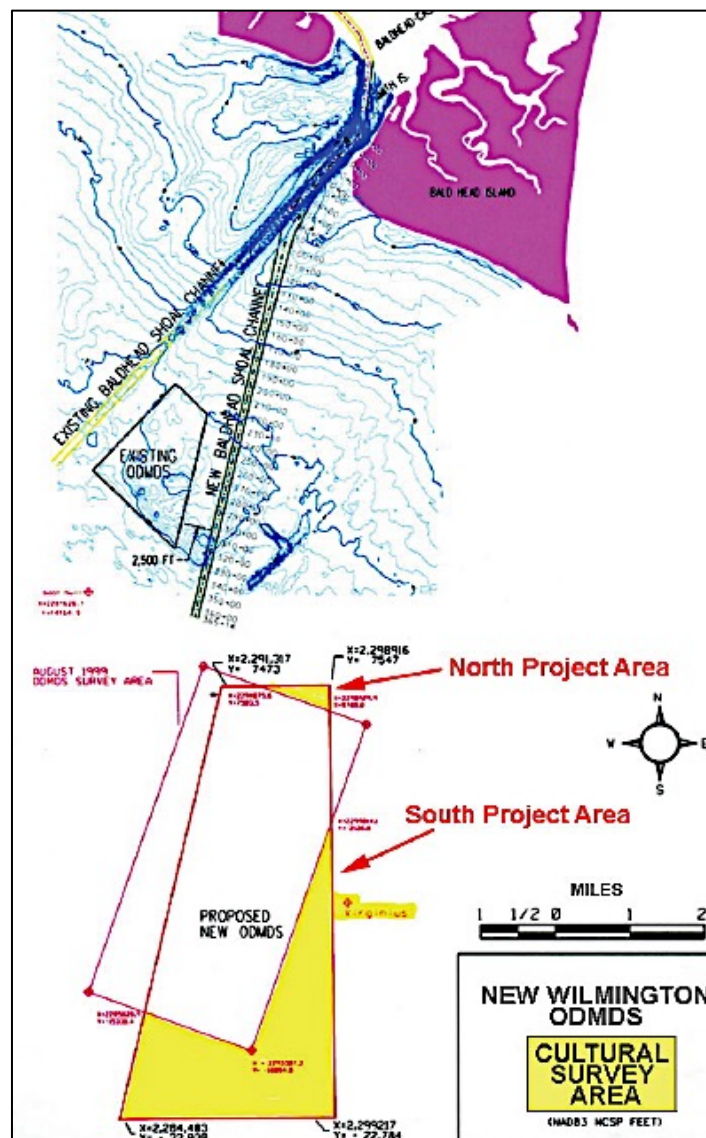


Figure 2-10. Panamerican Consultants, Inc.'s 2002 remote sensing survey project areas for the proposed new Ocean Dredged Material Disposal Site, offshore of Cape Fear River (Tuttle 2002:3).

The Village of Bald Head Island contracted TAR for a remote sensing survey of a future borrow area at the Jay Bird Shoal during March 2007. The survey identified 49 magnetic anomalies and no acoustic target. Seven targets had significant signatures and were ground-truthed over the next three months. Of the seven, two could not be located and archaeologists believed the targets were buried too deep. The two targets (JBS-05 and JBS-11) were provided a 200-foot buffer zone and all other targets were determined modern debris (Watts 2007). These targets were provided a site number (CFI0006) and are known as the “Jay Bird Shoal Site.”

To control erosion on the western side of Bald Head Island, the Village of Bald Head proposed the building of a terminal groin (Figure 2-11). Watts was contracted for a survey and dive assessment on potential cultural resources within the project area. In total, 104 marine magnetic anomalies were detected along with two acoustic targets. The acoustic targets with two of the magnetic targets located a shipwreck that was confirmed by divers to be a large wooden sailing vessel’s hull. No steam propulsion mechanism was noticed and the hull measured 160 to 190 feet in length (Watts 2012:29). The groin terminal was recommend to move 150 feet to clear the vessel.

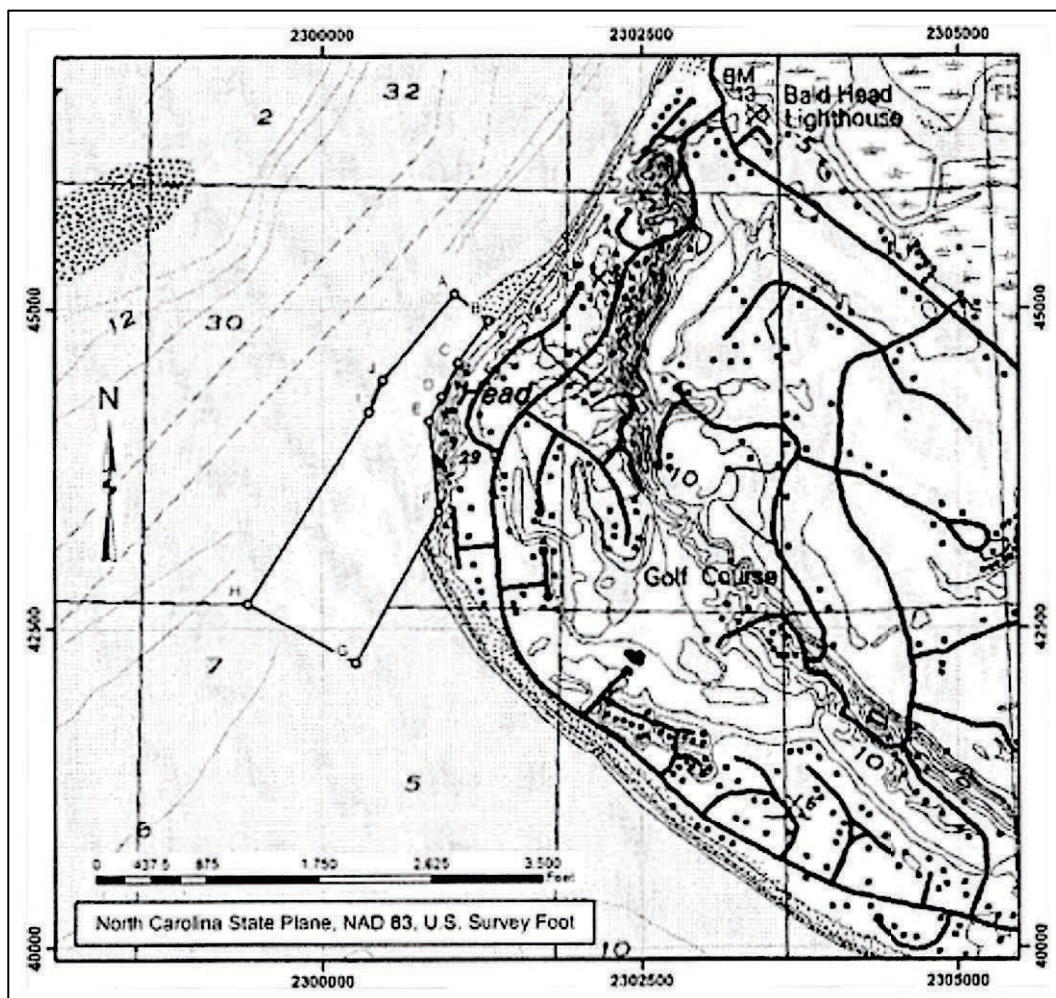


Figure 2-11. Tidewater Atlantic Research, Inc.’s 2012 remote sensing survey and diver assessment project areas for a terminal groin immediately next to the Bald Head Shoal/Reach 1 Channel (Watts 2012:2).

Again, in 2009, TAR returned to Cape Fear Inlet and performed a remote sensing survey, just north of the mouth of the Bald Head Creek (Watts 2009b). Due east of the Smith Island Range (and outside of the current APE), the survey was for a proposed dredging of a borrow area. In

total, 17 magnetic anomalies were encountered with four having related acoustic images associated with a modern concrete platform. All targets were determined to be modern debris. In 2010, this project area was extended, and another 37 magnetic anomalies and two acoustic signatures were identified only to be identified as modern debris. An additional extension of the same borrow area was warranted in 2014. This most recent survey encountered 38 magnetic anomalies and no target were found eligible for the NRHP. Four targets were discovered outside the 100-foot buffer zone of the project area and the rest were either modern debris or associated with range markers (Watts 2014).

SHIPWRECKS, AUTOMATED WRECK AND OBSTRUCTION INFORMATION SYSTEM, AND HISTORIC SITES INVENTORY

To help determine the potential for shipwrecks within the survey area, a review of shipwreck losses and a compilation of shipwrecks that might be located in the area is presented, as well as the types of vessels these wrecks represent. Studies of ship losses have been conducted for the North Carolina coast and demonstrate that numerous vessels have been lost since the early seventeenth century. The North Carolina Master Site Files were queried for archaeology sites in Cape Fear River region within the immediate APE. In addition, the North Carolina Shipwreck Data Entry Files and the current online edition of the National Oceanic and Atmospheric Administration's (NOAA's) Automated Wreck and Obstruction Information System (AWOIS) were queried for Historic shipwreck sites in or adjacent to the APE.

A review of the *Merchant Steam Vessels of the United States 1790-1868*, also known as the Lytle-Holdcamper List (originally compiled in 1952 and reprinted in 1975) indicate the potential for vessels to be lost off the present APE. While not concerned with Cape Fear or Wilmington directly, the volume is concerned with all steam vessels for the period noted. The Lytle-Holdcamper List (Lytle and Holdcamper 1975) is a comprehensive register of most steam vessels in the U.S. and indicates the name, rig, tonnage, year and place built, first homeport, and its final disposition. Also included is a list of losses; approximately 3,800 steam-powered vessels are noted as lost. It was this portion of the work that was examined with respect to losses in the APE. Over two score (40+) vessels were reported lost in North Carolina waters. A vast majority of these were off the Outer Banks. Twelve vessels are listed as lost in the vicinity of Cape Fear and Wilmington Harbor (Table 2-01). Although this listing is rather short and includes losses in the river, it only represents American steam vessels through the Civil War; foreign and sailing vessels are not considered. Additionally, steam vessels would be the most likely to be represented in the remote sensing data due to their iron content. Thus, the list gives the indication that there is the potential to find the remains of early steam-powered vessels. Note the list provides a record of the vessel *Virgin*, which is the given name of the *Virginus*.

Table 2-01. Lytle-Holdcamper List of steam vessel losses near the Area of Potential Effects.

Date Lost	Vessel Name	Location Lost	Manner Lost
1858	<i>Magnolia</i>	Cape Fear River	Exploded
1865	<i>Thorn</i>	Cape Fear River	Torpedoed
1865	<i>Twilight</i>	Cape Fear River	Stranded
1867	<i>Flambeau</i>	Off Fort Fisher, N.C.	Foundered
1867	<i>John McB. Davidson</i>	Wilmington, N.C. to New York, N.Y.	Foundered
1867	<i>Oneota</i>	Cape Fear	Foundered
1870	<i>Washington</i>	Cape Fear River	Burnt
1873	<i>Virgin</i>	At Sea, Off Cape Fear	Foundered
1874	<i>Sherman</i>	Off Cape Fear Light	Foundered
1878	<i>J.S. Underhill</i>	Wilmington, N.C.	Burnt

Date Lost	Vessel Name	Location Lost	Manner Lost
1891	<i>Sylvan Grove</i>	Wilmington, N.C.	Burnt
1899	<i>Catharine Whiting</i>	West of Southport, N.C.	Stranded

Source: Lytle and Holdcamper (1975)

Popular literature has produced a plethora of volumes that focus on the loss of shipwrecks in North Carolina waters. One of the earliest authors to treat the subject was David Strick. His two volumes *Graveyard of the Atlantic: Shipwrecks of the North Carolina Coast* (1952) and *The Outer Banks of North Carolina* (1958) are deeply concerned with the history of shipwreck losses of coastal Carolina. Close to 50 vessels are reported lost in the Cape Fear River, at Cape Fear, or off Cape Fear in the first of his books (1952:244-257). *The Outer Banks of North Carolina* (1958) is more a general history, but the connection to this region and the sea courses through the text.

AUTOMATED WRECK AND OBSTRUCTION INFORMATION SYSTEM

The most comprehensive and up to date list of shipwrecks for the U.S. is NOAA's AWOIS (www.anchor.ncd.noaa.gov/awois/search.cfm). An examination of the Cape Fear River via AWOIS noted many wrecks and obstruction immediately nearby the Area of Potential Effects. Many AWOIS shipwrecks and obstructions are found immediate to the survey area (Figures 2-12 to 2-15; Table 2-02).

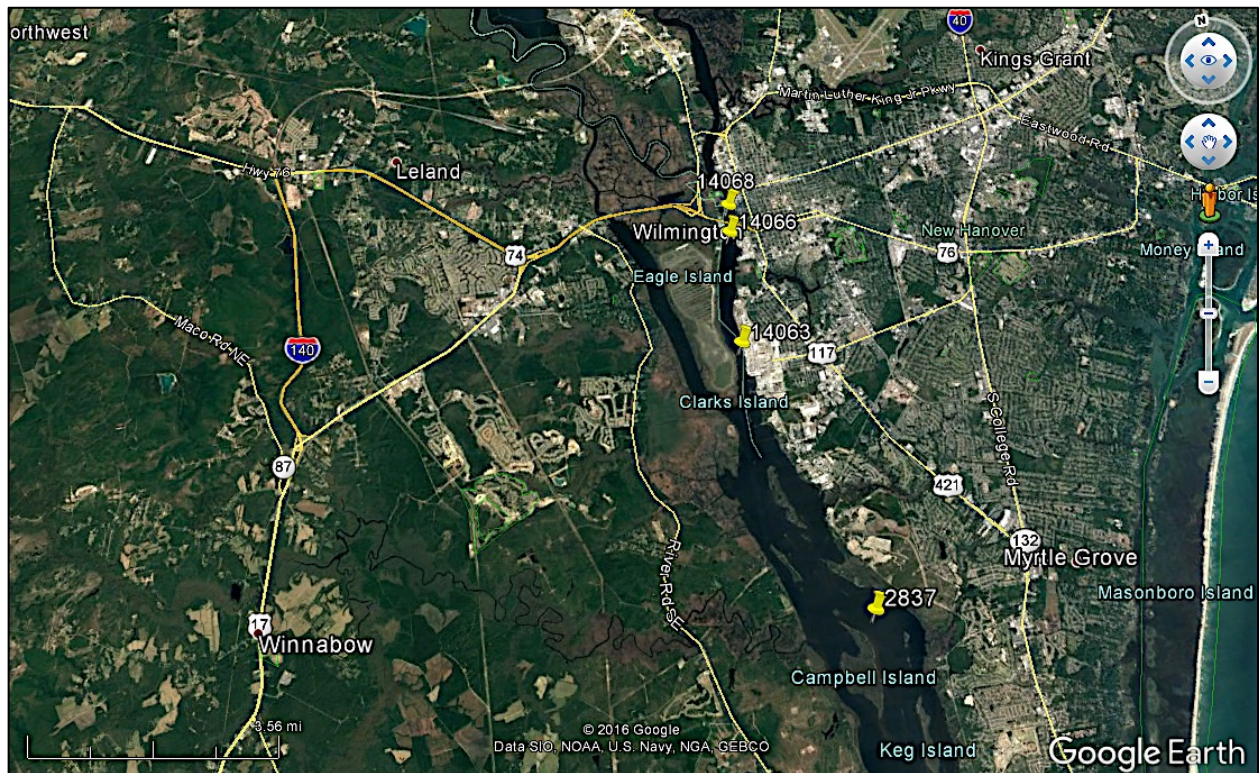


Figure 2-12. Map showing shipwrecks (Nos. 14068 and 2837) and obstructions (14066 and 14063) found in the northern survey area from Wilmington to Keg Island (map courtesy of Automated Wrecks and Obstructions Information System).

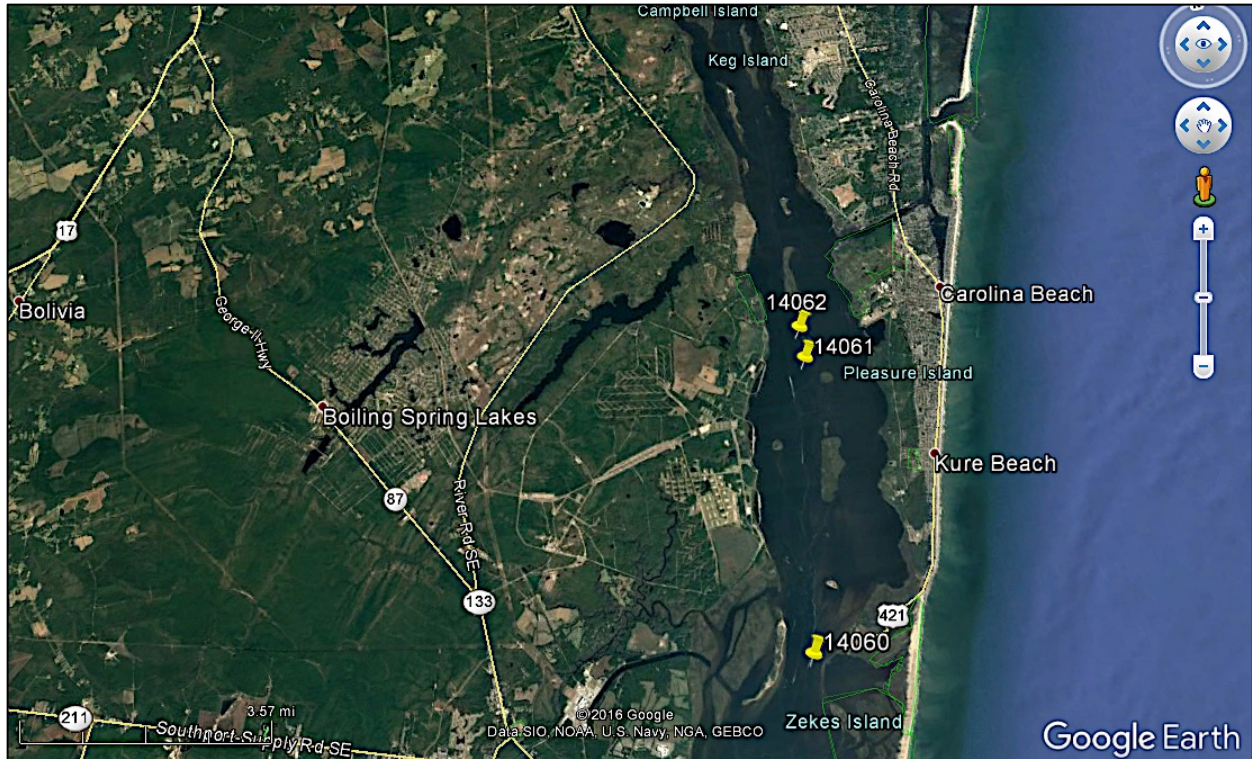


Figure 2-13. Map showing shipwrecks (AWOIS Nos. 14061 and 14060) and obstruction (14062) found in the Cape Fear River from Keg Island to Zekes Island (map courtesy of Automated Wrecks and Obstructions Information System).

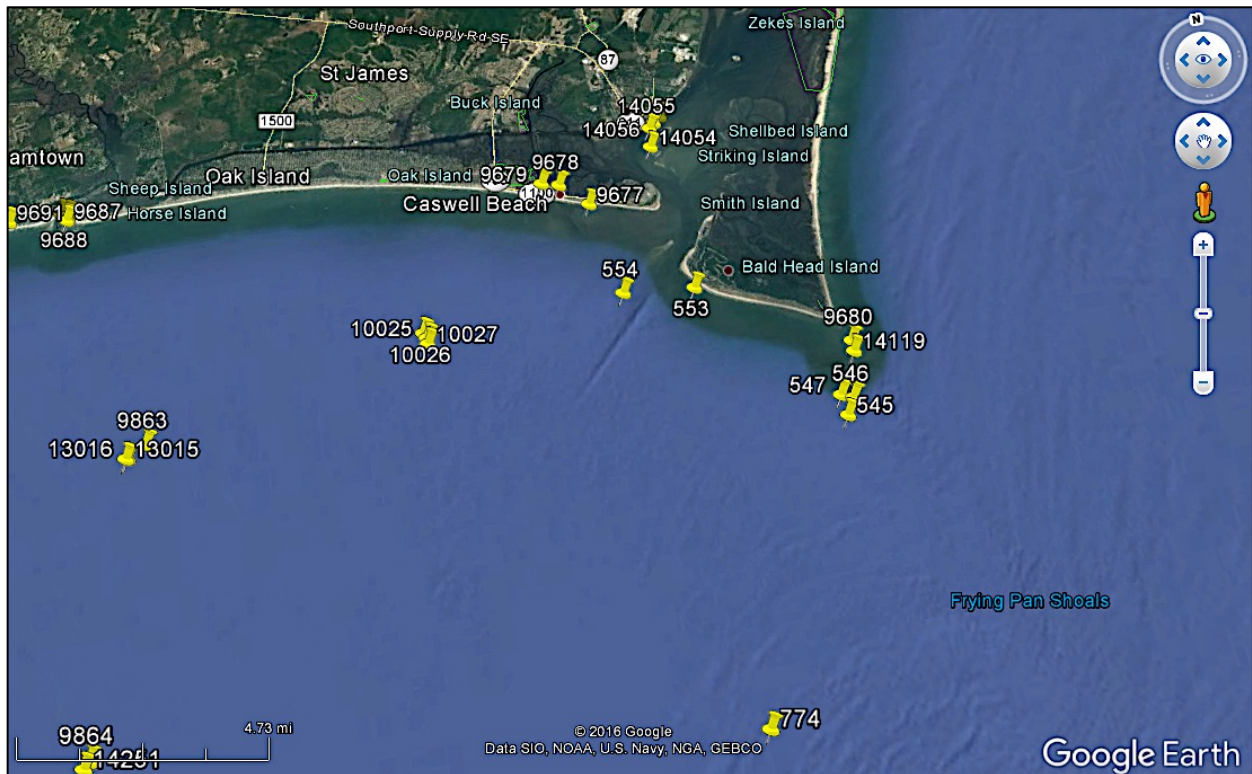


Figure 2-14. Map showing shipwrecks found at the Cape Fear Inlet (map courtesy of Automated Wrecks and Obstructions Information System).

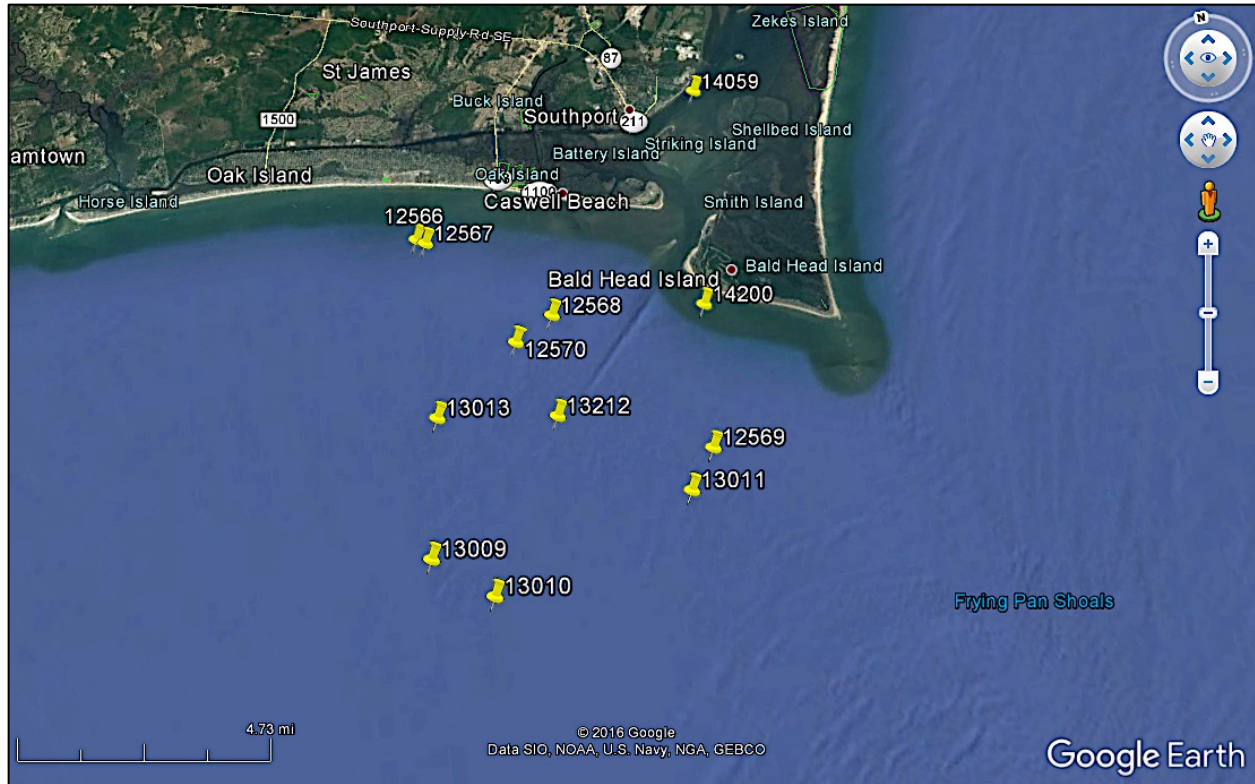


Figure 2-15. Map showing shipwrecks obstructions found at the Cape Fear Inlet (map courtesy of Automated Wrecks and Obstructions Information System).

Table 2-02. Vessels and obstructions located near the Area of Potential Effects.

Record	Latitude (Dec Degrees)	Longitude (Dec Degrees)	Description	Comment
14068	34.22914	-77.9528	Unknown Shipwreck	Unknown Source—A visible wreck was charted at 34°13'44.89" - 077°57'10.24", ca. 1969–1972. During the 200% SSS investigation, a non-dangerous submerged wreck was located in area of the reported visible wreck. Visible wreck is now submerged wreck. Also, the charted foul limits should be extended south of the bridge. Recommended to extend foul limits, delete charted visible WK ED and chart submerged wreck in location of the old visible wreck.
2837	34.13017	-77.938	Shipwreck, <i>Blanche</i>	Survey requirements not determined.
14061	34.02153	-77.9372	Unknown Shipwreck	Unknown Source—A Submerged Dangerous Wreck was charted at 34°01'13.96" - 077°56'13.43", Before 1969. During 200% SSS, located Wreck debris at 34/01/17.51 - 77/56/13.75. Relocate charted wreck to survey position.
14060	33.95736	-77.9521	Unknown Shipwreck	An 11-Foot wreck was added at 33/57/26.0-77/57/08.7, NAD27, through NOS survey 9501, from 1975. Wreck was located during investigation. Recommended to revise to 16 ft. dangerous submerged wreck at 33/57/26.485-077/57/07.656.

Record	Latitude (Dec Degrees)	Longitude (Dec Degrees)	Description	Comment
14057	33.91458	-78.0103	Unknown Shipwreck	Unknown Source—A Submerged Dangerous Wreck was charted at 33°54'50.96" - 078°00'38.02" and labeled: PD, before 1969. 200% SSS verified the existence of wreck. Located it at 33°54'52.47"-78°00'37.2". Recommended to relocate to survey position and revise to a 16 foot submerged dangerous wreck.
14055	33.91093	-78.0151	Unknown Shipwreck	Unknown Source—A Submerged Dangerous Wreck was charted at 33°54'40.78" - 078°00'53.72", before 1969. During the 200% SSS investigation, the wreck was located at 33°54'40.8" - 78°00'53.70". Recommended relocate wreck to survey position and revise to a 15-foot dangerous submerged wreck.
14056	33.91261	-78.0131	Unknown Shipwreck	Unknown Source—A Submerged Dangerous Wreck was charted at 33°54'44.99" - 078°00'49.74" " and labeled: PD, before 1969. 200% SSS verified the existence of the wreck. Located at 33°54'45.4"-78°00'47.18". Recommended to relocate to survey position and revise to a 19 foot dangerous submerged wreck.
14054	33.90438	-78.016	Unknown Shipwreck	Unknown Source—Between 1972 - 1974, A wreck was charted. Revised wreck symbol to dangerous submerged wreck and added label PA for Position Approximate. Wreck located on Chart History at 33°54'16.0" - 078°00'59.0". 200% SSS investigation located the dangerous submerged wreck at 33°54'15.77" - 78°00'57.75". Recommended relocating the wreck to the surveyed position and revising it to a 14 foot submerged dangerous wreck.
9677	33.88795	-78.043	Unknown Shipwreck	5TH CGD; Fishing vessel, 41FT, Burned and sank, Position given in LAT 33-53-16N, LONG 78-02-36W (NAD27) (PA). Wreck is marked with a red buoy. Wreck not investigated.
553	33.8549	-78.0103	Shipwreck, <i>Ella</i>	Visible wreck (Uncovers 5FT at Mean Low Water Datum (MLW)), Position scaled from survey in LAT 33-51-17N, LONG 78-00-38W (NAD27). This wreck is on range with Fort Caswell stack and Southport water tank. Blockade-runner "Ella" not visible at MLW. Wreck not verified or disproved carried forward as submerged. 21 Side-Wheeler Steamer, blockade-runner, 404 tons. Cargo of Military Goods and Gin. The Ship ran aground fleeing a Blockade December 3, 1864. 195 Loran-C Rates: 7980 Chain; 45328.4-Y AND 59138.8-Z. Mr. Steven Pfaff Provided the verified Loran Rates.
554	33.85684	-78.0364	Unknown Shipwreck	Submerged wreck approx. position from bar pilots of Southport. Position given in LAT 33-51-24N, LONG 78-02-12W (NAD27) was not verified or disproved by present survey.

Record	Latitude (Dec Degrees)	Longitude (Dec Degrees)	Description	Comment
9678	33.89601	-78.053	Unknown Shipwreck	Unreviewed; Visible wreck (Uncovered 1FT at MLW), Position scaled from survey in LAT 33-53-45.00N, LONG 78-03-12.00W (NAD27). Investigation incomplete attributed to erroneous position and provided to the field. Revise charted visible wreck to submerged.
9679	33.89739	-78.0594	Unknown Shipwreck	Visible wreck, Position scaled from survey in LAT 33-53-48.2N, LONG 78-03-35W (NAD27). Wreck not investigated.
14066	34.22206	-77.9541	Obstruction	A visible pile was added at 34/13.4 - 77/57.2 NAD27, convert to NAD83 is 34/13/24.61 - 77/57/10.96. But the chart location on the chart is 34/13/19.42 - 77/57/14.87. The obstruction is labeled Position Approximate. This was added to the chart sometime ca. 1974–1976. During the 200% SSS, a very small contact of a pile was identified. The item is deeper than the controlling depth and is recommended to be removed from the chart.
14063	34.19425	-77.9575	Obstruction	Unknown source—A Submerged pile was charted at 34°11'39.30" - 077°57'26.87", sometime between 1969 - 1972. Small contact noted in 200% SSS coverage. Retain as charted.
14062	34.02897	-77.9367	Obstruction	Added submerged obstruction at 34/01/42 - 77/56/12 NAD27. Small obstruction was located during 200% SSS ops at 34/01/44.30 - 77/56/12.25.
14059	33.92163	-77.9967	Obstruction	Unknown Source—A submerged obstruction was charted at 33°54'40.78" - 078°00'53.72", before 1969. During the 200% investigation, a large foul area was found to exists in the survey area. Recommended to revise the ENC and charted features limits to reflect the present survey findings.
14200	33.84924	-78.0091	Obstruction	Located uncharted dangerous obstruction with least depth of 15ft.
12568	33.85338	-78.0644	Obstruction	An obstruction was reported with a least depth of 26 feet in position 33 51 12.15 N, 078 03 51.92 W (NAD 83). Divers found a block of concrete rising about 3 feet off the bottom. Approximate size of block is 3 feet by 5 feet.
12570	33.84667	-78.0788	Obstruction	An obstruction with a least depth of 32 feet was located in Position 33 50 48.00 N. 078 04 43.56 W (NAD 83). Divers found a rock 6-8 feet in diameter rising approximately 3 feet off bottom. Hydrographer recommended charting rock with a depth of 32 feet in the position given above.
13212	33.82198	-78.068	Obstruction	A 38 [foot] RK [rock] is now charted in position: 33°49'18.93"N, 78°04'04.65"W (NAD 83). The 38 RK is shown on the smooth sheet for H10741, but not discussed in the descriptive report.
12569	33.80494	-78.016	Obstruction	An obstruction with a least depth of 32 feet was located in position 33 48 17.78 N. 078 00 57.70 W (NAD 83). Divers found what appeared to be a sunken buoy rising 7 feet off the bottom in an upright position. Hydrographer recommended charting an obstruction with a depth of 32 feet in the position given above.

Record	Latitude (Dec Degrees)	Longitude (Dec Degrees)	Description	Comment
13011	33.79355	-78.0262	Obstruction	The USACE has constructed a submerged artificial reed composed of rock debris from dredging operations in Bald Head Shoal Channel and is referred to as the Wilmington Offshore Fisheries Enhancement Structure (WOFES). Echosounder development over this area was run at 20-meter line spacing. Soundings averaging 25 to 35 feet were found in an area previously charted with 40 to 46 foot depths. Least depths of 25 feet were found. The reef runs in two strips approximately 120 to 150 meters wide from: 1. 33-47-08 N, 078-02-07 W (NAD 83) NORTHEAST TO 33-47-48 N, 078-01-21 W (NAD 83) AND 2. 33-47-55 N, 078-01-59 W (NAD 83) SOUTHEAST TO 33-47-34 N, 078-01-31 W (NAD 83).
13013	33.82726	-78.1101	Obstruction	A 40 RK [rock] is no charted in position: 33°49'38.12" N 078°06'36.27" W (NAD 83). THE 40 RK is shown on the smooth sheet for H10707, but not discussed in the descriptive report.
13009	33.78636	-78.118	Obstruction	Metal obstruction detected with side scan sonar in position 33-47-10.863 N, 078-07-04.903 W [NAD 83]. Divers investigated the contact on June 12, 1996 and located a flat metal object approximately 30 feet by 15 feet, with one end stuck in the sand and the other end inclined and rising off the bottom, Survey Position: 33°47'10.892"N, 078°07'04.675"W. Remarks: This charted obstruction (information only AWOIS 13009) was found with Klein 5000 SSS in current charted position. Office Notes: Concur with clarification. Survey H11413 sounding data was not acquired for AWOIS item #13009, dangerous obstruction least depth known 41 ft. Retain charted dangerous obstruction least depth known 41 ft. at the charted Position.
13010	33.77305	-78.0984	Obstruction	41 COhD Detected with side scan sonar in position 33-46-22.981N, 078-05-54.232 W [NAD 83]. Divers investigated the contact on June 12, 1996 and located a coral head rising 5 feet off the bottom.

Source: NOAA's AWOIS

Coordinates presented in WGS84 meters

NORTH CAROLINA MASTER SITE FILES

Archival research at the North Carolina UAB at Fort Fisher also indicated that there were a plethora of potential submerged shipwreck sites in the APE. Research at the UAB indicates that over 200 vessels were lost off Frying Pan Shoals and Cape Fear, indicating the potential for shipwreck remains in or near the Area of Potential Effects boundaries. The files at the UAB were examined relative to pertinent wreck sites including Cape Fear River, Inlet, and Ocean (CFO) files. In total, 128 archaeological sites were located within the Cape Fear site files. This included shipwrecks and isolated finds nearby the Area of Potential Effects. Examination of these files eliminated sites found outside the Area of Potential Effects and identified 35 archaeological sites inside or immediately nearby the Area of Potential Effects for Cape Fear Inlet and Cape Fear River areas. No archaeological site was found in the Cape Fear Ocean portion. Figure 2-16 illustrates all 35 archaeological sites immediate to the Area of Potential

Effects. Table 2-03 lists the site's name, coordinates, and the channels they coincide with for both the river and inlet. Table 2-04 provides the site name and type of site or vessel (if known).

In North Carolina's Master Site Files, one archaeological site was found inside the Area of Potential Effects. The site coordinates are for a single cannon recovered from the Cape Fear River off Brunswick Town. The Breece Site, CFR0050, is potentially listed as the *Fortuna*, a Spanish privateer vessel that attacked and was lost off Brunswick Town on 4 September 1748. The *Fortuna* has been described as a sloop of 120 tons with 24 guns. Previous archaeological surveys have attempted to locate the wreckage but have so far been unsuccessful. More on the *Fortuna* and the cannon's recovery follows below.

Additionally, 34 archaeological sites were determined to be immediately adjacent to the Area of Potential Effects. While not potentially in the APE, these sites enable us to understand the maritime activities that occurred along the river and are also listed in Table 2-03. Thirteen of these sites rest along the eastern and western sides of the Anchorage Basin, along the riverbanks of Wilmington and Eagles Island (see Figure 2-17). Two sites are found off the Upper Brunswick Range and two more on Campbell Island, off the Keg Island Range (see Figures 2-18 and 2-19). At the Upper Midnight Channel are two sites, including the Breece Site off Brunswick Town (see Figure 2-20). Snow Marsh (see Figure 2-22) has four sites nearby off the Horseshoe Shoal and Reaves Point Channels. Figure 2-23 (see below) shows seven sites identified immediately near the Area of Potential Effects off Battery Island, Fort Caswell, and Southport. At the Cape Fear Inlet, five shipwreck sites are noted near Baldhead Shoal/Reach 1, Reach 2, and the Smith Island Channel (see Figure 2-26). The inlet wrecks appear either on Baldhead Shoal, Jay Bird Shoal, or on the shoreline of Baldhead Island.

Table 2-03. Archaeological sites within and immediate to the Area of Potential Effects.

Site Number	Site Name	Coordinates	Easting	Northing	Nearest Channel
CFR0050	Breece Site (<i>Fortuna</i> ?)	UTM – Zone 18 – NAD83	228549E	3770651 N	Inside the Upper Midnight Channel.
CFR0023	<i>Lucretia</i>	NC State Plane	2316960E	173000N	Upper Anchorage Basin
CFR0035	<i>Seven Marys</i>	NC State Plane	2316830E	173210N	Upper Anchorage Basin
CFR0036	<i>Bostic</i>	NC State Plane	2316940E	173210N	Upper Anchorage Basin
CFR0037	<i>Stone 1</i>	NC State Plane	2316980E	172850N	Upper Anchorage Basin
CFR0038	NOAA #4 Barge	NC State Plane	2298564E	57611N	Battery Island Channel and Southport Channel
CFR0052	CSS <i>North Carolina</i>	NC State Plane	2299530E	60392N	Lower Swash Channel
CFR0078	Compressor Barge	NC State Plane	2315370E	171980N	Upper Anchorage Basin
CFR0079	Battery Island Canoe (Recovered)	UTM – Zone 17 – NAD27	776880E	3755936 N	Battery Island Channel and Southport Channel
CFR0080	Shrimp Net Canoe-Bird Shoal (Recovered)	UTM – Zone 18 – NAD27	228183E	3763169 N	Reaves Point Channel
CFR0081	<i>Belfast</i>	NC State Plane	2298756E	59954N	Lower Swash Channel
CFR0082	<i>Kate</i> (formerly <i>Carolina</i>)	NC State Plane	2300723E	63027N	Lower Swash Channel
CFR0083	Campbell Island Wreck	NC State Plane	2321320E	135200N	Keg Island Channel
CFR0084	Fort Caswell Steamer	NC State Plane	2299250E	54345N	Southport Channel
CFR0085	Battery Island Boiler	NC State Plane	2298892E	59539N	Battery Island Channel and Lower Swash Channel
CFR0086	Brunswick Town Barge	NC State Plane	2320250E	104690N	Upper Midnight Channel

Site Number	Site Name	Coordinates	Easting	Northing	Nearest Channel
CFR0088	Eagles Island Metal Barge	NC State Plane	2315700E	173240N	Upper Anchorage Basin
CFR0089	Eagles Island Wooden Barge	NC State Plane	2315600E	173020N	Upper Anchorage Basin
CFR0090	Innis Barge	NC State Plane	2315300E	171970N	Upper Anchorage Basin
CFR0091	Floating Tank Barge	NC State Plane	2315310E	172010N	Upper Anchorage Basin
CFR0092	Dawson Street Barge	NC State Plane	2317010E	174180N	Upper Anchorage Basin
CFR0099	Cape Fear Terminal North	NC State Plane	2317030E	173130N	Upper Anchorage Basin
CFR0100	Cape Fear Terminal Big Barge	NC State Plane	2316800E	173050N	Upper Anchorage Basin
CFR0101	Cape Fear Terminal South	NC State Plane	2317060E	172840N	Upper Anchorage Basin
CFR0102	Stackhouse Barge	UTM – Zone 18 – WGS84	227998E	3784990 N	Upper Brunswick Channel
CFR0106	Stackhouse Hopper Dredge	UTM – Zone 18 – WGS84	228014E	3785008 N	Upper Brunswick Channel
CFR0107	Reaves Channel Anchor	Zone 18 – NCSP– NAD83	2318137.48 E	77758.01 N	Horseshoe Shoal Channel
CFR0108	<i>Frances Elizabeth</i>	UTM – Zone 18 – WGS84	225336E	3760801 N	Snows Marsh Channel
CFR0114	Terry Johns Log Boat (Recovered)	UTM – Zone 18 – NAD83	228913E	3778989 N	Keg Island Channel
0003NEI	CSS <i>Raleigh</i>	NC State Plane	2317780E	77050N	Horseshoe Shoal Channel
CFI0001	<i>Ella</i>	UTM – Zone 17 – NAD27	776639E	3750000 N	Baldhead Shoal/Reach 2
CFI0003	Baldhead Rudder Wreck	Lat/Long	33° 51.053'	78° 00.454	Baldhead Shoal/Reach 2
CFI0004	Sandpiper Wreck	Lat/Long	33° 51.7069'	78° 00.5631	Baldhead Shoal/Reach 1 and 2
CFI0006	Jay Bird Shoals Site	NC State Plane	2294866.3E	43078.9N	Baldhead Shoal/Reach 2
CFI0007	Wes Hall Site R1-14	UTM – Zone 17 – WGS84	776311E	3752189 N	Smith Island Channel and Baldhead Shoal/Reach 1

Key: CFR=Cape Fear River; CFI=Cape Fear Inlet; CFO=Cape Fear Ocean; and CFT=Cape Fear Terminal

Source: master site files at North Carolina's Underwater Archaeological Branch

North Carolina State Plane coordinates were used preferably when available

Table 2-04. Archaeological site numbers and the type of site or vessel if known.

Site Number	Site Name	Site Type
CFR0050	Breece Site (<i>Fortuna</i> ?)	Possible Sloop
CFR0023	<i>Lucretia</i>	Possible Canal-Type Barge
CFR0035	<i>Seven Marys</i>	Fishing Vessel with Gas Screw Engine
CFR0036	<i>Bostic</i>	Wooden-Hull Vessel
CFR0037	<i>Stone 1</i>	Steam Tugboat

Site Number	Site Name	Site Type
CFR0038	NOAA #4 Barge	Late Nineteenth or Early Twentieth-Century Wooden Barge
CFR0052	CSS <i>North Carolina</i>	Civil War Ironclad
CFR0078	Compressor Barge	Late Nineteenth or Early Twentieth-Century Barge
CFR0079	Battery Island Canoe (Recovered)	Prehistoric Yellow Pine Canoe
CFR0080	Shrimp Net Canoe-Bird Shoal (Recovered)	Prehistoric Yellow Pine Canoe
CFR0081	<i>Belfast</i>	Schooner, Barge
CFR0082	<i>Kate</i> (formerly <i>Carolina</i>)	Blockade-runner, Sidewheel Steamer
CFR0083	Campbell Island Wreck	Late Nineteenth or Early Twentieth-Century Barge
CFR0084	Fort Caswell Steamer	Wooden-Hulled Steamboat
CFR0085	Battery Island Boiler	Boiler, Possibly for a Small Donkey Engine
CFR0086	Brunswick Town Barge	Barge with Wooden Deck
CFR0088	Eagles Island Metal Barge	Metal Barge
CFR0089	Eagles Island Wooden Barge	Wooden Barge
CFR0090	Innis Barge	Late Nineteenth or Early Twentieth-Century Wooden Barge
CFR0091	Floating Tank Barge	Wooden Barge
CFR0092	Dawson Street Barge	Wooden Barge
CFR0099	Cape Fear Terminal North	Wooden Barge
CFR0100	Cape Fear Terminal Big Barge	Wooden Barge
CFR0101	Cape Fear Terminal South	Wooden Barge
CFR0102	Stackhouse Barge	Wooden Barge
CFR0106	Stackhouse Hopper Dredge	Hooper Dredge
CFR0107	Reaves Channel Anchor	Stock Anchor
CFR0108	<i>Frances Elizabeth</i>	Pilot Schooner
CFR0114	Terry Johns Log Boat (Recovered)	Historic Period Single Log Canoe
0003NEI	CSS <i>Raleigh</i>	Civil War Ironclad
CFI0001	<i>Ella</i>	Blockade-runner, Iron Paddle Wheel Steamer
CFI0003	Baldhead Rudder Wreck	Unknown Sailing Vessel
CFI0004	Sandpiper Wreck	Unknown Sailing Vessel
CFI0006	Jay Bird Shoals Site	Isolated Finds, Magnetic Anomaly Cluster
CFI0007	Wes Hall Site R1-14	Wooden-Hulled Sailing Vessel

Key: CFR=Cape Fear River; CFI=Cape Fear Inlet; CFO=Cape Fear Ocean; and CFT=Cape Fear Terminal

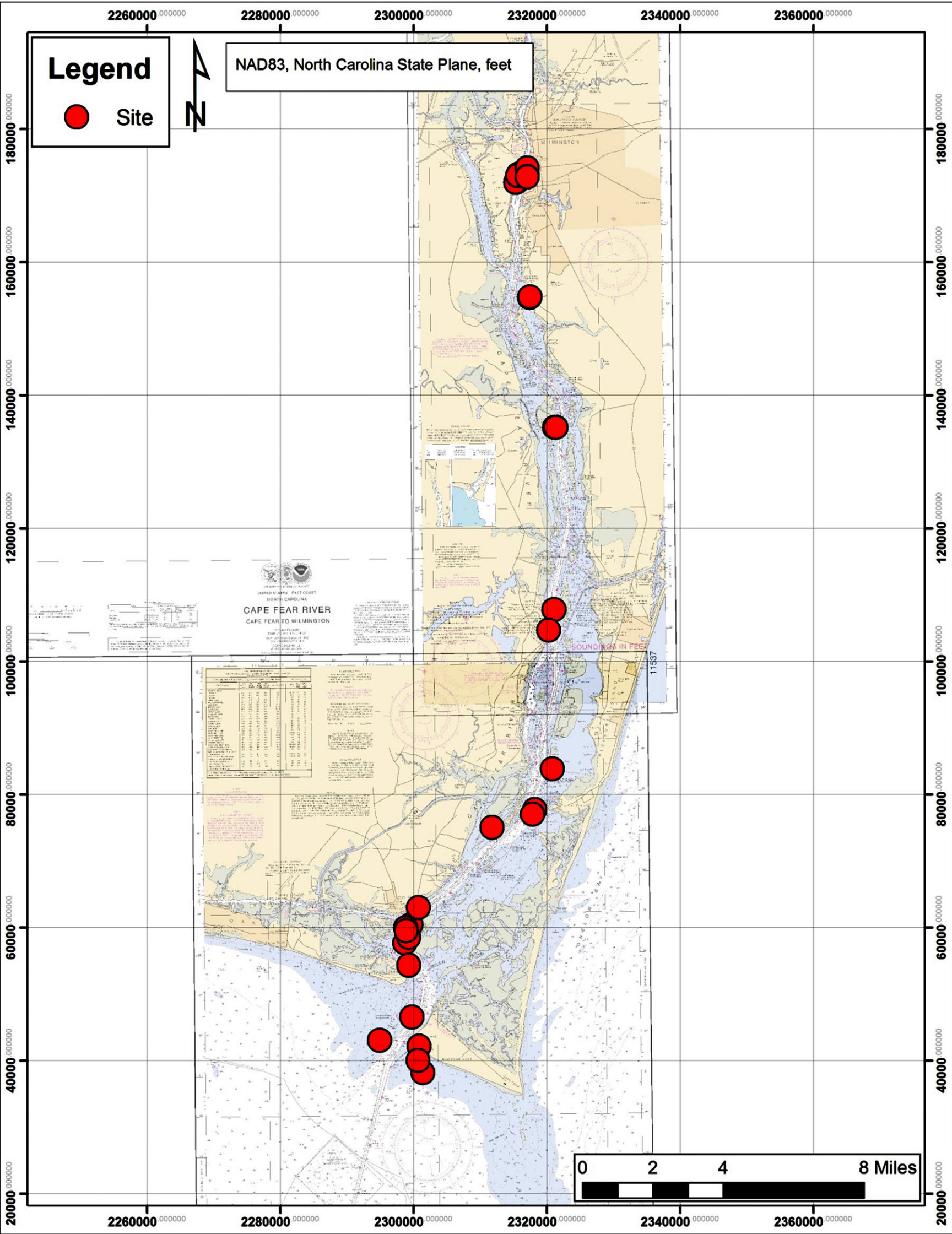


Figure 2-16. Thirty-four archaeological sites located nearby and one site found within the Project Area as recorded on file at the North Carolina Underwater Archaeological Branch.

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UPPER ANCHORAGE BASIN

Beginning at the northern end of the APE in Wilmington, 13 shipwrecks are found along the banks of the Cape Fear River in the Upper Anchorage Basin just south of the Cape Fear Memorial Bridge. An additional 51 maritime archaeological sites are recorded north of the memorial bridge and outside the current APE. A vast majority of these sites are considered a part of the Eagles Island Ships' Graveyard. This maritime graveyard, found on both the banks of Wilmington and Eagles Island, is a testament to a once thriving ship industry on the Cape Fear River.

Previous investigation by the UAB during their 1996 comprehensive study of the Cape Fear River had to rely on side scan sonar and diver visual inspection to find anomalies in the Anchorage Basin. Archaeologists noted an unusual amount of magnetic disturbance in the basin. The magnetic disturbances were believed to be caused by modern debris from dredging and wire cables found throughout the area (Overton et al.1996:52).

The 13 sites are all shipwrecks, eight on the banks of Wilmington and five on Eagles Island. All but four are named for descriptive terms based on their design or location (Figure 2-17).

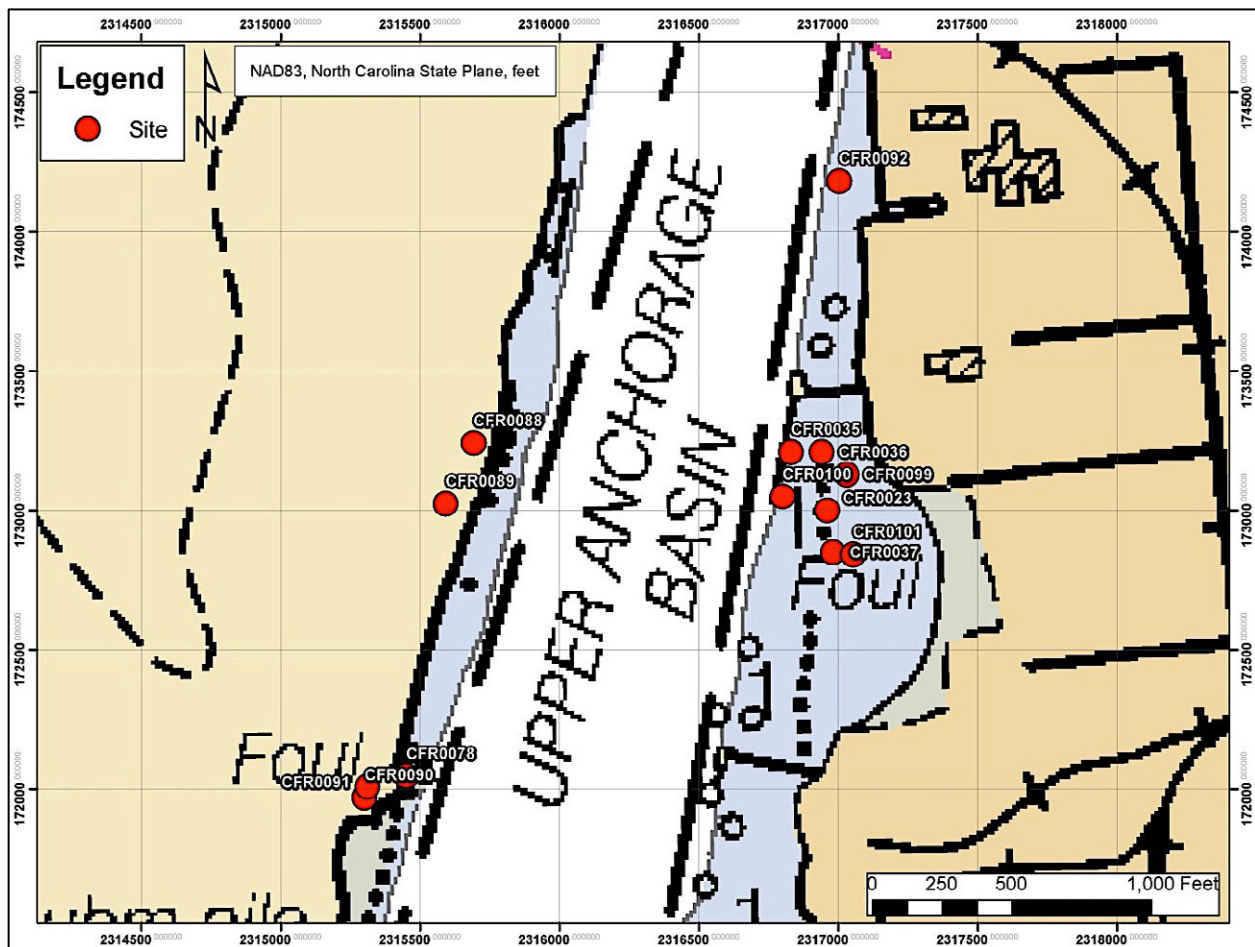


Figure 2-17. Thirteen archaeological sites located immediately off the Upper Anchorage Basin, along the banks of Eagles Island (west) and Wilmington (east).

WILMINGTON RIVERBANK

Seven of the eight shipwrecks on the Wilmington side of the Cape Fear River are located in an abandonment area adjacent to the Cape Fear Terminal Company along tidal mud flats. UAB's 1996 survey details that this portion of the river:

“was the scene of considerable industrial activity during the second half of the nineteenth and early twentieth centuries. These industries included Kidders Saw Mill, which operated from the time of the Civil War until 1910, as well as a number of businesses with shorter existences, such as the Germania Handle Manufacturing Company; J.C. Selby Handle Factory; Wilmington Lumber Company; Atlantic Shingle, Cooperage, and Veneer Company; and the Wilmington Cooperage Company. A 1921-1922 map prepared by the USACOE showed that these lumber businesses had been replaced by the Cape Fear Terminal Company and that the property was used for oil storage and refining” (Overton et al. 1996:162).

The *Lucretia* (CFR0023) is likely a canal-type barge built in 1901 at Whitehall, New York. Donald Bordeaux, who recalled the vessel's name, believes the Stone Towing Company owned the vessel before being discarded on the shore. In the *List of Merchant Vessels of the United States*, *Lucretia* was registered as 117 gross tons. Archaeologists found the wreck measured 160 feet and 23 feet, 5-inches wide and closely fitted the *Lucretia*'s specifications (Overton et al. 1996:162).

Donald Bordeaux also identified the *Seven Marys* (CFR0035) during the UAB's 1983 survey. He recalled the *Seven Marys* as a menhaden fishing boat. Research identified the vessel as “built in Salisbury, Maryland, in 1902 and was equipped with a gasoline screw engine. The boat was listed as having a length of 64 feet, a breadth of 16 feet, and a depth of hold of 4 feet” (Overton et al. 1996:169).

Little is known about the wooden-hulled *Bostic* (CFR0036) found on the tidal mud flats. Bordeaux reported the vessel's name, but historic research failed to identify a *Bostic* in the Wilmington area. Both the *Seven Marys* and the *Bostic* were not examined archaeologically during the 1983 or 1996 surveys (Overton et al. 1996:169).

Stone 1 (CFR0037) was a steam tugboat built in 1903 that now lies buried in the mud. The wooden tug was 29 gross tons with “a length of 48.6 feet, a beam of 14.1 feet, and depth of 7 feet” (Overton et al. 1996:169).

Dawson Street Barge (CFR0092) was identified during the UAB's 1996 low-tide survey, finding this smaller late nineteenth- to early twentieth-century wooden barge with a 38-foot length and a 20 foot and 1 inch beam. The vessel was on the beach at low tide but perpendicular to the shore (Overton et al 1996:116).

Three wooden barges were found nearby the *Lucretia* but were not examined during the 1983 or 1996 archaeological investigations. These barges include the Cape Fear Terminal North (CFR0099), Big Barge (CFR0100), and South (CFR0101; Overton et al. 1996:172-173).

EAGLES ISLAND RIVERBANK

Compressor Barge (CFR0078) is located across from the Hess Oil Company terminal on Eagles Island. Found during the low-tide survey, the 73-foot 6-inch long and 30-foot wide vessel is considered a late nineteenth- to early twentieth-century wooden barge. Orientated parallel to the shoreline, “a steam-powered air compressor was found between the second and third stringer, near the downriver end of the barge” (Overton et al. 1996:112).

Eagles Island Metal Barge (CFR0088) is a mid-twentieth-century vessel found on the beach parallel to the shoreline about 86 feet in length and with a 30 feet 8 inch beam (Overton et al

1996:116). A 59-foot wooden barge was also identified, the Eagles Island Wooden Barge (CFR0089). However, this vessels beam could not be examined as about 90 percent of the barge was covered with sediment and marsh grass (Overton et al 1996:115).

Innis Barge (CFR0090) is another late nineteenth- to early twentieth-century wooden barge. Discovered in the marsh grass, the vessel was “55 feet long, 19 feet 7 inches wide, cross planked, and raked on both ends” sitting perpendicular to the shoreline (Overton et al. 1996:112).

Floating Tank Barge (CFR0091) was named for two nearby floating tanks in the site area. The wooden barge itself was 60 feet long and 24 feet 2 inches wide. The barge is found on the Eagles Island beach perpendicular to the shoreline and dating to the twentieth-century (Overton et al 1996:115).

UPPER BRUNSWICK RANGE

Relatively little is known about the two Stackhouse shipwrecks found on the eastern shoreline south of Wilmington. CFR0102 contains a wooden barge covered with rubble and vegetation. Site CFR0106 contains the remains of a hopper dredge. North Carolina UAB site files provide the coordinates of these two wrecks however, a description of their construction and their current condition is at present unknown. Both vessels are outside the APE (Figure 2-18).

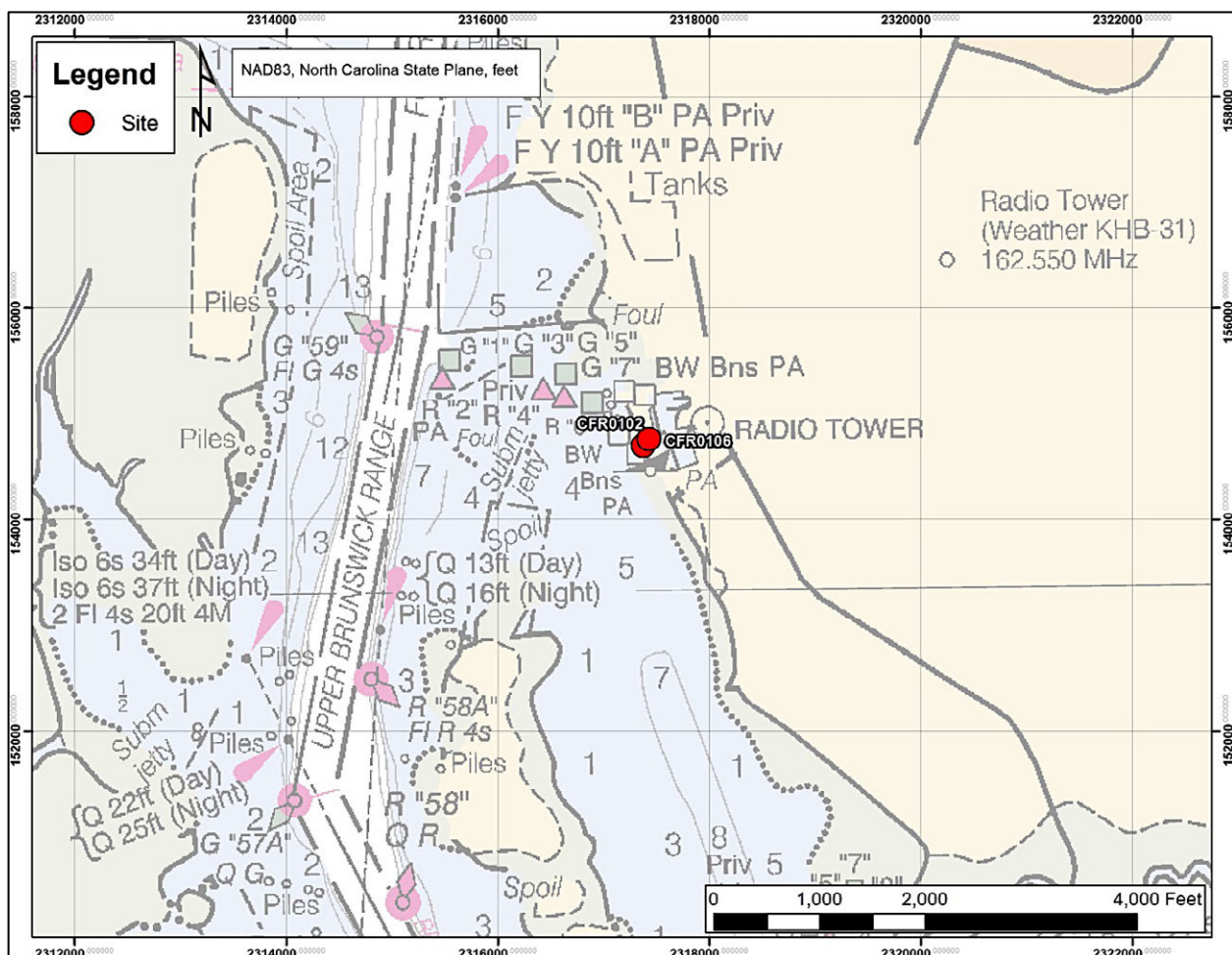


Figure 2-18. Two shipwreck sites located off the Upper Brunswick Range on the shoreline.

KEG ISLAND RANGE

Campbell Island contained at least two shipwrecks. The Campbell Island Wreck (CFR0083) and the Terry Johns Log Boat (CFR0114; Figure 2-19). Initially, a magnetometer located the Campbell Island Wreck and the vessel was partially exposed at low tide. Vessel construction suggests CFR0083 is a late nineteenth- or early twentieth-century barge due to the lack of a mast and no evidence of machinery.

In 2013, Terry Johns contacted the UAB concerning a log canoe he witnessed being washing out of the Campbell Island shoreline. Johns and a crew from UAB recovered the 14-foot single log canoe and placed the vessel in a UAB freshwater tank for conservation. The archaeologists noted the canoe appeared to be a single bald cypress log carved by iron tools. The finding of the canoe emphasizes the critical erosion that Campbell Island faces on the eastern shoreline from ship wakes and easterly winds producing waves (Henry 2013).

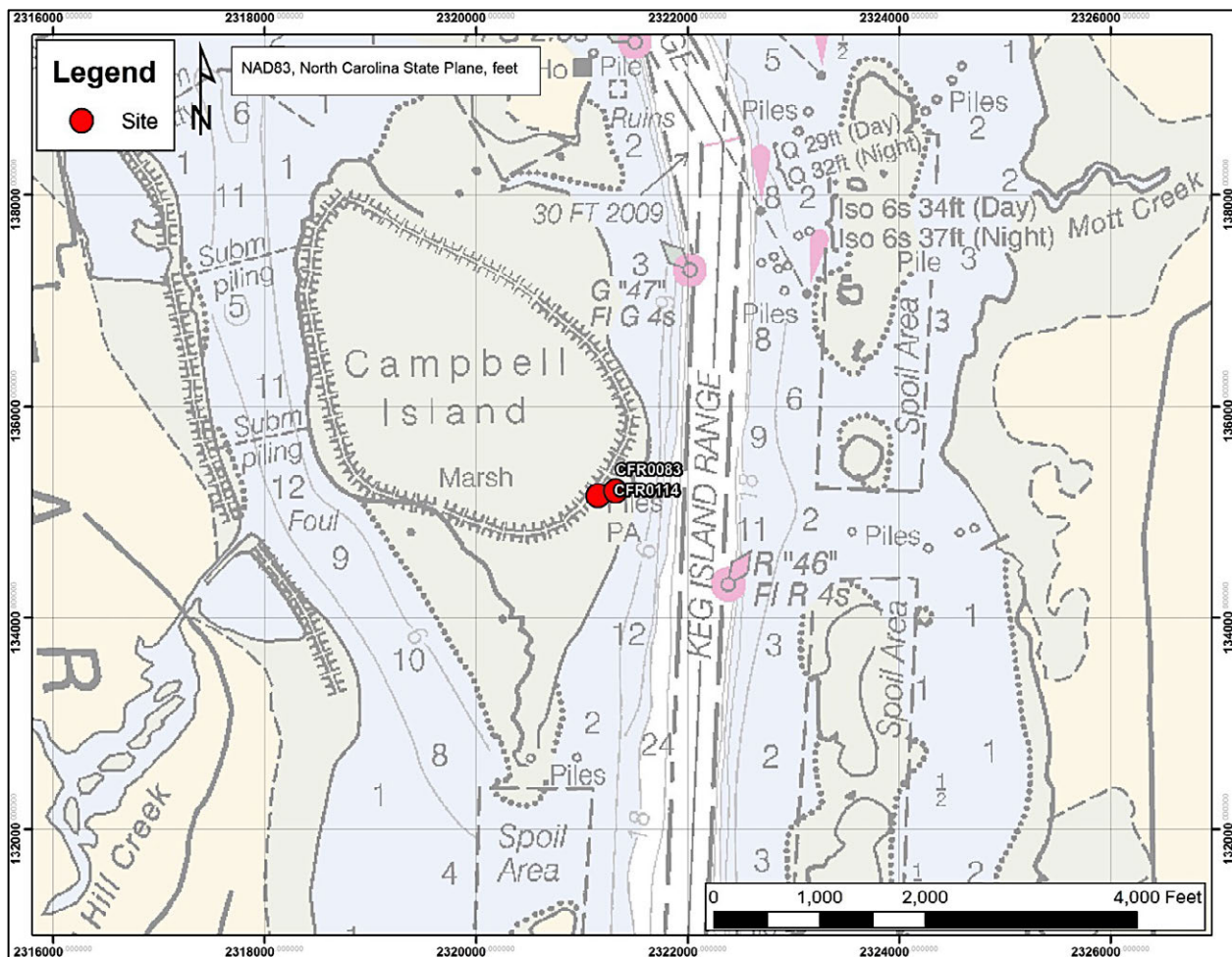


Figure 2-19. Two shipwreck sites illustrated off the KEG Island Range on Campbell Island. The Terry Johns Log Boat (CFR0114) no longer remains as it was recovered from the island.

UPPER MIDNIGHT CHANNEL RANGE

Site CFR0086 contains the remains of a barge with a wooden deck, simply called the “Brunswick Town Barge” (Figure 2-20). The barge lies 75 feet from the shoreline and perpendicular to the shore. Archaeologists during the 1996 survey found the structure highly deteriorated and could not classify complete ends of the vessel (Overton et al. 1996:117). Site CFR0050 is found inside the channel (discussed below).

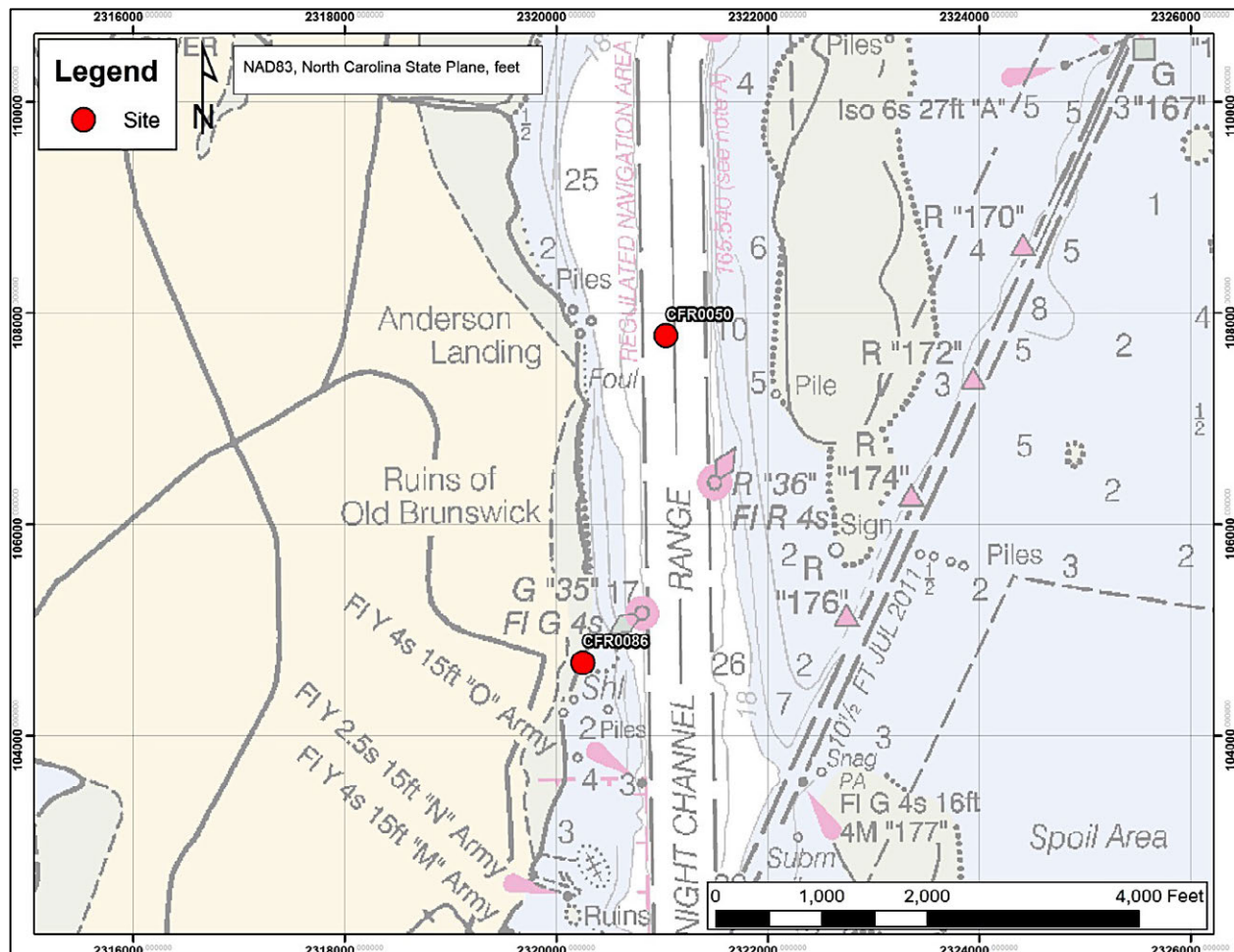


Figure 2-20. The Breece site (CFR0050) found inside the Upper Midnight Channel Range off Old Brunswick Town along with the Brunswick Town Barge (CFR0086) outside the same channel.

THE BREECE SITE (CFR0050)

The Breece Site (CFR0050; see Figure 2-20) is the only site listed as inside the current APE; an isolated find containing a single cannon, which has since been recovered (i.e., no longer a site). Site coordinates show the location of the cannon as recovered from the Upper Midnight Channel Range. The site name is recorded as “Breece” on file at the UAB, but the discoverer’s name is actually spelled “Breese” with an “s.” On 3 May 1985, Dennison K. Breese and the UAB recovered the 820-pound cannon off Brunswick Town. D.K. Breese had been searching for the *Fortuna* with a magnetometer survey off Brunswick Town after acquiring a permit through the North Carolina Department of Cultural Resources (Hall 2007). Divers with the UAB were unable to locate additional cultural material above the riverbed. To date, the *Fortuna* has yet to be discovered off Brunswick Town.

The UAB asked multiple institutions if they knew the type or nationality of the cannon, which had no markings present due to deterioration. Unfortunately, no one was able to pinpoint a specific origin for the gun. Most likely, the cannon (Figure 2-21) is a 4-pound eighteenth-century gun and potentially French or Spanish, but not considered English. Correspondence by UAB with William Brown, a curator with the National Park Service (NPS), reveals that Brown believes the gun either Spanish or French regarding the "...general shape and the placement of the reinforcement rings. The length and the caliber would indicate early eighteenth century. This is just the sort of cannon I would expect to find on a sloop of the 'Fortuna' period" (Brown 1985).



Figure 2-21. North Carolina Office of State Archaeology's Underwater Archaeology Branch archaeologists taking measurements of the Breece Site 4-pound cannon in 1985 (image on file at Fort Fisher's Underwater Archaeological Branch).

SNOWS MARSH, HORSESHOE SHOAL, AND REAVES POINT CHANNEL RANGES

Four sites are located nearby Snow Marsh including 0003NEI, the CSS *Raleigh* (Figure 2-22). Much work has focused on the Confederate ironclad. The vessel bears the site number abbreviation for New Inlet rather than "CFR" for the Cape Fear River. The wreck has appeared on New Inlet nautical charts and was considered a navigation hazard after sinking in 1864 (Jackson 1996:271-272).

Site CFR0080 was the location of the "Shrimp Net Canoe" off Bird Shoal. Recovered by a shrimp boat fisherman in 1988, the Prehistoric yellow pine canoe was given to the UAB.

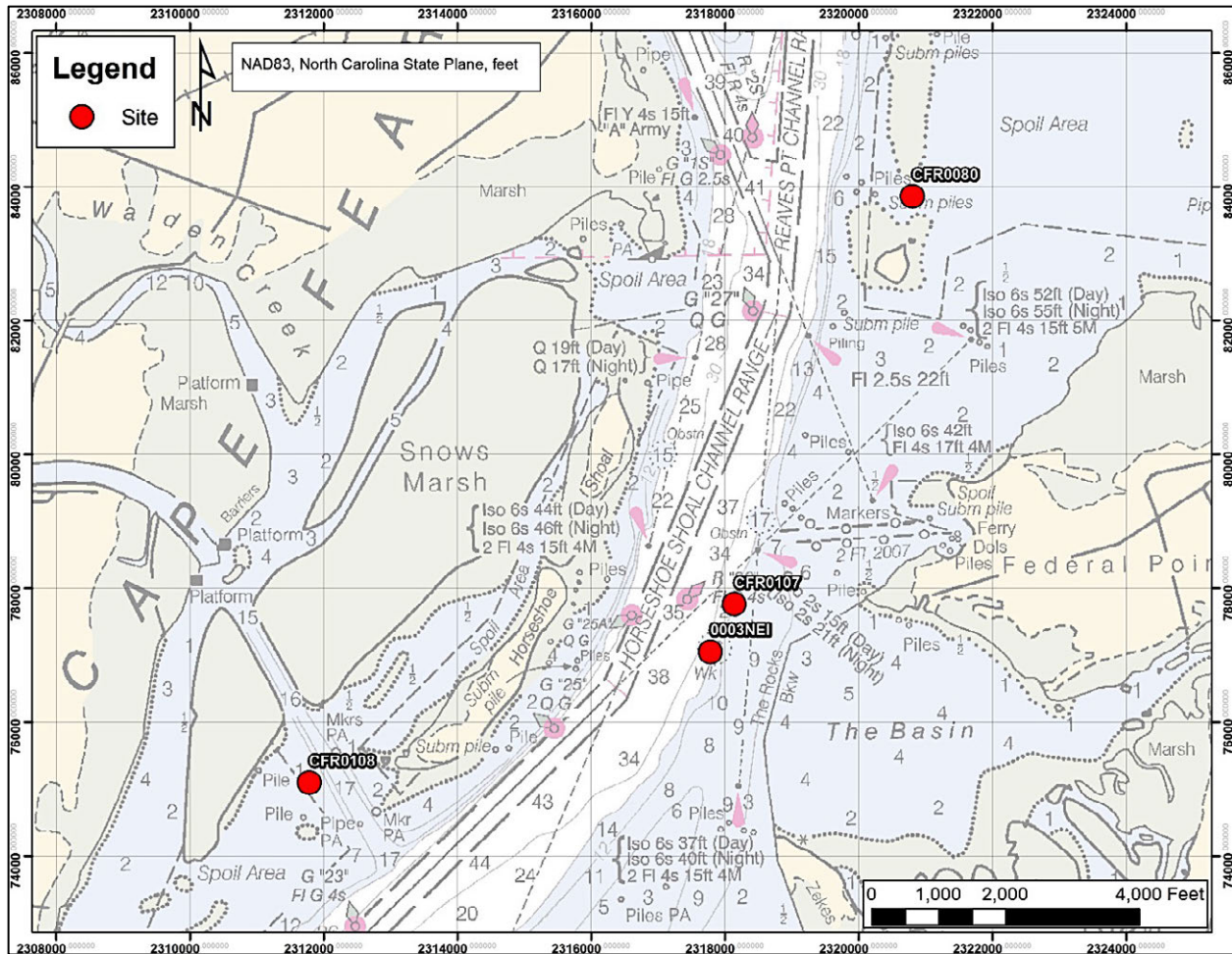


Figure 2-22. Archaeological sites found off the Snows Marsh, Horseshoe Shoal, and Reaves Point Channels.

Just 700 feet north of the CSS *Raleigh* lay the previous origins of a nineteenth-century wooden stock anchor, isolated find CFR0107. The USACE–Wilmington District recovered the anchor in 2004. No ship wreckage was found after survey and it remains unknown if the anchor belonged to the ironclad, one of the ships salvaging the Confederate vessel, or another vessel from the shipping channels of Horseshoe Shoal or the former New Inlet channel. Wes Hall (2004) conducted the remote sensing survey on behalf of the USACE and is listed in the *Previous Investigations* section above.

Just south of Snow Marsh are the remains of the local Southport pilot schooner, *Frances Elizabeth* (CFR0108). In July 1912, the engine exploded from a leaky fuel line and the vessel burned, resulting in killing the owner's son who served as the captain. Originally, the 30-ton vessel was rigged as a schooner when built in 1879. In 1910, the pilot boat was outfitted with a 40-horsepower gasoline engine and a screw propeller. Magnetometer targets identified the site location in 1993, during the UAB's comprehensive survey, but the wreck was not fully investigated until 2004. The vessel was likely salvaged after burning and divers recovered little from excavations. Excavation and measurements showed the vessel had the same overall length as the *Frances Elizabeth*, 60 feet.

SOUTHPORT AND BATTERY ISLAND

Seven sites are identified immediately near the APE off Battery Island, Fort Caswell, and Southport, including the *Kate* (Figure 2-23; details below). The name “NOAA #4 Barge (CFR0038)” corresponds with a wreck found on NOAA’s Nautical Chart 11537. Only identified as a late nineteenth- to early twentieth-century wooden barge, the vessel is 110 feet in length with a 30-foot beam (Overton et al. 1996:104).

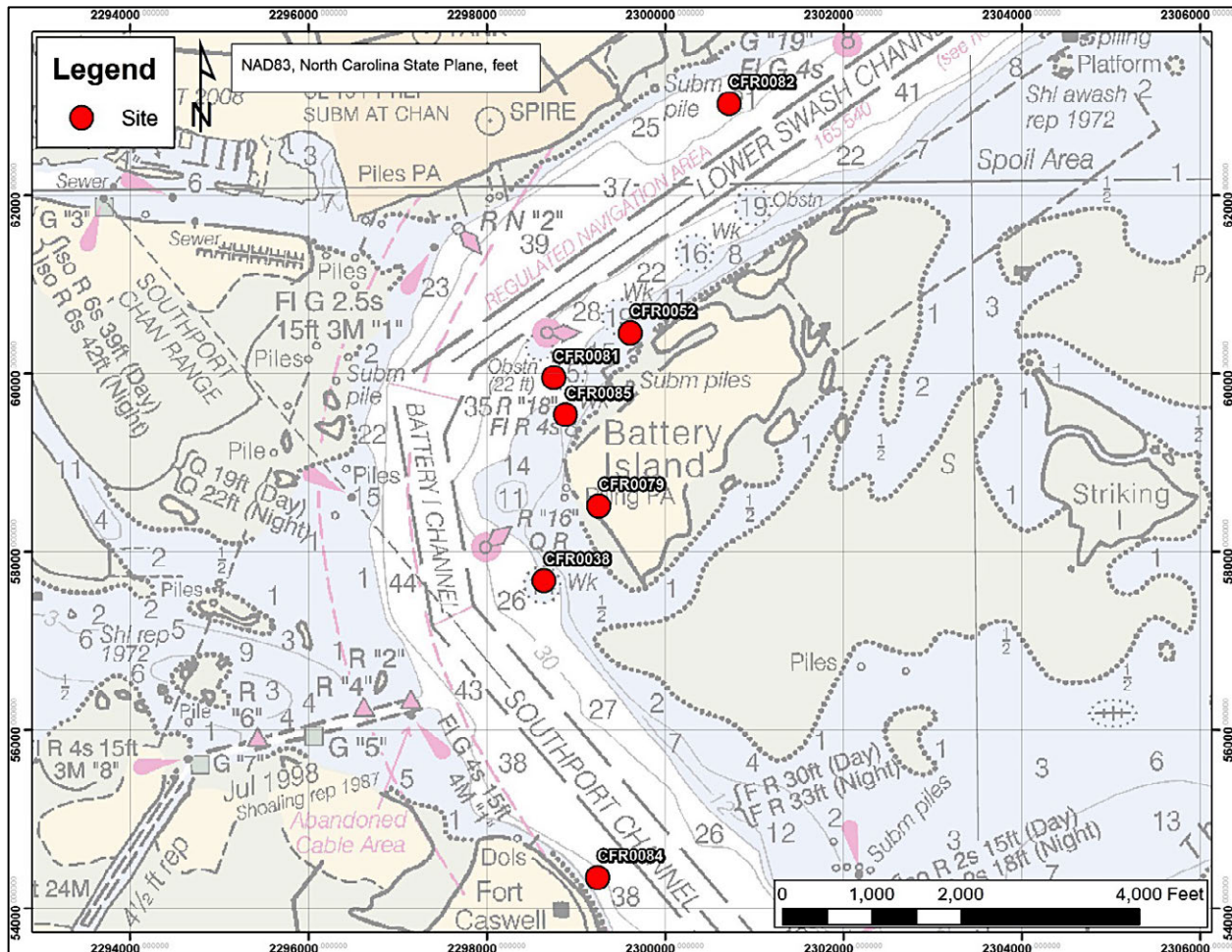


Figure 2-23. Archaeological sites located at Southport and Battery Island.

Both the CSS *Raleigh* and the CSS *North Carolina* (CFR0052) were built as Richmond-class ironclads in Wilmington during 1863 and 1862, respectively (Jackson 1996:269). Mutually, the vessels were designed only for river defense and not to cross the bar. The *North Carolina* saw little action and was left to deteriorate before finally being abandoned at Battery Island (Jackson 1996:270). Regrettably, the vessel was damaged during dredge operations in 1995. TAR documented the structural damage (described above in *Previous Investigations* section; Watts 1996, 1998).

Similar to the Shrimp Boat Canoe found on Bird Shoal, the Battery Island Canoe (CFR00079) was also recovered by the UAB in 1985. Archaeologists suggest that the canoe remains floated over to Battery Island. Only one end of the Prehistoric canoe exists and is likely yellow pine. The canoe is now displayed in the New Hanover County Museum.

The schooner *Belfast* (CFR0081) was damaged during a storm and towed to Southport where it could not be saved, sinking off Battery Island. Divers identified the *Belfast*'s log cargo still present on the wreck along with a small donkey engine. The 181-foot vessel is a difficult dive due to strong currents and having limited dive time due to tides (Overton et al. 1996:101).

Immediately downriver of the Fort Caswell pier lies the Fort Caswell Steamer (CFR0084), a nineteenth-century wooden-hulled steam vessel. The vessel's structure is deteriorating but the steam machinery is still present on the site. As of yet, the steamer has not been identified. The most likely contender for the wreck is a steamboat lost off Fort Caswell in 1853, called *Fayetteville*. Like the *Belfast*, the steamer's dive site is subject to rapid tide changes and strong currents.

Site CFR0085 is an isolated find, the Battery Island Boiler. The boiler contains a firebox and a steam fitting. UAB archaeologists consider the size of the boiler "suggests that it was not used to propel a steam vessel but rather was used with a small donkey engine such as those employed on large sailing vessels to power a windlass" (Overton et al. 1996:103).

KATE (CFR0082)

Just north of the Lower Swash Channel, is the blockade-runner, *Kate* (CFR0082; see Figure 2-23). The vessel's hull remains are just outside of the APE, but this survey's investigation has revealed a potential location of the *Kate*'s paddle wheel shaft within the APE approximately 250 feet from the wreck site. Records list the vessel's dimensions as 165' x 29'10" x 10'4" and are shown in line drawings (Figure 2-24). The 483-ton wooden-hulled sidewheel steamer was originally known as the *Carolina* when built in 1852 out of Greenpoint, New York. Purchased by John Fraser and Company in the early 1860s for the purpose of running blockades, the vessel cruised up to nine knots and successfully evaded the Union Navy and made 20 runs between January and November 1862.

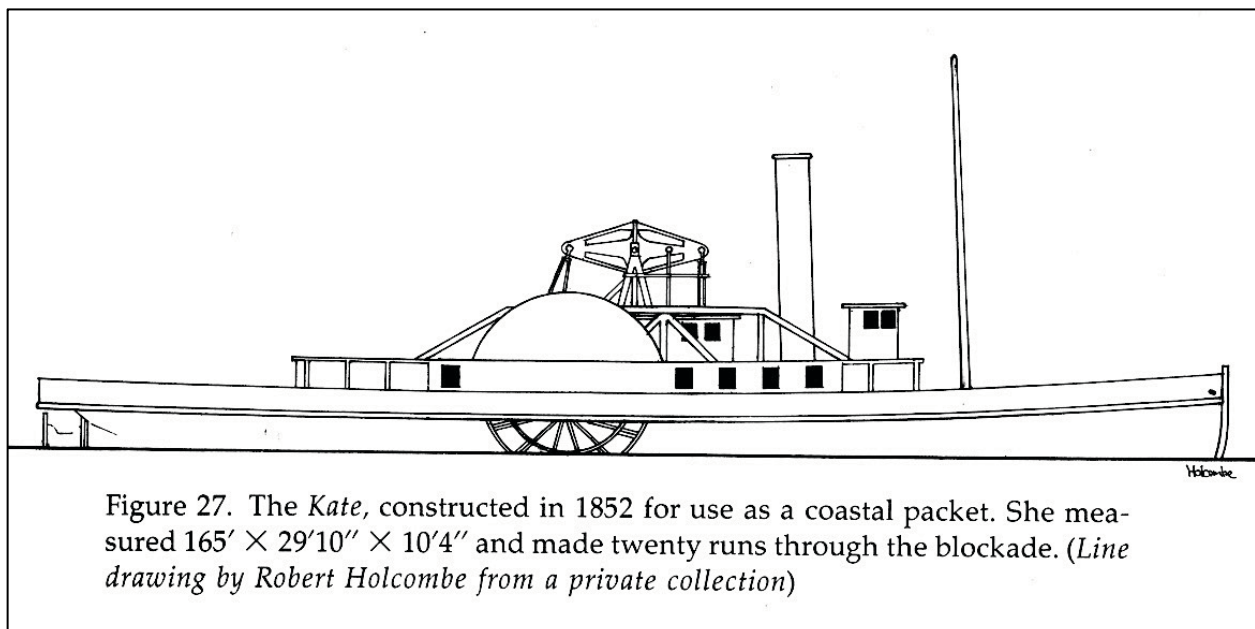


Figure 2-24. Line drawing of the *Kate*, formerly known as the *Carolina* (originally found in Stephen R. Wise's 1991 *Lifeline of the Confederacy*; image on file at Fort Fisher's Underwater Archaeological Branch).

Unfortunately, the steamer “was responsible for bringing the yellow fever epidemic to Wilmington from the port of Nassau in August 1862. The epidemic which began on 6 August and ended on 17 November resulted in the loss of between 450 and 700 lives” (Jackson 1996:268). About the time the epidemic was under control, the *Kate* encountered obstructions in the Cape Fear River at modern day Bonnet’s Creek and “partially” sank. The cargo was saved but *Kate* was a total loss. The vessel became a navigation hazard causing a schooner, identified as the *Planet*, to sink after wreckage punctured its hull in 1870 (Jackson 1996:268-269).

Correspondence by the UAB with Bob Holcombe with the Confederate Naval Museum, revealed additional specifications on the *Kate*’s machinery listing the paddlewheel’s diameter as 26 feet by 7 feet wide. Here, the vessel is recorded as 477-tons, dimensions as 170’ x 29’8” x 10’, with one deck, one mast square, and a funnel 31 feet high with a five-foot diameter (Holcombe 1993).

The UAB located the shipwreck during the Cape Fear River survey in 1996. Identified as “Target 2-D” off the Southport/Bald Head ferry dock, UAB divers described the site as “a mass of twisted metal and pipes surrounded by a scatter of coal” (Overton et al. 1996:104). The wreckage itself measured 96 feet long with the baseline’s zero end pointing towards the down river. At 56 feet on the baseline, the vessel had a 19-foot beam and the top of the boiler appeared torn off (perhaps by salvage) at 30 feet. Next to the boiler remains, divers identified a part of the paddlewheel hub. Divers noticed copper sheathing at the start of the baseline until 75 feet and the most exposed area being the midships (Overton et al. 1996: 104). Illustrated in Figure 2-25 is the UAB’s site plan of the block-runner showing the paddlewheel hub piece and the boiler.

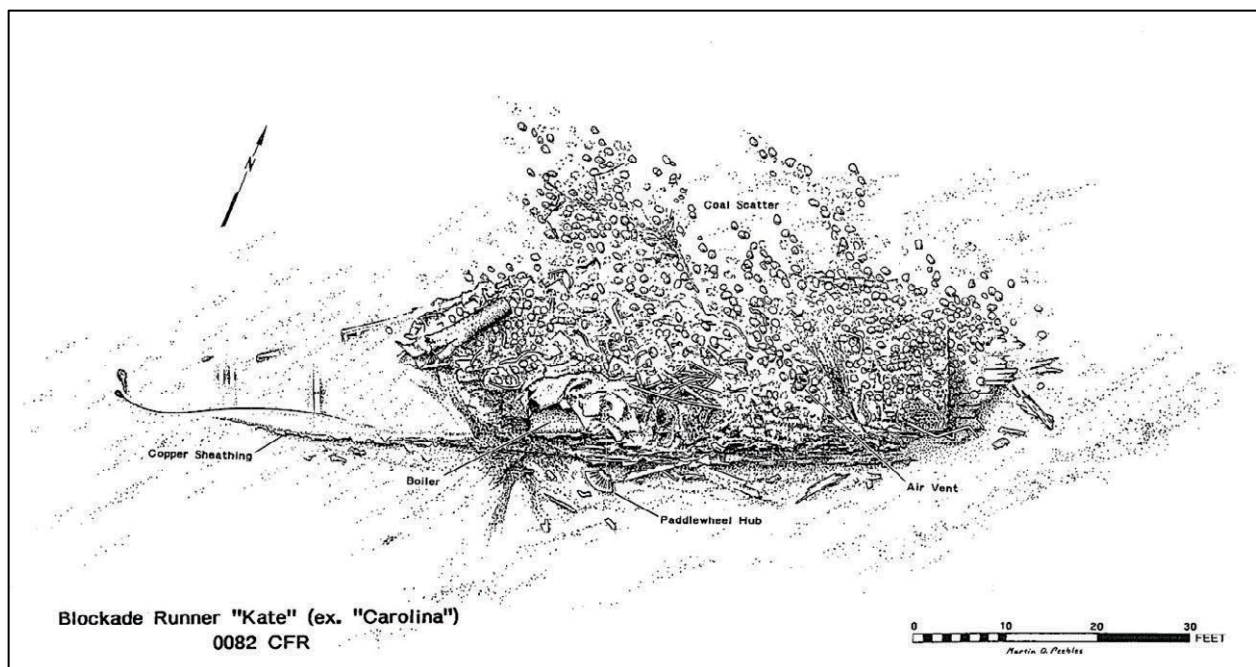


Figure 2-25. The North Carolina Office of State Archaeology’s Underwater Archaeology Branch’s site plan of the blockade-runner *Kate* (CFR0082) just off the Southport/Bald Head ferry dock as it looked in 1996 (Overton et al. 1996:105).

UAB archaeologists recovered 16 artifacts from the wreckage, with one of the most important identifying the wreck as the steamer. An encrusted ironstone plate, that once cleaned, revealed a design showing “a snake in the form of a circle around a palm tree. Above the palm tree was the name “Carolina,” the former name of the blockade-runner *Kate* known to have been lost in the Cape Fear River” (Overton et al. 1996:107). The other artifacts included “...a lamp base, an

earthenware bottle, two bowl base fragments, a dinner plate fragment, a torpedo bottle, a dark green bottle, two clear bottles, a through-deck sleeve, two porthole fragments, two brass straps, five binnacle fragments, and a piece of copper sheathing” (Overton et al. 1996:107).

CAPE FEAR INLET

Five shipwreck sites are noted near Baldhead Shoal/Reach 1, Reach 2, and the Smith Island Channel (Figure 2-26). Site CFI0001 is the famous blockade-runner, *Ella*, a 404-ton iron paddlewheel steamer built and lost in 1864. The vessel has long been known by historians as located off the Cape Fear Inlet and Bald Head Island. The *Ella* is 1,800 yards south-southwest of the Bald Head Lighthouse and still features large boilers, steam machinery, and the sidewheel shaft. The *Ella* is recorded on the AWOIS listing above as record #553.

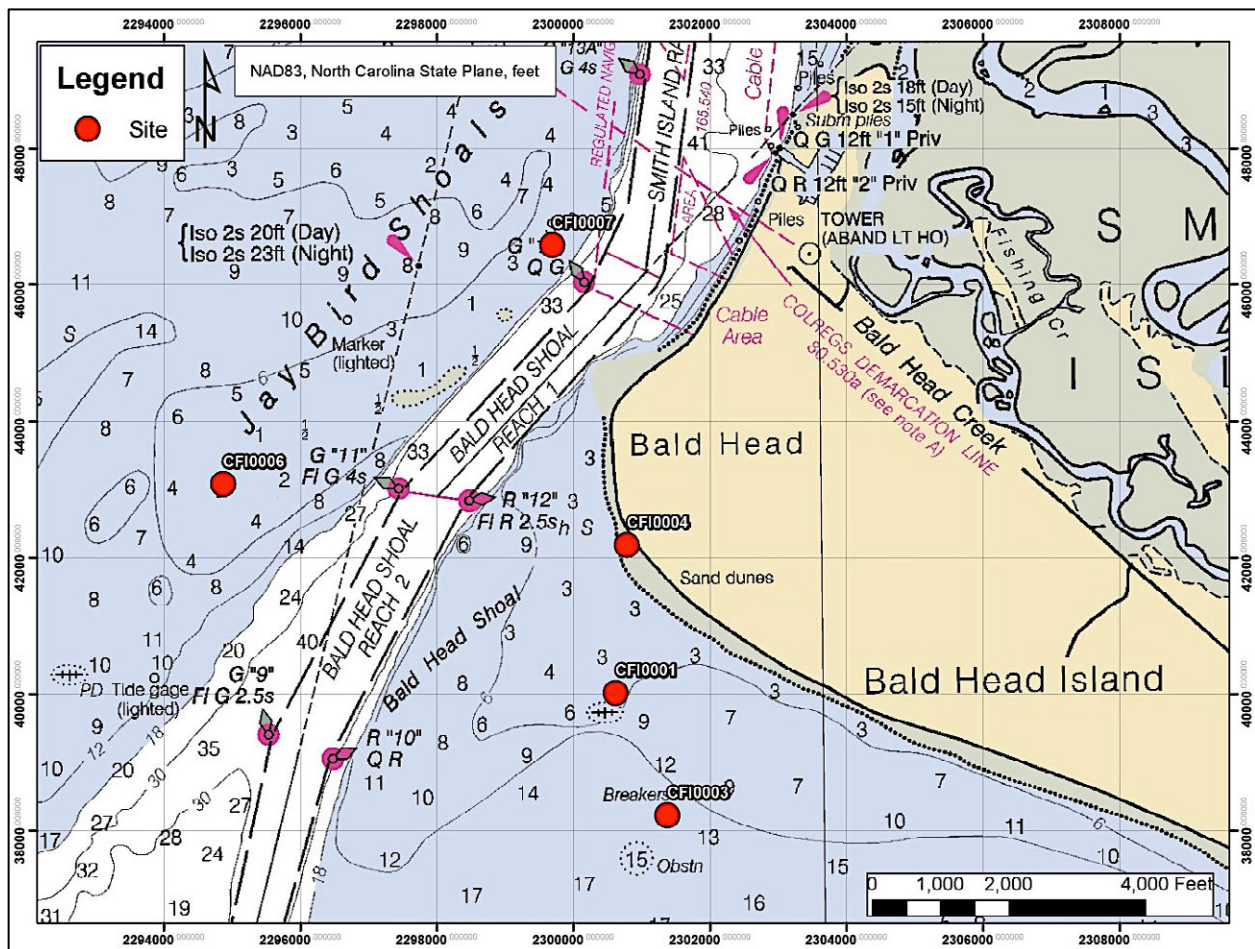


Figure 2-26. Five archaeological sites located at the Cape Fear Inlet.

Just south of *Ella* is Site CFI0003, an unknown sailing vessel simply called the “Baldhead Rudder Wreck.” The wreck site consists of two ballast piles with a rudder and cannon that were both recovered in 1987 and 1988, respectively. The rudder was reportedly 14-foot long and recovered by the Strategic Salvors of North Carolina hoping that the rudder belonged to the *La Rosa de Bilboa*, a Spanish galleon lost in 1804. Wood analysis of the rudder revealed white oak on one edge and pine on the other, but the rudders origins could not be discerned above a generic species (Newsom 1988). The 9-pound cannon was determined to be of English origins dating to 1789 after the UAB spoke with a British Historic artillery consultant. The consultant mentioned

the English gun could have been captured by the Spanish merchantman, if the Baldhead Rudder Wreck is indeed the *La Rosa de Bilbao* (Carpenter 1991).

Site CFI0004 is another unknown sailing vessel, called the “Sandpiper Wreck.” The wreck rests on the shore of Bald Head Island and is periodically uncovered by sand. UAB archaeologists examined the Sandpiper Wreck in 1991 finding the wooden wreck highly deteriorated with only the bottom portion of the hull and floors intact with iron fasteners. Wood analysis revealed American woods used for construction; Southern pine for the ceiling planking, American chestnut for a futtock timber, and spruce for a knee timber (Newsom 1992).

On the western side of the Bald Head Shoal Channel, is the Jay Bird Shoal and a series of target clusters now recorded as Site CFI0006. A survey of the shoal for a borrow area by Watts in 2007 found seven magnetic anomaly clusters with “signature characteristics consistent with shipwreck material and/or other potentially significant submerge cultural resources” (Watts 2007:22). Research notes the shoal as having a high potential for historical shipwrecks and it was recommended the targets be avoided. Site files at UAB list CFI0006 as an isolated find. TAR’s 2007 survey is further discussed in the above Previous Investigations Section.

The closest site to the inlet channel is the Wes Hall Site R1-14 (CFI0007) found by Hall in 1999. A marine survey of the Jay Bird Shoal for the ODMDS identified a magnetic anomaly with a sidescan sonar target featuring a linear scatter of wreckage. Target R1-14 was investigated, found to be 140 feet long, and ultimately the remains of a wooden-hulled sailing vessel (Hall 1999b).

HISTORIC SHIP LOSSES AND MARITIME EVENTS

Review of the North Carolina Shipwrecks Data Entry Files at the North Carolina UAB identified numerous vessels lost within proximity to the current APE; however, relatively few were recorded inside or immediately nearby the APE. In total, 535 Shipwrecks Data Entry Files were identified in the database for the Cape Fear vicinity. Of these, 312 give a general location of the Cape Fear River, and 112 files reference the Cape Fear Inlet, and 111 vessels are listed as lost off the Cape Fear Ocean. The database contains vessels that were listed as refloated, vessel saved, or total recovery. Many ships in distress or stranded were refloated by the life-saving stations at Cape Fear and Oak Island nearby in the Cape Fear region. Because of the variety of the ship listings including refloated vessels in the Shipwreck Data Entry Files, this report has included the UAB’s 1996 survey report listing the Lower Cape Fear River’s Historical Accounts of Shipwrecks lost within the study area (Jackson 1996:421-427; *Appendix A: Documentation of Vessel Losses as Presented in Gayes et al. 2013*). The list contains 291 total wrecks described as lost below Wilmington and applicable to the current APE.

SUMMARY OF KNOWN SHIPWRECKS AND SITES

An examination of the North Carolina Master Site Files revealed only one submerged archaeology site on record within the current APE; the Breece Site (CFR0050), the location of a recovered cannon. Thirty-four other shipwrecks and isolated finds were noted nearby the navigation channel. With the exception of two Prehistoric canoes acquired from vague locations (i.e., not found *in situ*), no other Prehistoric submerged sites were listed as present in the APE. Additionally, no cultural resource was identified offshore in the Cape Fear Ocean files. Regardless, the documentary evidence of Historic shipwrecks and naval events in the project vicinity warrants an investigation.

III. METHODS

PROJECT ENVIRONMENT

The survey covered two different areas each with their own environment, the Inner Harbor Area and the Offshore Area. The environment of the Inner Harbor Area consists of the channel margins along a 26-mile stretch of the navigation channel that runs down the middle of the Cape Fear River beginning from the river's entrance or mouth up to the Cape Fear Memorial Bridge at the City of Wilmington. The upper quarter of the survey area is a built-landscape with numerous docks as well as industrial infrastructure, while below the city the river is relatively free of infrastructure that would affect the magnetometer. Figures 3-01 and 3-02 show examples of the Inner Harbor Area environments. Conducted 5 to 15 April 2017, the survey was somewhat affected by storm fronts, and was often conducted throughout the day and into the night when good weather presented itself. Diving was conducted between 20 and 26 September 2017, a period that saw both warm air and water temperatures. Because of extreme river currents, diving was conducted only at slack tides and, owing to the tide cycles and how they fall within the daylight hours, some days would see diving during two cycles, while other days only one cycle was diveable.

The Offshore Area consists of the northern offshore section that starts at the mouth or entrance of the Cape Fear River and projects south, southeasterly for approximately 8 miles. It then angles slightly westward for a distance of another 8-mile length, this section is known as the "southern extension." The "northern section" was surveyed during 1 to 3 November 2017, and the southern extension was surveyed on 20 and 21 January 2018. Unlike the Inner Harbor Area, the Offshore Area was void of any built environment and the survey was conducted during periods of good weather (Figure 3-03).



Figure 3-01. Built environment along the shoreline that created numerous magnetic anomalies and sonar contacts in the northern quarter near the city; view looking down river.



Figure 3-02. General survey conditions of the river south of Wilmington.

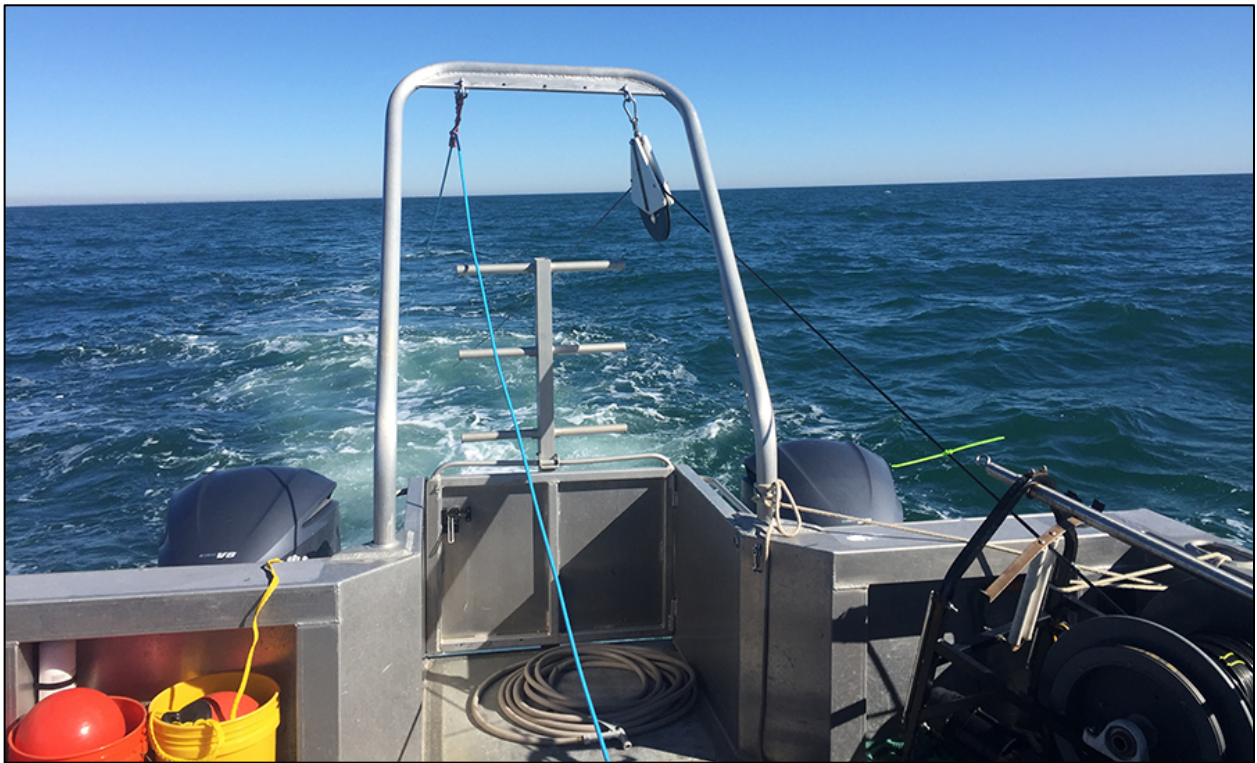


Figure 3-03. General survey conditions of the Offshore Area; looking north toward shore from the survey vessel.

PERSONNEL

A multi-faceted project, the various aspects were directed by several individuals. Mr. Stephen R. James, Jr. served as the Principal Investigator for all aspects of the investigation. For the Remote Sensing Survey, Mr. Duke Hunsaker with DC&A acted as vessel captain, and both Mr. William Wilson, M.A., RPA, and Mr. Jeff Pardee, M.A., RPA served as Remote Sensing Specialists at various times during the survey. Both Wilson and Pardee helped to process data, while Mr. Wilson analyzed all data sets and produced the maps, tables, and associated figures, as well as the sonar report, with analysis verified by Mr. James. Mike Rice (DC&A) processed the sidescan data. For the Diving Investigation phase Mr. James Hargrove with DC&A acted as vessel captain, and the diving crew consisted of Wilson as Field Director, Pardee as Dive Supervisor, and Ms. Loren Clark, M.A., RPA, and Mr. James Duff, M.A. (ABT) acted as Archaeological Divers. Ms. Erica Gifford, M.A. conducted archival research and authored *Chapter II: Historical Context*.

REMOTE SENSING SURVEY EQUIPMENT

The remote sensing tools chosen for this investigation were the magnetometer (to detect ferrous materials), sidescan sonar (to create images of the bottom), and the subbottom profiler (to reconstruct the structure of the underlying sediment beds). Locational control was conducted with DGPS technology. Analysis of the data was conducted with Hypack and SonarWiz.MAP (described in detail below).

DIFFERENTIAL GLOBAL POSITIONING SYSTEM

The primary consideration in the search for any submerged item is positioning. Accurate positioning is essential during the running of survey tracklines, and it is essential in returning to recorded locations for remote sensing refinement or diver investigations. Positioning was accomplished on the project using two Trimble DSM12/212 Global Positioning System (GPS) and antennae; one was used for the subbottom, and one split to the navigation/magnetometer computer and to the sidescan (Figure 3-04).

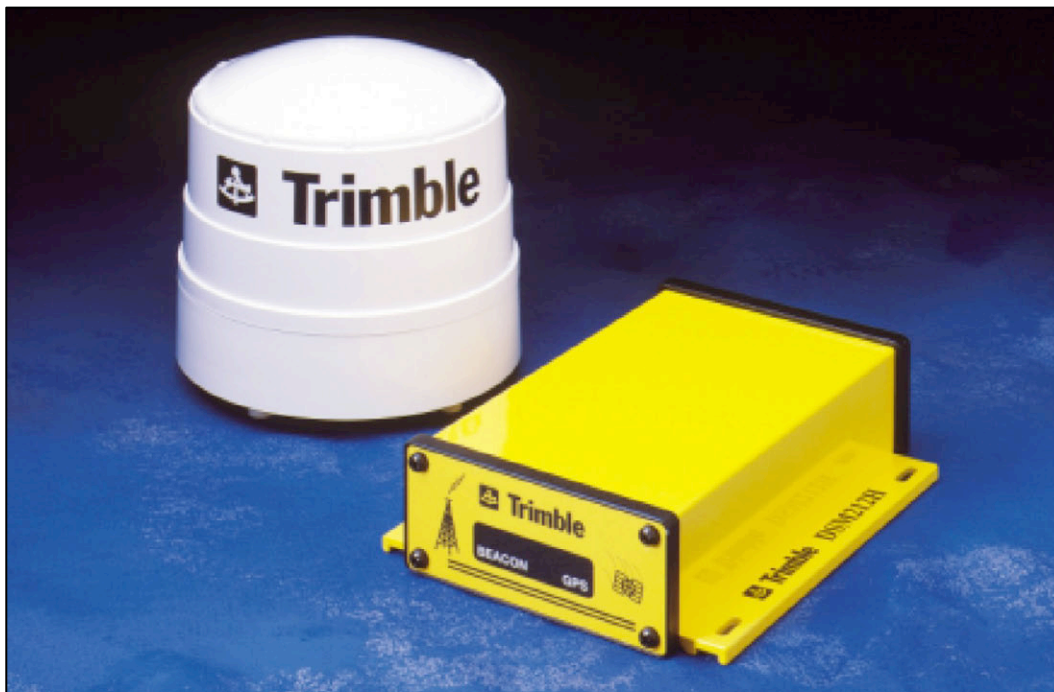


Figure 3-04. Trimble Navigation DSM 12/212 global-based positioning system used during the investigation.

The DSM12/212 GPS attains sub-meter precision with a dual-channel Minimum-Shift Keying (MSK) differential beacon receiver. This electronic device combines data from satellites and shore-based differential beacon stations, which increase the precision of the satellite data alone. DGPS positions were updated at 1-second intervals, the same rate as the magnetic data were recorded (Trimble Navigation Limited 1998:1-2).

The project was planned in NAD83 North Carolina State Plane East, U.S. survey feet, and all sidescan, subbottom, and magnetometer target data have been converted to this datum and projection. The Differential Global Positioning System (DGPS) data streams are in geographic format, WGS84 (i.e., latitude, longitude), and converted in real time by the navigation software.

Navigation was conducted with a Capaccino Twister PC computer, using Hypack Max for navigation, which was written and developed by Coastal Oceanographics, Inc. specifically for marine survey applications. The magnetometer data were acquired with this program as well.

All positioning coordinates are based on the position of either of the two DGPS antennae. Layback for each of the remote sensing devices was noted and used in the target location determination (Figure 3-05). This layback information is critical for accurate positioning of targets in the data analysis phase and to relocate any targets for additional investigations.

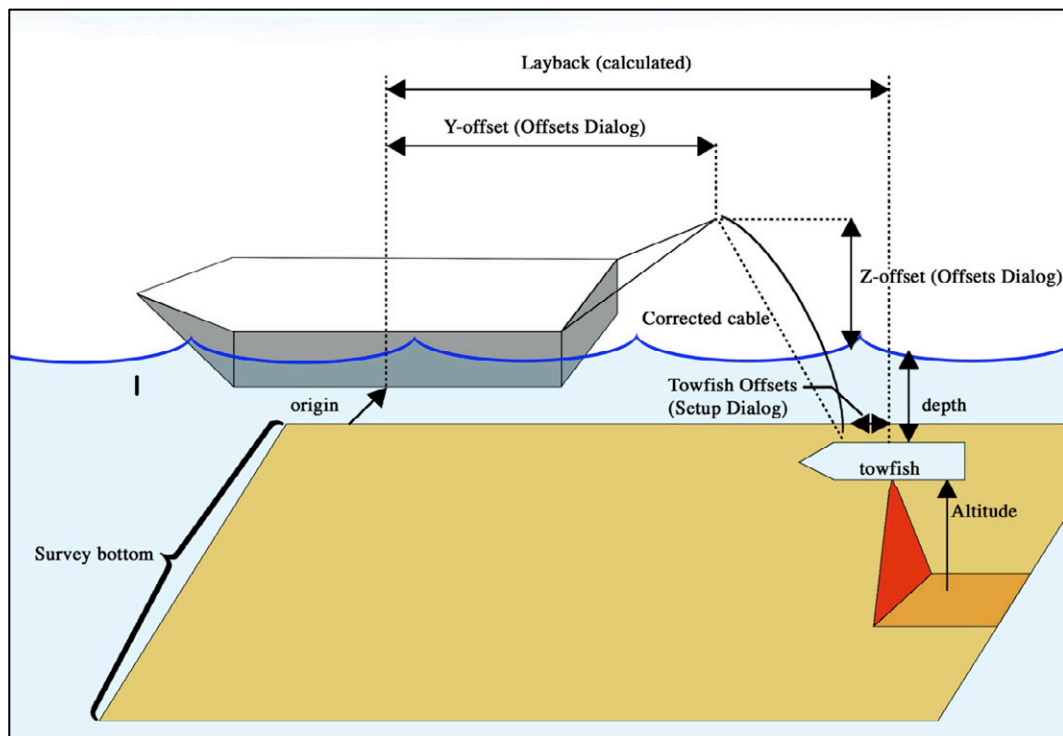


Figure 3-05. Equipment schematic illustrating layback (courtesy of Coastal Oceanographics, Inc.).

MAGNETOMETER

Magnetometers measure the intensity of magnetic forces with a sensor that measures and records the ambient (background) magnetic strength and deviations from the ambient background (anomalies) caused by ferrous and some other sources (Breiner 1973). These measurements are recorded in nanoteslas, the standard unit of magnetic intensity.

The success of the magnetometer to detect anomalies in local magnetic fields has resulted in the instrument being a principal remote sensing tool of maritime archaeologists because of anomalies that can be components of shipwrecks and other historic debris or objects hazardous to dredging or navigation. While it is not possible to identify specific ferrous objects from the magnetic field contours, it is occasionally possible to approximate shape, mass, and alignment characteristics of wrecks or other structures based on complex magnetic field patterns. In addition, other data (historic accounts, use patterns of the area, diver inspection), which overlap data from other remote sensing technologies, such as the sidescan sonar and prior knowledge of similar targets, can lead to an accurate identification of potential targets. Finally, it must be noted that other sources of magnetic field variation can overwhelm any smaller objects. These include: electrical magnetic fields that surround power transmission lines, underground pipelines, navigation buoys, or bridges and dock structures, which can be quite extensive when the feature is massive.

There are three types of commercially available marine magnetometers available: proton precession; cesium; and Overhauser. Panamerican has determined that the Marine Magnetics SeaSPY Overhauser magnetometer is the most stable and precise magnetometer available, and therefore, it is the magnetometer used for this survey (Figure 3-06). A 110-volt gasoline-powered generator powered the system. Data were stored in the navigation computer and archived. The SeaSPY is capable of sub-second recordation for precise locational control, but data were collected at 1-second intervals, providing a record of both the ambient field and the character and amplitude of the encountered anomalies.

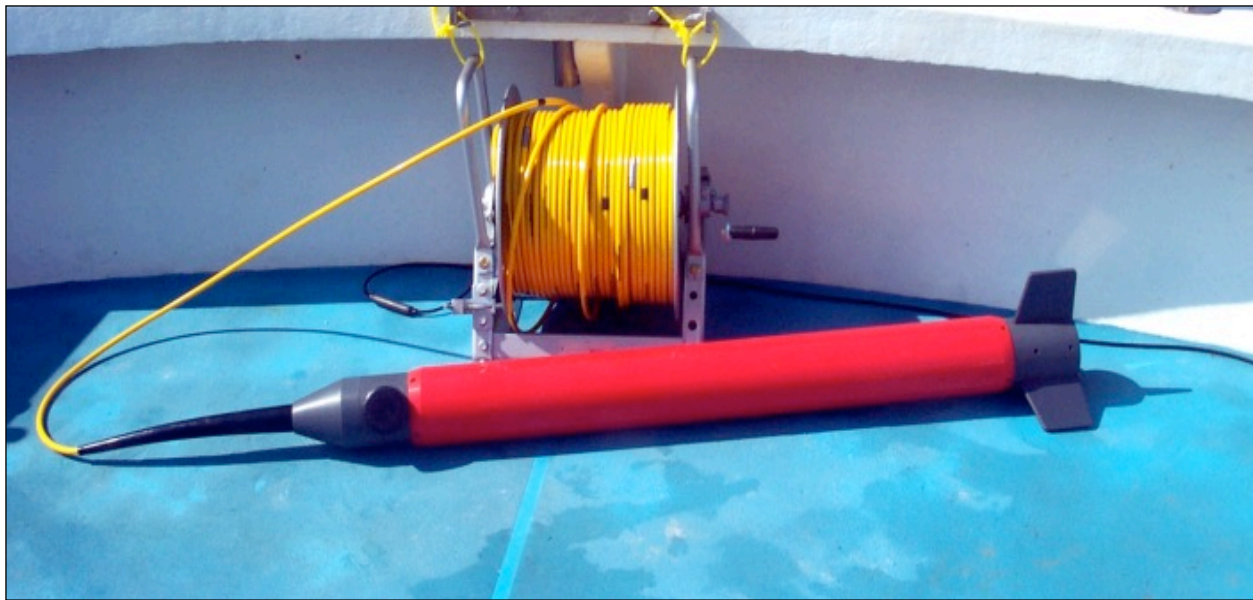


Figure 3-06. Marine Magnetics SeaSPY overhauser magnetometer employed during the survey.

SIDESCAN SONAR

Sidescan sonars produce images by “pinging” the water column with acoustic energy (sound), and then they determine distance and reflective strength of objects from the echoed returns. Under ideal circumstances (low energy wave and current conditions), they are capable of providing near-photographic images of submerged bottomland, on either side of a trackline of a survey vessel. A portion of the record from directly below the vessel is absent due to the physics of the system and depth of the water under the towfish.

The remote sensing instrument used to search for physical features on or above the ocean floor was a Marine Sonic Technology (MST) HDS sidescan sonar system (Figure 3-07). The sidescan sonar is an instrument that, through the transmission of dual fan-shaped pulses of sound and reception of reflected sound pulses, produces an acoustic image of the bottom. Under ideal circumstances, the sidescan sonar is capable of providing a near-photographic representation of the bottom on either side of the trackline of a survey vessel.

The Sea Scan PC has internal capability for removal of the water column from the instrument's video printout, as well as correction for slant range distortion. This sidescan sonar was utilized with the navigation system to provide manual positioning of fix or target points on the digital printout. Sidescan sonar data are useful in searching for the physical features indicative of submerged cultural resources. Specifically, the record is examined for features showing characteristics such as height above bottom, linearity, and structural form. Additionally, potential acoustic targets are checked for any locational match with the data derived from the magnetometer and the subbottom profiler.

The MST HDS sidescan sonar was linked to a towfish that employed a 800/900-kilohertz power setting and a variable side range of 20 meters-per-channel (131 feet) on each of the survey lines. The 20-meters-per-channel setting was chosen to provide detail and 100% overlapping coverage with the 50-foot line spacing to insure full coverage of the survey area. The power setting was selected in order to provide maximum possible detail on the record generated; 900 kilohertz was the preferred frequency.



Figure 3-07. Marine Sonic Technology HDS sidescan sonar with 800/900-kilohertz towfish employed during the survey.

SUBBOTTOM PROFILER

Employed to determine the character of near-surface geologic features over the survey area, subbottom profilers generate low frequency (0.5 to 30 kilohertz) sound pulses capable of penetrating the seabed and reflecting off sediment boundaries or larger objects below the surface. The data are then processed and reproduced as cross sections based on two-way travel time (the time taken for the pulse to travel from the source to the reflector and back to the receiver). This travel time is then interpolated to depth in the sediment column by calculating at 1,500 meters-per-second (the average speed of sound in water).

Subbottom profilers have different ranges of sound wave frequency (sparkers, boomers, pingers, and chirp systems). Sparkers and boomers operate at low frequency (5 hertz to 2 kilohertz) and afford deep geologic penetration and low resolution, useful for deep geologic time. Pingers (3.5 and 7 kilohertz) are more useful to penetrate late Pleistocene- and Holocene-aged deposits or paleolandscape features of interest to prehistoric archaeologists. CHIRP systems sweep multiple frequency ranges and are the most precise and accurate of the subbottom profiler systems, and they operate at ranges of between 3 to 40 kilohertz. The resolution can be on the order of 10 centimeters (6 inches) depending on sediment type and the quality of the acoustic return.

Panamerican employed an EdgeTech 3100 CHIRP subbottom profiler system with a topside power unit, laptop processor and SB-424 towfish. The device was operated at a setting of 4 to 16 kilohertz, the lowest setting of the device, for maximum penetration (Figure 3-08).

Seismic cross sections reconstruct the shapes and extents of reflectors such as facies in channel sediments, rock/sediment interfaces, marine sand bed cover, and so forth. In addition to subbottom profiling, and depending on the density of data points, the first bottom return data can be used for high-resolution bathymetry. Shipwrecks can be studied with subbottom profilers once their location is known. Finding shipwrecks with subbottom profiler survey is less useful.



Figure 3-08. The EdgeTech SB-424 towfish employed during the survey.

High and low amplitude reflectors (light and dark returns) distinguish differences of sediment characteristics such as particle size and consolidation (Stevenson et al. 2002). Facies contacts can be identified by discontinuities in the extent, slope angle, or shape of the reflector returns. This latter fact is important when identifying the sinusoidal shapes of drowned channel systems and other relict and buried fluvial system features (e.g., estuarine, tidal, lowland, upland areas around drainage features). Parabolic-shaped reflectors indicate individual objects of sufficient size and consolidation. The parabolic shape is the result of sound propagating outwardly from the item. There are also five types of signals that may cause misinterpretation in the two dimensional records: direct arrivals from the sound source; water surface reflection; side echoes; reflection multiples; and point source reflections. Judicious analysis is required to identify them.

Peats tend to reflect strongly, as do other fine-grained or muddy sediments. Sand and shell deposits are less reflective, and difficult to penetrate without lower seismic frequencies such as those employed by the profiler system used here.

SURVEY VESSELS

The vessel employed during both the remote sensing survey of the Inner Harbor and the diving investigation was DC&A's 25-foot Parker 2520-XL *Haley Ann* (Figures 3-09 and 3-10) a modified "V"-hulled motor vessel powered by twin 125-horsepower Yamaha outboards. Perfect for both survey and diving, the vessel has numerous davits with electric winches for deploying survey instruments as well as an excellent dive ladder. The vessel has a covered cabin and an ample, covered-deck area for the placement and operation of the necessary remote sensing equipment. The vessel conformed to all U.S. Coast Guard specifications, according to class, and had a full compliment of safety equipment. It carried all appropriate emergency supplies, including lifejackets, a spare parts kit, a tool kit, first-aid supplies, a flare gun, and air horns.

The vessel employed during for remote sensing survey of the offshore area was the R/V *Seahawk*, a 34-foot aluminum-hulled "Armstrong" catamaran specifically outfitted for survey, and leased from the University of North Carolina, Wilmington (Figure 3-11). Powered by twin 350-horsepower Yamaha outboards, it was perfectly suited for survey of large distances from shore. The vessel had a covered cabin and an ample, covered-deck area for the placement and operation of the necessary remote sensing equipment. The vessel conformed to all U.S. Coast Guard (USCG) specifications, according to class, and had a full compliment of safety equipment. It carried all appropriate emergency supplies, including lifejackets, a spare parts kit, a tool kit, first-aid supplies, a flare gun, and air horns.

SURVEY PROCEDURES

Spaced at 50-foot intervals as per state requirements, ten survey transects lines covering 272 survey line miles were conducted in the Inner Harbor Area (Figures 3-12 to 3-16). Spaced at 100-foot intervals as per state requirements, ten survey transects lines covering 170 survey line miles were conducted in the Offshore Area (Figures 3-17 and 3-18). The magnetometer, sidescan, subbottom profiler, and DGPS were mobilized, tested, found operational, and thus, the trackline running began. The helmsman viewed a video monitor, linked to the DGPS and navigational computer, to aid in directing the course of the vessel down the survey tracklines. The monitor displayed the pre-plotted trackline, the real time position of the survey vessel, and the path of the survey vessel. The speed of the survey vessel was maintained at approximately 3 to 4 knots for the uniform acquisition of data. As the survey vessel maneuvered down each trackline, the navigation system monitored the position of the survey vessel relative to the tracklines every second, each of which was recorded by the computer. Event marks delineated the start and end of each trackline. The positioning points along the traveled line were recorded on the computer hard drive and the magnetic data were also stored digitally.



Figure 3-09. Dial Cordy and Associates, Inc.'s 25-foot *Haley Ann* employed for the survey investigations.

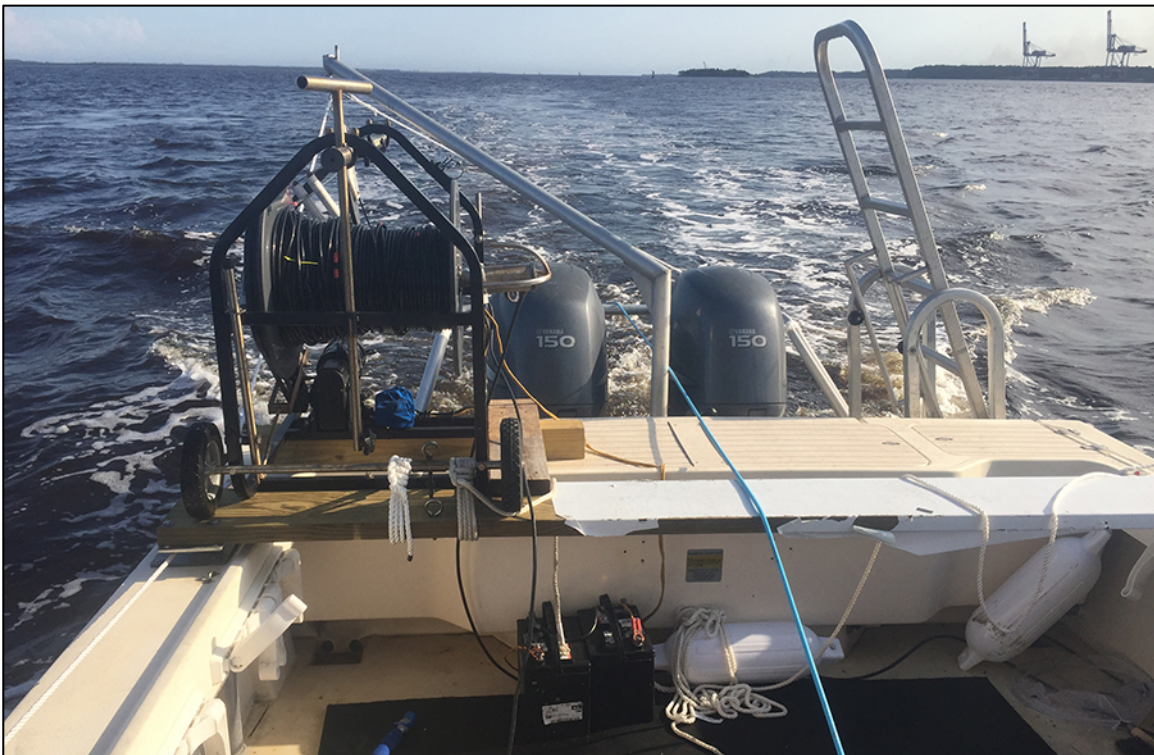


Figure 3-10. Towing configuration for magnetometer (center cable) and sidescan sonar (black cable spool) with dive ladder to right.



Figure 3-11. The R/V *Seahawk*, a 34-foot aluminum-hulled catamaran employed for the survey of the Offshore Area.

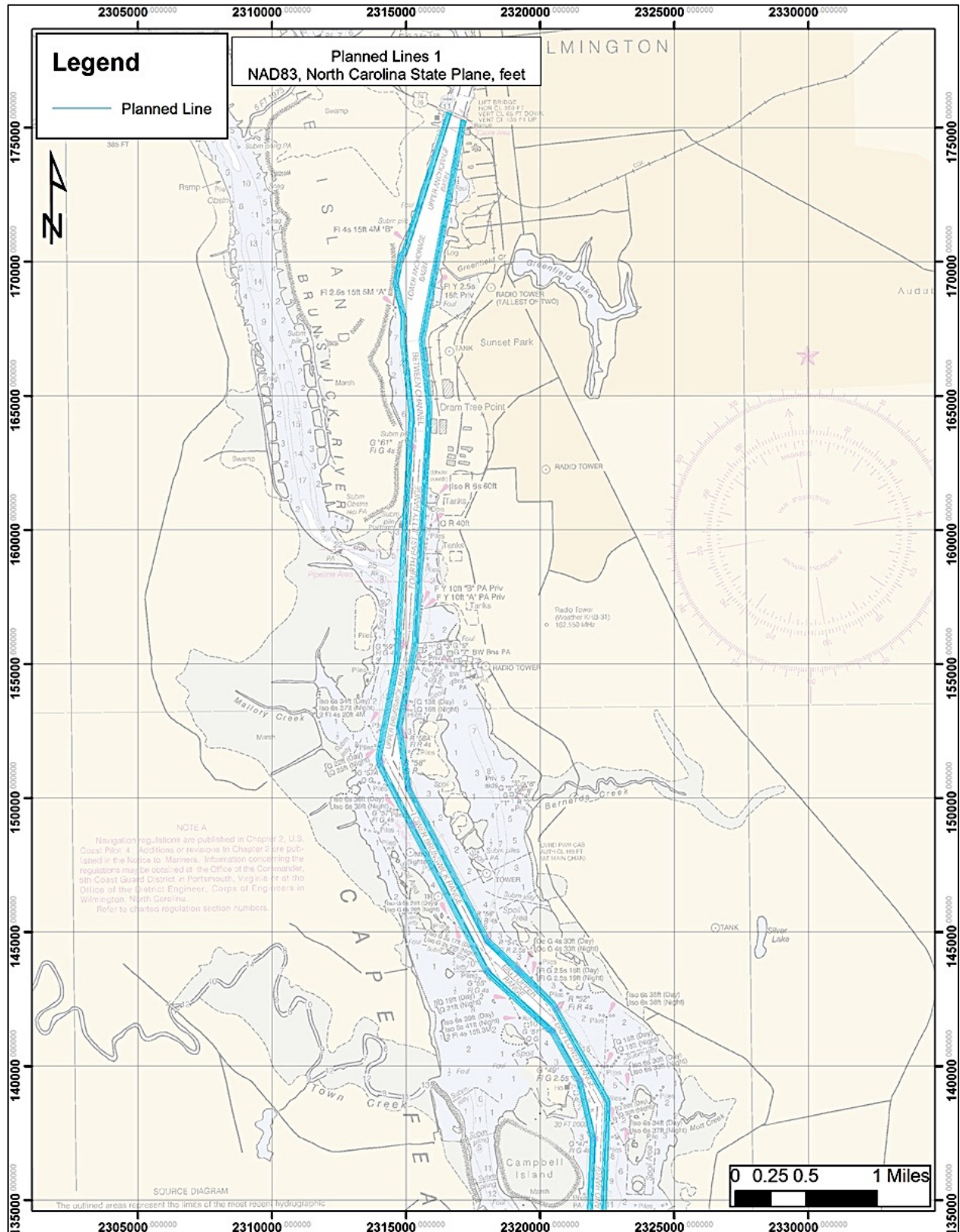


Figure 3-12. Planned survey lines for the northern quarter of the survey area.

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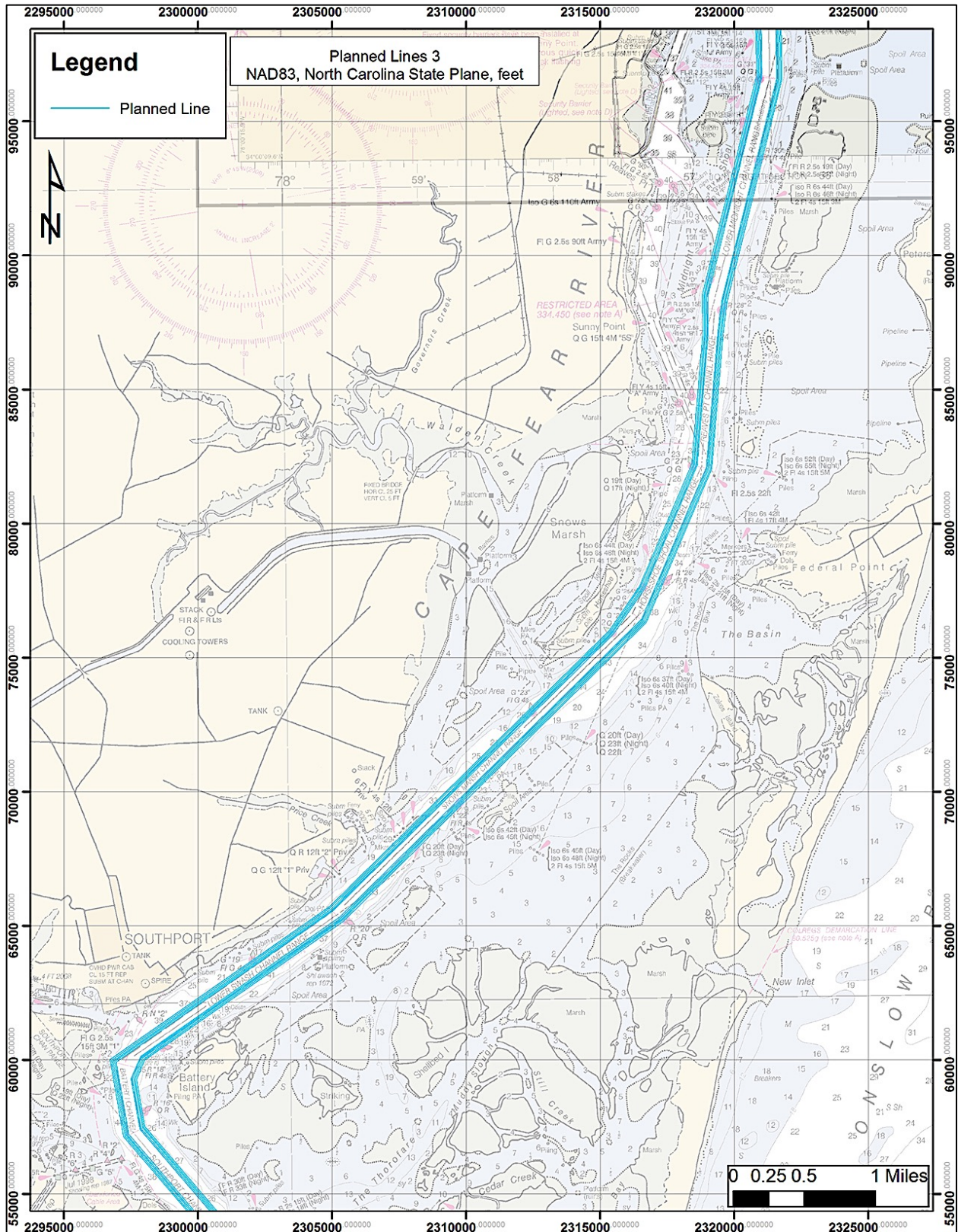


Figure 3-14. Planned survey lines for the third quarter of the survey area.

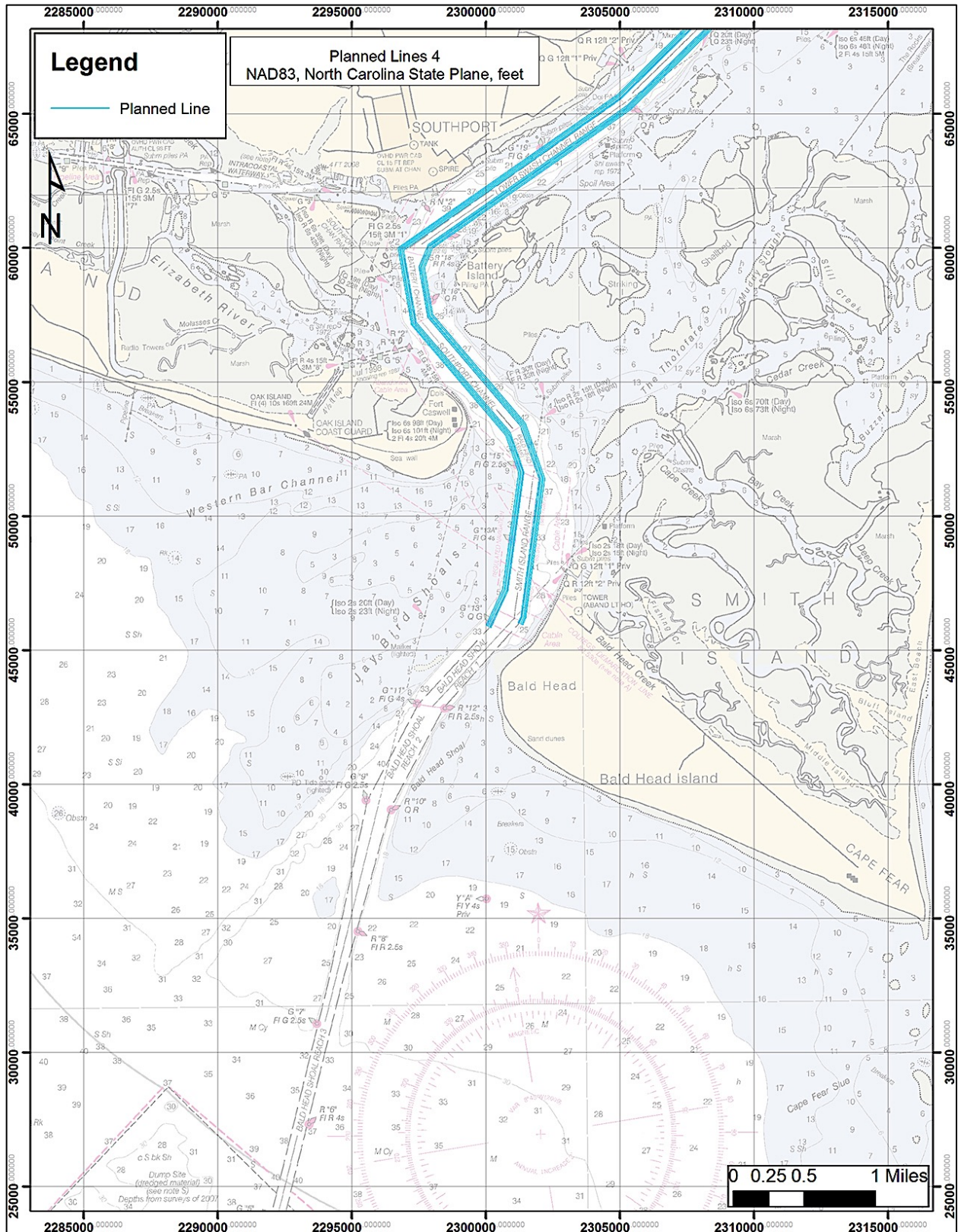


Figure 3-15. Planned survey lines for the southern end of the survey.

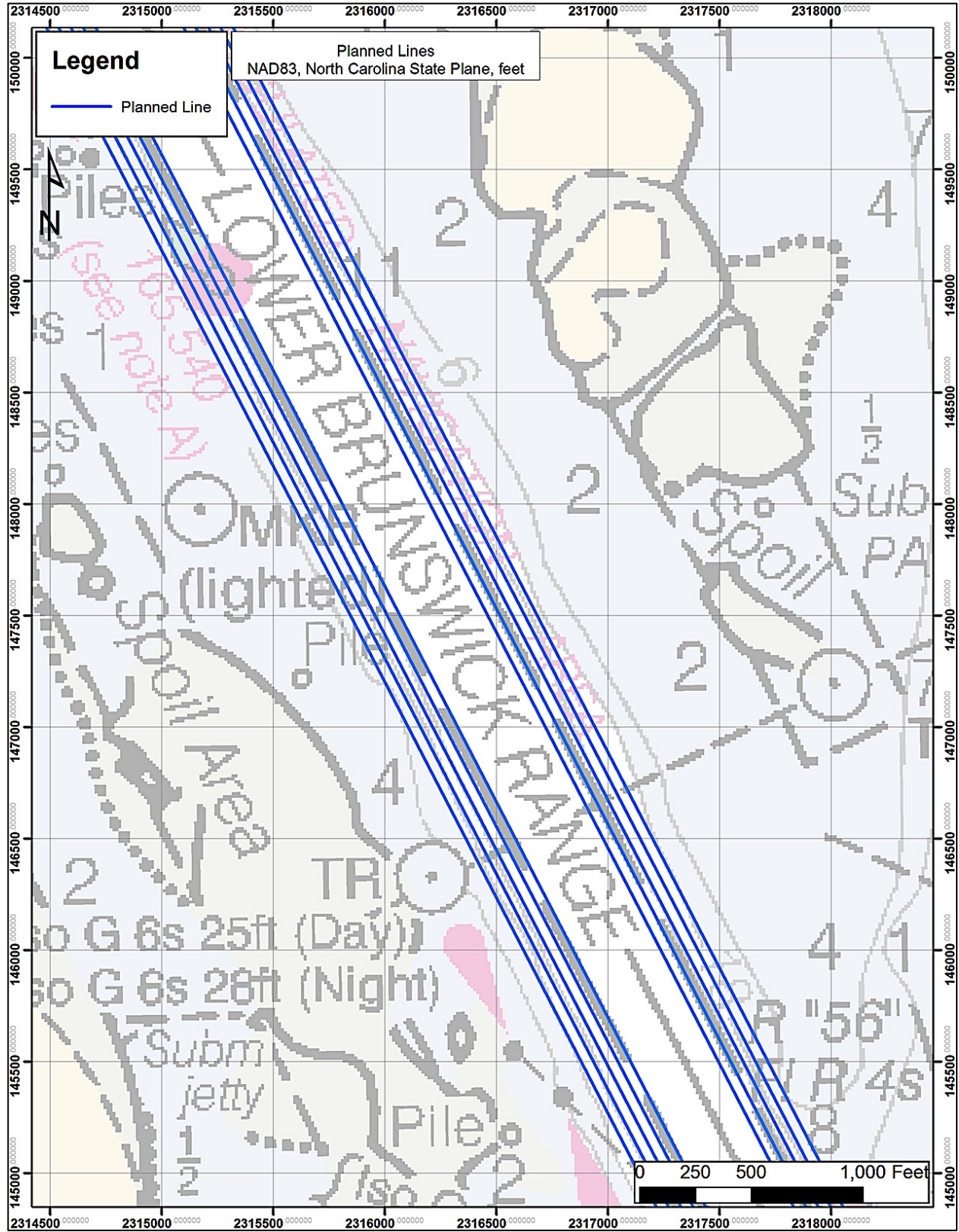


Figure 3-16. Detail of planned survey lines showing lines on both channel margins.

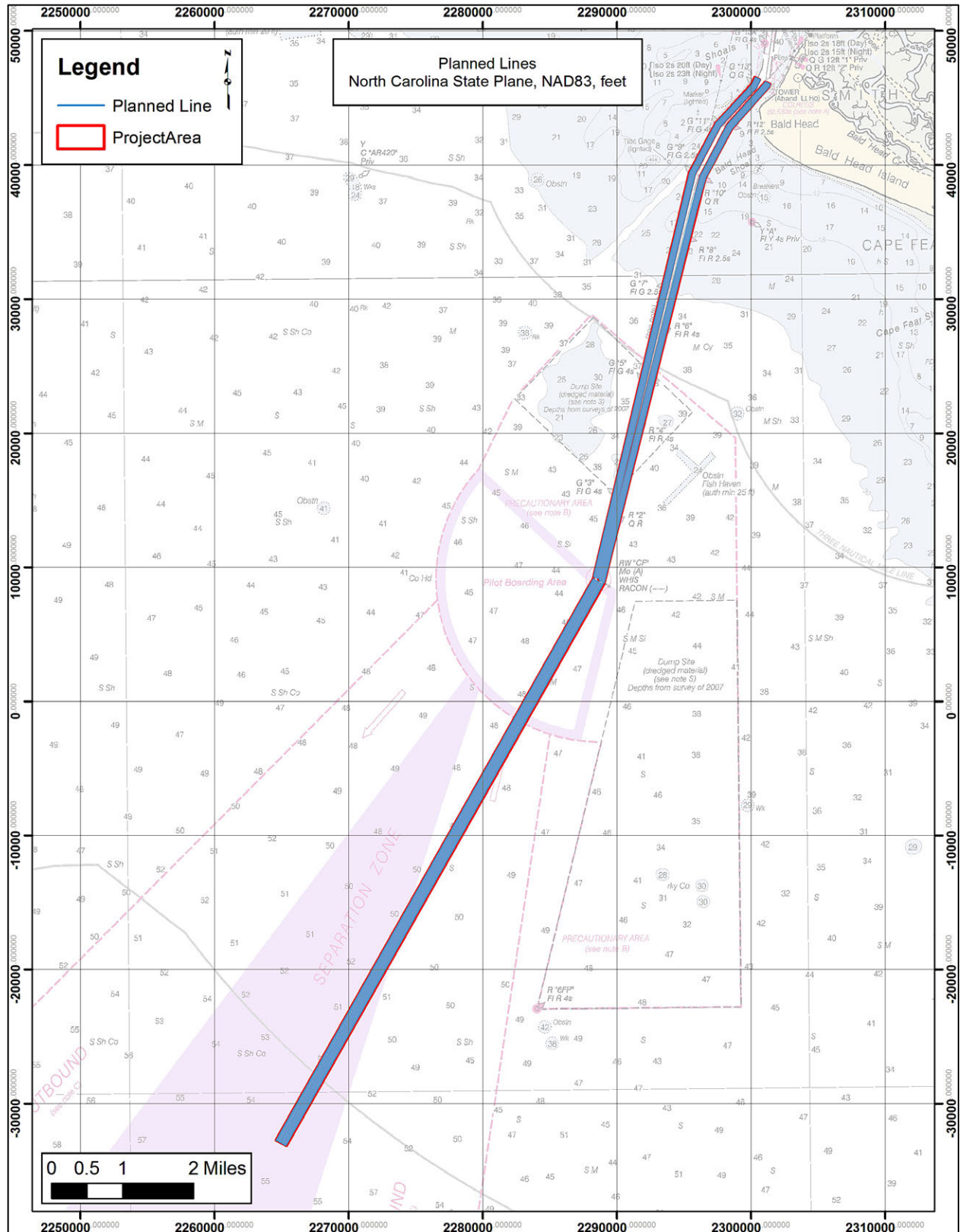


Figure 3-17. Planned survey lines for the Offshore Area.

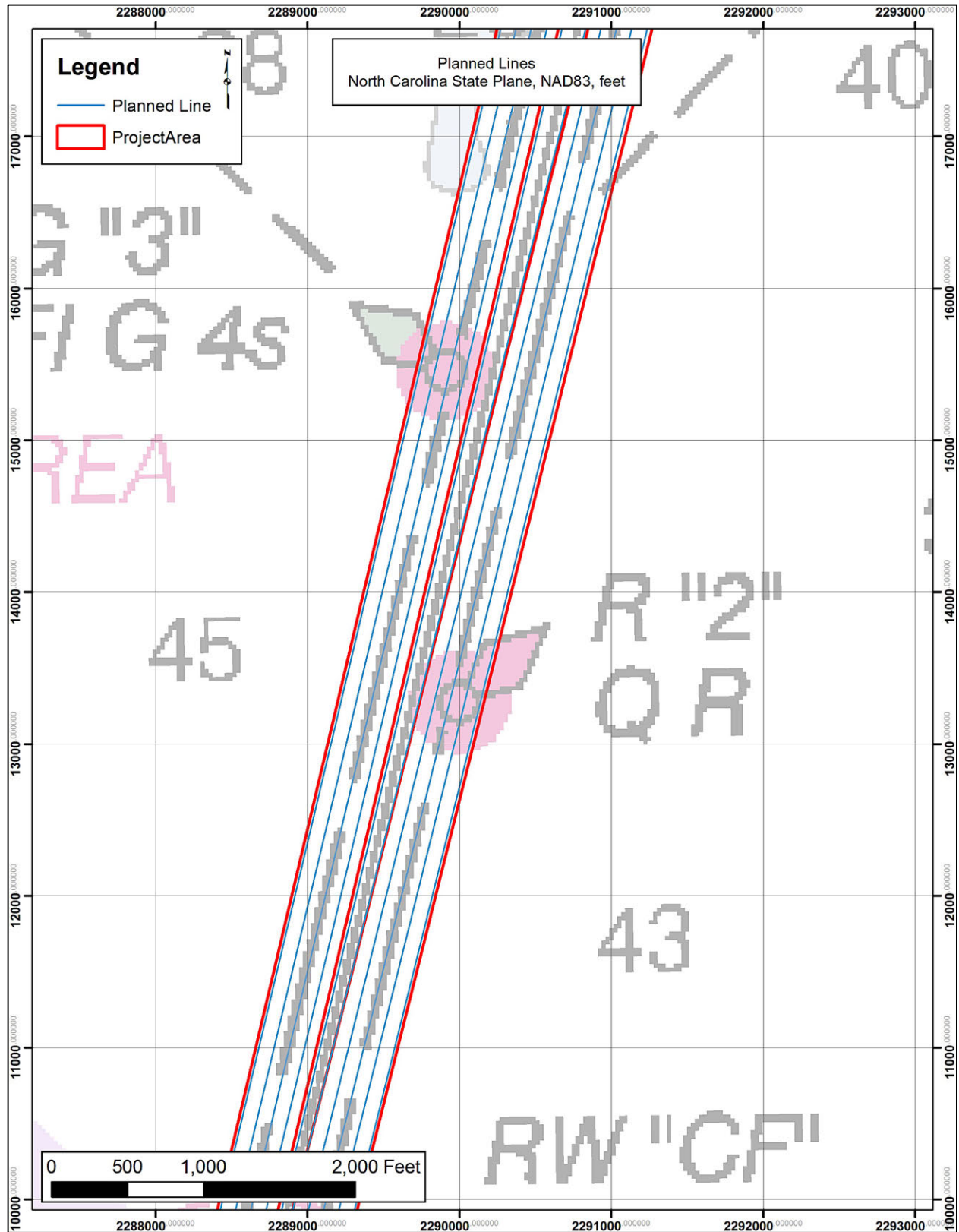


Figure 3-18. Detail of planned survey lines in Offshore Area.

DATA ANALYSIS

DATA PROCESSING

Once collected, survey data are processed and analyzed using an array of software packages designed to display, edit, manipulate, map, and compare proximities of raster, vector, and tabular data. These packages include SonarWiz.MAP for mosaicing sidescan sonar and subbottom profiler data, mapping target extents and generating target reports, figure details, and GIS layers; Hypack Single Beam Editor, Hypack TIN Modeler, and Hypack Export for tabulating anomaly characteristics and contouring magnetic data, and generating GIS data layers. ESRI ArcMap and ArcView are used to display the data on background charts, to conduct a “proximity analysis” for each of the three types of targets (e.g., see which magnetometer, sidescan, and subbottom profiler anomalies are near each other and may explain each other) and to create maps and figures for this report.

MAGNETIC DATA COLLECTION AND PROCESSING

Data from the magnetometer are collected using Hypack Max. The data are stored as *.RAW files by line, time, and day. Raw data files are opened, and layback parameters are set. Contour maps are produced of the magnetic data with the TIN Modeler. The DXF file is saved and exported into the combined GIS database. The contour maps allow a graphic illustration of anomaly locations, spatial extent, and association with other anomalies. Magnetic data are reviewed by the Hypack Single Beam Editor (Figure 3-19), and the location, strength, duration, and type of anomaly are transcribed to a spreadsheet along with comments.

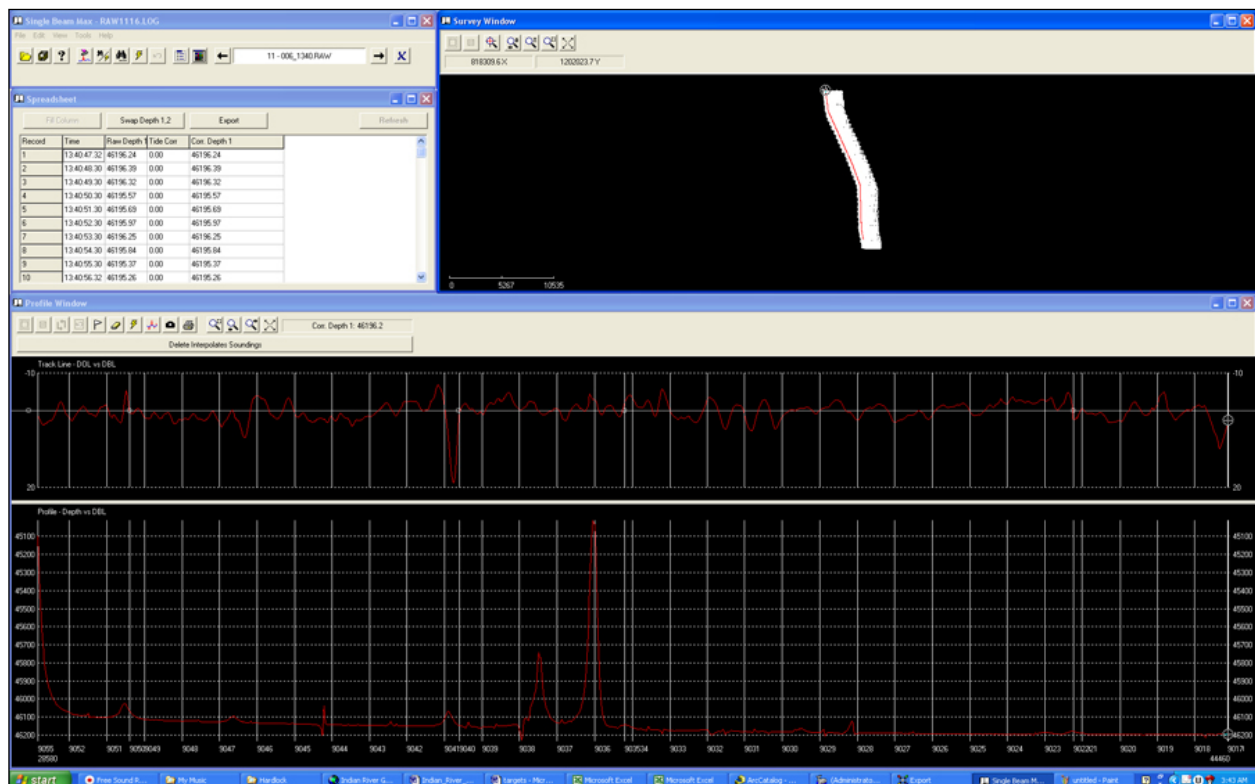


Figure 3-19. Hypack Single Beam Editor magnetic data display of a section of a survey line. Using these windows one can analyze anomaly position, strength, duration, and type. The peaks of these variations are the locations of target coordinates; their width is the duration.

SIDECAN SONAR DATA COLLECTION AND PROCESSING

Post-processing of sidescan sonar is accomplished using SonarWiz.MAP, a product that enables the user to view the sidescan data in digitizer waterfall format, pick targets and enter target parameters including length, width, height, material, and other characterizations into a database of contacts. In addition, SonarWiz.MAP “mosaics” the sidescan data by associating each pixel (equivalent to about 10 centimeters) of the sidescan image with its geographic location determined from the DGPS position (layback rectified) and distance from the DGPS position (Figures 3-20 and 3-21). SonarWiz.MAP is the industry standard for mosaicing capability, and the results are exported as geo-referenced TIFFs for importing to the GIS database of the project. SonarWiz.MAP can generate target reports in PDF, Word, or Excel format. Panamerican utilizes the Word format for reports (Figure 3-22).

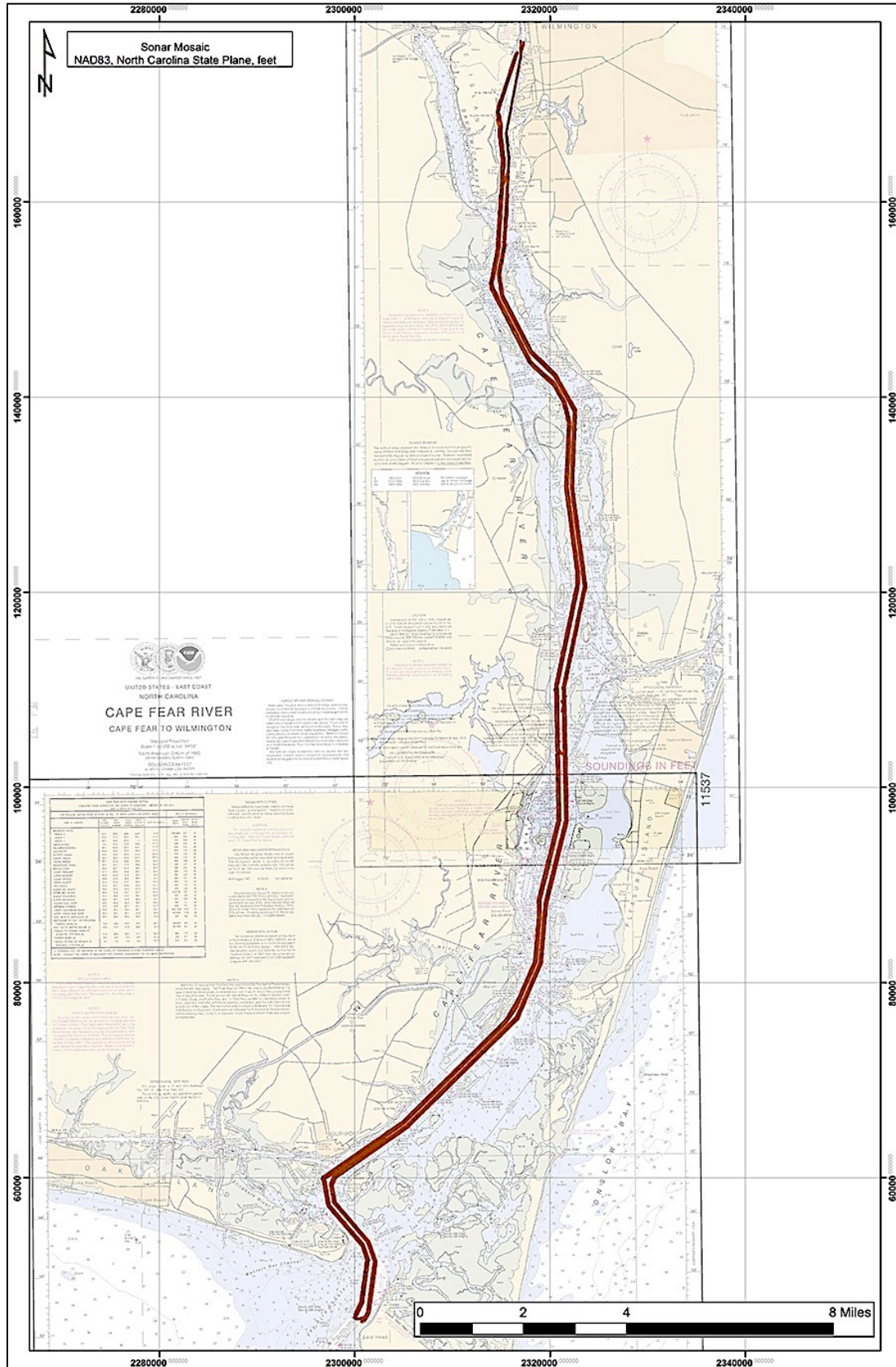


Figure 3-20. SonarWiz.MAP sonar mosaic of the Inner Harbor Area.

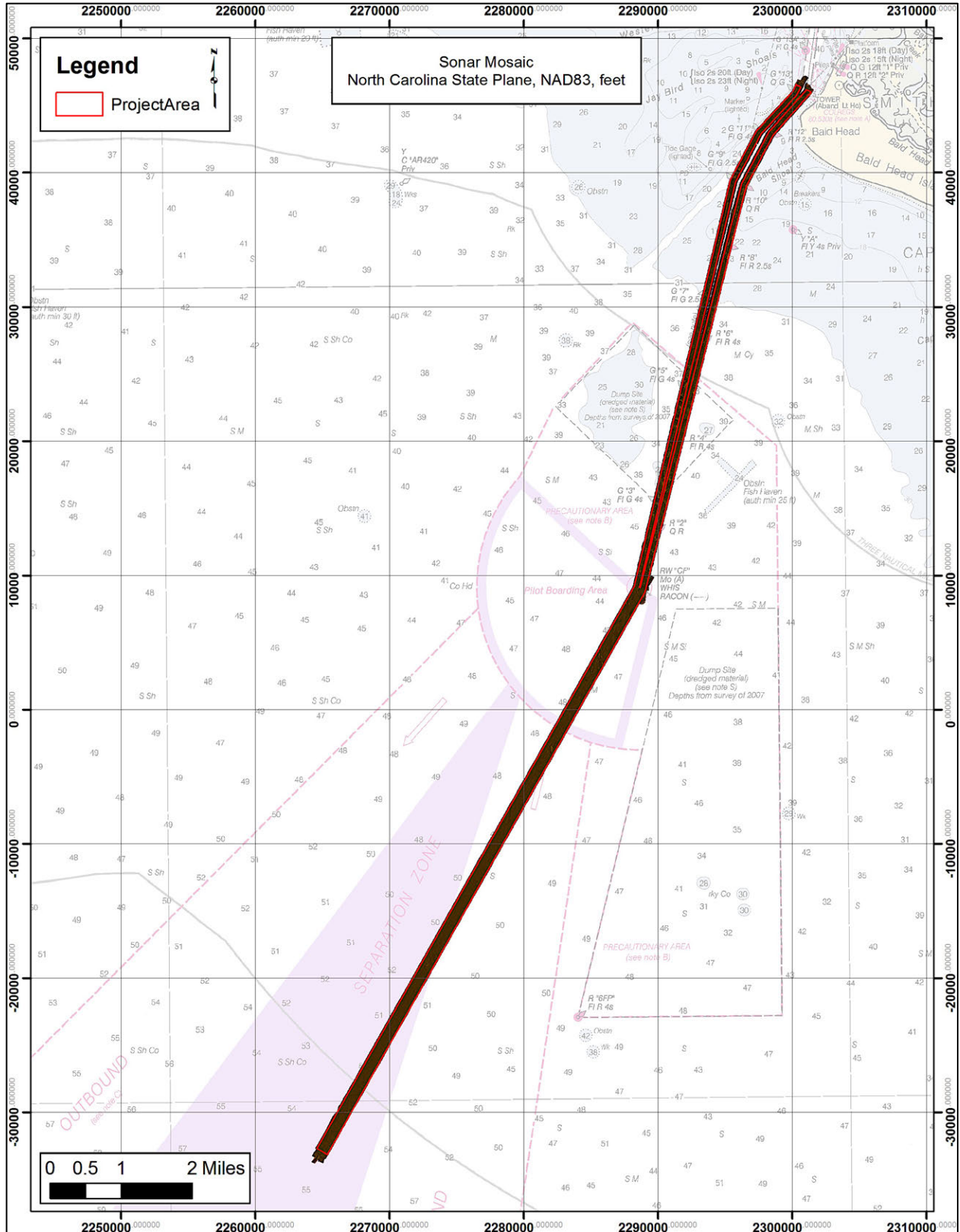


Figure 3-21. SonarWiz.MAP sonar mosaic of the Offshore Area.

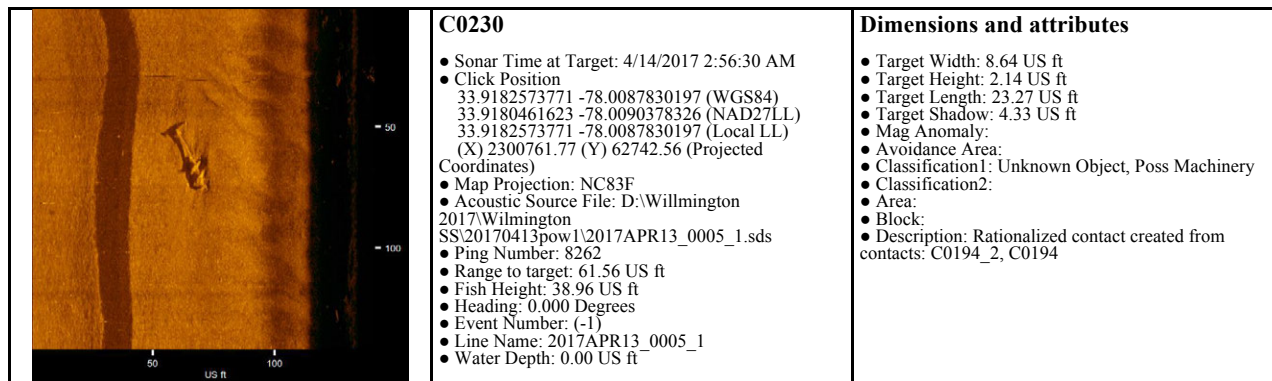


Figure 3-22. SonarWiz.MAP sonar contact data automatically generated in tabular format. Located in the Inner Harbor Survey Area, the target pictured here is Contact C0230, a paddle wheel shaft from the from the sidewheeler *Kate*, a Confederate blockade runner whose wreckage (site CFR0082) is located some 250 feet away.

SUBBOTTOM PROFILER DATA PROCESSING AND ANALYSIS

Post-processing of subbottom profiler data, like the sidescan data, is done with SonarWiz.MAP, which in this case enables the user to view the subbottom data in a planar, trackline format. The user may view the data in a digitizer window as a waterfall format, allowing the digitizing of subbottom features of interest, linear extent, depth, and type (Figure 3-23). SonarWiz.MAP batch processes waterfall images to *.JPG formats in order to generate figures (Figure 3-24).

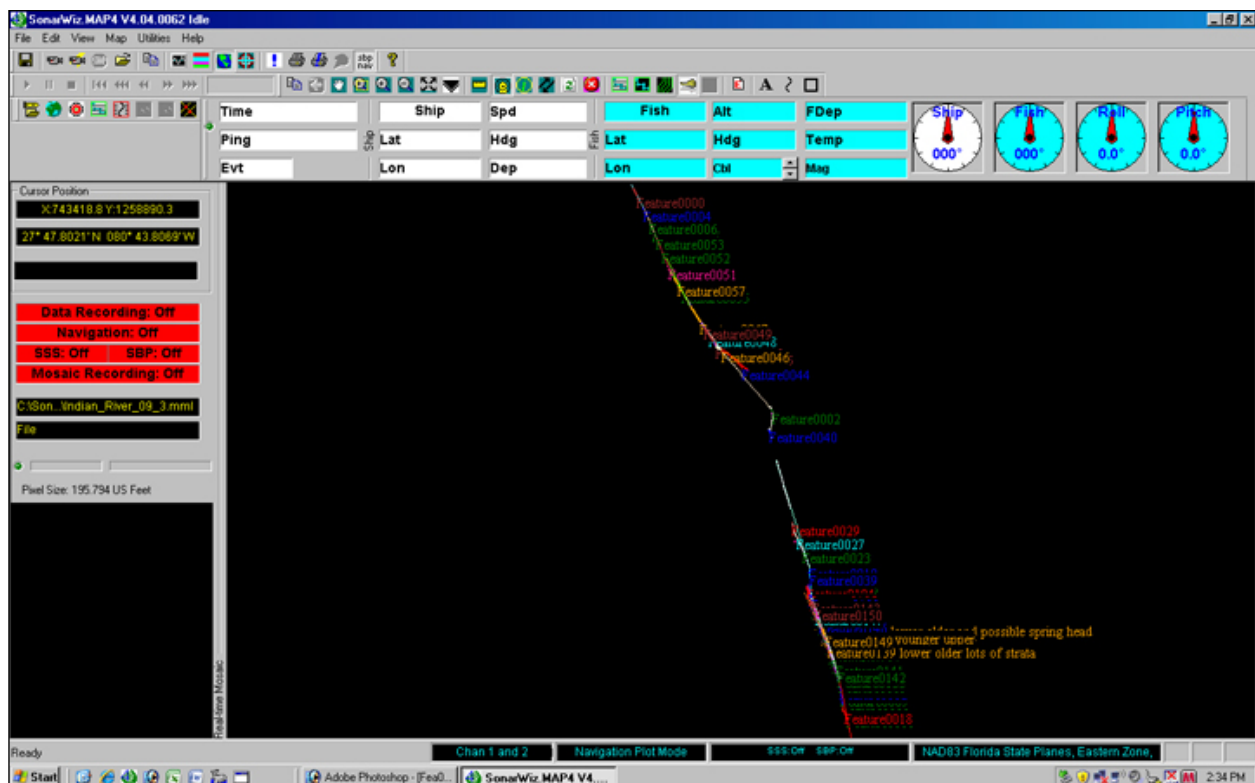


Figure 3-23. Trackline configuration example and various “reflector” features digitized.

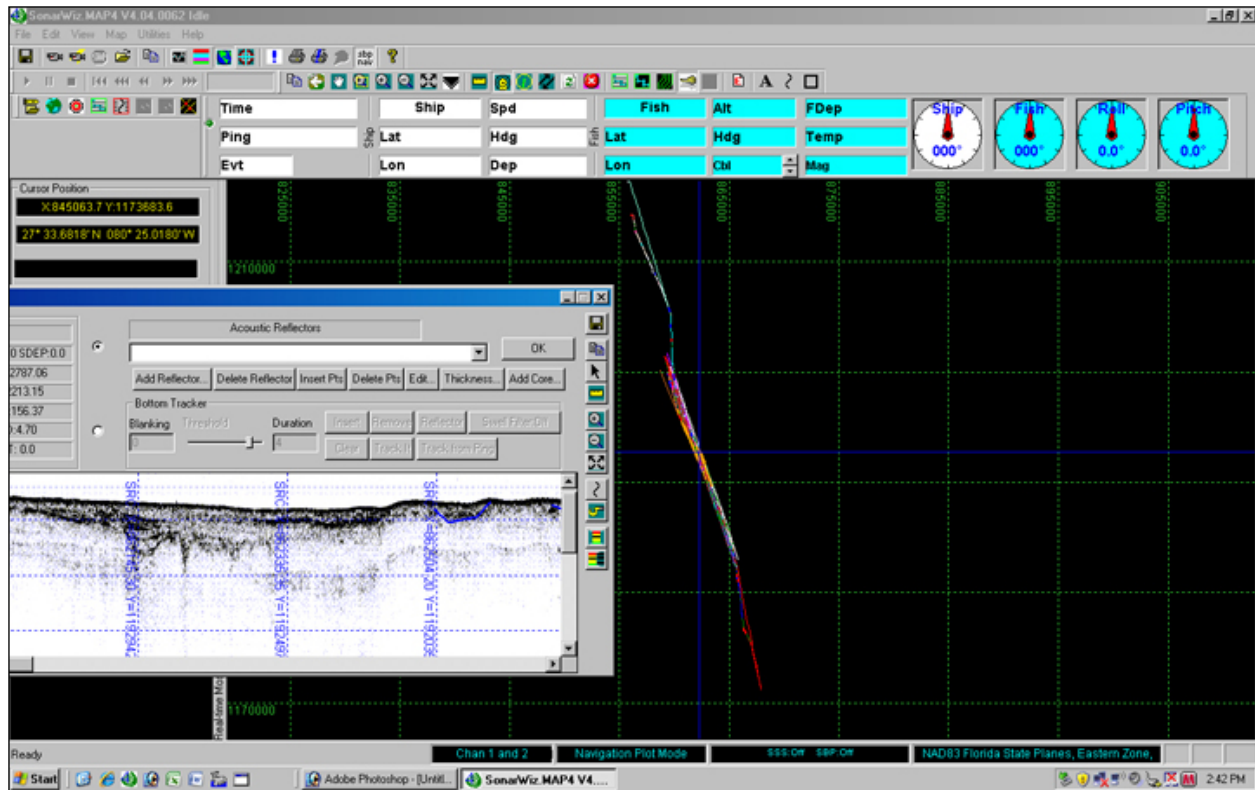


Figure 3-24. SonarWiz.MAP Subbottom waterfall image example showing the seismic profile-digitizing window. The blue cross hairs in the background chart show the location of the cursor, which at the time of the image was directly over the peak of the positive relief feature shown.

GEOGRAPHIC INFORMATION SYSTEMS ANALYSIS

A project GIS database is constructed using geo-referenced images and layers generated during the magnetometer, sidescan, and subbottom data analyses. Other layers can be added, such as orthophoto quads or navigation charts. Several important things are accomplished by GIS compilation. First, the collected data are compared to one another and evaluated for accuracy and consistency of the positioning information. Secondly, magnetic, sidescan, and other remote sensing targets are compared for relationship (proximity analysis). Employing the data in GIS, one can easily zoom in to further analyze spatial relationships as well as magnetic signature characteristics (Figure 3-25).

DATA ANALYSIS CRITERIA, THEORY, AND COMMENTARY

The remote sensing survey of the APE intended to locate and identify the presence or absence of potentially significant submerged cultural resources, and, if present, might be adversely affected by proposed plans; however, the interpretation of remote-sensing data obtained from both the magnetometer and sidescan sonar, as stated by Pearson et al. (1991), “relies on a combination of sound scientific knowledge and practical experience”. The evaluation of remote-sensing anomalies, with regard to a determination that the anomaly does or does not represent shipwreck remains, depends on a variety of factors. These include the detected characteristics of the individual anomalies (e.g., magnetic anomaly strength and duration, sidescan image configuration), associated with other sidescan or magnetic targets on the same or adjacent lines, and relationships to observable target sources such as channel buoys or pipeline crossings, etc.

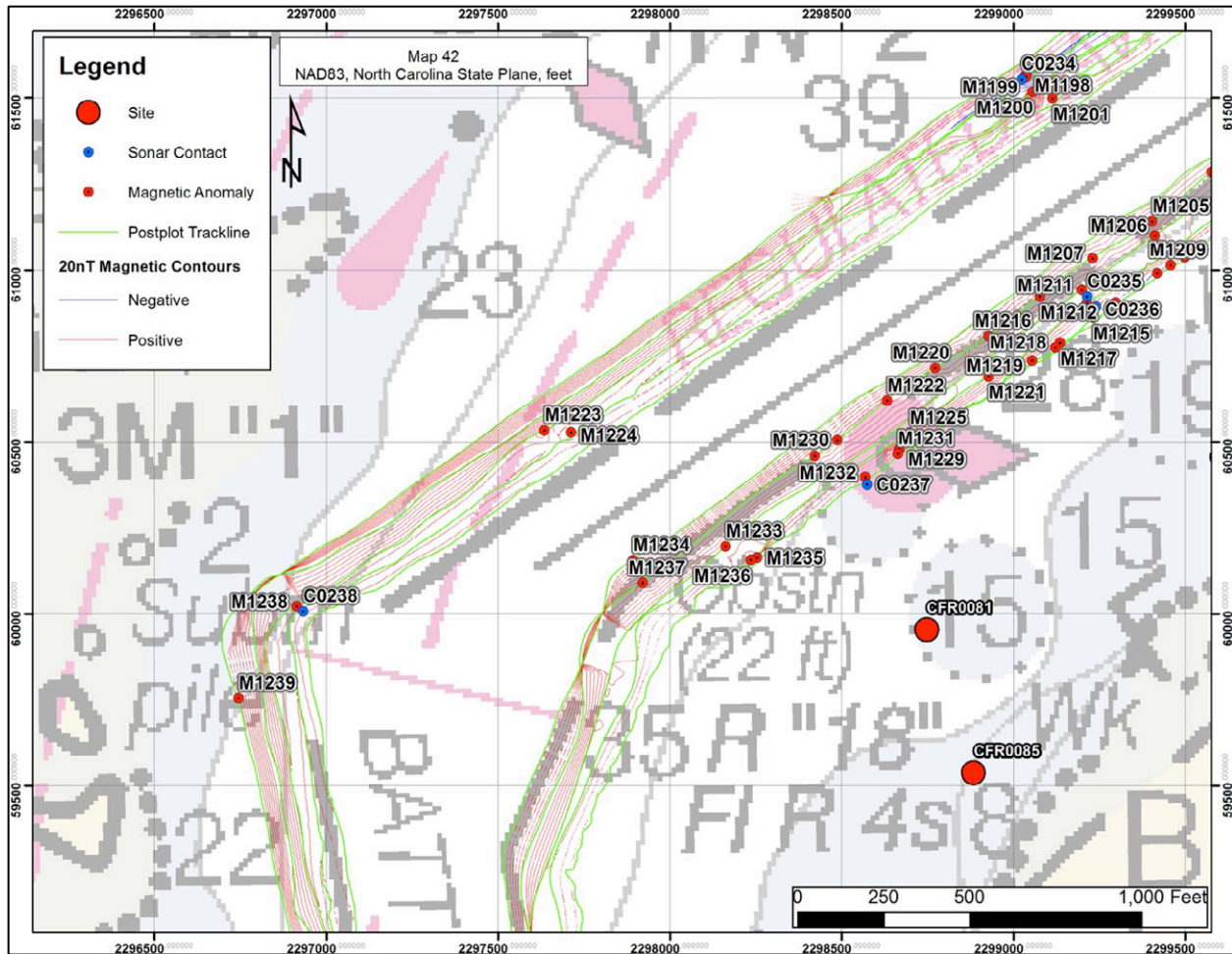


Figure 3-25. Magnetic contour map in GIS with the ENC chart as the background; example taken from the Inner Harbor Area; the map presents layers of magnetic anomalies, sonar contacts, magnetic contours, and survey track lines.

MAGNETOMETER

Interpretation of data collected by the magnetometer, the tool of choice by the underwater archaeologist for locating shipwrecks, is perhaps the most problematic. Magnetic anomalies are evaluated and prioritized based on magnetic amplitude or deflection of nanotesla intensity from the ambient background in concert with duration or spatial extent (distance in feet along a trackline of an anomaly influences the ambient background); they are also correlated with sidescan targets. Because the sonar record gives a visible indication of the target, identification or evaluation of potential significance is based on visible target shape, size, and presence of structure, as well as association with magnetic anomalies. Targets, such as isolated sections of pipe, normally can be discarded immediately as non-significant, while large areas of above-sediment wreckage are generally easy to identify.

The problems of differentiating between modern debris and shipwrecks, based on remote-sensing data, have been discussed by a number of authors. This difficulty is particularly true in the case of magnetic data, which have received the most attention in the current body of literature dealing with the subject. Pearson and Saltus (1990:32) state “even though a considerable body of magnetic signature data for shipwrecks is now available, it is impossible to positively associate

any specific signature with a shipwreck or any other feature”. There is no doubt that the only positive way to verify a magnetic source object is through physical examination; however, the size and complexity of a magnetic signature does provide a usable key for distinguishing between modern debris and shipwreck remains (see also Garrison et al. 1989; Irion and Bond 1984; Pearson et al. 1993). Specifically, the magnetic signatures of most shipwrecks tend to be large in area and tend to display multiple magnetic peaks of differing amplitude.

In a study conducted for the Minerals Management Service for magnetic anomalies in the northern Gulf of Mexico, Garrison et al. (1989) indicate that a shipwreck signature will cover an area between 10,000 and 50,000 square meters. In an effort to assess potential significance of remote-sensing targets, the Pearson et al. (1991) study, using the Garrison et al. (1989) study, as well as years of “practical experience,” developed general characteristics of magnetometer signatures most likely to represent shipwrecks. The report states that “the amplitude of magnetic anomalies associated with shipwrecks varies considerably, but, in general, the signature of large watercraft or portions of watercraft, range from moderate to high intensity (greater than 50 nanoteslas) when the sensor is at distances of 20 feet or so” (Pearson et al. 1991:70). Employing a table of magnetic data from various sources as baseline data, the report goes on to state that “data suggests that at a distance of 20 feet or fewer, watercraft of moderate size are likely to produce a magnetic anomaly (this would be a complex signature [i.e., a cluster of dipoles and/or monopoles]) greater than 80 or 90 feet across the smallest dimension...” (Pearson et al. 1991:70).

While establishing baseline amounts of amplitude and duration reflective of the magnetic characteristics for a shipwreck site, the report “recognizes that a considerable amount of variability does occur” (Pearson et al. 1991:70). Generated in an effort to test the 50-nanotesla/80-foot criteria and to determine the amount of variability, Table 3-01 lists numerous shipwrecks as well as single and multiple-source objects located by magnetic survey and verified by divers. All shipwrecks met and surpassed the 50-nanotesla/80-foot criteria, with one exception. *Emanuel Point II*’s magnetic deviation falls below the cut off, although duration is above. Subsequent archaeological examinations have determined that *Emanuel Point II* contains very little iron (Greg Cook, personal communication 2011). The majority of single-object readings fell below the criteria (with the exception of the pipeline, the two sections of pipe, and one of the seven rocket motors). However, the signature of the pipeline should appear as a linear feature on a magnetic contour map and should not be confused with a single source object. The strengths of the two sections of pipe represent refinement readings that sought to produce the highest reading possible and should perhaps be discounted from the sample. Further, because of their association with the space program, rocket motors, which are single source objects, must be considered potentially significant. While the shipwrecks and most single source objects adhere to the 50-nanotesla/80-foot criteria, the multiple-source objects do not. If all targets listed on the table required prioritization of potential significance based on the 50-nanotesla/80-foot criteria, the two multiple-source object targets would be classified as potentially significant.

While the 50-nanotesla/80-foot criteria is a good general guide for most conditions, several recent studies have suggested that a 50-nanotesla/80-foot duration applied to remote sensing data as a baseline for all wreck sites is much too low. Allowing for a larger and more focused database on which to assess signature characteristics of specific vessel classes, the findings from these investigations argue for higher nanotesla and duration criteria for specific types of sites. Table 3-02 indicates the sizable magnetic deviation and duration of previously recorded and located steamboat wreck sites. However, there is one exception, each of the known steamboat wrecks investigated has a magnetic deviation of at least 500 nanoteslas and a duration of no fewer than 110 feet, usually in the 200-plus feet range. As opposed to single objects, steamboat wrecks documented during previous investigations are generally much larger in magnetic strength (although not always), tend to have a longer duration, and typically have multi-component signatures. It should be noted, however, that each steamboat wreck signature differs

markedly due to environmental conditions, amount of hull/machinery remaining, and the depth of water/overburden over the wreck site.

Table 3-01. Compilation of Magnetic Data from Various Sources.

Vessel (Object)	Type and Size	Magnetic Deviation	Duration (feet)	Reference
Shipwrecks				
<i>La Belle</i>	54-ft. <i>barque longue</i> (1686)	247	90	Arnold 1996
<i>Emanuel Point I</i>	wooden hulled sailing (1559)	110	200	Cook 2011
<i>Emanuel Point II</i>	wooden hulled sailing (1559)	40	85	Cook 2011
<i>75-D-91A</i>	18 th -century wooden wreck	140	120	Cox 2005
<i>Egmont Shoal wreck</i>	19 th century Wooden-hulled copper clad sailing vessel	67	160	Krivor 2005
<i>USS Narcissus</i>	Civil War wooden tug	582	176	Krivor 2005
<i>J.D. Hinde</i>	129-ft. wooden sternwheeler	573	110	Gearhart and Hoyt 1990
<i>Utina</i>	267-ft. wooden freighter	690	150	James and Pearson 1991; Pearson and Simmons 1995
<i>Mary Somers</i>	iron-hulled sidewheeler	5000	400	Pearson et al. 1993
<i>Gen C.B. Comstock</i>	177-ft. wooden hopper dredge	200	200	James et al. 1991
<i>Mary</i>	234-ft. iron-hulled sidewheeler	1180	200	Hoyt 1990
<i>El Nuevo Constante</i>	126-ft. wooden collier (1677)	65	250	Pearson et al. 1991
<i>James Stockton</i>	55-ft. wooden schooner	80	130	Pearson et al. 1991
<i>Homer</i>	148-ft. wooden side-wheeler	810	200	Pearson and Saltus 1990
modern shrimp boat	segment 27-x-5 ft.	350	90	Pearson et al. 1991
Confederate Obstructions	numerous vessels with machinery removed and filled with construction rubble	110	long duration	Irion and Bond 1984
Shrimp Boat	Modern	162	110	Watts 2000
Single Objects				
pipeline	18-in. diameter	1570	200	Duff 1996
Pipe/mast/davit	18 in. by 26 ft.	475	104	Lydecker 2007
Pipe	3 in. by 10 ft.	55	352	Krivor 2005
anchor	6-ft. shaft	30	270	Pearson et al. 1991
iron anvil	150 lbs.	598	26	Pearson et al. 1991
engine block	modern gasoline	357	60	Rogers et al. 1990
steel drum	55 gal.	191	35	Rogers et al. 1990
pipe	8 ft. long, 3 in. diameter	121	40	Rogers et al. 1990
railroad rail segment	4-ft. section	216	40	Rogers et al. 1990
7 Rocket Motors	8–34 ft. in length	61 to 422	75 to 180	Watts 2000
Multiple Objects				
anchor/wire rope	8-ft. modern stockless/large coil	910	140	Rogers et al. 1990
cable and chain	5 ft.	30	50	Pearson et al. 1991
scattered ferrous metal	14-x-3 ft.	100	110	Pearson et al. 1991

Furthermore, it should be inferred that one of the biggest influences on a wreck site's magnetic signature is directly related to the distance from the magnetometer sensor to the wreck site. As stated in Pearson and Birchett:

“For a typical iron object, the intensity of its magnetic signature [i.e., anomaly] is inversely proportional to the cube of the distance. One pound of iron, for example, would produce an anomaly of 100 nanoteslas at a distance of 2 feet. At a distance of 10 feet the same pound of iron would produce an anomaly of only 1 nanotesla. A 1,000-ton ship could produce a 700-nanotesla anomaly at 100 feet and a barely discernible 0.7-nanotesla anomaly at 1,000 feet” [1999:4-13].

Table 3-02. Magnetic Data from Steamboat Wreck Sites.

Vessel (object)	Type & Size	Magnetic Deviation	Duration (feet)	Reference
Shipwrecks				
<i>Star of the West</i>	172-ton ocean-going sidewheel	8,300	400	Krivor et al. 2002
3MO69 (unidentified)	wooden sidewheeler	2,961	299	Buchner and Krivor 2001
<i>Caney Creek Wreck</i>	sidewheeler	2,790	unknown	Hedrick 1998
<i>Mary E. Keene</i>	236-ft. sidewheeler	1,700	220	Robinson 1998
<i>John Walsh</i>	275-ft. sidewheeler	1,602	280	James et al. 2002
<i>New Mattie</i>	130-ft. wooden sternwheeler	1,491	200	Buchner and Krivor 2001
<i>35th Parallel</i>	sidewheeler	1,414	320	Saltus 1993
<i>Scotland</i>	sidewheeler	1,322	200	Kane et al. 1998
“Boiler” wreck (unidentified steamboat)	sidewheeler/sternwheeler (?)	1,164	500	Saltus 1993
Hartford City	150-ton sidewheeler	856	400	Krivor et al. 2002
<i>Mary Somers</i>	iron-hulled sidewheeler	5000	325	Pearson et al. 1993
<i>Homer</i>	148-ft. wooden sidewheeler	810	200	Pearson and Saltus 1993
<i>E.F. Dix/Eastport</i>	sidewheeler/ironclad	800	360	Pearson and Birchett 1995
<i>Choctaw</i>	223-ton sternwheel towboat	797	250	Krivor et al. 2002
<i>J.D. Hinde</i>	129-ft. wooden sternwheeler	573	110	Gearhart and Hoyt 1990
Oklahoma Wreck	sidewheeler	497	300	M.C. Krivor personal communication 2005
<i>Undine</i>	sternwheeler	200	300	James and Krivor 2000

An example of a steamboat wreck that produces a magnetic signature of less than 500 nanoteslas involves the purported *Undine* site investigated by Panamerican in 1999 and 2000. During 1999, remote sensing operations located a magnetic anomaly with a magnetic deflection of 193 nanoteslas with a duration of 300 feet. During the 2000 field investigations, the anomaly was identified as the remnant of a charred steamboat \approx 38–40 feet below the river's surface, and buried 8 feet below riverbed sediments. Historic records indicate the *Undine* was extensively salvaged after the scuttling incident whereupon everything of value including all iron plating, machinery, and cannon were removed from the wreck, but the hull remained in place (James and Krivor 2000:16-17). While only a small portion of the wreck site was uncovered (due to the extensive amount of overburden) it was evident that little of the hull is extant, only just to the turn of the bilge.

It should also be stated that two of the wreck sites with either small areas of deviation or low nanotesla deflections, the *J.D. Hinde* and the purported *Undine*, represent either partial hull remains (*J.D. Hinde*) or were heavily burned and salvaged (*Undine*). Historic records indicate the *J.D. Hinde* was also salvaged after the wrecking process. Retaining none of her steam machinery or wheels, half of the vessel was no longer present, most likely as a result of dredging; both salvage and dredging the obvious reason for its small magnetic duration (James and Pearson 1993:22). Salvage efforts often sought to remove any cargo as well as any machinery, cannon, anchors, or other goods of value. During the Civil War, the salvage of iron for reuse was often paramount. As stated by John B. Jones on August 11, 1863, “the iron was wanted more than anything else but men” (Black 1958:200). Therefore, it may be speculated that any wreck site that (1) has been salvaged in the past; (2) has been exposed to excessive environmental processes (i.e., current); or (3) has been impacted by channelization efforts (i.e., dredging) will produce a lower nanotesla deflection (due to less ferrous metal on site) than a wreck not exposed to similar processes.

While the data indicates the validity of employing specific nanotesla strength and duration criteria when assessing magnetic anomalies, other factors must be taken into account. Pearson and Hudson (1990) have argued that the past and recent use of a water body must be an important consideration in the interpretation of remote sensing data; in many cases, this should supposedly be the most important criterion. Unless the remote sensing data, the historical record, or the specific environment (i.e., harbor entrance channel) provides compelling and overriding evidence, it is otherwise believed that the history of use should be a primary consideration in the interpretation. The constitution of “compelling evidence” is, to some extent, left to the discretion of the researcher; however, in settings where modern commercial traffic and historic use have been intensive, such as the current project area, the presence of a large quantity of modern debris must be anticipated. In harbor, bay, or riverine situations where traffic is heavy, this debris will be scattered along the channel right-of-way, although it may be concentrated in areas where traffic would slow or halt, and it will appear on remote sensing survey records as discrete, small objects. This is in fact the case for many of the anomalies recorded during the current investigation.

In addition to anomaly strength and duration considerations, all anomalies were assessed for type (monopole [negative or positive influence], dipole [negative and positive influence], or complex) and association with other magnetic anomalies (i.e., clustering) and sidescan sonar targets. With regard to analysis of these anomalies, relative to potential significance, many will be found to represent a small, single source object (a localized deviation), and are generally identified and labeled as non-significant, especially in an area of high use (however, this is not generally the case with the current environment). As seen on contour maps, the contour lines for this type of anomaly can be seen to approach, or go to but not beyond, the adjacent survey trackline on which it is located. This visual interpretation is corroborated during the analysis of the electronic magnetometer strip-chart data of each survey trackline. An examination of the strip-chart will show that the target was recorded only on a single transect, and that it was not recorded (i.e., did not influence the ambient magnetic background) on adjacent lines. This is especially true when an anomaly’s readings are large deviations but are recorded on only one line. This indicates the source for this target must be a small, discrete object, and the magnetometer sensor must have passed closely by or directly over the object in order to generate the large readings on this survey line, yet not be recorded or have had an influence on adjacent lines. Because these anomalies represent single source objects, they are not considered representative of a potentially significant submerged cultural resource and are not recommended for avoidance.

SIDESCAN SONAR

In contrast to magnetic data, sidescan interpretation is less problematic, as objects are reconstructed as they look to the eye. Targets, such as isolated sections of pipe, can normally be

immediately discarded as non-significant, while large areas of above-sediment wreckage as well as some exposed potential paleofeatures (i.e., rock outcrops) are generally apparent. The chief factors considered in analyzing sidescan data, with regard to wreckage, include: linearity, height off bottom, size, associated magnetics, and environmental context. Since historic resources in the form of shipwrecks usually contain large amounts of ferrous compounds, complex sidescan targets with complex magnetic anomalies are of the greatest importance. The usual outcome of targets with no associated magnetics are items, such as rocks, trees, and other non-historic debris of limited interest to the archaeologist.

CLUSTERING

Since an archaeological remote sensing survey involves the collection of several different types of data, each of which has the potential to locate significant cultural resources, attention must be given to groups of targets. These groupings, referred to as clustering, occur when a target exists that produces both a sidescan sonar return and a magnetic signature. In addition, a magnetic source that extends across several survey lines will produce an anomaly on each line, and since these anomalies are related they will form a cluster. Previously discovered archaeological sites will also be considered as an aspect of clustering. Although criteria used to determine a cluster is somewhat subjective, anomalies, sidescan targets, and previously identified archaeological sites will generally be included in a cluster if they lie within 65 feet of one another.

SUBBOTTOM PROFILER ANALYSIS

Subbottom profilers generate low frequency acoustic waves that penetrate the seabed and reflect off boundaries or objects located in the subsurface. The data are then processed and reproduced as a cross section using two-way travel time to determine depth (the time taken for the pulse to travel from the source to the reflector and back to the receiver by a constant). The shapes, relationships, and extents of reflectors are used to infer bottom and subbottom geomorphological characteristics.

In general, high and low amplitude linear reflectors (light and dark lines) distinguish between sediment beds; parabolic reflectors indicate point-source objects with sound propagating out from them; and erosional or non-depositional contacts can be identified by discontinuities in extent, slope angle, and the shape of the reflector morphology. This latter fact is important when identifying buried and drowned channel systems and other relict and buried fluvial system features (e.g., estuarine, tidal, lowland, and upland areas around drainage features).

In caution, there are five spurious signals that may cause confusion in the two-dimensional records that specialists recognize: direct arrival from the sound source, reflection multiples, water surface reflection, side echoes, and point-source reflections. Judicious analysis is required to identify these sound underwater imagery phenomena. Precise inference of a sediment bed or other anomaly from the subbottom profiler data would necessitate coring or excavation.

While it is challenging to know which reflectors are significant, the intent is to identify paleolandscape features likely to be conducive to human occupation and where preservation may be enhanced based on local geology and archaeology. In analysis, seismic returns indicating positive relief features as possible mounds and negative relief features as a probable channel or other fluvial feature with margins and sediment beds indicate higher potentials for Prehistoric remains.

METHOD AND THEORY FOR RECOGNITION OF A SUBMERGED PREHISTORIC SITE

Panamerican's methodology for identifying submerged Prehistoric sites entails developing criteria for the discovery of a "site" in any particular setting. The criteria are based on the geology and archaeology of the APE and models of site submergence. Models for the presence

and preservation of submerged archaeological sites are discussed by several researchers, including Waters (1992) in his chapter on coastal processes, Kraft et al. (1983), and others. Much of this has to do with the identification of landforms identifiable with remote sensing that have the potential for archaeological site presence. For instance, two models used in this project were horizontal surfaces near channel features and positive relief features considered potentially to represent midden feature(s). Causeways, fishing weirs, or other Prehistoric infrastructure features are difficult to identify.

Publications are more limited that are specific to recognizing sedimentary signatures of the deposits that make up sites that have been transgressed by rising sea levels and then remained submerged, perhaps buried, until exposure. One such study specifically focused on such information is Gagliano et al.'s (1982) *Sedimentary Studies of Prehistoric Archaeological Sites: Criteria for the identification of submerged archaeological Sites of the Northern Gulf of Mexico Continental Shelf*. This document is one of high value but limited distribution. Gagliano's group chose 15 terrestrial sites in Louisiana and Texas as analogs from eight identifiable and mapable landforms with which archaeological sites are commonly and consistently associated on land, terrestrially. Their local geomorphic features included major natural levee, minor natural levee, Chenier and accretion ridges, barrier island, salt dome margin, estuarine margin, channel on Pleistocene terrace, and lake margins. They sampled sediments with excavations and box core sampling; recorded color, bedding, and contact descriptions; sorted the sediments to particle size; conducted point count and grain size analysis; and then geochemically analyzed the samples by levels. They showed that sites were recognized most frequently by shell content, fish bones, and charred wood. Some ceramic and lithic artifacts were identified, but they were rare and often small.

Another aspect to realize about submerged Prehistoric sites is that virtually all examples of inundated sites are partially, or wholly, reworked in ways somewhat analogous to deflation (Fischer 1995; Masters and Flemming 1983). This is caused by fluidization of sediments at times of inundation and the removal of fine particles that are often re-deposited with material by subsidence of the inundation or wave action. Faught (1996, 2002–2004) has shown sites with late Pleistocene, early Holocene, and middle Holocene artifacts to be re-worked by sea level rise and submergence, but that artifact arrays remain cohesive as surface and near surface remains.

Because of these factors, recognition that deposits are indeed cultural is not always immediately apparent to the diver, or at first glance of the collected materials. Artifacts are important, but not always part of the site, as Gagliano et al. (1982) has systematically determined. Expectations for midden deposits include dominance of unarticulated specimens of particular mollusk species, faunal bone, and manuports (i.e., geologic items out of place). On the other hand, discovery of any artifact would be important, especially in any sediment bed below a marine bed.

DIVER INVESTIGATIONS

The second phase of the project included an on-site diver investigation of seven targets identified as potentially significant during the previous remote sensing investigation phase of the project. The diving investigation included remote sensing refinement survey and diver inspection and assessment.

Surface Supplied Air (SSA) was chosen as the most efficient and safe method of conducting investigations within the APE. Divers employed a Kirby-Morgan Superlite-27 dive helmet connected to a surface-supplied air source, radio communications cable, safety tether, and pneumo hose (Figure 3-26). On the surface, various individuals and pieces of equipment ensured safe diving operations. A dive tender was required to aid the diver in donning and doffing equipment and to tend the diver while submerged and moving about the sea floor. The radio communications operator kept in constant contact with the diver and relayed messages between

the diver and the surface support team. A suited, standby diver was required on site in the event of an emergency situation that would require aid to the primary diver. Finally, a dive supervisor was present on site at all times to coordinate the activity of the diver and surface support team to achieve the project goals.



Figure 3-26. Surface Supplied Air-equipped diver Ms. Loren Clark and tender James Duff; note the black pneumo hose on the diver's umbilical, which is employed for depth readings in low and zero visibility environments; yellow hose is air; red is communication line.

Air for SSA diving was provided by a cascade system of two 240-cubic-foot compressed air cylinders, opened to supply air one at a time. Pressure gauges and check valves were included in the air supply system. Two levels of redundant backup air supply were used, including a second 240-cubic-foot compressed air cylinder and a 50-cubic-foot aluminum Self-Contained Underwater Breathing Apparatus (SCUBA) cylinder worn by the diver and connected to the dive helmet. The dive supervisor acted as timekeeper, monitoring the air supply system during each dive to ensure that air pressure was correctly maintained and adequate reserve air was always available, as well as make notes of diver descriptions of environmental data and target or feature data (Figure 3-27).

Prior to commencement of diving operations, a Pre-Dive Safety Meeting was held with all members of the dive team and vessel crew. All safety and diving procedures were discussed in detail. Diving commenced upon completion of the meeting.

The purpose of the diving phase of the project was to attempt to locate the source of the current, ten selected targets, either through visual or tactile methods. Each target was buoyed at its

respective coordinate location. Prior to anchoring, the direction of the tidal current and wind direction relative to each target buoy had to be ascertained, so that when anchored, the distance from and the orientation of the survey vessel's stern to the buoy were optimal.



Figure 3-27. Dive Supervisor Mr. Jeff Pardee manning the dive station that includes diver communications and air manifold with pneuemo gauges for depth readings.

The standard operating procedure for the diver was to enter the water and be directed to the buoy location. The diver then conducted a visual and/or tactile inspection of the riverbed for the source of the sidescan target or anomaly. If a sidescan target was not immediately located, the diver was swung on arcs to cover all cardinal directions from the buoy. Once the target was located, the diver conducted an assessment of identity and significance through either tactile or visual methods, verbally passing target and environmental data to the communications operator on the surface. Measurements were taken of targets encountered, but photography was not conducted, as visibility was nonexistent. It should be stated that all targets were easily located in this manner, with most directly at or adjacent the buoy weight.

Environmental conditions encountered during the diving phase were benign with the exception of occasional vessel traffic. Water temperatures were in the upper 70°F range. A thin wet suit or coveralls were used for skin protection and thermal insulation. Water depths, for the most part, were shallow, ranging between 15 and 50 feet. Diving at slack tides, currents were still an issue with dives aborted or cut short due to increasing currents. Visibility was 0 feet, and the bottom types encountered included clay, sand, and/or silty mud.

IV. INVESTIGATIVE FINDINGS

INVESTIGATION OF INNER HARBOR AREA

REMOTE SENSING SURVEY RESULTS

In total, 1,288 magnetic anomalies (Table 4-01) and 241 sidescan sonar contacts (Table 4-02; *Appendix B: B: Inner Harbor Sonar Targets*) were recorded within the Inner Harbor Area. No subbottom impedance contrast was found in the data. Both tables include target location, type (i.e., monopole, dipole, complex), anomaly deviation in nanoteslas, duration in feet, and association with other targets (both magnetic and sidescan) from the current survey. The magnetic contour maps are presented in Figures 4-01 to 4-48 with both sonar contacts and known cultural resource sites labeled. Maps are presented at a 10-nanotesla contour with the positive magnetic deviation denoted in red and the negative deviation in blue.

Employing the previous discussions on target analysis, magnetic anomalies were assessed for potential significance based on magnetic deviation (above and/or below ambient background), duration (distance in feet, along a trackline, an anomaly influences the ambient background), type (monopole [negative or positive influence], dipole [negative and positive influence], or complex), and association with other magnetic anomalies (i.e., clustering) and/or sidescan sonar contacts. Sidescan sonar contacts, as visual images, were assessed for linearity, height off bottom, size, associated magnetics, backscatter characteristics, and visual surface associations (i.e., jetties, buoys, etc.). Subbottom features were assessed as to feature type, and association with other subbottom features and sidescan targets.

MAGNETOMETER RESULTS

Based in part on the anomaly signature and/or sidescan target association, the recorded anomalies have been identified as nonsignificant debris, unknowns, jetties, shoreline infrastructure, and single-point-source (SPS) anomalies, with the latter category by far the largest. Analysis of the magnetic data indicates that of the 1,288 magnetic anomalies, 448 anomalies are classified as SPSs, meaning the anomaly occurred on a single survey line and did not meet the criteria established in the previous chapter for the existence of potentially significant resources. With regard to analysis of these anomalies, relative to potential significance, most will be found to represent a small, SPS object (a localized deviation), and are generally identified and labeled as non-significant, especially in an area of high use, such as in or adjacent to a navigation channel, similar to the current environment. These anomalies can have very large deviations yet not be recorded or have had an influence on an adjacent transect line, especially in shallow depths, such as the APE with depths of less than 15 feet. The SPS anomaly type is not considered representative of a potentially significant submerged Historic resource.

There are 442 classified as Unknowns, although many were objects but not wreck-like. None is thought to be created by potentially significant resources. Navigation buoys and channel markers comprised 121 anomalies, and 237 anomalies were classified as debris, which included non-wreck objects and scatters, linear features (such as pipes or logs), lengths of wire rope, tires, crab pots, and some geologic outcrops (i.e., limestone), all with associated sonar contacts. Twenty- three anomalies were created by infrastructure including, overhead transmission lines and towers, barges, wharf walls, etc.

Analysis of the data indicates that of the 1,288 anomalies and 241 sonar contacts, seven targets comprised of both sonar contacts and anomaly clusters were considered to have the potential to represent historically significant resources. These were subsequently recommended for diver investigation. Findings from this Phase II study are presented below.

Table 4-01. Magnetic Anomalies in the Area of Potential Effects.

Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M001	2317015	175376	3473	130	M	1		SPS
M002	2316456	174920	426	40	D	1	M002, C0001	SPS
M003	2317016	174819	141	40	M	1		SPS
M004	2316991	174686	149	45	M	1		SPS
M005	2316865	174016	474	110	C M	1	M005, C0003	Infrastructure
M006	2316091	173817	493	15	D	1		SPS
M007	2316012	173553	2680	65	D	1	M007, C0005	Linear Contact
M008	2315952	173351	57	95	M	1	M008, M009, M010	SPS
M009	2316004	173335	269	425	C D	1	M008, M009, M010	SPS
M010	2315988	173313	400	420	C D	1	M008, M009, M010	SPS
M011	2316647	173323	1919	340	C M	1		SPS
M012	2315909	173238	456	62	D	1		SPS
M013	2316725	173245	3684	325	C M	1		SPS
M014	2315859	173087	267	25	M	1		SPS
M015	2315842	173037	42	55	M	1		SPS
M016	2315825	172980	56	15	M	1		SPS
M017	2315787	172845	428	60	D	1		SPS
M018	2316621	172703	288	50	M	1		SPS
M019	2316525	172649	56	115	C M	1		SPS
M020	2316592	172558	104	40	M	1		SPS
M021	2315662	172450	39	20	M	1		SPS
M022	2315684	172387	43	60	D	1	M022, M023, M024, C0007	Debris
M023	2315685	172337	25	80	D	1	M022, M023, M024, C0007	Debris
M024	2315619	172329	341	55	C M	1	M022, M023, M024, C0007	Debris
M025	2316531	172266	3697	90	M	1		SPS
M026	2316447	172157	1144	240	C M	1		SPS
M027	2315535	172040	30	25	M	1		SPS
M028	2316485	171994	3558	140	M	1		SPS
M029	2315434	171738	649	150	C D	1	M029, M030	Unknown
M030	2315489	171724	86	230	C D	1	M029, M030	Unknown
M031	2316434	171718	261	50	M	1		SPS
M032	2315328	171410	26	20	M	1		SPS
M033	2315305	171324	111	35	D	1		SPS
M034	2315273	171223	180	35	D	1	M034, M035	Unknown
M035	2315306	171203	152	565	C D	1	M034, M035	Unknown
M036	2315226	171083	374	60	C D	1	M036, M037	Unknown
M037	2315262	171045	61	80	D	1	M036, M037	Unknown
M038	2315145	170998	28	10	M	1	M038, C0009	Debris
M039	2315137	170940	317	25	M	1		SPS
M040	2315132	170796	259	75	C D	1	M040, M041	Unknown
M041	2315172	170741	30	75	D	1	M040, M041	Unknown
M042	2315060	170586	181	70	C D	1	M042, C0010	Linear Contact
M043	2314997	170378	22	35	C M	1		SPS
M044	2314812	169968	27	25	M	2		SPS
M045	2316063	169807	3111	155	C M	2	M045, M047	Unknown

Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M046	2314790	169711	50	50	D	2		SPS
M047	2315982	169751	579	170	M	2	M045, M047	Unknown
M048	2314715	169508	55	60	D	2	M048, M049	Unknown
M049	2314772	169460	140	80	D	2	M048, M049	Unknown
M050	2314645	169245	123	10	M	2	M050, M051	Unknown
M051	2314683	169239	18	20	M	2	M050, M051	Unknown
M052	2315955	169183	201	60	M	2		SPS
M053	2314629	169061	197	15	M	2	M053, M054	Unknown
M054	2314701	169055	18	25	M	2	M053, M054	Unknown
M055	2314689	168812	30	15	M	2	M055, C0011	Linear Contact
M056	2314803	168629	13	30	M	2	M056, M057, M059	Unknown
M057	2314803	168629	13	30	M	2	M056, M057, M059	Unknown
M058	2315851	168614	958	100	M	2		SPS
M059	2314768	168544	35	25	M	2	M056, M057, M059	Unknown
M060	2314860	168358	25	25	M	2		SPS
M061	2315695	168214	404	165	M	2	M061, M063	Unknown
M062	2314702	168144	444	15	M	2		SPS
M063	2315767	168173	1626	180	C M	2	M061, M063	Unknown
M064	2314939	168052	30	20	M	2		SPS
M065	2314784	167894	971	25	D	2	M065, C0012	Debris or Outcrop
M066	2314970	167890	19	40	M	2		SPS
M067	2314962	167699	27	35	M	2		SPS
M068	2314800	167673	341	35	D	2		SPS
M069	2314808	167587	58	20	M	2	M069, C0013	Linear Contact
M070	2314811	167534	23	15	M	2		SPS
M071	2314957	167499	72	40	D	2	M071, C0014	Linear Contact
M072	2314812	167462	161	30	D	2	M072, C0015	Debris Scatter
M073	2314905	167386	30	30	D	2	M073, M074	Unknown
M074	2314950	167386	16	20	M	2		SPS
M075	2315620	167385	5372	550	C D	2		SPS
M076	2314808	167163	117	40	C M	2	M076, C0016	Tire and Debris
M077	2314807	167063	199	20	M	2	M077, C0017	Unknown Object
M078	2314808	166980	51	35	M	2		SPS
M079	2314962	166899	132	25	M	2	M079, M080, M081, M082	Unknown
M080	2314964	166884	132	50	D	2	M079, M080, M081, M082	Unknown
M081	2314909	166868	44	15	M	2	M079, M080, M081, M082	Unknown
M082	2314968	166854	38	40	M	2	M079, M080, M081, M082	Unknown
M083	2314926	166721	169	75	C D	2	M083, M084, M085	Unknown
M084	2314836	166675	144	40	D	2	M083, M084, M085	Unknown
M085	2314991	166654	21	25	M	2	M083, M084, M085	Unknown
M086	2314953	166490	41	25	M	2	M086, C0018	Tire
M087	2314969	166393	21	15	M	2	M087, M088, M089, M090	Unknown
M088	2315022	166328	16	40	M	2	M087, M088, M089, M090	Unknown

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Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M089	2315086	166280	32	60	D	2	M087, M088, M089, M090	Unknown
M090	2315092	166280	57	45	M	2	M087, M088, M089, M090	Unknown
M091	2315663	166170	685	5120	C D	2	M091, M093	Unknown
M092	2314898	166140	85	65	D	2		SPS
M093	2315591	166155	3498	1130	C M	2	M091, M093	Unknown
M094	2315051	166129	15	40	M	2		SPS
M095	2315013	166004	103	65	M	2		SPS
M096	2315078	165889	27	25	M	2	M096, M097	Unknown
M097	2315034	165829	28	45	C M	2	M096, M097	Unknown
M098	2315706	165808	3314	130	M	2	Ship Passing?	SPS
M099	2315062	165637	40	70	C M	2		SPS
M100	2315141	165323	33	50	M	2	M100, M101, M102, M103	Unknown
M101	2315141	165320	33	50	M	2	M100, M101, M102, M103	Unknown
M102	2315101	165304	49	50	C D	2	M100, M101, M102, M103	Unknown
M103	2315007	165261	48	15	M	2	M100, M101, M102, M103	Unknown
M104	2315711	165256	3999	325	C D	2	M104, M108	Barge
M105	2315215	165170	23	40	D	2	M105, M106, M107	Unknown
M106	2315217	165131	30	50	D	2	M105, M106, M107	Unknown
M107	2315126	165112	30	20	M	2	M105, M106, M107	Unknown
M108	2315692	165133	2969	125	C M	2	M104, M108	Barge
M109	2315229	164858	32	55	D	2	M109, M110, M111, M112, C0020	Debris
M110	2315242	164835	31	60	D	2	M109, M110, M111, M112, C0020	Debris
M111	2315191	164832	20	35	M	2	M109, M110, M111, M112, C0020	Debris
M112	2315203	164729	17	40	M	2	M109, M110, M111, M112, C0020	Debris
M113	2315077	164617	355	45	D	2	M113, M114, C0021	Linear Contact
M114	2315177	164557	28	30	M	2	M113, M114, C0021	Linear Contact
M115	2315841	164573	1816	205	C D	2		SPS
M116	2315315	164264	78	70	M	3	M116, M117, M118, M119, M120, M122, C022, C023	Tires and Linear Contact
M117	2315320	164189	100	75	D	3	M116, M117, M118, M119, M120, M122, C022, C023	Tires and Linear Contact
M118	2315120	164179	48	20	M	3	M116, M117, M118, M119, M120, M122, C022, C023	Tires and Linear Contact
M119	2315252	164182	59	35	M	3	M116, M117, M118, M119, M120, M122, C022, C023	Tires and Linear Contact
M120	2315209	164172	35	30	D	3	M116, M117, M118, M119, M120, M122, C022, C023	Tires and Linear Contact
M121	2315733	164193	24	35	M	3		SPS
M122	2315112	164111	30	15	M	3	M116, M117, M118, M119, M120, M122, C022, C023	Tires and Linear Contact
M123	2315095	163978	67	10	M	3		SPS
M124	2315714	163858	38	210	M	3	M024, C0024	Linear Contact
M125	2315075	163751	202	20	M	3		SPS
M126	2315216	163754	55	25	M	3	M126, M127	Unknown
M127	2315197	163747	71	25	M	3	M126, M127	Unknown
M128	2315096	163663	837	15	D	3	M128, C0025	Linear Contact

Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M129	2315755	163497	3084	420	C D	3	M129, M130	Barge
M130	2315690	163371	800	85	M	3	M129, M130	Barge
M131	2315178	163244	30	15	M	3		Buoy
M132	2315184	163165	34	25	M	3		Buoy
M133	2315221	163111	184	55	D	3		Buoy
M134	2315673	163112	330	115	M	3	M134, C0026	Debris
M135	2315221	163011	308	50	D	3		Buoy
M136	2315184	163000	32	95	M	3		Buoy
M137	2315658	162732	33	55	M	3	M137, M138	Unknown
M138	2315730	162730	156	85	M	3	M137, M138	Unknown
M139	2315205	162504	32	35	M	3	M139, M131, C0027	Tire
M140	2315645	162518	52	50	M	3		SPS
M141	2315217	162477	52	50	M	3	M139, M131, C0027	Tire
M142	2315692	162012	2419	355	C M	3	M142, M143	Unknown
M143	2315611	162004	992	325	M	3	M142, M143	Unknown
M144	2315152	161864	21	30	M	3	M144, M145	Unknown
M145	2315165	161842	28	30	D	3	M144, M145	Unknown
M146	2315083	161221	30	50	M	3	M146, M147, C0028	Linear Contact
M147	2315082	161208	31	50	M	3	M146, M147, C0028	Linear Contact
M148	2315631	161091	1768	235	M	3	M148, M149	Unknown
M149	2315553	161064	734	235	M	3	M148, M149	Unknown
M150	2315071	161041	40	70	C D	3		SPS
M151	2315057	160999	62	45	C D	3		SPS
M152	2315030	160457	24	85	D	3	M152, C0030	Linear Contact
M153	2315007	160175	64	70	C D	3		SPS
M154	2315496	160098	2041	350	M	3		SPS
M155	2315565	159941	3290	330	M	3	M155, C0033	Small Contact
M156	2315455	159434	62	35	M	3		SPS
M157	2314964	159314	17	40	M	3	M157, M158	Unknown
M158	2315012	159276	18	30	D	3	M157, M158	Unknown
M159	2315492	159210	5339	290	D	3		SPS
M160	2315430	159073	2909	210	M	3		Barge
M161	2314905	158478	82	85	M	4	M161, M164, C0037, C0038	Linear and Small Contacts
M162	2315478	158470	261	80	M	4	M162, M163, M165	Unknown
M163	2315390	158434	149	55	M	4	M162, M163, M165	Unknown
M164	2314969	158380	220	160	C M	4	M161, M164, C0037, C0038	Linear and Small Contacts
M165	2315554	158403	445	35	M	4	M162, M163, M165	Unknown
M166	2314887	158246	45	105	M	4	M166, C0039	Unknown Object
M167	2315377	158205	68	70	M	4		SPS
M168	2315505	157746	254	10	M	4	M168, M169	Unknown
M169	2315505	157716	119	5	M	4	M168, M169	Unknown
M170	2315416	157441	192	695	M	4	M170, M171, C0041	Linear Contact
M171	2315502	157418	2159	65	M	4	M170, M171, C0041	Linear Contact

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Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M172	2315323	157209	613	560	M	4	M172, M173, M174	Unknown
M173	2315423	157138	1804	60	M	4	M172, M173, M174	Unknown
M174	2315398	157132	1413	355	C M	4	M172, M173, M174	Unknown
M175	2315427	156909	2857	90	M	4		SPS
M176	2315429	156600	696	65	M	4		SPS
M177	2315333	156104	81	150	M	5	M177, M178	Unknown
M178	2315381	156092	2834	70	D	5	M177, M178	Unknown
M179	2315364	155893	552	50	M	5	M179, M182, M183, M184	Unknown
M180	2314660	155844	90	21	D	5		Buoy
M181	2314793	155783	88	50	M	5		Buoy
M182	2315313	155795	68	165	M	5	M179, M182, M183, M184	Unknown
M183	2315357	155771	423	45	M	5	M179, M182, M183, M184	Unknown
M184	2315306	155761	119	115	C M	5	M179, M182, M183, M184	Unknown
M185	2314737	155709	174	65	M	5		Buoy
M186	2315169	155406	18	30	M	5		SPS
M187	2314710	155244	19	55	D	5		SPS
M188	2315253	155247	83	20	M	5		SPS
M189	2314969	154397	10	55	M	5	M189, C0044	Unknown Object
M190	2314563	154300	47	75	D	5	M190, M191, M192	Unknown
M191	2314519	154271	18	50	M	5	M190, M191, M192	Unknown
M192	2314603	154270	55	50	M	5	M190, M191, M192	Unknown
M193	2315030	154109	47	25	M	5		SPS
M194	2314454	153736	15	75	M	6	M194, M196	Unknown
M195	2314964	153705	26	25	D	6		SPS
M196	2314404	153682	80	70	M	6	M194, M196	Unknown
M197	2315040	153682	23	10	M	6		SPS
M198	2314928	153603	56	10	M	6		SPS
M199	2314954	153471	26	35	C M	6		SPS
M200	2314935	153378	2555	15	D	6	M200, M201	Unknown
M201	2314894	153366	14	15	D	6	M200, M201	Unknown
M202	2314964	153298	55	30	D	6		SPS
M203	2314348	153238	26	60	M	6	M203, M205	Unknown
M204	2314912	153250	32	15	M	6		SPS
M205	2314310	153198	23	50	M	6	M203, M205	Unknown
M206	2314905	153198	78	10	M	6		SPS
M207	2314903	153176	308	70	M	6		SPS
M208	2314900	153146	472	15	D	6		SPS
M209	2314789	153001	21	90	M	6	M209, M210, M211, M212, M213, M214, M215	Unknown
M210	2314911	153004	41	40	M	6	M209, M210, M211, M212, M213, M214, M215	Unknown
M211	2314905	152970	117	55	M	6	M209, M210, M211, M212, M213, M214, M215	Unknown
M212	2314788	152950	41	50	M	6	M209, M210, M211, M212, M213, M214, M215	Unknown

Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M213	2314885	152934	793	40	D	6	M209, M210, M211, M212, M213, M214, M215	Unknown
M214	2314782	152849	12	15	M	6	M209, M210, M211, M212, M213, M214, M215	Unknown
M215	2314870	152849	47	35	C M	6		SPS
M216	2314319	152812	34	60	D	6		SPS
M217	2314779	152806	16	20	M	6	M217, M218	Unknown
M218	2314870	152796	64	20	M	6	M217, M218	Unknown
M219	2314828	152753	15	15	M	6	M219, M220, M221	Unknown
M220	2314775	152726	24	35	M	6	M219, M220, M221	Unknown
M221	2314813	152720	34	15	D	6	M219, M220, M221	Unknown
M222	2314769	152639	20	20	M	6	M222, M224	Unknown
M223	2314225	152598	12	55	D	6	M223, M227, C0045	Unknown Object
M224	2314851	152620	1228	30	C M	6	M222, M224	Unknown
M225	2314785	152571	33	40	D	6	M225, M226	Unknown
M226	2314859	152547	1284	20	D	6	M225, M226	Unknown
M227	2314245	152503	41	90	C D	6	M223, M227, C0045	Unknown Object
M228	2314209	152427	42	70	D	6	M228, M230	Unknown
M229	2314661	152444	9	45	D	6		Buoy
M230	2314162	152407	1104	50	D	6	M228, M230	Unknown
M231	2314812	152417	137	70	C M	6		Buoy
M232	2314780	152406	150	130	C M	6		Buoy
M233	2314753	152402	47	90	C D	6		Buoy
M234	2314877	152365	19	20	D	6		Buoy
M235	2314702	152244	11	30	M	6	M235, M236	Unknown
M236	2314775	152238	17	25	M	6	M235, M236	Unknown
M237	2314902	152195	17	20	D	6	M237, M238, C0046	Unknown Object
M238	2314910	152147	49	25	D	6	M237, M238, C0046	Unknown Object
M239	2314892	152043	34	15	M	6	M239, C0047	Rectangular Contact
M240	2314083	151932	103	100	M	6	M240, M241, M242, C0048	Linear Contact
M241	2314101	151931	42	120	D	6	M240, M241, M242, C0048	Linear Contact
M242	2314106	151911	37	105	M	6	M240, M241, M242, C0048	Linear Contact
M243	2314891	151809	121	15	M	6	M243, C0049	Small Contact
M244	2314897	151739	56	15	D	7	M244, M245	Unknown Object
M245	2314889	151738	44	15	M	7	M244, M245	Unknown Object
M246	2314918	151655	12	20	M	7	M246, C0050	Debris Scatter
M247	2314956	151553	13	20	M	7	M247, M248	Unknown
M248	2314913	151536	31	40	M	7	M247, M248	Unknown
M249	2314120	151403	28	60	M	7		Buoy

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Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M250	2314098	151401	179	65	D	7		Buoy
M251	2314040	151347	26	50	M	7		Buoy
M252	2314940	151377	12	20	M	7	M252, C0051	Linear Contact
M253	2315014	151257	37	15	M	7		SPS
M254	2313997	151206	1478	20	D	7		SPS
M255	2314085	151103	123	10	C D	7		SPS
M256	2315049	151027	255	15	M	7		SPS
M257	2314055	150987	37	15	D	7		SPS
M258	2314153	150969	41	35	C D	7		SPS
M259	2314216	150873	199	15	M	7	M259, M260	Unknown
M260	2314144	150825	161	20	D	7	M259, M260	Unknown
M261	2315036	150802	37	35	D	7	M261, M262	Unknown
M262	2315070	150791	33	40	D	7	M261, M262	Unknown
M263	2314269	150648	68	10	M	7	M263, C0052	Small Contact
M264	2315090	150657	10	10	M	7	M264, M265	Unknown
M265	2315132	150612	14	20	D	7	M264, M265	Unknown
M266	2314439	150438	21	20	M	7	M266, M269	Unknown
M267	2315088	150413	28	45	D	7		Buoy
M268	2314996	150408	78	100	M	7		Buoy
M269	2314440	150331	259	40	C D	7	M266, M269	Unknown
M270	2314998	150306	34	85	M	7		Buoy
M271	2315227	150298	27	35	D	8		Buoy
M272	2315178	150291	100	45	D	7		Buoy
M273	2315335	150079	68	15	D	8		SPS
M274	2314739	149954	9	55	D	8		SPS
M275	2314739	149757	22	65	M	8		SPS
M276	2315530	149724	36	15	M	8		SPS
M277	2314828	149592	31	50	M	8		SPS
M278	2315561	149570	11	20	M	8		SPS
M279	2315648	149491	18	10	M	8		SPS
M280	2315700	149393	434	45	D	8	M280, M281, M282, M283, C0059	Linear Contacts
M281	2315581	149341	20	60	M	8	M280, M281, M282, M283, C0059	Linear Contacts
M282	2315633	149337	524	45	M	8	M280, M281, M282, M283, C0059	Linear Contacts
M283	2315690	149325	933	40	M	8	M280, M281, M282, M283, C0059	Linear Contacts
M284	2315090	149270	24	50	M	8	M284, M285, M286, C0060	Debris
M285	2315064	149220	63	35	M	8	M284, M285, M286, C0060	Debris
M286	2315016	149193	369	50	D	8	M284, M285, M286, C0060	Debris
M287	2315088	149083	115	40	M	8	M287, C0061	Linear Contact
M288	2315264	149067	33	55	M	8		Buoy
M289	2315209	149013	89	95	D	8		Buoy
M290	2315945	148933	350	25	M	8		SPS
M291	2315187	148881	3273	70	C D	8	M291, M292, M294, M295, M298	Unknown

Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M292	2315260	148854	124	235	C D	8	M291, M292, M294, M295, M298	Unknown
M293	2315933	148842	52	65	C D	8		SPS
M294	2315255	148754	559	30	D	8	M291, M292, M294, M295, M298	Unknown
M295	2315360	148740	40	100	D	8	M291, M292, M294, M295, M298	Unknown
M296	2315882	148759	12	35	M	8	M296, M297	Unknown
M297	2315909	148749	15	35	M	8	M296, M297	Unknown
M298	2315344	148600	155	80	M	8	M291, M292, M294, M295, M298	Unknown
M299	2315414	148455	13	15	M	8		SPS
M300	2316220	148368	72	35	D	9		SPS
M301	2316093	148356	22	40	D	8		SPS
M302	2315572	148245	21	20	D	8		SPS
M303	2316338	148155	18	40	C D	9		SPS
M304	2316163	148044	11	40	M	9		SPS
M305	2315759	147988	47	85	D	9	M305, M306	Unknown
M306	2315747	147943	170	55	D	9	M305, M306	Unknown
M307	2315814	147698	21	25	D	9		SPS
M308	2316705	147450	20	90	M	9	M308, M309, M310, M311, M312, C0062	Debris, Pipes, wire rope
M309	2316672	147424	111	65	M	9	M308, M309, M310, M311, M312, C0062	Debris, Pipes, wire rope
M310	2316626	147412	826	45	M	9	M308, M309, M310, M311, M312, C0062	Debris, Pipes, wire rope
M311	2316576	147405	461	70	D	9	M308, M309, M310, M311, M312, C0062	Debris, Pipes, wire rope
M312	2316526	147325	110	100	M	9	M308, M309, M310, M311, M312, C0062	Debris, Pipes, wire rope
M313	2316241	146945	29	20	M	9	M313, M315	Unknown
M314	2316810	146964	20	40	D	9		SPS
M315	2316255	146921	17	65	M	9	M313, M315	Unknown
M316	2317080	146726	143	155	D	9	M316, M317, M318, M319, M321	Transmission Tower
M317	2316998	146604	65	145	D	9	M316, M317, M318, M319, M321	Transmission Tower
M318	2317096	146589	98	130	M	9	M316, M317, M318, M319, M321	Transmission Tower
M319	2317066	146583	76	115	M	9	M316, M317, M318, M319, M321	Transmission Tower
M320	2316412	146531	482659 1	55	M	9	M320, M322, M323, M324, M325	Transmission Tower
M321	2316948	146545	52	185	M	9	M316, M317, M318, M319, M321	Transmission Tower
M322	2316477	146480	41	95	M	9	M320, M322, M323, M324, M325	Transmission Tower
M323	2316566	146440	101	165	D	9	M320, M322, M323, M324, M325	Transmission Tower

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Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M324	2316628	146436	169	115	M	9	M320, M322, M323, M324, M325	Transmission Tower
M325	2316502	146344	55	70	M	9	M320, M322, M323, M324, M325	Transmission Tower
M326	2317252	146276	14	15	M	10		SPS
M327	2317357	146196	515	85	M	10		SPS
M328	2317297	146006	22	60	D	10	M328, M329	Unknown
M329	2317340	146004	14	30	M	10	M328, M329	Unknown
M330	2316848	145963	15	30	M	10		SPS
M331	2317508	145907	67	60	M	10		SPS
M332	2317431	145774	30	40	D	10	M332, C0063	Unknown Object
M333	2317615	145692	304	15	D	10		SPS
M334	2317637	145646	264	20	D	10		SPS
M335	2316997	145599	37	50	D	10	M335, M336, M337	Unknown
M336	2316920	145548	17	35	M	10	M335, M336, M337	Unknown
M337	2316993	145521	70	55	M	10	M335, M336, M337	Unknown
M338	2317649	145518	48	20	M	10	M338, M339	Unknown
M339	2317617	145493	25	35	D	10	M338, M339	Unknown
M340	2317668	145411	16	10	M	10		SPS
M341	2317796	145336	55	25	D	10	M341, M342	Unknown
M342	2317764	145318	422	20	D	10	M341, M342	Unknown
M343	2317796	145258	35	20	M	10	M343, M344, M345, C0064	Debris Scatter
M344	2317763	145238	540	50	D	10	M343, M344, M345, C0064	Debris Scatter
M345	2317699	145232	18	70	D	10	M343, M344, M345, C0064	Debris Scatter
M346	2317848	145232	102	25	D	10		SPS
M347	2317843	145165	59	20	M	10	M347, M348, C0065, C0066	Debris Scatter and LInear Contact
M348	2317886	145154	89	25	C D	10	M347, M348, C0065, C0066	Debris Scatter and Linear Contact
M349	2317878	145098	14	10	M	10		SPS
M350	2317261	145067	81	70	D	10	M350, M351, C0067	Linear Contact
M351	2317253	145015	115	60	D	10	M350, M351, C0067	Linear Contact
M352	2317909	145040	15	10	M	10		SPS
M353	2317992	144921	54	20	D	10		SPS
M354	2318069	144767	991	55	C D	10		Buoy
M355	2317988	144742	15	50	M	10		Buoy
M356	2317959	144605	85	60	M	10		Buoy
M357	2318319	144545	560	90	C D	11		SPS
M358	2317662	144402	13	45	M	10		SPS
M359	2318487	144375	46	10	M	11		SPS
M360	2318647	144122	24	20	D	11		SPS
M361	2318694	144082	29	20	D	11		SPS
M362	2318728	144082	592	15	D	11		SPS

Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M363	2318763	144018	18	30	M	11		SPS
M364	2318859	143910	113	30	D	11		SPS
M365	2318976	143855	24	15	M	11		SPS
M366	2318813	143779	19	45	M	11		SPS
M367	2319037	143725	22	20	M	11		SPS
M368	2318038	143659	14	45	M	11		Buoy
M369	2319131	143696	201	20	D	11	M369, C0070	Debris Scatter
M370	2318015	143643	164	45	D	11		Buoy
M371	2317936	143636	15	10	M	11	M370, C0071	Debris
M372	2319134	143647	23	35	C M	11		Buoy
M373	2319185	143646	18	15	M	11		Buoy
M374	2319061	143618	281	65	M	11		Buoy
M375	2319207	143590	23	35	M	11		Buoy
M376	2319310	143593	305	10	M	11		SPS
M377	2317999	143526	52	10	D	11		Buoy
M378	2319083	143540	45	100	M	11		Buoy
M379	2319292	143518	69	35	D	11		SPS
M380	2319214	143488	16	45	M	11		Buoy
M381	2319372	143457	30	70	M	12	M381, M382, M383	Unknown
M382	2319380	143430	305	20	C D	12	M381, M382, M383	Unknown
M383	2319421	143414	106	10	D	12	M381, M382, M383	Unknown
M384	2318202	143356	88	20	D	11		SPS
M385	2318339	143351	16	30	M	11		SPS
M386	2319517	143393	43	15	D	12		SPS
M387	2319461	143347	104	20	M	12		SPS
M388	2319516	143289	91	25	D	12	M388, M389, M390	Unknown Object
M389	2319625	143284	431	85	M	12	M388, M389, M390	Unknown Object
M390	2319454	143271	12	40	D	12	M388, M389, M390	Unknown Object
M391	2318356	143219	78	95	C D	11	M391, M392	Unknown
M392	2318271	143203	883	130	C D	11	M391, M392	Unknown
M393	2319601	143201	94	15	D	12		SPS
M394	2319632	143167	50	35	M	12		SPS
M395	2319854	143061	26	25	M	12		SPS
M396	2319711	143021	26	50	D	12		SPS
M397	2319781	143012	128	35	C D	12		SPS
M398	2319875	142992	211	15	M	12	M398, M399, M401, M402, M405	Unknown
M399	2319907	142960	41	10	M	12	M398, M399, M401, M402, M405	Unknown
M400	2318714	142910	14	25	M	11	M400, M403, M406, M407, C0075	Debris Scatter
M401	2319925	142942	122	15	M	12	M398, M399, M401, M402, M405	Unknown
M402	2319861	142938	366	25	M	12	M398, M399, M401, M402, M405	Unknown
M403	2318770	142894	25	65	C D	11	M400, M403, M406, M407, C0075	Debris Scatter
M404	2319999	142917	81	10	M	12		SPS
M405	2319832	142905	50	55	D	12	M398, M399, M401, M402, M405	Unknown

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Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M406	2318792	142842	180	25	C D	12	M400, M403, M406, M407, C0075	Debris Scatter
M407	2318713	142811	82	30	D	12	M400, M403, M406, M407, C0075	Debris Scatter
M408	2320013	142846	28	10	M	12		SPS
M409	2318915	142746	29	20	M	12	M409, M410, M412, C0076	Infrastructure
M410	2318917	142694	22	25	M	12	M409, M410, M412, C0076	Infrastructure
M411	2320191	142723	2012	55	M	12	M411, M414, M415, M416	Unknown
M412	2318791	142663	41	15	M	12	M409, M410, M412, C0076	Infrastructure
M413	2318915	142625	17	60	C M	12	M413, M417	Unknown
M414	2320188	142664	240	25	M	12	M411, M414, M415, M416	Unknown
M415	2320274	142639	141	20	D	12	M411, M414, M415, M416	Unknown
M416	2320171	142633	28	45	M	12	M411, M414, M415, M416	Unknown
M417	2318899	142573	78	85	M	12	M413, M417	Unknown
M418	2319168	142535	20	40	D	12		SPS
M419	2319032	142515	21	25	D	12		SPS
M420	2319144	142466	22	30	M	12		SPS
M421	2320407	142504	848	20	M	12	M421, M422	Unknown
M422	2320351	142498	87	15	M	12	M421, M422	Unknown
M423	2319047	142442	51	20	D	12		SPS
M424	2319140	142421	13	15	D	12		SPS
M425	2319305	142409	23	30	D	12		SPS
M426	2320407	142440	699	15	M	12	M426, M427, M429, M430, M431, M432	Unknown
M427	2320402	142409	267	35	C M	12	M426, M427, M429, M430, M431, M432	Unknown
M428	2319305	142361	16	30	M	12		SPS
M429	2320506	142406	145	55	C D	13	M426, M427, M429, M430, M431, M432	Unknown
M430	2320450	142358	1116	20	M	13	M426, M427, M429, M430, M431, M432	Unknown
M431	2320394	142336	73	55	M	12	M426, M427, M429, M430, M431, M432	Unknown
M432	2320377	142271	30	65	M	12	M426, M427, M429, M430, M431, M432	Unknown
M433	2319456	142231	15	25	M	12		SPS
M434	2319579	142224	21	40	D	12		SPS
M435	2320601	142201	56	30	M	13		Buoy
M436	2320491	142196	148	90	M	13		Buoy
M437	2319365	142148	20	20	M	12		SPS
M438	2320559	142191	58	110	C M	13		Buoy
M439	2319724	142122	15	35	D	12		SPS
M440	2319573	142048	33	45	D	12	M440, M442	Unknown
M441	2320487	142069	23	65	M	13		Buoy
M442	2320717	142076	745	40	M	13	M442, M444	Unknown
M443	2319525	142027	274	25	D	12	M440, M442	Unknown
M444	2320701	142011	63	45	M	13	M442, M444	Unknown
M445	2319690	141937	23	40	C D	12		SPS

Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M446	2319741	141936	44	30	C D	12		SPS
M447	2319927	141942	23	105	C D	12		SPS
M448	2319603	141924	57	10	M	12		SPS
M449	2319640	141881	25	10	M	12		SPS
M450	2319744	141884	13	15	M	12		SPS
M451	2319679	141845	48	20	C D	12		SPS
M452	2319786	141846	44	20	D	12		SPS
M453	2320797	141849	18	20	M	13	M453, M455	Unknown
M454	2319746	141785	69	15	M	12		SPS
M455	2320758	141824	24	50	M	13	M453, M455	Unknown
M456	2319994	141787	16	50	D	12	M456, M458, M459, M461	Unknown
M457	2319759	141774	201	10	M	12		SPS
M458	2319976	141760	112	40	D	12	M456, M458, M459, M461	Unknown
M459	2319880	141756	1488	40	M	12	M456, M458, M459, M461	Unknown
M460	2319797	141741	52	10	D	12		SPS
M461	2319830	141709	46	20	D	12	M456, M458, M459, M461	Unknown
M462	2320896	141738	15	25	M	13	M462, M464, M465, M466	Unknown
M463	2319884	141657	287	10	M	12		SPS
M464	2320885	141694	21	30	M	13	M462, M464, M465, M466	Unknown
M465	2320852	141689	110	50	M	13	M462, M464, M465, M466	Unknown
M466	2320797	141673	17	65	M	13	M462, M464, M465, M466	Unknown
M467	2320100	141620	19	25	M	13	M467, M469	Unknown
M468	2319953	141603	825	10	D	13		SPS
M469	2320058	141593	51	40	D	13	M467, M469	Unknown
M470	2320251	141544	34	75	C D	13		SPS
M471	2320064	141514	478161 5	10	M	13		SPS
M472	2320141	141515	110	15	D	13		SPS
M473	2320100	141482	1538	20	D	13		SPS
M474	2320237	141457	99	30	C D	13	M474, M476, M477, M478	Unknown
M475	2320136	141447	304	15	D	13		SPS
M476	2320215	141447	1686	45	C D	13	M474, M476, M477, M478	Unknown
M477	2320167	141419	231	15	M	13	M474, M476, M477, M478	Unknown
M478	2320204	141390	3462	20	C D	13	M474, M476, M477, M478	Unknown
M479	2320319	141383	400	70	C D	13	M479, M481, M483	Unknown
M480	2320507	141378	28	40	M	13		Buoy
M481	2320305	141357	231	20	D	13	M479, M481, M483	Unknown
M482	2320466	141359	71	55	M	13		Buoy
M483	2320281	141329	2050	15	D	13	M479, M481, M483	Unknown
M484	2320332	141278	430	10	M	13		SPS
M485	2320498	141261	19	30	D	13		Buoy
M486	2321062	141276	22	20	M	13	M486, C0077	Unknown Object
M487	2320429	141247	75	50	C D	13		Buoy
M488	2320417	141137	17	15	M	13		SPS

Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M489	2321238	141149	12	20	M	13		SPS
M490	2320545	141067	30	20	M	13	M490, M491, M492	Unknown
M491	2320481	141038	35	25	C M	13	M490, M491, M492	Unknown
M492	2320486	141031	380	10	M	13	M490, M491, M492	Unknown
M493	2320595	140921	42	15	D	13		SPS
M494	2320596	140822	59	15	D	13		SPS
M495	2320721	140823	71	25	M	13		SPS
M496	2320675	140689	40	5	M	13	M496, C0078	Linear Contact
M497	2320767	140642	18	15	D	13		SPS
M498	2320811	140563	58	15	M	14		SPS
M499	2321025	140458	23	50	D	14	M499, M500, M501, M504, M506	Unknown
M500	2320976	140442	14	40	M	14	M499, M500, M501, M504, M506	Unknown
M501	2320891	140431	223	20	D	14	M499, M500, M501, M504, M506	Unknown
M502	2321503	140451	29	65	D	14	M502, M503, C0079	Unknown Object
M503	2321531	140439	67	70	D	14	M502, M503, C0079	Unknown Object
M504	2320821	140388	145	10	M	14	M499, M500, M501, M504, M506	Unknown
M505	2321646	140419	96	40	D	14		SPS
M506	2320918	140380	75	15	M	14	M499, M500, M501, M504, M506	Unknown
M507	2320951	140310	46	25	D	14	M507, M508	Unknown
M508	2320895	140290	1361	10	M	14	M507, M508	Unknown
M509	2321053	140116	95	15	D	14		SPS
M510	2321984	139829	28	30	M	14		SPS
M511	2322014	139773	12	15	M	14		SPS
M512	2321357	139563	18	15	M	14		SPS
M513	2322112	139592	54	30	M	14		SPS
M514	2321522	139549	37	40	M	14		Buoy
M515	2321475	139506	163	55	M	14		Buoy
M516	2321362	139475	22	10	M	14		Buoy
M517	2322183	139476	31	40	D	14		SPS
M518	2321387	139426	74	15	M	14		Buoy
M519	2322157	139441	15	20	M	14		SPS
M520	2322155	139373	27	85	C M	14		SPS
M521	2321488	139339	32	5	M	14		SPS
M522	2322156	139269	44	165	C D	14		SPS
M523	2322382	139132	18	10	M	15	M523, M524, M525, M527, C0081	Debris Scatter
M524	2322335	139109	61	40	D	15	M523, M524, M525, M527, C0081	Debris Scatter
M525	2322297	139068	26	35	M	15	M523, M524, M525, M527, C0081	Debris Scatter
M526	2321446	139001	74	10	M	15		SPS
M527	2322216	138997	91	165	D	15	M523, M524, M525, M527, C0081	Debris Scatter
M528	2322427	138968	140	45	D	15	M528, M529, C0082	Debris or Outcrop
M529	2322388	138950	16	30	M	15	M528, M529, C0082	Debris or Outcrop
M530	2321620	138816	26	15	M	15		SPS

Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M531	2322493	138781	58	45	D	15		SPS
M532	2321598	138672	18	15	M	15		SPS
M533	2322597	138447	45	20	D	15	M533, M534	Unknown
M534	2322573	138408	30	15	M	15	M533, M534	Unknown
M535	2321739	138343	31	15	M	15		SPS
M536	2321708	138200	94	15	D	15		SPS
M537	2321879	138144	10	20	M	15		SPS
M538	2321755	138003	20	15	M	15		SPS
M539	2322457	137894	28	90	M	15		Tower
M540	2322595	137885	82	95	M	15		Tower
M541	2322493	137866	36	70	D	15		Tower
M542	2322532	137844	22	80	M	15		Tower
M543	2321799	137793	15	15	M	15		SPS
M544	2321755	137737	25	10	M	15		SPS
M545	2321847	137636	75	15	D	15		SPS
M546	2321868	137550	107	20	D	15		SPS
M547	2322050	137393	21	50	M	15		Buoy
M548	2322042	137365	44	50	M	15		Buoy
M549	2321849	137263	26	30	M	15		Buoy
M550	2321926	137248	32	20	M	15		Buoy
M551	2321970	137240	41	35	D	15		SPS
M552	2321847	137207	20	20	C M	15	M552, C0084	Rectangular Contract
M553	2321853	137159	19	5	M	15		SPS
M554	2321855	137143	50	10	D	15		SPS
M555	2322006	137054	31	80	D	15	M555, M556, M557	Unknown
M556	2321956	137006	230	70	D	15	M555, M556, M557	Unknown
M557	2321921	136965	111	45	M	15	M555, M556, M557	Unknown
M558	2321852	136910	24	10	M	15	M558, C0085	Linear Contact
M559	2321996	136840	17	35	M	16		SPS
M560	2321892	136781	107	20	M	16		SPS
M561	2321848	136761	1166	20	M	16		SPS
M562	2321962	136747	41	30	M	16		SPS
M563	2321890	136725	27	20	M	16		SPS
M564	2321838	136702	412	10	M	16		SPS
M565	2321832	136676	289	10	M	16		SPS
M566	2321823	136633	127	195	D	16		SPS
M567	2321822	136626	269	20	M	16		SPS
M568	2321891	136609	119	10	M	16	M568, C0086	Unknown Object
M569	2321819	136573	72	10	M	16	M569, M570, C0087	Wire Rope
M570	2321821	136550	23	5	M	16	M569, M570, C0087	Wire Rope
M571	2321889	136523	165	30	D	16	M571, M572	Unknown
M572	2321826	136510	154	20	M	16	M571, M572	Unknown
M573	2322524	136476	21	50	M	16	M573, M574, M575, M576, M578	Unknown
M574	2322455	136459	62	35	M	16	M573, M574, M575, M576, M578	Unknown

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Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M575	2322402	136395	32	45	M	16	M573, M574, M575, M576, M578	Unknown
M576	2322483	136396	112	90	C D	16	M573, M574, M575, M576, M578	Unknown
M577	2321918	136340	19	15	M	16		SPS
M578	2322439	136357	102	45	M	16	M573, M574, M575, M576, M578	Unknown
M579	2321911	136274	40	25	M	16	M579, M580, M581, M582, M583	Unknown
M580	2321879	136261	19	15	M	16	M579, M580, M581, M582, M583	Unknown
M581	2321833	136246	17	10	M	16	M579, M580, M581, M582, M583	Unknown
M582	2321955	136228	17	40	M	16	M579, M580, M581, M582, M583	Unknown
M583	2322003	136217	23	45	M	16	M579, M580, M581, M582, M583	Unknown
M584	2321816	135978	16	15	M	16		SPS
M585	2322304	135989	11	35	M	16		SPS
M586	2321844	135925	20	25	M	16		SPS
M587	2322518	135945	21	65	M	16		SPS
M588	2321816	135909	38	10	M	16		SPS
M589	2321916	135830	16	35	M	16		SPS
M590	2322495	135663	121	35	M	16		SPS
M591	2321955	135637	31	45	M	16		SPS
M592	2321904	135567	22	35	C M	16	M592, M593, M594, M598, M600, C0088, C0089	Linear and Small Contacts
M593	2321803	135514	81	30	M	16	M592, M593, M594, M598, M600, C0088, C0089	Linear and Small Contacts
M594	2321848	135511	122	35	C M	16	M592, M593, M594, M598, M600, C0088, C0089	Linear and Small Contacts
M595	2322489	135531	2754	50	D	16	M595, M596, M597, M599	Unknown
M596	2322443	135466	235	80	D	16	M595, M596, M597, M599	Unknown
M597	2322410	135462	107	85	D	16	M595, M596, M597, M599	Unknown
M598	2321940	135433	50	35	M	16	M592, M593, M594, M598, M600, C0088, C0089	Linear and Small Contacts
M599	2322359	135438	11	40	M	16	M595, M596, M597, M599	Unknown
M600	2321909	135418	122	50	D	16	M592, M593, M594, M598, M600, C0088, C0089	Linear and Small Contacts
M601	2321888	135247	83	40	M	16	M601, M602	Unknown
M602	2321926	135220	50	65	C D	16	M601, M602	Unknown
M603	2322360	135090	18	25	M	16	M603, C0090	Linear Contact
M604	2322474	135066	10	15	M	16		SPS
M605	2321910	134934	26	25	M	16	M605, M606	Unknown
M606	2321869	134889	30	30	M	16	M605, M606	Unknown
M607	2322465	134893	34	35	M	16	M607, M608, M609	Unknown
M608	2322425	134839	154	45	D	16	M607, M608, M609	Unknown
M609	2322464	134792	43	25	M	16	M607, M608, M609	Unknown
M610	2322330	134700	20	65	D	16	M610, C0091	Linear Contact
M611	2321861	134642	48	50	C D	17	M611, M612, M613, M614, M615, C0092	Debris or Outcrop
M612	2321936	134624	19	75	C M	17	M611, M612, M613, M614, M615, C0092	Debris or Outcrop

Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M613	2321800	134612	128	30	D	17	M611, M612, M613, M614, M615, C0092	Debris or Outcrop
M614	2321762	134592	69	20	M	17	M611, M612, M613, M614, M615, C0092	Debris or Outcrop
M615	2321897	134535	25	65	M	17	M611, M612, M613, M614, M615, C0092	Debris or Outcrop
M616	2321928	134384	40	45	M	17	M616, M619, M620, C0093	Linear Contact
M617	2322308	134386	103	75	D	17		Buoy
M618	2322249	134365	132	105	D	17		Buoy
M619	2321884	134341	258	70	D	17	M616, M619, M620, C0093	Linear Contact
M620	2321846	134334	69	40	M	17	M616, M619, M620, C0093	Linear Contact
M621	2322383	134289	57	60	M	17		Buoy
M622	2322236	134093	62	115	D	17	M622, M623, M624, M625	Unknown
M623	2322311	134072	97	110	D	17	M622, M623, M624, M625	Unknown
M624	2322396	134039	43	45	M	17	M622, M623, M624, M625	Unknown
M625	2322361	134018	115	110	D	17	M622, M623, M624, M625	Unknown
M626	2322429	133899	21	15	M	17	M626, C0094	Linear Contact
M627	2322424	133834	13	20	M	17		SPS
M628	2321702	133665	31	15	M	17		SPS
M629	2321702	133557	181	10	M	17	M629, C0096	Small Contact
M630	2322290	133464	20	55	D	17	M630, M631, M632, M633, M634, C0095, C0097, C0098, C0099, C0100	Possible Wreck and Nearby Objects
M631	2322373	133458	108	60	C M	17	M630, M631, M632, M633, M634, C0095, C0097, C0098, C0099, C0100	Possible Wreck and Nearby Objects
M632	2322417	133459	733	30	C D	17	M630, M631, M632, M633, M634, C0095, C0097, C0098, C0099, C0100	Possible Wreck and Nearby Objects
M633	2322319	133407	114	65	D	17	M630, M631, M632, M633, M634, C0095, C0097, C0098, C0099, C0100	Possible Wreck and Nearby Objects
M634	2322414	133409	158	10	M	17	M630, M631, M632, M633, M634, C0095, C0097, C0098, C0099, C0100	Possible Wreck and Nearby Objects
M635	2322339	133208	25	45	M	17	M635, C0101	Small Contact
M636	2321683	133176	17	20	M	17	M636, C0102	Unknown Object
M637	2321765	132809	17	20	M	17		SPS
M638	2322354	132697	159	15	D	17	M638, M639, C0103	Wire Rope
M639	2322377	132677	98	25	M	17	M638, M639, C0103	Wire Rope
M640	2322297	132628	28	20	M	17	M640, M641	Unknown

Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M641	2322350	132620	122	20	D	17	M640, M641	Unknown
M642	2322287	132389	28	115	C M	17	M642, M643, M644	Unknown Object
M643	2322335	132385	316	95	C M	17	M642, M643, M644	Unknown Object
M644	2322372	132358	1708	40	C M	18	M642, M643, M644	Unknown Object
M645	2322275	131987	19	35	M	18		SPS
M646	2321617	131924	35	20	M	18		SPS
M647	2322320	131859	50	20	C D	18		SPS
M648	2322365	131783	29	15	M	18		SPS
M649	2321615	131520	25	45	M	18		SPS
M650	2322346	131435	31	15	M	18		SPS
M651	2322293	131359	76	25	D	18	M651, M652	Unknown Object
M652	2322246	131334	15	25	D	18	M651, M652	Unknown Object
M653	2322329	131136	137	30	D	18	M653, M654, C0106	Unknown Object
M654	2322285	131109	13	25	M	18	M653, M654, C0106	Unknown Object
M655	2322328	131020	16	15	M	18	M655, M656, M657, C0107	Debris Scatter
M656	2322325	130977	55	15	M	18	M655, M656, M657, C0107	Debris Scatter
M657	2322278	130946	17	25	M	18	M655, M656, M657, C0107	Debris Scatter
M658	2322173	130848	68	60	M	18		Buoy
M659	2322239	130825	63	70	M	18		Buoy
M660	2322131	130723	15	90	M	18		Buoy
M661	2322266	130696	28	40	M	18		Buoy
M662	2321756	130223	24	40	D	18		SPS
M663	2322396	129179	22	35	M	19		SPS
M664	2322449	128809	28	45	D	19	M664, M665, C0103	Debris
M665	2322484	128783	59	50	D	19	M664, M665, C0103	Debris
M666	2321949	128272	41	20	C M	19	M666, M667	Unknown
M667	2321911	128221	47	25	M	19	M666, M667	Unknown
M668	2321999	127890	46	20	M	19	M668, M669	Unknown
M669	2321954	127857	20	25	M	19	M668, M669	Unknown
M670	2322138	127269	18	35	M	19		SPS
M671	2322262	126671	31	30	M	19	M671, M673, M674	Unknown
M672	2322866	126646	18	45	C M	19		SPS
M673	2322242	126620	25	55	M	19	M671, M673, M674	Unknown
M674	2322177	126609	67	15	M	19	M671, M673, M674	Unknown
M675	2322335	126530	19	80	C M	19		SPS
M676	2322882	126496	22	25	M	19	M676, C0110	Wire Rope
M677	2322301	126418	35	35	M	19	M677, M678	Unknown
M678	2322261	126376	28	45	M	19	M677, M678	Unknown
M679	2322865	125584	41	40	M	19		Buoy

Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M680	2322926	125514	31	40	M	19		Buoy
M681	2322487	124812	23	40	M	19	M681, M682, M683, M684	Unknown
M682	2322563	124764	61	100	M	19	M681, M682, M683, M684	Unknown
M683	2322526	124697	28	50	M	19	M681, M682, M683, M684	Unknown
M684	2322505	124666	43	60	D	19	M681, M682, M683, M684	Unknown
M685	2323094	124565	16	15	M	19	M685, C0112	Debris or Outcrop
M686	2322526	124488	13	30	M	19		SPS
M687	2323160	124422	30	30	D	19	M687, C0113	Unknown Object
M688	2323133	124335	34	20	D	19		SPS
M689	2323090	123949	38	45	M	20	M689, M690, M691, C0114	Linear Contact
M690	2323230	123952	20	30	M	20	M689, M690, M691, C0114	Linear Contact
M691	2323126	123928	51	40	M	20	M689, M690, M691, C0114	Linear Contact
M692	2323281	123540	221	50	D	20	M692, M693, M695	Unknown
M693	2323189	123506	132	80	D	20	M692, M693, M695	Unknown
M694	2322550	123440	150	30	M	20	M694, M696, M697, M698, M700, M701, C0115	Unknown Object
M695	2323162	123459	137	80	C D	20	M692, M693, M695	Unknown
M696	2322602	123367	39	10	M	20	M694, M696, M697, M698, M700, M701, C0115	Unknown Object
M697	2322558	123364	752	25	M	20	M694, M696, M697, M698, M700, M701, C0115	Unknown Object
M698	2322557	123313	45	10	M	20	M694, M696, M697, M698, M700, M701, C0115	Unknown Object
M699	2323308	123332	12	25	M	20		SPS
M700	2322609	123300	306	40	D	20	M694, M696, M697, M698, M700, M701, C0115	Unknown Object
M701	2322676	123287	37	45	M	20	M694, M696, M697, M698, M700, M701, C0115	Unknown Object
M702	2322738	123124	25	20	M	20		SPS
M703	2323205	123093	14	20	M	20	M703, C0116	Debris or Outcrop
M704	2322715	122957	31	40	D	20		SPS
M705	2322620	122831	26	10	M	20		SPS
M706	2322743	122798	23	25	M	20		SPS
M707	2322629	122720	110	15	M	20	M707, M708, M710, M711	SPS
M708	2322696	122720	19	10	M	20	M707, M708, M710, M711	SPS
M709	2323221	122720	76	65	D	20		Buoy
M710	2322794	122685	68	35	M	20	M707, M708, M710, M711	SPS
M711	2322760	122682	92	40	M	20	M707, M708, M710, M711	SPS
M712	2323304	122686	60	70	M	20		Buoy
M713	2323408	122636	97	45	M	20		Buoy
M714	2322660	122581	19	10	M	20		SPS
M715	2323367	122573	44	50	D	20		SPS
M716	2322821	122485	26	30	M	20	M716, M717	SPS

Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M717	2322793	122468	131	30	D	20	M716, M717	SPS
M718	2322690	122361	346	20	M	20		SPS
M719	2323416	122203	18	20	M	20		SPS
M720	2322731	122052	158	15	D	20		SPS
M721	2323476	122066	72	30	M	20	M721, M722	Unknown
M722	2323443	122028	71	20	M	20	M721, M722	Unknown
M723	2322933	121990	220	60	M	21	M723, M724, C0118	Unknown Object
M724	2322905	121987	381	65	M	21	M723, M724, C0118	Unknown Object
M725	2322849	121912	251	55	C M	21		SPS
M726	2322747	121791	15	10	M	21		SPS
M727	2323475	121769	24	15	M	21	M727, M728	Unknown
M728	2323389	121726	50	50	D	21	M727, M728	Unknown
M729	2322728	121580	130	5	M	21		SPS
M730	2322734	121541	526	15	C D	21		SPS
M731	2322834	121474	28	15	M	21		Buoy
M732	2322958	121348	171	45	D	21		Buoy
M733	2322731	121297	39	10	D	21		Buoy
M734	2322836	121248	150	15	M	21		Buoy
M735	2322728	121044	601	30	C D	21	M735, M736, M737, M738	Unknown
M736	2322783	120996	30	10	M	21	M735, M736, M737, M738	Unknown
M737	2322713	120949	138	20	D	21	M735, M736, M737, M738	Unknown
M738	2322721	120838	274	15	D	21	M735, M736, M737, M738	Unknown
M739	2323670	120734	22	10	M	21		SPS
M740	2322686	120543	67	20	D	21	M740, C0119	Rectangular Contact
M741	2322787	120353	21	40	M	21	M741, M742	Unknown
M742	2322740	120321	45	25	M	21	M741, M742	Unknown
M743	2323555	120085	32	30	D	21	M743, M744, C0120, C0121	Linear Contact
M744	2323499	120066	72	25	D	21	M743, M744, C0120, C0121	Linear Contact
M745	2323361	119221	31	15	M	22	M745, M746, M748, M752, C0122, C0123, C0124	Debris or Outcrop and Linear Contact
M746	2323314	119186	45	40	C M	22	M745, M746, M748, M752, C0122, C0123, C0124	Debris or Outcrop and Linear Contact
M747	2322523	119050	62	90	CM	22		SPS
M748	2323228	118968	35	70	C M	22	M745, M746, M748, M752, C0122, C0123, C0124	Debris or Outcrop and Linear Contact
M749	2322440	118903	320	50	D	22	M749, M750, M751	Unknown
M750	2322319	118881	31	30	D	22	M749, M750, M751	Unknown
M751	2322383	118874	71	30	M	22	M749, M750, M751	Unknown

Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M752	2323193	118815	138	40	M	22	M745, M746, M748, M752, C0122, C0123, C0124	Debris or Outcrop and Linear Contact
M753	2323112	118220	57	30	D	22	M753, C0125	Debris Scatter
M754	2323027	118021	49	60	M	22		Buoy
M755	2322314	117837	20	40	D	22		SPS
M756	2322193	117689	93	35	D	22	M756, M757	Unknown
M757	2322232	117681	19	35	M	22	M756, M757	Unknown
M758	2322067	117324	22	20	M	23	M758, M759	Unknown
M759	2322000	117298	25	35	M	23	M758, M759	Unknown
M760	2322859	117239	70	30	M	23		SPS
M761	2321967	117125	93	25	M	23	M761, C0127	Crab Pot
M762	2321947	117053	29	25	C D	23		SPS
M763	2321928	116989	63	15	M	23		SPS
M764	2321918	116951	99	10	M	23		SPS
M765	2322846	116781	14	15	M	23		SPS
M766	2321758	116249	41	35	D	23	M766, C0128	Debris or Outcrop
M767	2322739	116218	815	95	C D	23	M767, M768, C0129	Linear Contact
M768	2322674	116105	56	75	M	23	M767, M768, C0129	Linear Contact
M769	2322565	115999	51	40	M	23	M769, M770	Unknown
M770	2322599	115940	34	40	M	23	M769, M770	Unknown
M771	2321868	115829	112	65	M	23		Buoy
M772	2321797	115809	56	35	M	23		Buoy
M773	2322527	115430	44	10	D	23	M773, M774, M775, M776, M777, C0130, C0131, C0132, C0133, C0134, C0135	Linear Contacts and Unknown Objects
M774	2322521	115386	52	15	M	23	M773, M774, M775, M776, M777, C0130, C0131, C0132, C0133, C0134, C0135	Linear Contacts and Unknown Objects
M775	2322426	115368	162	80	C D	23	M773, M774, M775, M776, M777, C0130, C0131, C0132, C0133, C0134, C0135	Linear Contacts and Unknown Objects
M776	2322327	115301	470	65	D	23	M773, M774, M775, M776, M777, C0130, C0131, C0132, C0133, C0134, C0135	Linear Contacts and Unknown Objects
M777	2322445	115274	470	45	C D	23	M773, M774, M775, M776, M777, C0130, C0131, C0132, C0133, C0134, C0135	Linear Contacts and Unknown Objects
M778	2322440	115030	447	15	D	24		SPS
M779	2321516	114944	40	75	D	24	M779, C0136	Linear Contact
M780	2322393	114588	16	20	M	24		SPS

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Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M781	2322324	114485	222	10	D	24		SPS
M782	2322268	114204	35	10	D	24		SPS
M783	2322218	114155	49	30	D	24	M783, M784, C0137	Rectangular Contact
M784	2322178	114148	25	50	M	24	M783, M784, C0137	Rectangular Contact
M785	2322153	114012	15	50	D	24	M785, C0138	Linear Contact
M786	2322120	113872	19	45	D	24	M786, C0139	Linear Contact
M787	2322185	113767	225	15	D	24		SPS
M788	2321211	113514	292	85	D	24	M788, C0140	Unknown Object
M789	2322011	113378	16	35	M	24	M789, M790, C0142	Unknown Object
M790	2322030	113330	29	45	M	24	M789, M790, C0142	Unknown Object
M791	2321304	113234	25	65	D	24		SPS
M792	2320938	112235	14	35	M	25	M792, C0143	Debris Scatter
M793	2321089	112203	36	70	M	25	M793, M794	Unknown
M794	2321036	112136	31	20	M	25	M793, M794	Unknown
M795	2321736	111606	120	40	D	25	M795, M796, M797	Unknown
M796	2321754	111576	704	40	D	25	M795, M796, M797	Unknown
M797	2321734	111495	78	20	C M	25	M795, M796, M797	Unknown
M798	2321714	111394	69	30	D	25		SPS
M799	2321630	111377	21	20	M	25		SPS
M800	2321704	111297	29	20	D	25		SPS
M801	2320779	111159	59	45	M	25		SPS
M802	2321691	111132	28	10	M	25	M802, M804	Unknown
M803	2320813	111089	19	30	M	25		SPS
M804	2321683	111101	22	10	M	25	M802, M804	Unknown
M805	2321554	110998	14	10	M	25		SPS
M806	2320650	110834	747	35	C D	25	M806	Wire Rope
M807	2321500	110789	49	35	C M	25	M807, C0147	Small Contact
M808	2320626	110698	50	45	M	26		SPS
M809	2321551	110648	90	60	M	26	M809, M810, M811	Unknown
M810	2321508	110612	32	75	M	26	M809, M810, M811	Unknown
M811	2321503	110563	193	25	C M	26	M809, M810, M811	Unknown
M812	2321493	110415	34	15	D	26		SPS
M813	2321387	110391	21	80	M	26		SPS
M814	2320608	110270	32	25	M	26		SPS
M815	2321260	110287	37	100	M	26		SPS
M816	2321490	110239	18	15	M	26	M816, M819, M820, M821	Unknown
M817	2320725	110205	21	55	D	26	M817, M818	Unknown Object
M818	2320674	110176	22	30	M	26	M817, M818	Unknown Object
M819	2321454	110205	585	35	M	26	M816, M819, M820, M821	Unknown

Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M820	2321414	110194	54	55	D	26	M816, M819, M820, M821	Unknown
M821	2321419	110180	58	35	M	26	M816, M819, M820, M821	Unknown
M822	2321450	110125	60	15	M	26		SPS
M823	2320524	109998	25	15	M	26		SPS
M824	2321455	110034	22	15	M	26		SPS
M825	2321462	109955	40	10	M	26		SPS
M826	2321400	109877	36	10	M	26	M826, C0149, C1050	Unknown Object and Small Contact
M827	2320628	109802	31	15	M	26		SPS
M828	2321376	109747	84	40	D	26	M828, M829, M830, M831, C0151	Unknown Object
M829	2321474	109727	126	10	D	26	M828, M829, M830, M831, C0151	Unknown Object
M830	2321411	109711	80	35	C D	26	M828, M829, M830, M831, C0151	Unknown Object
M831	2321473	109696	54	15	D	26	M828, M829, M830, M831, C0151	Unknown Object
M832	2320579	109634	15	40	C D	26	M832, M833, M834, C0152	Wire Rope
M833	2320579	109595	29	10	M	26	M832, M833, M834, C0152	Wire Rope
M834	2320577	109566	34	10	M	26	M832, M833, M834, C0152	Wire Rope
M835	2320680	109485	14	40	D	26		SPS
M836	2321476	109496	12	10	D	26	M836, M837	Unknown
M837	2321520	109490	73	30	M	26	M836, M837	Unknown
M838	2321432	109246	181	25	D	26		SPS
M839	2320590	109113	36	50	D	26	M839, M840, M841, M842, C0153	Wire Rope
M840	2320627	109113	15	25	M	26	M839, M840, M841, M842, C0153	Wire Rope
M841	2320599	109070	51	20	M	26	M839, M840, M841, M842, C0153	Wire Rope
M842	2320595	109067	18	15	M	26	M839, M840, M841, M842, C0153	Wire Rope
M843	2320596	108982	19	35	C M	26		SPS
M844	2320593	108943	26	15	M	26		SPS
M845	2321401	108844	26	45	D	26	M845, C0155	Crab Pot
M846	2321533	108843	247	30	D	26	M846, C0156	Crab Pot
M847	2320700	108758	32	20	D	26	M847, C0157	Debris or Outcrop
M848	2321339	108717	25	25	M	26	M848, M849, M850, C0158, C0159, C0160	Debris or Outcrop and Unknown Objects
M849	2321503	108687	96	15	D	26	M848, M849, M850, C0158, C0159, C0160	Debris or Outcrop and Unknown Objects
M850	2321342	108624	17	30	M	26	M848, M849, M850, C0158, C0159, C0160	Debris or Outcrop and Unknown Objects

Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M851	2320597	108527	20	30	D	26		SPS
M852	2320598	108482	28	10	M	26		SPS
M853	2320598	108482	15	10	M	26		SPS
M854	2321500	108489	40	15	D	26	M854, C0161	Unknown Object
M855	2320596	108264	73	70	D	27	M855, M856, M857, C0163	Debris or Outcrop
M856	2320619	108221	67	35	D	27	M855, M856, M857, C0163	Debris or Outcrop
M857	2320621	108214	30	20	M	27	M855, M856, M857, C0163	Debris or Outcrop
M858	2320607	108046	46	60	C D	27	M858, M859, M860, C0164	Rectangular Contact
M859	2320619	108034	24	20	M	27	M858, M859, M860, C0164	Rectangular Contact
M860	2320615	108007	53	25	D	27	M858, M859, M860, C0164	Rectangular Contact
M861	2321420	107949	69	45	D	27	M861, M862, M863, C0166, C0167	Linear and Rectangular Contacts
M862	2321371	107931	14	30	M	27	M861, M862, M863, C0166, C0167	Linear and Rectangular Contacts
M863	2321416	107906	67	75	D	27	M861, M862, M863, C0166, C0167	Linear and Rectangular Contacts
M864	2320614	107840	37	20	M	27	M864, M865, M866, M867, C0168	Linear Contact
M865	2320604	107823	65	85	C D	27	M864, M865, M866, M867, C0168	Linear Contact
M866	2320670	107783	16	25	M	27	M864, M865, M866, M867, C0168	Linear Contact
M867	2320611	107766	75	90	D	27	M864, M865, M866, M867, C0168	Linear Contact
M868	2321425	107570	12	25	M	27	M868, C0169, C0170	Debris Scatter and Unknown Object
M869	2320738	107442	22	35	M	27	M869, C0171	Unknown Object
M870	2321507	107318	145	65	D	27	M870, M871, C0172	Pipe
M871	2321465	107303	83	50	D	27	M870, M871, C0172	Pipe
M872	2321574	106948	12	25	M	27	M872, M873	Unknown
M873	2321551	106926	53	20	M	27	M872, M873	Unknown
M874	2321445	106796	20	40	M	27	M874, M875, C0173, C0174	Debris and Tire
M875	2321449	106754	18	30	M	27	M874, M875, C0173, C0174	Debris and Tire
M876	2321446	106620	12	30	M	27	M876, M877, C0176	Debris or Outcrop
M877	2321464	106600	14	55	M	27	M876, M877, C0176	Debris or Outcrop

Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M878	2321390	106532	41	45	D	27		SPS
M879	2321450	106444	57	35	M	27	M879, M880, M881, C0177	Rectangular Contact and Buoy
M880	2321489	106433	50	75	M	27	M879, M880, M881, C0177	Rectangular Contact and Buoy
M881	2321487	106429	49	50	M	27	M879, M880, M881, C0177	Rectangular Contact and Buoy
M882	2321385	106352	38	65	D	27		SPS
M883	2320647	106128	23	15	D	28	M883, M884, M885, C0180	Debris Scatter
M884	2320699	106079	128	40	M	28	M883, M884, M885, C0180	Debris Scatter
M885	2320749	106066	54	45	M	28	M883, M884, M885, C0180	Debris Scatter
M886	2321396	106037	24	45	D	28		SPS
M887	2320657	105993	92	50	D	28	M887, C0182	Linear Contact
M888	2320653	105962	214	15	M	28		SPS
M889	2320655	105927	452	20	D	28		SPS
M890	2320664	105888	198	40	M	28	M890, M891, M893, C0183	Crab Pot
M891	2320657	105877	31	15	M	28	M890, M891, M893, C0183	Crab Pot
M892	2321554	105874	13	35	M	28	M892, C0184	Linear Contact
M893	2320691	105838	20	20	M	28	M890, M891, M893, C0183	Crab Pot
M894	2321422	105863	17	15	M	28		SPS
M895	2320670	105787	21	20	M	28		SPS
M896	2320694	105743	33	25	D	28		SPS
M897	2320657	105647	16	15	M	28		SPS
M898	2320701	105490	23	35	M	28		SPS
M899	2320755	105458	47	30	M	28		SPS
M900	2320703	105212	48	65	C D	28	M900, C0185	Linear Contact
M901	2321410	105220	14	35	D	28		SPS
M902	2320781	105173	96	55	M	28		Buoy
M903	2320825	105161	137	40	M	28		Buoy
M904	2320840	105159	76	50	M	28		Buoy
M905	2320674	105123	15	15	M	28		SPS
M906	2321482	105001	9	50	M	28	M906, C0186	Unknown Object
M907	2320709	104935	35	30	D	28	M907, M908	Unknown
M908	2320684	104904	13	15	M	28	M907, M908	Unknown
M909	2320779	104604	19	30	M	28	M909, C0187	Debris
M910	2321464	104462	11	45	M	28		SPS
M911	2320823	104155	18	30	M	28	M911, M912, M913, M914, C0188	Debris Scatter
M912	2320784	104111	167	50	D	28	M911, M912, M913, M914, C0188	Debris Scatter
M913	2320694	104072	30	15	M	28	M911, M912, M913, M914, C0188	Debris Scatter
M914	2320726	104033	180	35	D	28	M911, M912, M913, M914, C0188	Debris Scatter

Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M915	2320745	103545	17	20	M	29	M915, M917, C0189	Unknown, Possible Wreck
M916	2321529	103569	14	30	M	29		SPS
M917	2320789	103504	28	20	D	29	M915, M917, C0189	Unknown, Possible Wreck
M918	2321502	103494	10	80	D	29		SPS
M919	2320745	103434	303	60	C D	29	M919, M920, M921, M922, M923, M924, M925, M926	Unknown
M920	2320827	103396	45	35	M	29	M919, M920, M921, M922, M923, M924, M925, M926	Unknown
M921	2320705	103390	797	35	C D	29	M919, M920, M921, M922, M923, M924, M925, M926	Unknown
M922	2320779	103368	175	15	M	29	M919, M920, M921, M922, M923, M924, M925, M926	Unknown
M923	2320792	103323	117	70	C D	29	M919, M920, M921, M922, M923, M924, M925, M926	Unknown
M924	2320681	103307	161	20	D	29	M919, M920, M921, M922, M923, M924, M925, M926	Unknown
M925	2320762	103302	187	20	C M	29	M919, M920, M921, M922, M923, M924, M925, M926	Unknown
M926	2320684	103250	452	15	D	29	M919, M920, M921, M922, M923, M924, M925, M926	Unknown
M927	2320760	103152	52	45	M	29	M927, M928, M929, M930, M931	Unknown
M928	2320697	103150	196	55	D	29	M927, M928, M929, M930, M931	Unknown
M929	2320714	103113	140	25	C M	29	M927, M928, M929, M930, M931	Unknown
M930	2320798	103098	12	20	M	29	M927, M928, M929, M930, M931	Unknown
M931	2320706	103073	21	20	M	29	M927, M928, M929, M930, M931	Unknown
M932	2320690	102966	94	20	D	29	M932, M933, M934, M935, M936, M938	Unknown
M933	2320703	102947	54	40	D	29	M932, M933, M934, M935, M936, M938	Unknown
M934	2320759	102878	110	95	C D	29	M932, M933, M934, M935, M936, M938	Unknown
M935	2320688	102864	28	15	M	29	M932, M933, M934, M935, M936, M938	Unknown
M936	2320702	102837	31	30	D	29	M932, M933, M934, M935, M936, M938	Unknown
M937	2321652	102867	84	45	M	29		SPS
M938	2320689	102812	34	20	M	29	M932, M933, M934, M935, M936, M938	Unknown
M939	2320803	102708	97	55	D	29	M939, M940, M941, M942, M943	Unknown
M940	2320708	102652	84	50	C M	29	M939, M940, M941, M942, M943	Unknown
M941	2320701	102635	166	35	D	29	M939, M940, M941, M942, M943	Unknown
M942	2320761	102586	62	40	M	29	M939, M940, M941, M942, M943	Unknown
M943	2320807	102535	32	55	M	29	M939, M940, M941, M942, M943	Unknown

Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M944	2320827	101911	15	40	M	29	M944, M945, M946, C0192	Linear Contact
M945	2320773	101903	33	25	M	29	M944, M945, M946, C0192	Linear Contact
M946	2320772	101812	13	25	M	29	M944, M945, M946, C0192	Linear Contact
M947	2320857	101750	25	20	M	29		SPS
M948	2321537	101686	12	50	D	30	M948, C0193	Debris Scatter
M949	2321676	101298	103	15	M	30		SPS
M950	2320877	101164	98	35	M	30		Buoy
M951	2320842	101126	153	65	M	30		Buoy
M952	2321643	100898	9	15	M	30		SPS
M953	2320796	100452	60	40	D	30	M953, M954, M955	Unknown
M954	2320755	100401	227	30	D	30	M953, M954, M955	Unknown
M955	2320744	100400	484	26	D	30	M953, M954, M955	Unknown
M956	2320813	99430	15	20	M	31	M956, M957, C0194	Wire Rope
M957	2320874	99422	47	40	M	31	M956, M957, C0194	Wire Rope
M958	2321626	98750	21	25	M	31	M958, M959, C0195	Debris
M959	2321728	98730	99	105	M	31	M958, M959, C0195	Debris
M960	2320983	98593	40	35	M	31		SPS
M961	2320889	98408	20	30	D	31		SPS
M962	2321646	98433	22	20	M	31		SPS
M963	2321736	98331	27	20	M	31		SPS
M964	2321697	97036	16	30	D	32		SPS
M965	2320962	96605	74	55	M	32		Buoy
M966	2320916	96594	119	40	M	32		Buoy
M967	2320976	96542	26	55	M	32		Buoy
M968	2320650	95944	14	15	M	32	M968, C0196	Linear Contact
M969	2320334	94701	1745	20	M	33	M969, M970, M971, M972, M973, C0197, C0198	Unknown Objects
M970	2320338	94700	462	25	M	33	M969, M970, M971, M972, M973, C0197, C0198	Unknown Objects
M971	2320369	94700	401	50	D	33	M969, M970, M971, M972, M973, C0197, C0198	Unknown Objects
M972	2320460	94695	46	30	M	33	M969, M970, M971, M972, M973, C0197, C0198	Unknown Objects
M973	2320430	94664	301	25	M	33	M969, M970, M971, M972, M973, C0197, C0198	Unknown Objects
M974	2320469	94453	31	65	M	33		SPS
M975	2320243	94297	128	50	D	33	M975, M976, C0199	Linear Contact
M976	2320238	94295	230	50	D	33	M975, M976, C0199	Linear Contact
M977	2320256	94228	84	10	M	33	M977, C0201	Unknown Object
M978	2321186	94244	30	65	D	33	M978, M979, M980, C0200	Unknown Object and Linear Contact
M979	2321087	94202	30	70	M	33	M978, M979, M980, C0200	Unknown Object and Linear Contact

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Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M980	2321134	94181	3002	35	M	33	M978, M979, M980, C0200	Unknown Object and Linear Contact
M981	2320141	93763	87	45	C D	33	M981, M982, M983, C0203	Unknown Object
M982	2320205	93732	24	25	D	33	M981, M982, M983, C0203	Unknown Object
M983	2320099	93723	179	30	D	33	M981, M982, M983, C0203	Unknown Object
M984	2321047	93696	177	45	M	33	M984, M985, M986, M987, C0204, C0205, C0206, C0207	Linear Contacts and Debris
M985	2320927	93649	111	35	M	33	M984, M985, M986, M987, C0204, C0205, C0206, C0207	Linear Contacts and Debris
M986	2320989	93633	147	110	C D	33	M984, M985, M986, M987, C0204, C0205, C0206, C0207	Linear Contacts and Debris
M987	2320958	93625	433	65	D	33	M984, M985, M986, M987, C0204, C0205, C0206, C0207	Linear Contacts and Debris
M988	2320047	93501	30	15	D	33		SPS
M989	2320915	93531	215	30	M	33		Buoy
M990	2320037	93460	51	15	D	33		SPS
M991	2320056	93400	352	30	D	33	M991, M992	Unknown
M992	2320019	93389	1,535	30	D	33	M991, M992	Unknown
M993	2320847	93254	36	30	D	33	M993, M994, M995, C0208	Linear Contact
M994	2320831	93253	52	60	M	33	M993, M994, M995, C0208	Linear Contact
M995	2320748	93232	62	65	M	33	M993, M994, M995, C0208	Linear Contact
M996	2319899	92882	175	10	M	33	M996, M997	Unknown
M997	2319996	92830	18	40	D	33	M996, M997	Unknown
M998	2319559	91404	13	30	M	34		SPS
M999	2319503	91339	165	70	D	34		SPS
M1000	2320258	91286	13	45	M	34		SPS
M1001	2319541	90855	93	210	M	34		SPS
M1002	2319468	90316	977	215	M	35		SPS
M1003	2319311	90140	392	165	M	35		SPS
M1004	2320130	90147	15	15	M	35		SPS
M1005	2320031	90141	13	40	D	35		SPS
M1006	2319167	89832	1025	40	D	35	M1006, C0210	Debris
M1007	2319991	89566	53	15	D	35		SPS
M1008	2319139	89139	37	55	M	35		Buoy
M1009	2319059	89134	47	35	M	35		Buoy
M1010	2319850	88820	12	20	M	35		SPS
M1011	2319665	88648	11	90	D	35		SPS
M1012	2319745	88451	19	30	D	35		SPS

Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M1013	2318803	88403	99	65	M	35	M1013, M1014, M1015, M1016, C0211, C0212	Linear Contact
M1014	2318857	88366	356	105	C D	35	M1013, M1014, M1015, M1016, C0211, C0212	Linear Contact
M1015	2318905	88344	21	75	M	35	M1013, M1014, M1015, M1016, C0211, C0212	Linear Contact
M1016	2318901	88028	275	105	C D	35	M1013, M1014, M1015, M1016, C0211, C0212	Linear Contact
M1017	2319535	87982	228	40	M	35		Buoy
M1018	2319460	87960	108	40	M	35		Buoy
M1019	2318795	87387	32	50	M	35	M1019, M1020, C0213	Wire Rope
M1020	2318824	87385	16	70	M	35	M1019, M1020, C0213	Wire Rope
M1021	2318768	86384	19	35	D	35	M1021, M1022, C0214	Linear Contact
M1022	2318759	86352	15	20	M	35	M1021, M1022, C0214	Linear Contact
M1023	2318889	86274	18	35	D	35		SPS
M1024	2319322	86029	9	45	M	35	M1024, M1025	Unknown
M1025	2319284	86008	14	40	D	35	M1024, M1025	Unknown
M1026	2318890	85554	18	70	M	35	M1026, M1027, C0215	Unknown Object
M1027	2318804	85514	15	40	D	35	M1026, M1027, C0215	Unknown Object
M1028	2319367	84647	17	25	M	35	M1028, C0216	Unknown Object
M1029	2318657	84572	9	50	D	35		SPS
M1030	2319189	84415	16	45	D	36	M1030, M1031	Unknown
M1031	2319309	84385	17	15	M	36	M1030, M1031	Unknown
M1032	2319270	83981	10	20	M	36	M1032, C0217	Debris Scatter
M1033	2319137	83655	30	85	M	36	M1033, M034, M1035, C0218	Wire Rope
M1034	2319187	83657	32	30	M	36	M1033, M034, M1035, C0218	Wire Rope
M1035	2319237	83607	19	30	M	36	M1033, M034, M1035, C0218	Wire Rope
M1036	2319176	83486	36	35	M	36		SPS
M1037	2318558	83409	52	60	D	36	M1037, M1038, M1039	Unknown
M1038	2318514	83367	16	45	D	36	M1037, M1038, M1039	Unknown
M1039	2318503	83324	17	10	M	36	M1037, M1038, M1039	Unknown
M1040	2318518	82919	14	40	M	36		SPS
M1041	2318390	82216	65	60	M	36		Buoy
M1042	2319123	82231	18	20	M	36		SPS
M1043	2318379	82110	275	45	D	36		Buoy
M1044	2318422	82059	228	35	D	36		Buoy
M1045	2318403	81821	44	30	M	36	M1045, M1046, M1047	Unknown
M1046	2318301	81790	15	30	M	36	M1045, M1046, M1047	Unknown
M1047	2318336	81760	34	40	M	36	M1045, M1046, M1047	Unknown
M1048	2318792	81560	18	85	D	36		SPS
M1049	2318839	81329	10	60	M	36	M1049, M1051	Unknown
M1050	2318161	81283	20	40	M	36		SPS
M1051	2318787	81306	44	35	M	36	M1049, M1051	Unknown

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Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M1052	2318484	80843	8	40	M	36		SPS
M1053	2317638	80393	16	15	M	36	M1053, M1054, M1055	Unknown
M1054	2317633	80355	20	55	D	36	M1053, M1054, M1055	Unknown
M1055	2317618	80350	58	30	D	36	M1053, M1054, M1055	Unknown
M1056	2318354	80280	18	35	M	36		SPS
M1057	2317283	79275	21	35	M	36		SPS
M1058	2317002	78660	32	130	M	37		Marker
M1059	2316894	78645	527	95	M	37		Marker
M1060	2316945	78646	87	205	M	37		Marker
M1061	2316978	78606	34	80	M	37		Marker
M1062	2316895	78413	30	35	M	37	M1062, M1063, M1064	Unknown
M1063	2316924	78406	135	50	M	37	M1062, M1063, M1064	Unknown
M1064	2316884	78372	47	55	M	37	M1062, M1063, M1064	Unknown
M1065	2316716	78225	12	30	M	37		SPS
M1066	2317478	78155	21	175	M	37		SPS
M1067	2316698	78104	7	30	D	37		SPS
M1068	2317303	78092	21	50	M	37	M1068, M1069	Unknown
M1069	2317344	78069	17	35	M	37	M1068, M1069	Unknown
M1070	2316660	77994	17	25	M	37		SPS
M1071	2316554	77594	36	30	M	37		Buoy
M1072	2316466	77576	22	75	C D	37		Buoy
M1073	2316641	77573	34	80	M	37		Buoy
M1074	2316498	77548	13	25	C M	37		Buoy
M1075	2317086	77555	34	130	D	37		SPS
M1076	2316370	77518	16	25	D	37		SPS
M1077	2316435	77454	50	40	D	37	M1077, M1078, M1079	Unknown
M1078	2316464	77438	19	35	D	37	M1077, M1078, M1079	Unknown
M1079	2316422	77417	61	40	M	37	M1077, M1078, M1079	Unknown
M1080	2316254	77273	106	45	M	37	M1080, M1081	Unknown
M1081	2316199	77262	290	40	C M	37	M1080, M1081	Unknown
M1082	2316124	77144	11	25	C M	37	M1082, M1083	Unknown
M1083	2316142	77103	16	10	M	37	M1082, M1083	Unknown
M1084	2315881	76796	50	25	D	37	M1084, M1085	Unknown
M1085	2315909	76767	107	60	M	37	M1084, M1085	Unknown
M1086	2315747	76603	22	30	M	37		SPS
M1087	2316655	76595	18	55	D	37		SPS
M1088	2315636	76447	25	10	M	37	M1088, M1089	Unknown
M1089	2315690	76448	30	10	D	37	M1088, M1089	Unknown
M1090	2315593	76379	37	15	M	37		SPS
M1091	2316732	76373	13	65	D	37		SPS
M1092	2315481	76211	12	20	M	37		SPS
M1093	2316334	75996	24	85	M	37		SPS
M1094	2315370	75923	46	70	C D	37		Buoy
M1095	2315382	75910	180	55	D	37		Buoy
M1096	2315146	75815	34	15	D	37		SPS
M1097	2315014	75690	13	15	M	37		SPS

Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M1098	2314979	75655	53	20	C M	37		SPS
M1099	2315186	75658	717	280	D	37		Passing Vessel
M1100	2315994	75676	20	85	M	37		SPS
M1101	2314897	75510	11	25	M	37		SPS
M1102	2314650	75311	56	25	D	37		SPS
M1103	2314438	75113	26	20	M	37		SPS
M1104	2315461	75107	20	55	M	37		SPS
M1105	2315379	75079	47	65	D	37		SPS
M1106	2315282	75040	24	50	M	37		SPS
M1107	2314243	74935	37	25	C D	37		SPS
M1108	2315339	74974	40	70	M	37		SPS
M1109	2315248	74947	29	50	M	37		SPS
M1110	2313875	74503	10	35	D	37		SPS
M1111	2313488	73343	10	40	M	37	M1111, M1112	Unknown
M1112	2313521	73305	28	45	M	37	M1111, M1112	Unknown
M1113	2312449	73007	17	60	M	38		Buoy
M1114	2312398	72976	26	80	M	38		Buoy
M1115	2312391	72836	191	160	D	38		SPS
M1116	2311812	72353	1,097	360	M	38	M1116, M1117, C0219	Debris Scatter
M1117	2311793	72332	1,085	215	M	38	M1116, M1117, C0219	Debris Scatter
M1118	2311531	72251	23	25	M	38	M1118, M1119, C0220	Debris Scatter
M1119	2311587	72240	14	35	M	38	M1118, M1119, C0220	SPS
M1120	2311452	72176	13	50	D	38		SPS
M1121	2311235	71959	243	170	M	38		SPS
M1122	2311424	71947	110	45	M	38	M1122, M1123, M1124	Unknown
M1123	2311364	71938	30	50	M	38	M1122, M1123, M1124	Unknown
M1124	2311459	71915	59	60	D	38	M1122, M1123, M1124	Unknown
M1125	2310761	71300	149	40	M	38	M1125, M1126, M1127, C0221	Unknown, Possible Wreck
M1126	2310703	71293	24	60	M	38	M1125, M1126, M1127, C0221	Unknown, Possible Wreck
M1127	2310792	71252	64	50	D	38	M1125, M1126, M1127, C0221	Unknown, Possible Wreck
M1128	2310974	70926	14	100	D	38		SPS
M1129	2310942	70768	41	45	D	38	M1129, C0222	Unknown Object
M1130	2309672	70147	26	190	C M	38		SPS
M1131	2310383	70154	52	30	D	38		SPS
M1132	2310223	69972	16	15	M	38		SPS
M1133	2309253	69865	15	60	M	38		SPS
M1134	2310121	69828	11	20	M	38		SPS
M1135	2309743	69734	17	80	M	38		SPS
M1136	2309672	69574	163	50	M	38		Buoy

Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M1137	2308562	69169	12	30	M	39	M1137, C0223	Debris Scatter
M1138	2309321	69159	29	30	D	38		SPS
M1139	2309324	69051	16	20	M	38		SPS
M1140	2309229	68943	20	30	D	38		SPS
M1141	2309036	68801	108	25	D	39		SPS
M1142	2308113	68753	107	675	M	39		SPS
M1143	2307852	68553	352	675	M	39	M1143, M1144, M1145, M1146, M1147	Unknown, Possibly from Nearby Marker
M1144	2307878	68534	488	255	M	39	M1143, M1144, M1145, M1146, M1147	Unknown, Possibly from Nearby Marker
M1145	2307847	68468	178	580	M	39	M1143, M1144, M1145, M1146, M1147	Unknown, Possibly from Nearby Marker
M1146	2307861	68443	98	215	M	39	M1143, M1144, M1145, M1146, M1147	Unknown, Possibly from Nearby Marker
M1147	2307915	68407	93	730	M	39	M1143, M1144, M1145, M1146, M1147	Unknown, Possibly from Nearby Marker
M1148	2307330	67967	36	40	D	39	M1148, M1149, C0224	Linear Contact
M1149	2307303	67936	45	55	D	39	M1148, M1149, C0224	Linear Contact
M1150	2307087	67081	21	1258 .18	M	39		SPS
M1151	2306304	67031	14	40	D	39		SPS
M1152	2306178	66821	13	25	M	39	M1152, M1153, M1154	Unknown
M1153	2306163	66794	36	60	C D	39	M1152, M1153, M1154	Unknown
M1154	2306207	66778	-249	45	D	39	M1152, M1153, M1154	Unknown
M1155	2306664	66417	17	40	M	39		SPS
M1156	2305600	66328	38	115	C M	39		SPS
M1157	2305592	66232	21	55	M	39		SPS
M1158	2306235	66181	58	70	C D	39		SPS
M1159	2306257	66011	22	40	D	39		SPS
M1160	2304756	65482	16	165	M	40		SPS
M1161	2305052	65093	57	50	M	39		Buoy
M1162	2304023	65039	12	40	D	40		SPS
M1163	2303885	65008	14	15	M	40	M1163, M1165, M1166	Unknown
M1164	2305092	65044	62	80	C D	39		Buoy
M1165	2303829	64971	27	20	M	40	M1163, M1165, M1166	Unknown
M1166	2303815	64944	15	50	M	40	M1163, M1165, M1166	Unknown
M1167	2303740	64905	11	15	M	40		SPS

Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M1168	2303533	64630	16	35	M	40	M1168, M1169, C0225	Debris Scatter
M1169	2303510	64605	26	30	M	40	M1168, M1169, C0225	Debris Scatter
M1170	2303420	64556	14	60	M	40	M1170, M1171	Unknown
M1171	2303405	64532	20	50	C M	40	M1170, M1171	Unknown
M1172	2302087	63755	45	55	D	40		Buoy
M1173	2302073	63689	47	95	M	40		Buoy
M1174	2301743	63503	16	55	M	40	M1174, M1175, M1176, M1177, C0226, C0227	Unknown Object
M1175	2301739	63452	85	45	M	40	M1174, M1175, M1176, M1177, C0226, C0227	Unknown Object
M1176	2301742	63392	39	40	M	40	M1174, M1175, M1176, M1177, C0226, C0227	Unknown Object
M1177	2301719	63366	60	45	M	40	M1174, M1175, M1176, M1177, C0226, C0227	Unknown Object
M1178	2301567	63262	14	30	C M	40		SPS
M1179	2301283	63179	19	35	D	40		SPS
M1180	2301331	63169	24	55	D	40		SPS
M1181	2301397	63069	35	25	D	40	M1181, C0228	Wire Rope
M1182	2300789	62789	21	40	M	40	M1182, M1183, M1184, C0229, C0230, C0231	Paddle Wheel, Possibly from <i>Kate</i>
M1183	2300798	62735	79	35	M	40	M1182, M1183, M1184, C0229, C0230, C0231	Paddle Wheel, Possibly from <i>Kate</i>
M1184	2300777	62713	233	70	D	40	M1182, M1183, M1184, C0229, C0230, C0231	Paddle Wheel, Possibly from <i>Kate</i>
M1185	2301667	62685	15	30	M	40		SPS
M1186	2300194	62365	12	40	M	41		SPS
M1187	2301386	62366	15	25	M	40		SPS
M1188	2300175	62222	691	215	M	41		Passing Vessel
M1189	2301073	62146	21	70	M	40		SPS
M1190	2300951	62061	100	45	D	40		SPS
M1191	2300713	61947	19	40	C M	40		SPS
M1192	2300785	61942	54	35	D	40		SPS
M1193	2300374	61822	25	110	D	41		SPS
M1194	2300528	61822	17	20	M	41	M1194, M1195, C0223	Linear Contact
M1195	2300534	61766	32	40	M	41	M1194, M1195, C0223	Linear Contact
M1196	2300387	61667	39	35	C D	41		SPS
M1197	2300179	61626	19	25	M	41		SPS
M1198	2299038	61566	99	50	M	41	M1198, M1199, M1200, M1201, C0234	Linear Contact
M1199	2299038	61562	122	45	M	41	M1198, M1199, M1200, M1201, C0234	Linear Contact
M1200	2299057	61518	243	40	M	41	M1198, M1199, M1200, M1201, C0234	Linear Contact

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Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M1201	2299115	61498	25	50	M	41	M1198, M1199, M1200, M1201, C0234	Linear Contact
M1202	2299893	61320	78	20	M	41		SPS
M1203	2299578	61285	16	40	D	41		SPS
M1204	2299744	61223	104	50	C D	41		SPS
M1205	2299404	61141	45	45	M	41	M1205, M1206	Unknown
M1206	2299413	61099	37	25	M	41	M1205, M1206	Unknown
M1207	2299231	61034	29	60	C D	41		SPS
M1208	2299499	61037	22	15	M	41		SPS
M1209	2299458	61014	28	15	M	41		SPS
M1210	2299419	60990	27	15	D	41		SPS
M1211	2299200	60942	20	25	M	41	M1211, M1212, M1213, M1214, M1215, C0235, C0236	Debris Scatter and Linear Contact
M1212	2299078	60923	16	50	C D	41	M1211, M1212, M1213, M1214, M1215, C0235, C0236	Debris Scatter and Linear Contact
M1213	2299298	60905	63	20	M	41	M1211, M1212, M1213, M1214, M1215, C0235, C0236	Debris Scatter and Linear Contact
M1214	2299214	60902	43	35	C M	41	M1211, M1212, M1213, M1214, M1215, C0235, C0236	Debris Scatter and Linear Contact
M1215	2299232	60861	38	30	M	41	M1211, M1212, M1213, M1214, M1215, C0235, C0236	Debris Scatter and Linear Contact
M1216	2298928	60807	50	70	C M	42		SPS
M1217	2299137	60789	24	35	M	42		SPS
M1218	2299123	60774	18	25	M	42		SPS
M1219	2299055	60736	12	20	M	42		SPS
M1220	2298772	60714	38	55	D	42		SPS
M1221	2298928	60690	31	35	D	42		SPS
M1222	2298633	60619	16	20	M	42		SPS
M1223	2297635	60533	60	75	D	42	M1223, M1224	Unknown
M1224	2297712	60527	20	42	M	42	M1223, M1224	Unknown
M1225	2298698	60526	41	45	D	42		Buoy
M1226	2298488	60505	18	25	C M	42		SPS
M1227	2298724	60506	70	35	D	42		Buoy
M1228	2298726	60504	83	35	D	42		Buoy
M1229	2298669	60479	28	10	M	42		Buoy
M1230	2298422	60460	32	30	D	42		SPS
M1231	2298664	60465	29	15	M	42		Buoy
M1232	2298569	60396	31	45	M	42	M1232, C0237	Large Object
M1233	2298163	60196	18	40	M	42	M1233, M1235, M1236	Unknown
M1234	2297893	60155	169	2625	M	42	M1234, M1237	Unknown
M1235	2298255	60163	192	55	M	42	M1233, M1235, M1236	Unknown

Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M1236	2298236	60157	45	50	M	42	M1233, M1235, M1236	Unknown
M1237	2297921	60090	41	45	D	42	M1234, M1237	Unknown
M1238	2296915	60021	12	30	M	42		SPS
M1239	2296745	59754	16	15	M	42		SPS
M1240	2297942	57875	10	35	M	43	M1240, C0239	Linear Contact
M1241	2297975	57717	63	80	M	43		Buoy
M1242	2297938	57693	393	60	M	43		Buoy
M1243	2298397	56912	14	25	M	43		SPS
M1244	2298369	55949	16	25	M	43		SPS
M1245	2298331	55848	26	35	M	43		SPS
M1246	2299381	55697	9	45	M	43		SPS
M1247	2299573	55537	26	50	M	43	M1247, M1249	Unknown
M1248	2298779	55497	26	20	M	43		SPS
M1249	2299641	55517	25	100	D	43	M1247, M1249	Unknown
M1250	2299917	55279	19	30	M	43		SPS
M1251	2299998	55208	23	40	M	43		SPS
M1252	2299069	55125	23	15	M	43		SPS
M1253	2299123	54907	12	40	M	43	M1253, C0240	Debris Scatter
M1254	2300891	52974	14	25	M	44		SPS
M1255	2300979	52324	19	35	D	44		SPS
M1256	2301187	51830	61	40	M	44		Buoy
M1257	2301270	51806	78	60	D	44		Buoy
M1258	2302087	51205	18	65	M	44		SPS
M1259	2301157	51130	55	15	M	44		SPS
M1260	2301927	50858	136	2755	M	44		SPS
M1261	2301072	50484	43	80	CD	44		SPS
M1262	2301943	50339	38	30	M	44	M1262, M1264	Unknown
M1263	2301033	50282	14	20	M	44	M1263, M1265	Unknown
M1264	2301992	50306	24	30	M	44	M1262, M1264	Unknown
M1265	2301087	50269	56	25	M	44	M1263, M1265	Unknown
M1266	2301026	50190	20	20	M	44		SPS
M1267	2301020	50069	76	50	C D	44		SPS
M1268	2301002	49922	24	45	M	44		SPS
M1269	2301062	49717	12	25	M	45		SPS
M1270	2300959	49294	16	15	M	45		SPS
M1271	2301071	49076	44	75	M	45		Buoy
M1272	2300959	49016	40	60	M	45		Buoy
M1273	2300818	48257	12	20	M	45		SPS
M1274	2300834	48052	11	20	M	45		SPS
M1275	2300769	47937	65	30	M	45	M1275, M1276	Unknown
M1276	2300808	47911	23	30	M	45	M1275, M1276	Unknown
M1277	2300694	47740	18	20	D	45		SPS
M1278	2300703	47489	48	40	M	45	M1278, M1279, M1280, M1281	Unknown
M1279	2300853	47477	26	65	M	45	M1278, M1279, M1280, M1281	Unknown
M1280	2300754	47457	26	35	M	45	M1278, M1279, M1280, M1281	Unknown
M1281	2300654	47439	70	80	M	45	M1278, M1279, M1280, M1281	Unknown

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Target	Easting	Northing	nTs	Duration	Type	Map	Associations	Notes
M1282	2301472	47218	13	35	M	45	M1282, C0241	Debris Scatter
M1283	2301404	46395	16	25	M	45		SPS
M1284	2301351	46229	9	30	M	45		SPS
M1285	2300245	46058	349	60	M	45		Buoy
M1286	2300135	46037	18	40	M	45		Buoy
M1287	2300247	46039	77	80	M	45		Buoy
M1288	2301321	45838	40	20	M	45		SPS

Key: nTs=nanoteslas; M= Monopole; D= Dipole; C= Complex; SPS= Single-Point-Source
Coordinates in NAD83 North Carolina State Plane U.S. Survey Feet.

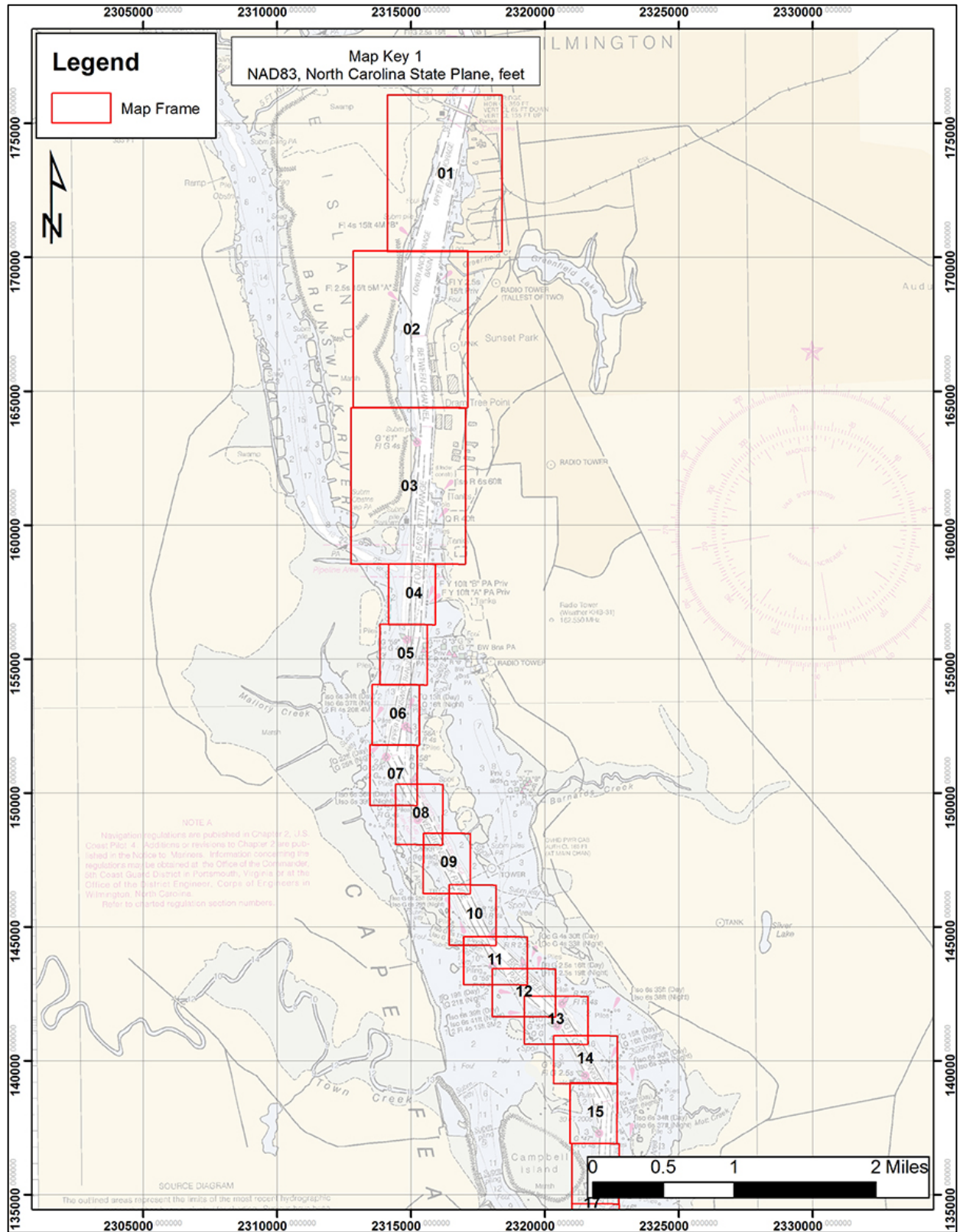


Figure 4-01. Area of Potential Effects Map Key 1 (base map is National Oceanic and Atmospheric Administration Chart 11537 “Cape Fear to Wilmington” 2009).

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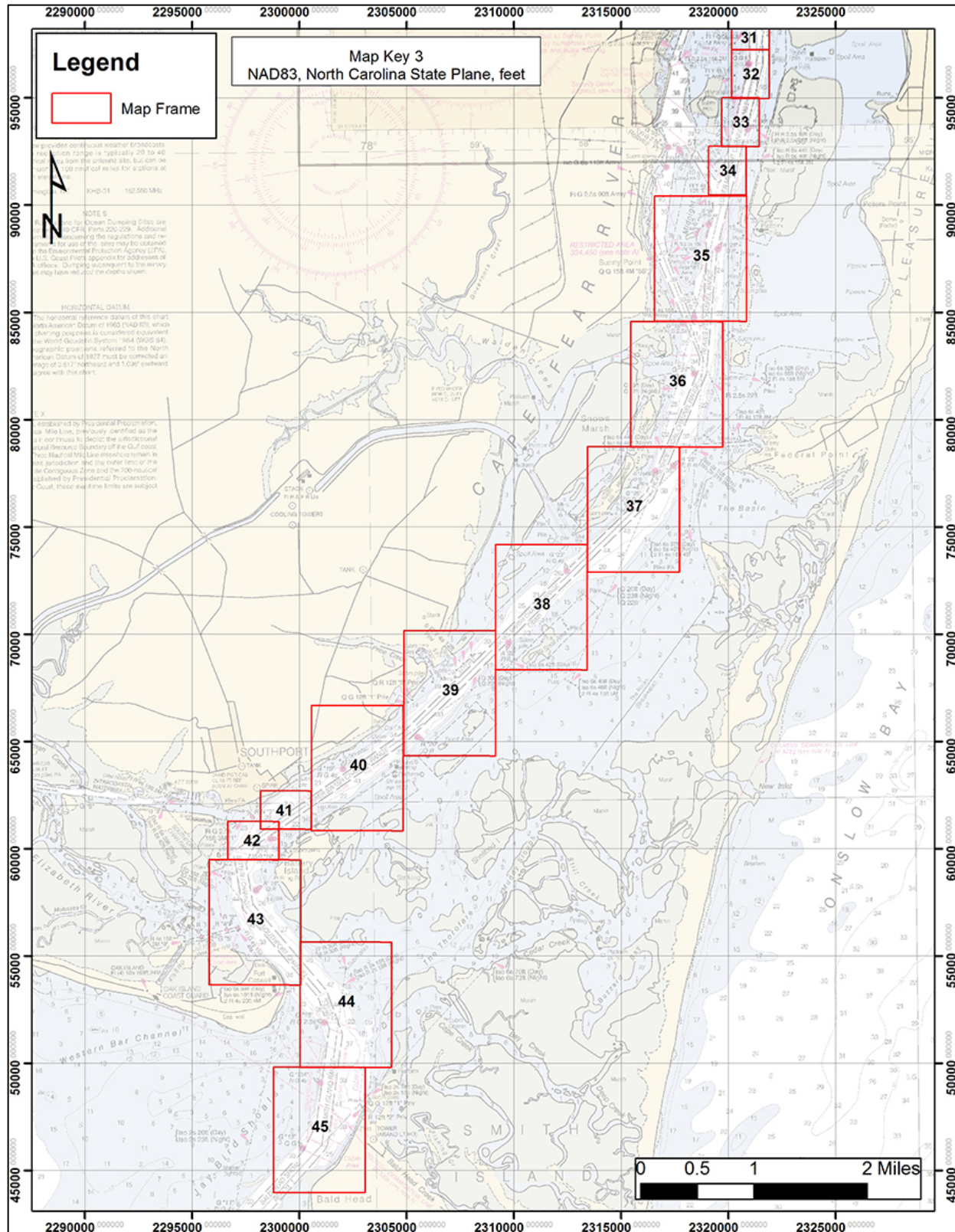


Figure 4-03. Area of Potential Effects Map Key 3 (base map is National Oceanic and Atmospheric Administration Chart 11537 “Cape Fear to Wilmington” 2009).

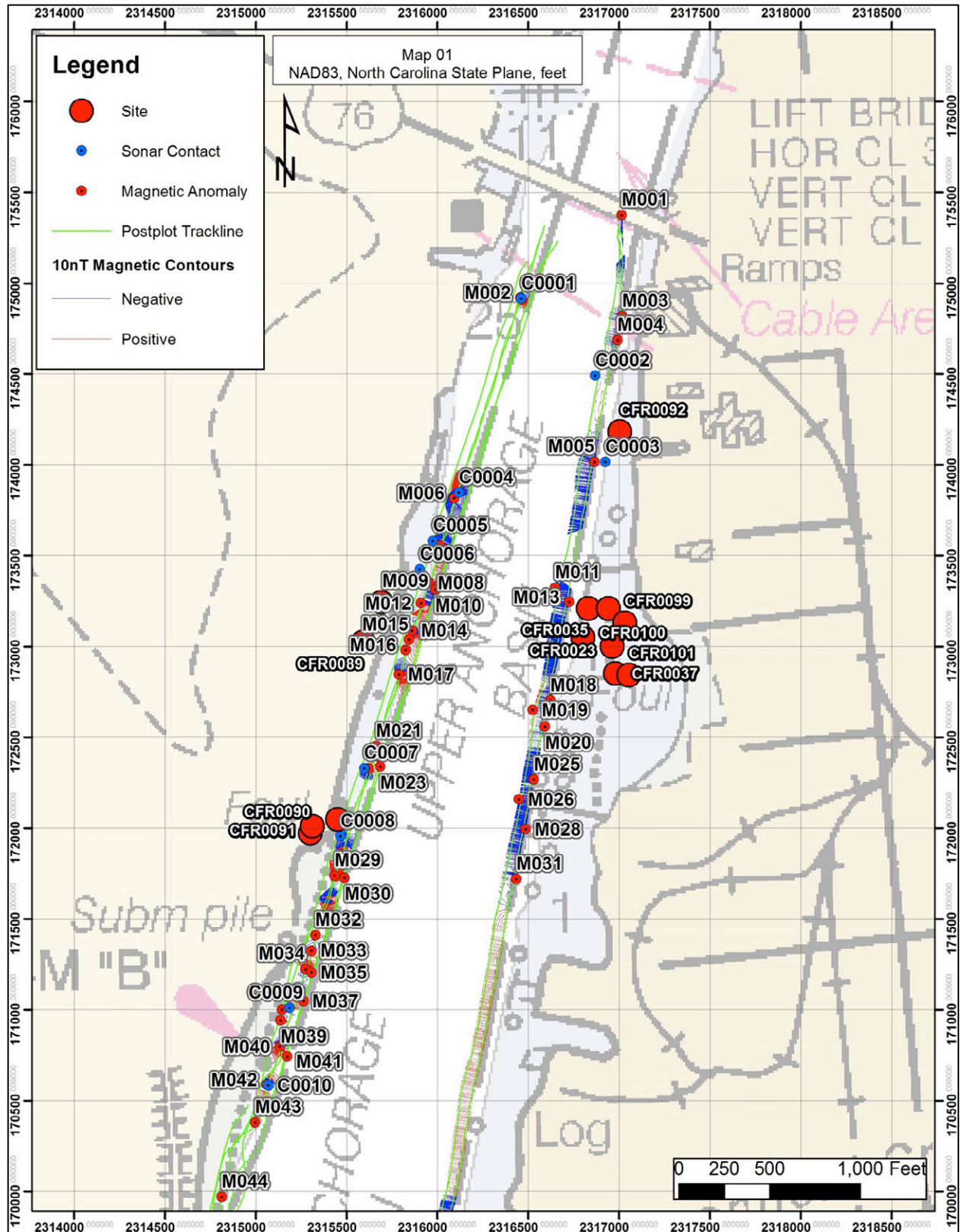


Figure 4-04. Area of Potential Effects Map 1.

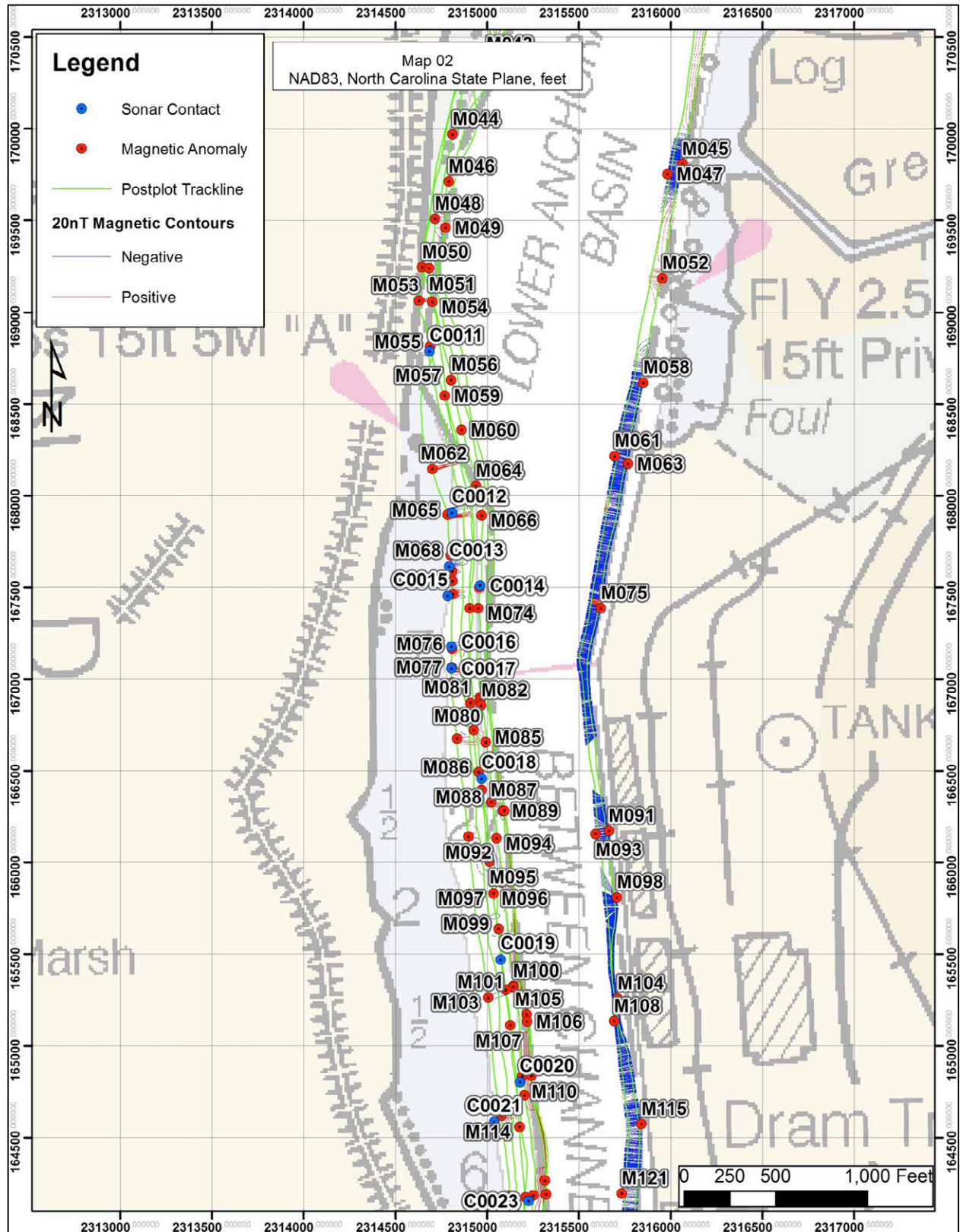


Figure 4-05. Area of Potential Effects Map 2.

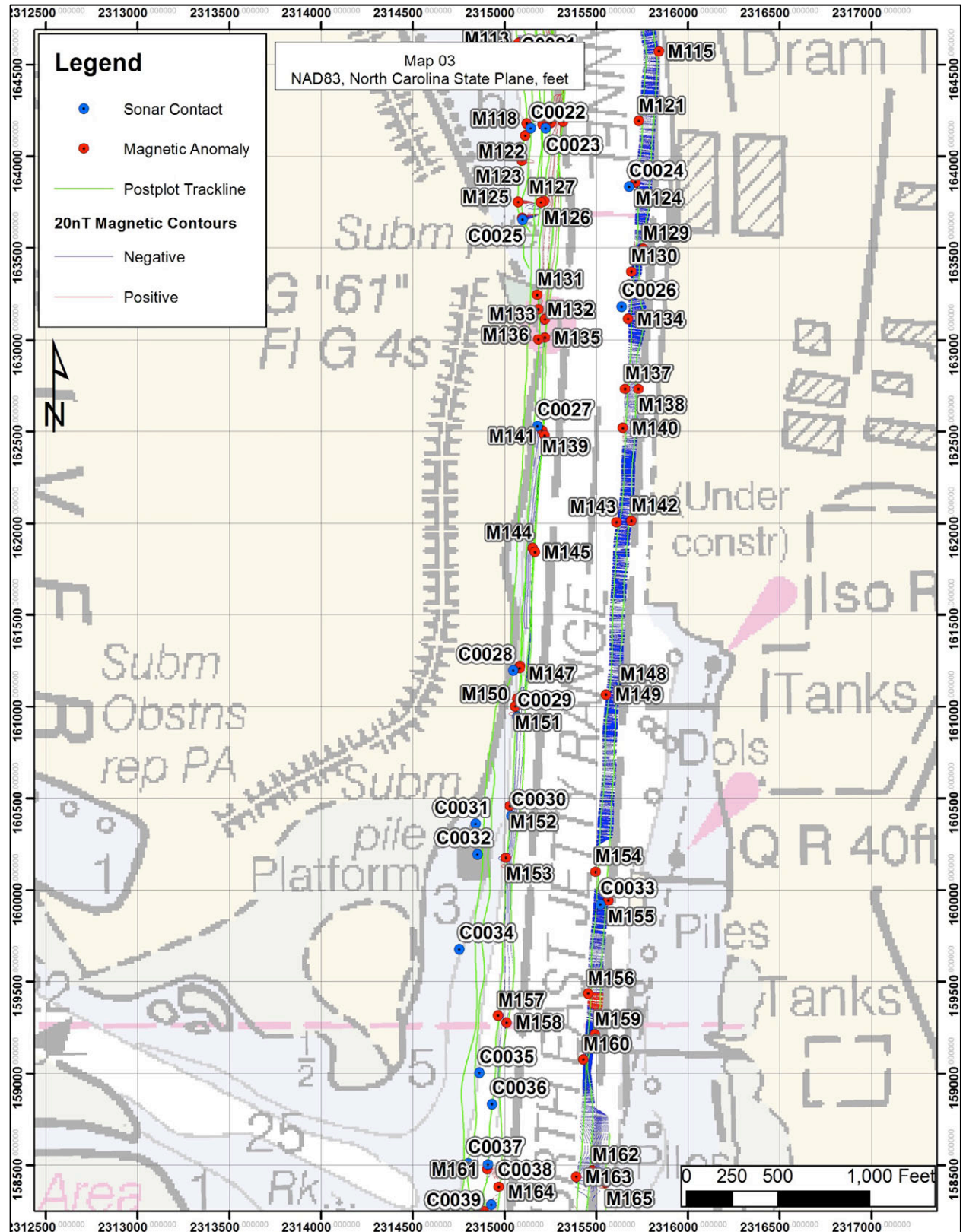


Figure 4-06. Area of Potential Effects Map 3.

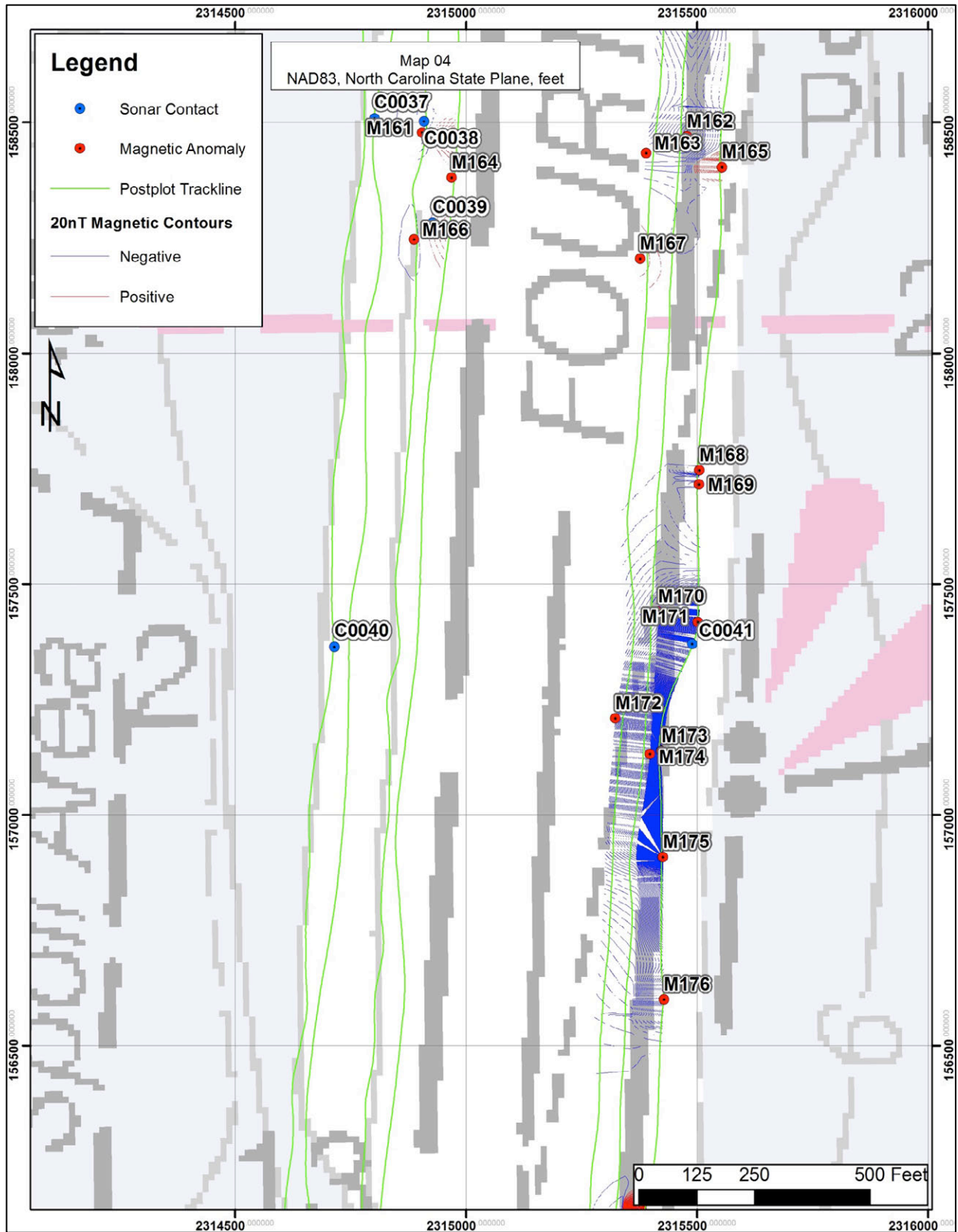


Figure 4-07. Area of Potential Effects Map 4.

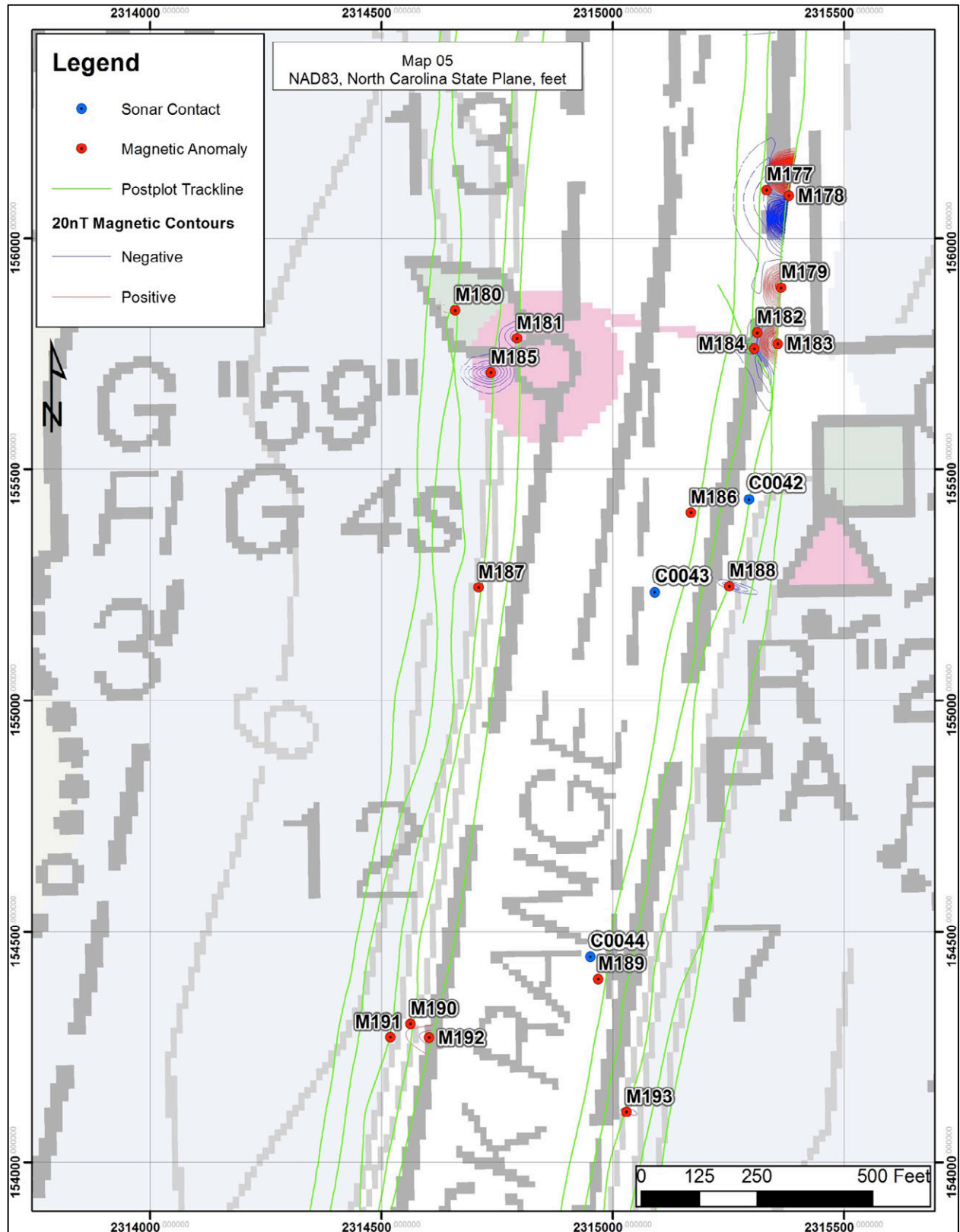


Figure 4-08. Area of Potential Effects Map 5.

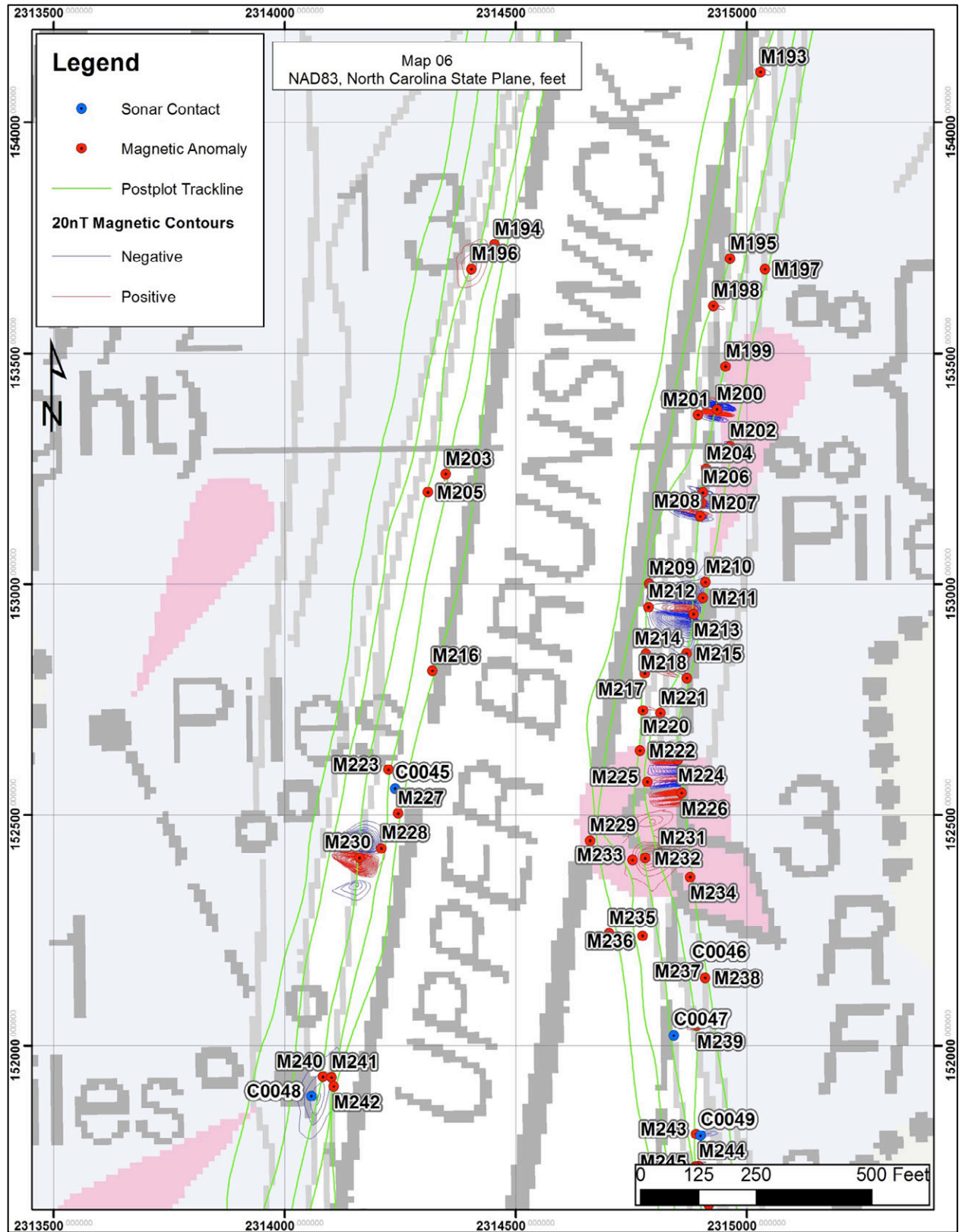


Figure 4-09. Area of Potential Effects Map 6.

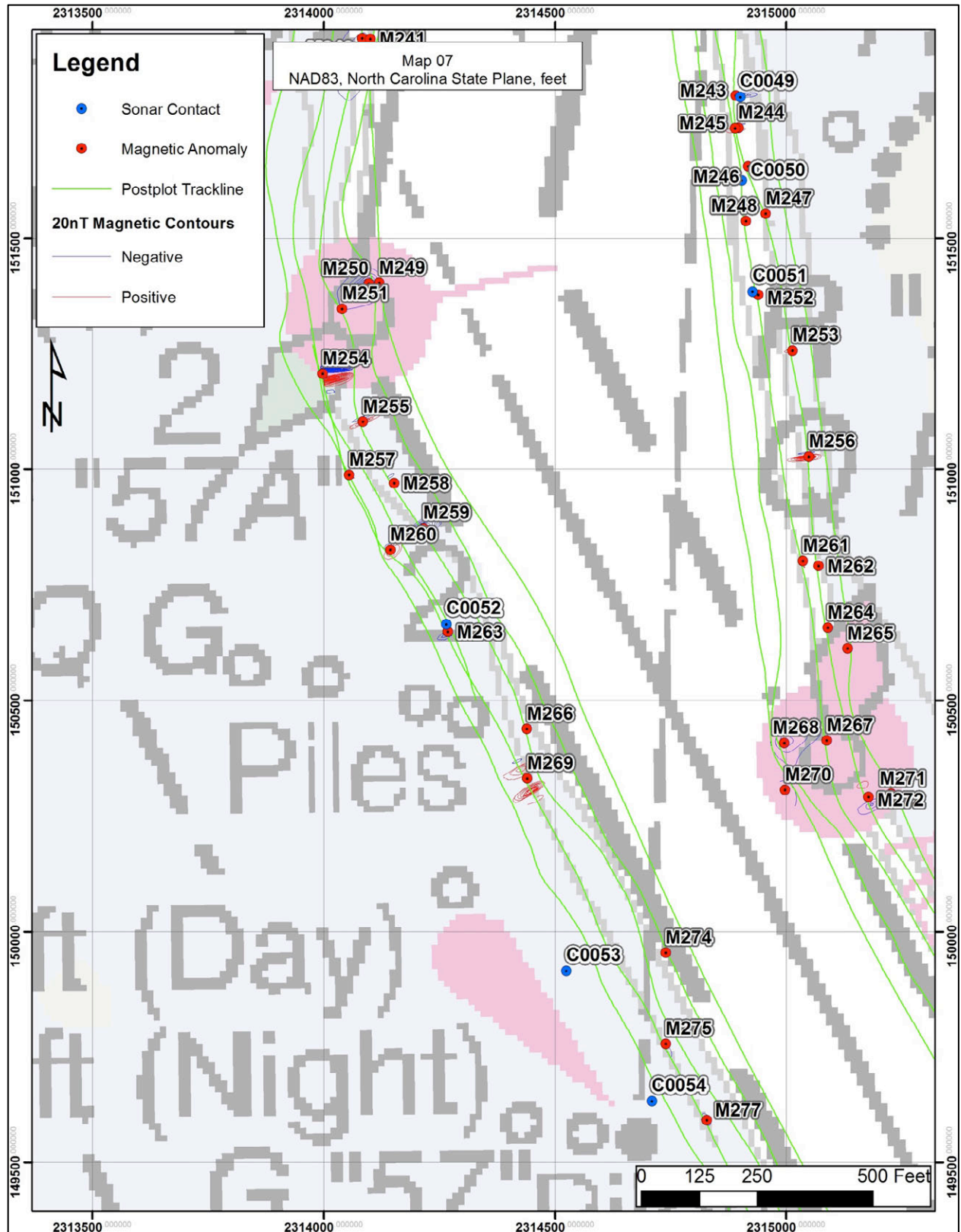


Figure 4-10. Area of Potential Effects Map 7.

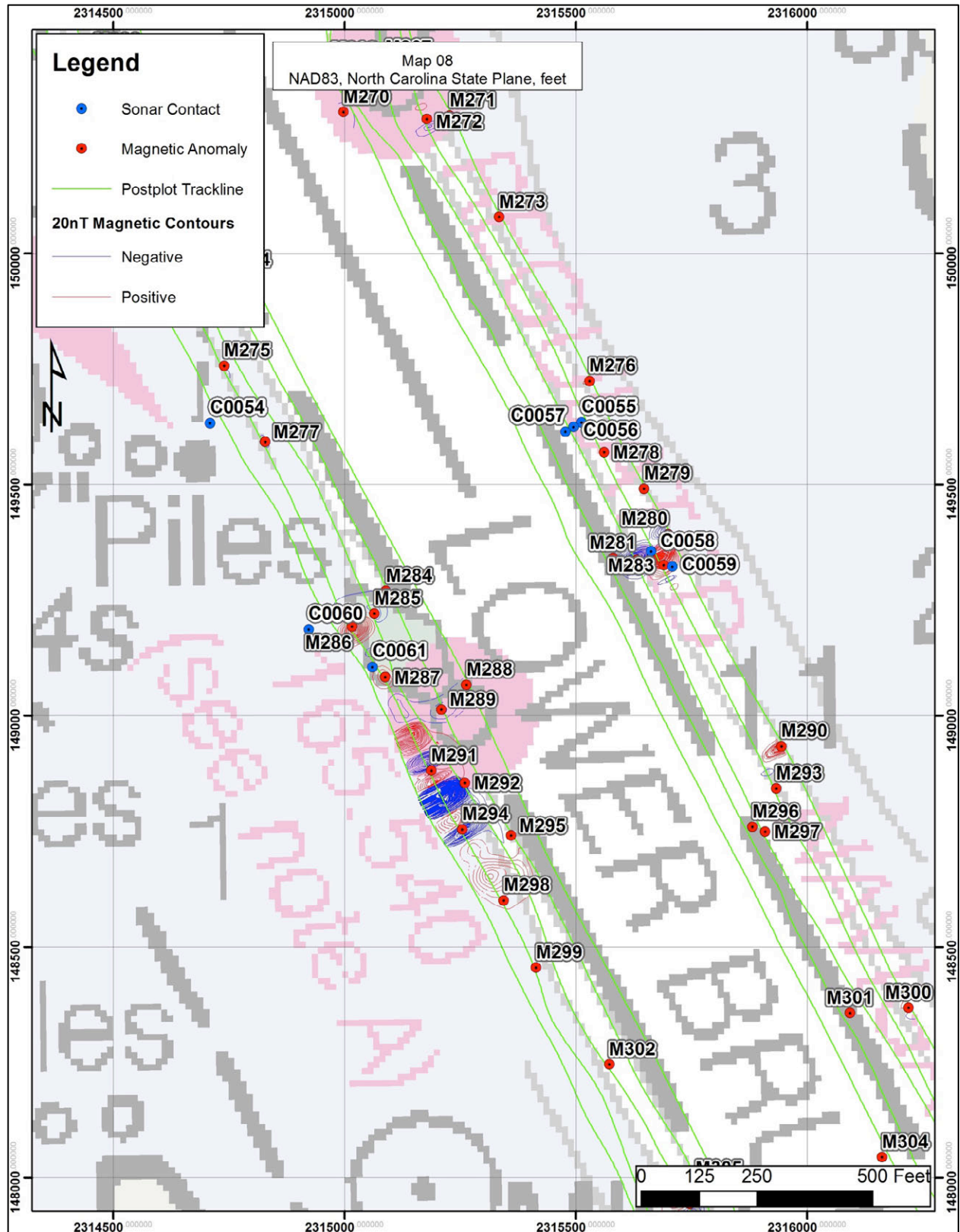


Figure 4-11. Area of Potential Effects Map 8.

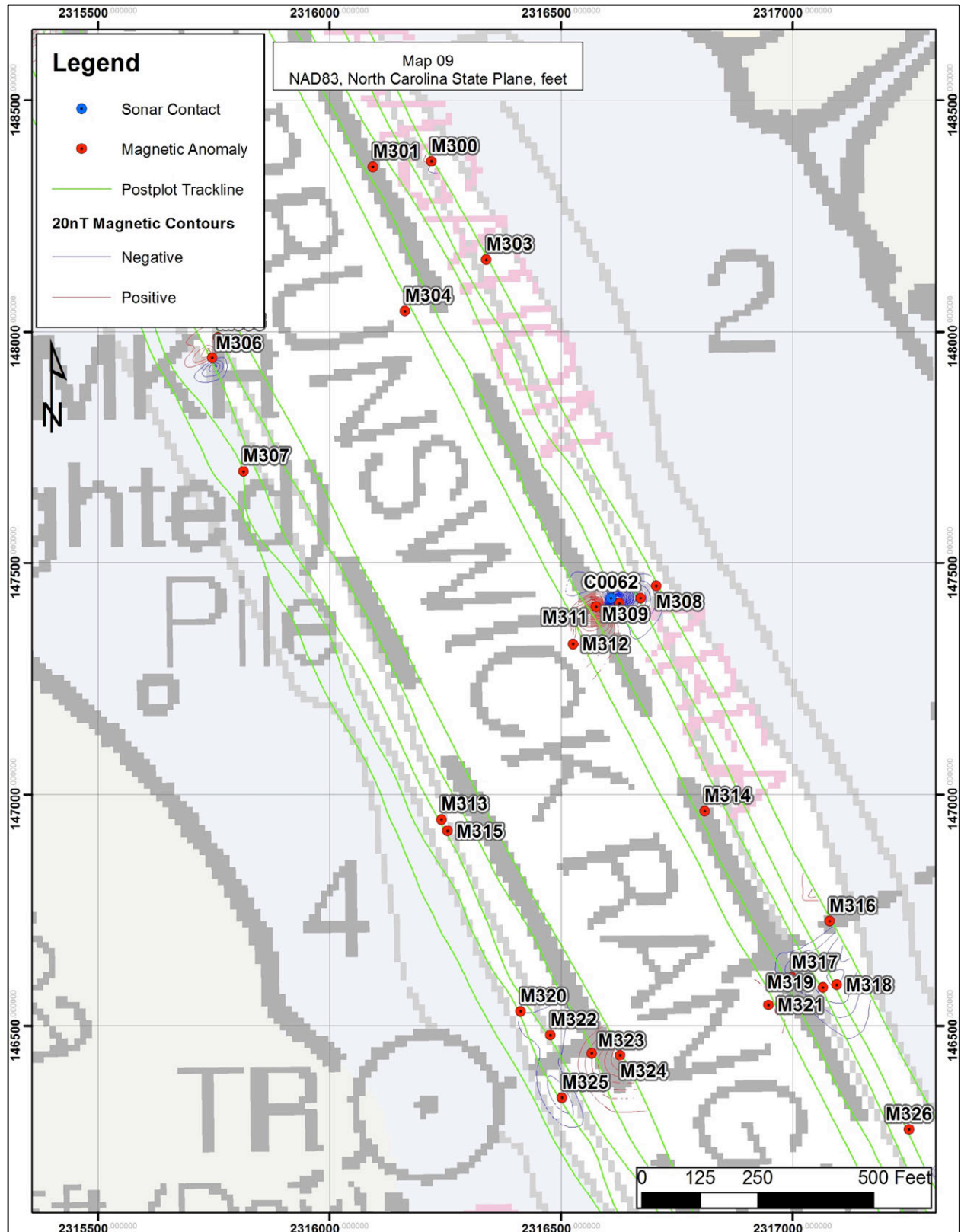


Figure 4-12. Area of Potential Effects Map 9.

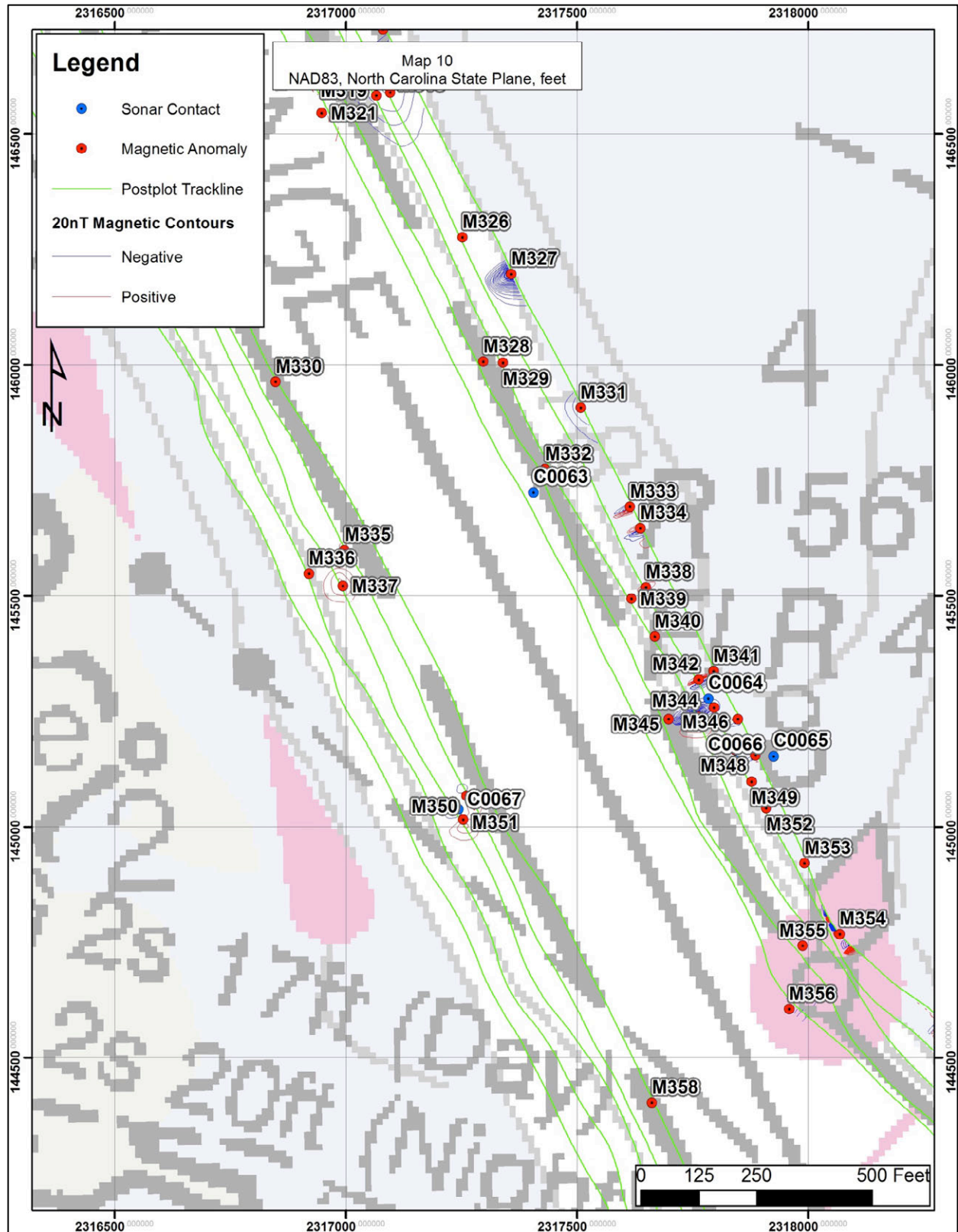


Figure 4-13. Area of Potential Effects Map 10.

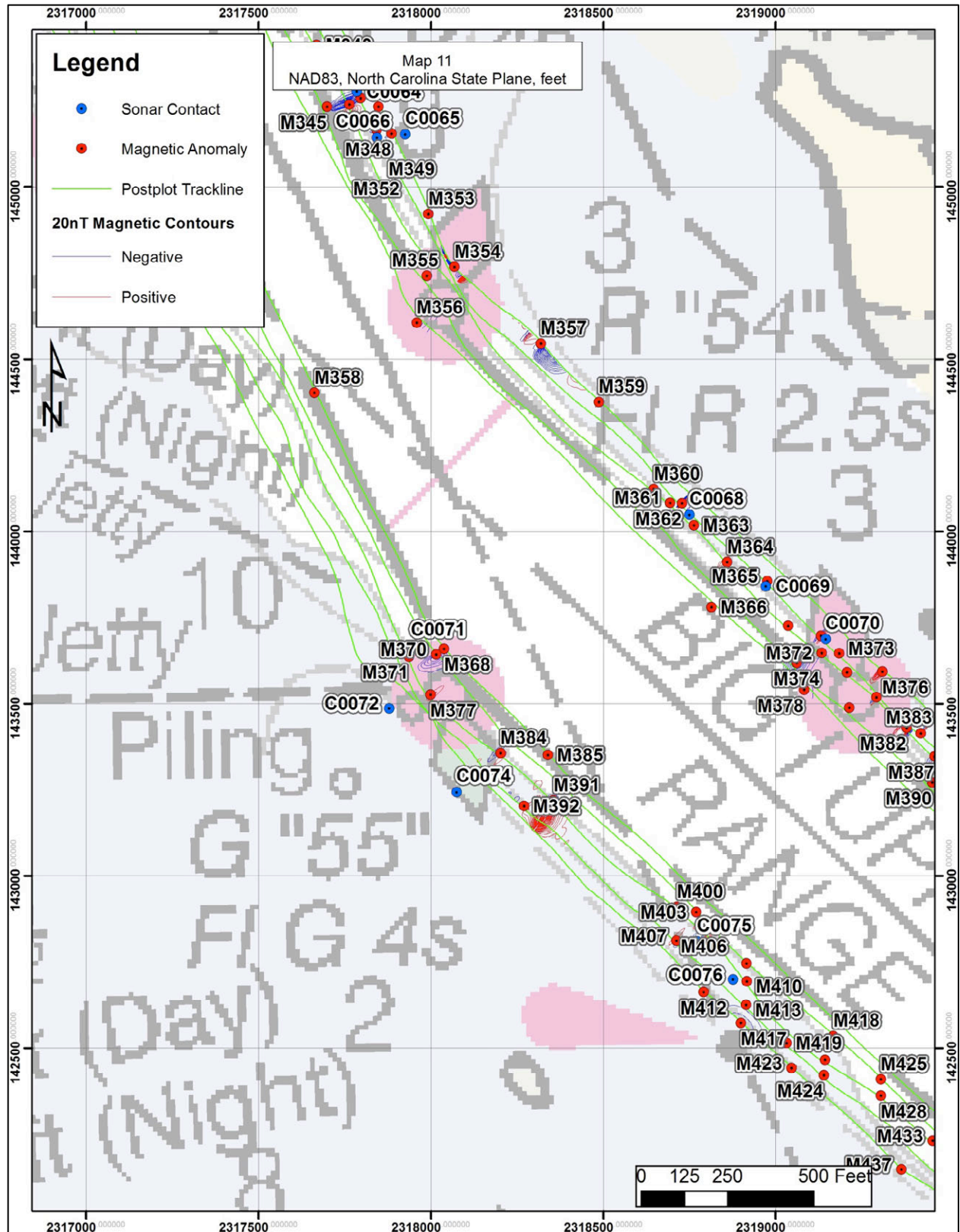


Figure 4-14. Area of Potential Effects Map 11.

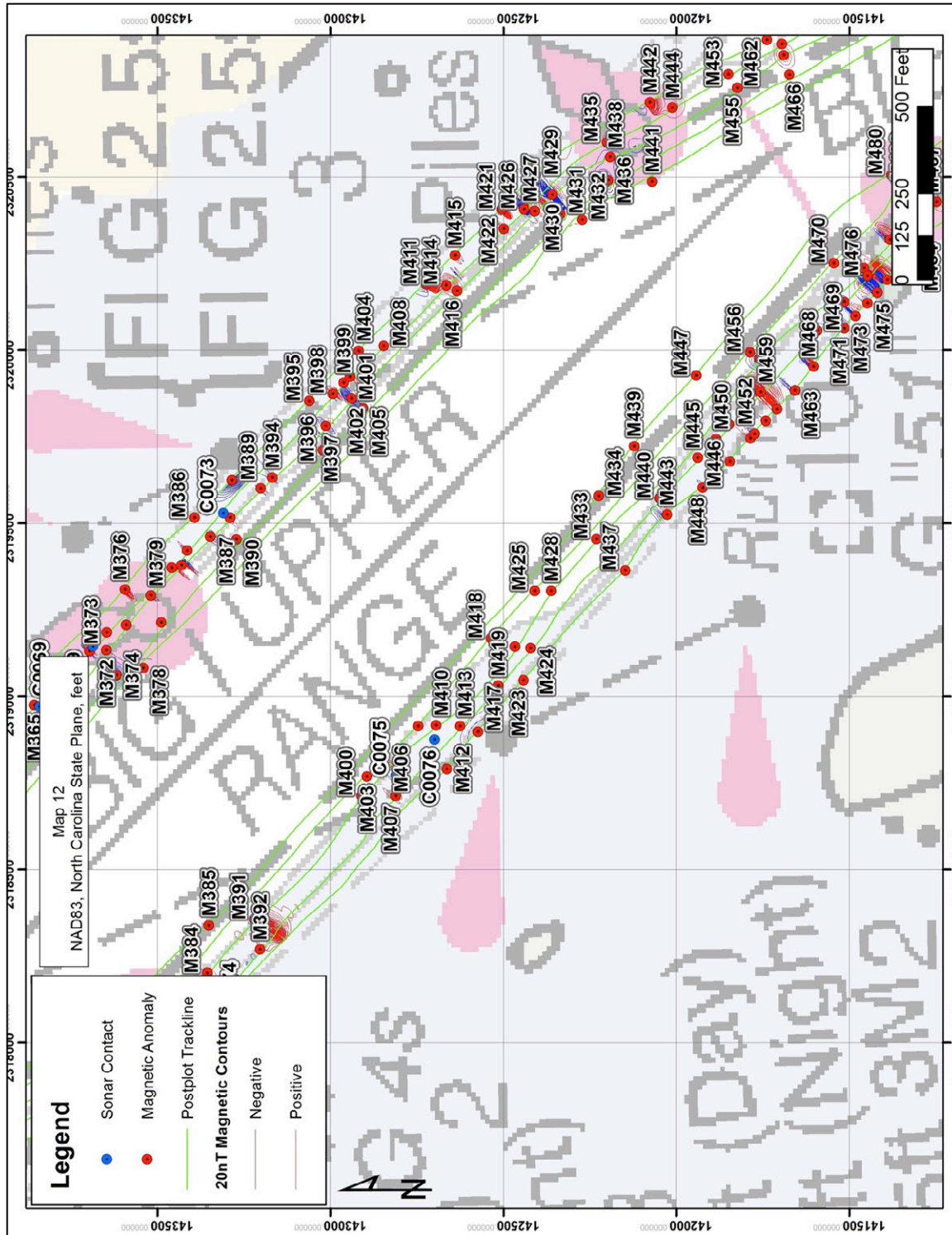


Figure 4-15. Area of Potential Effects Map 12.

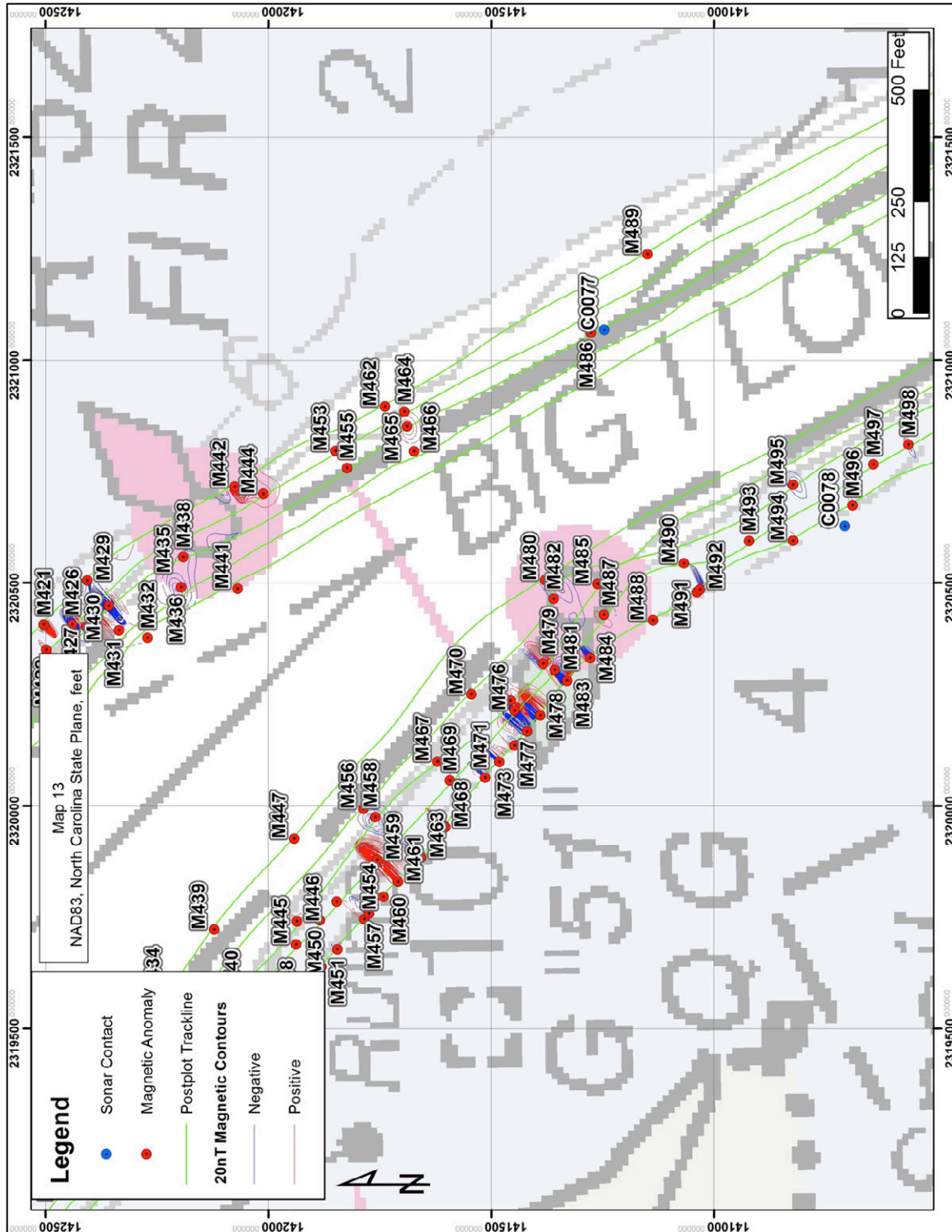


Figure 4-16. Area of Potential Effects Map 13.

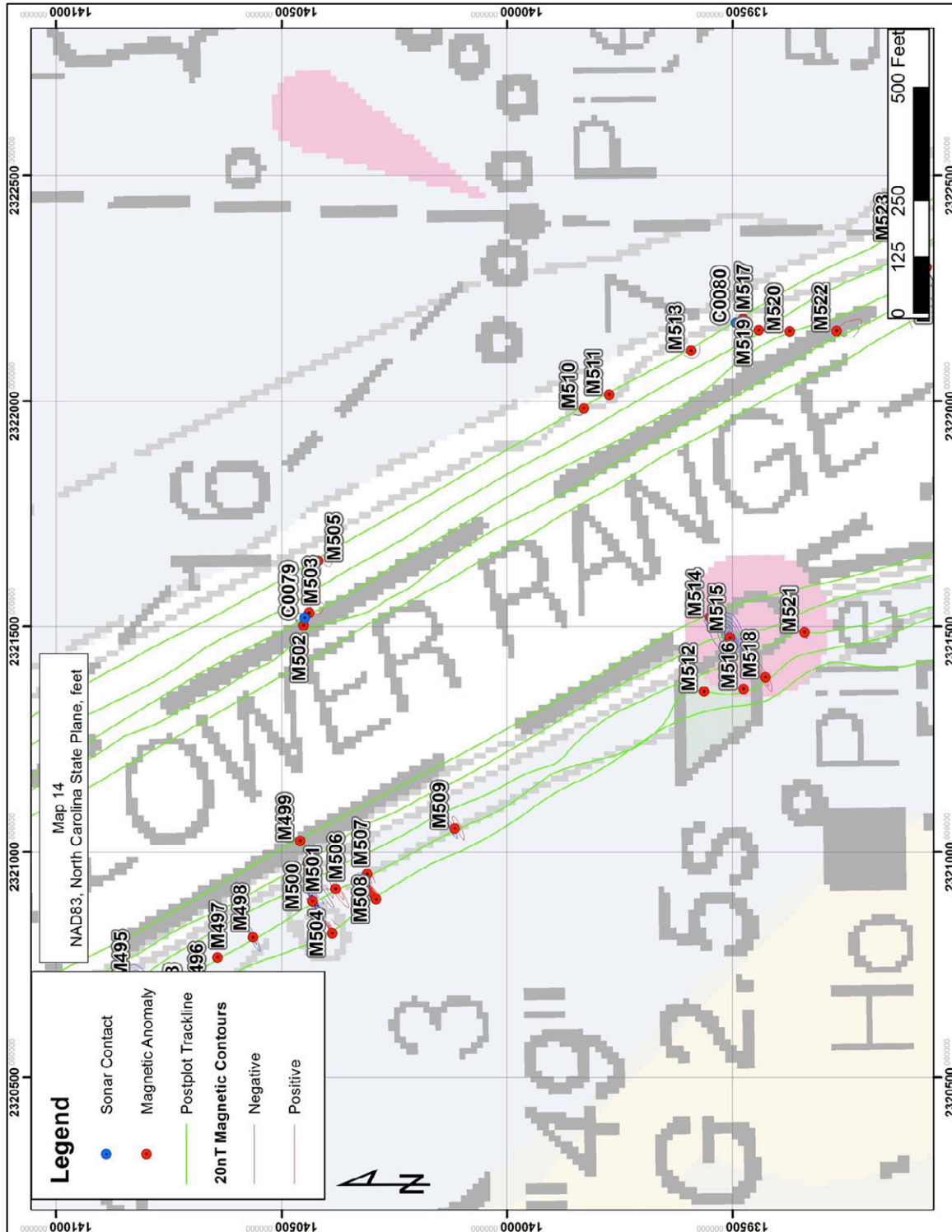


Figure 4-17. Area of Potential Effects Map 14.

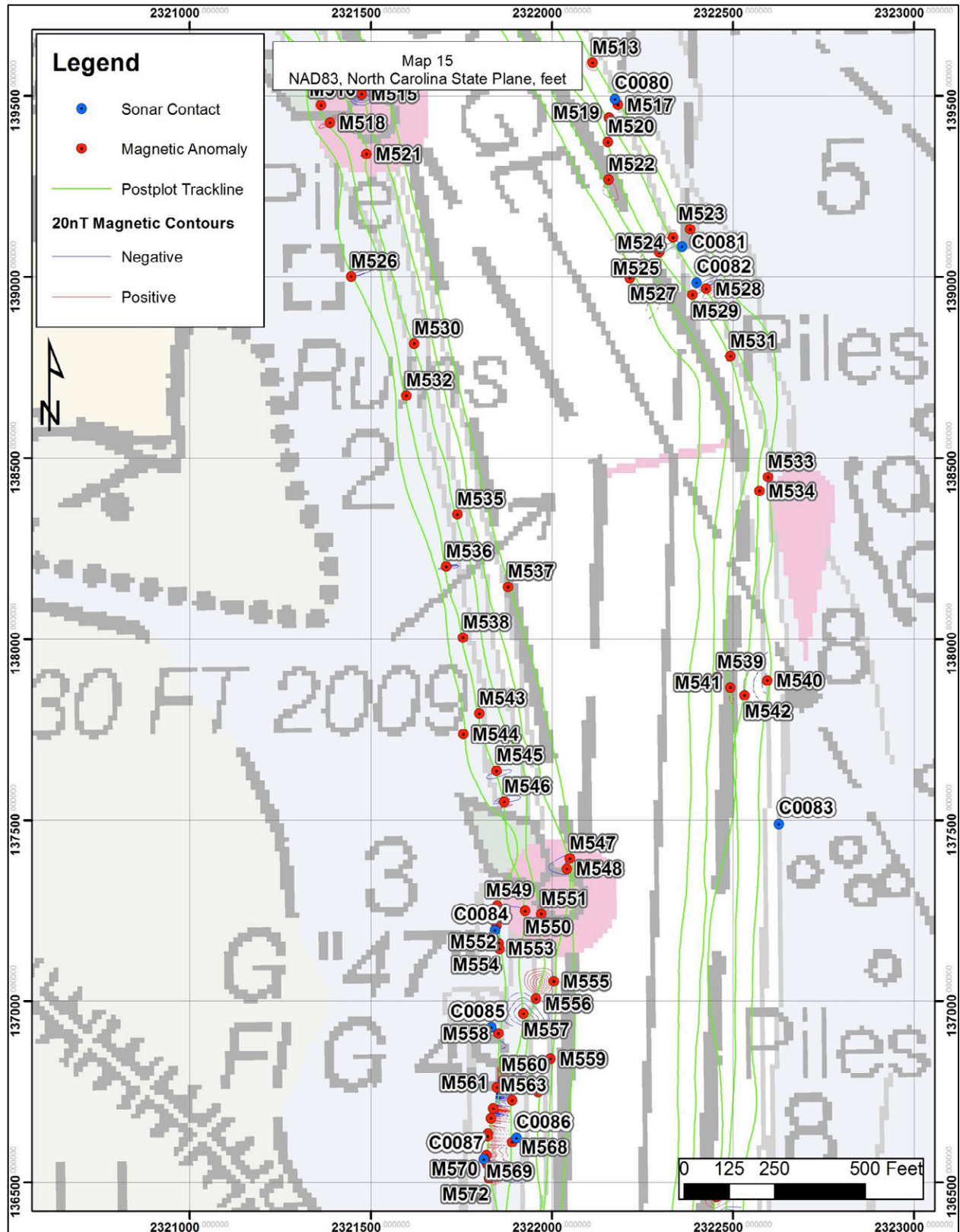


Figure 4-18. Area of Potential Effects Map 15.

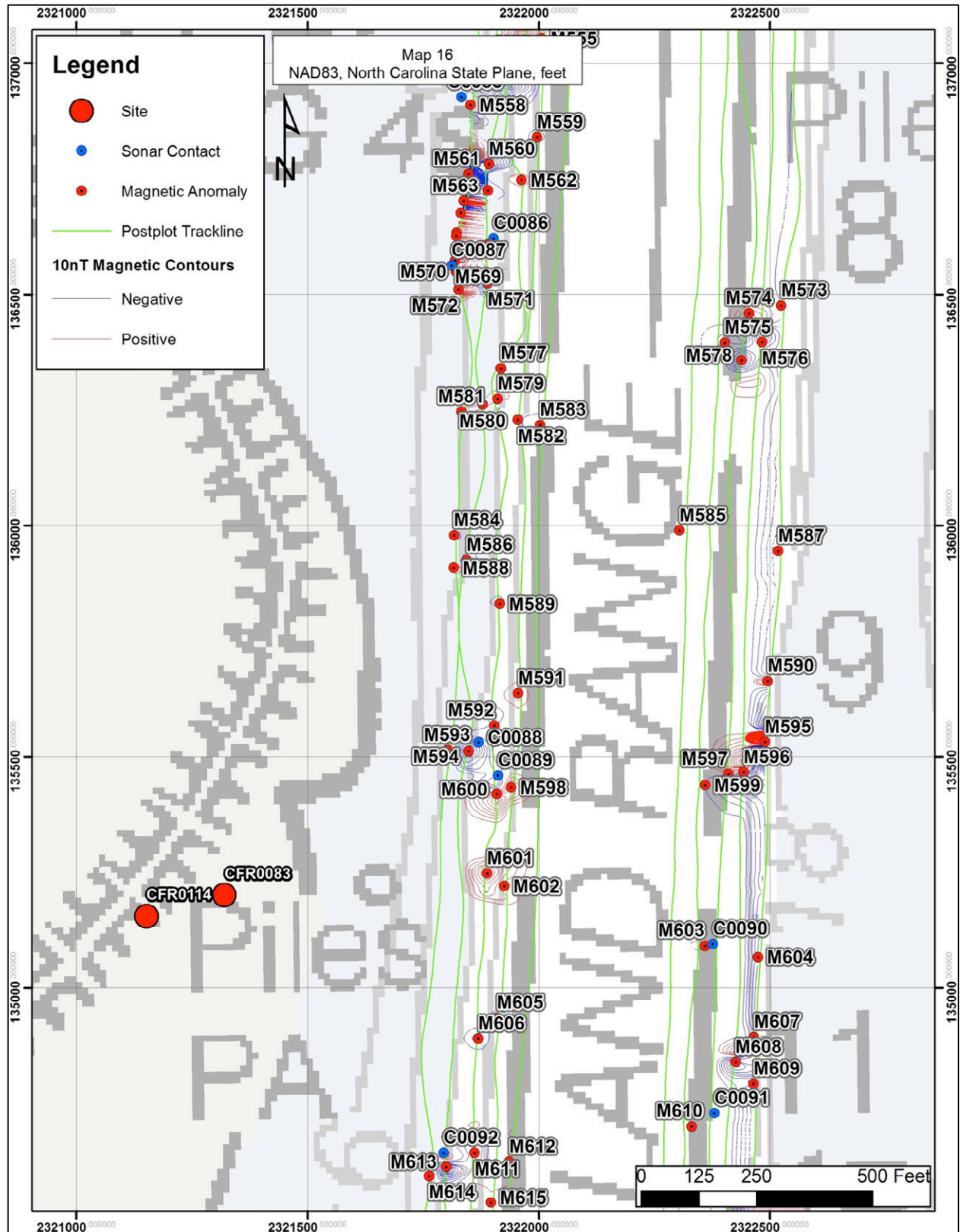


Figure 4-19. Area of Potential Effects Map 16.

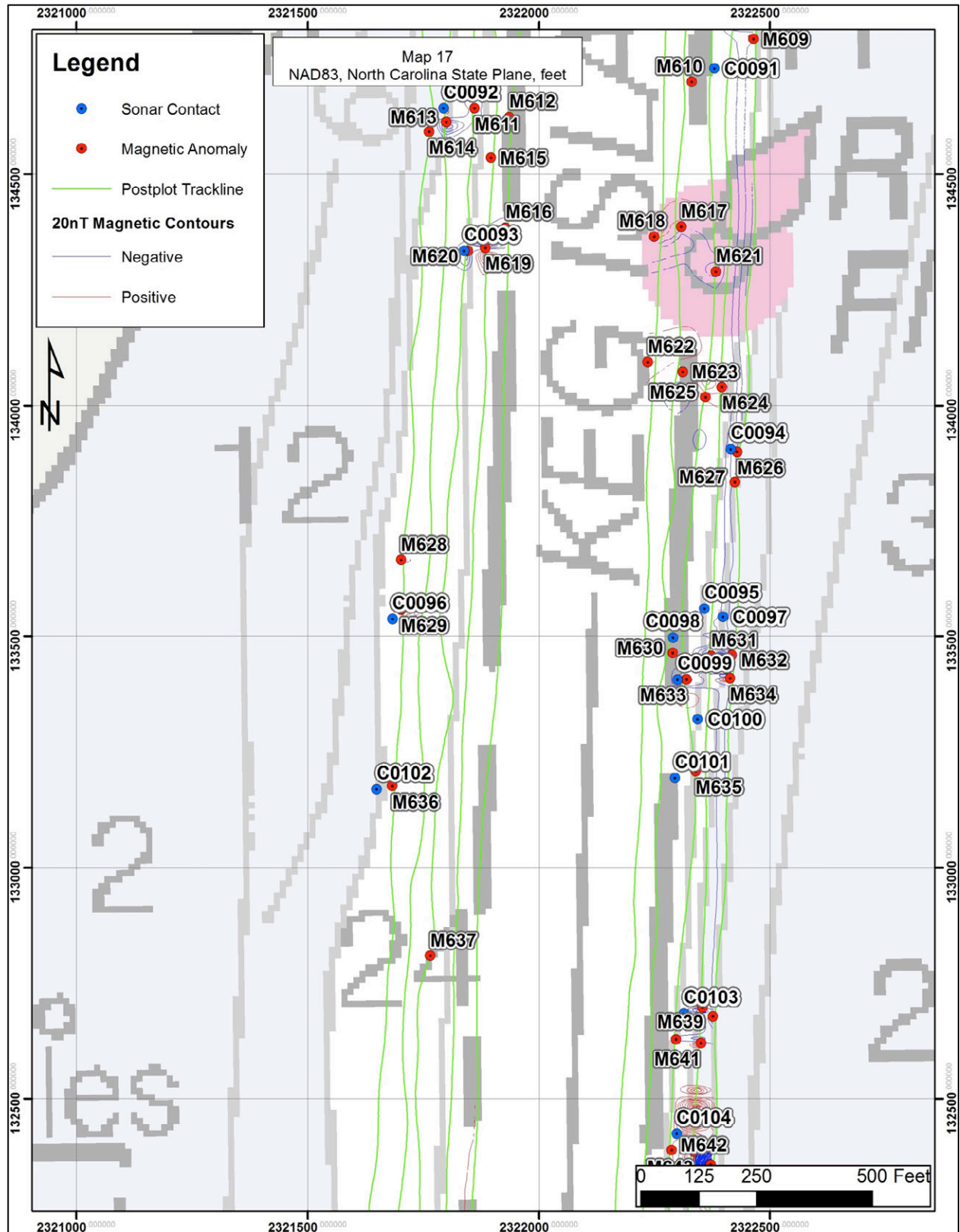


Figure 4-20. Area of Potential Effects Map 17.

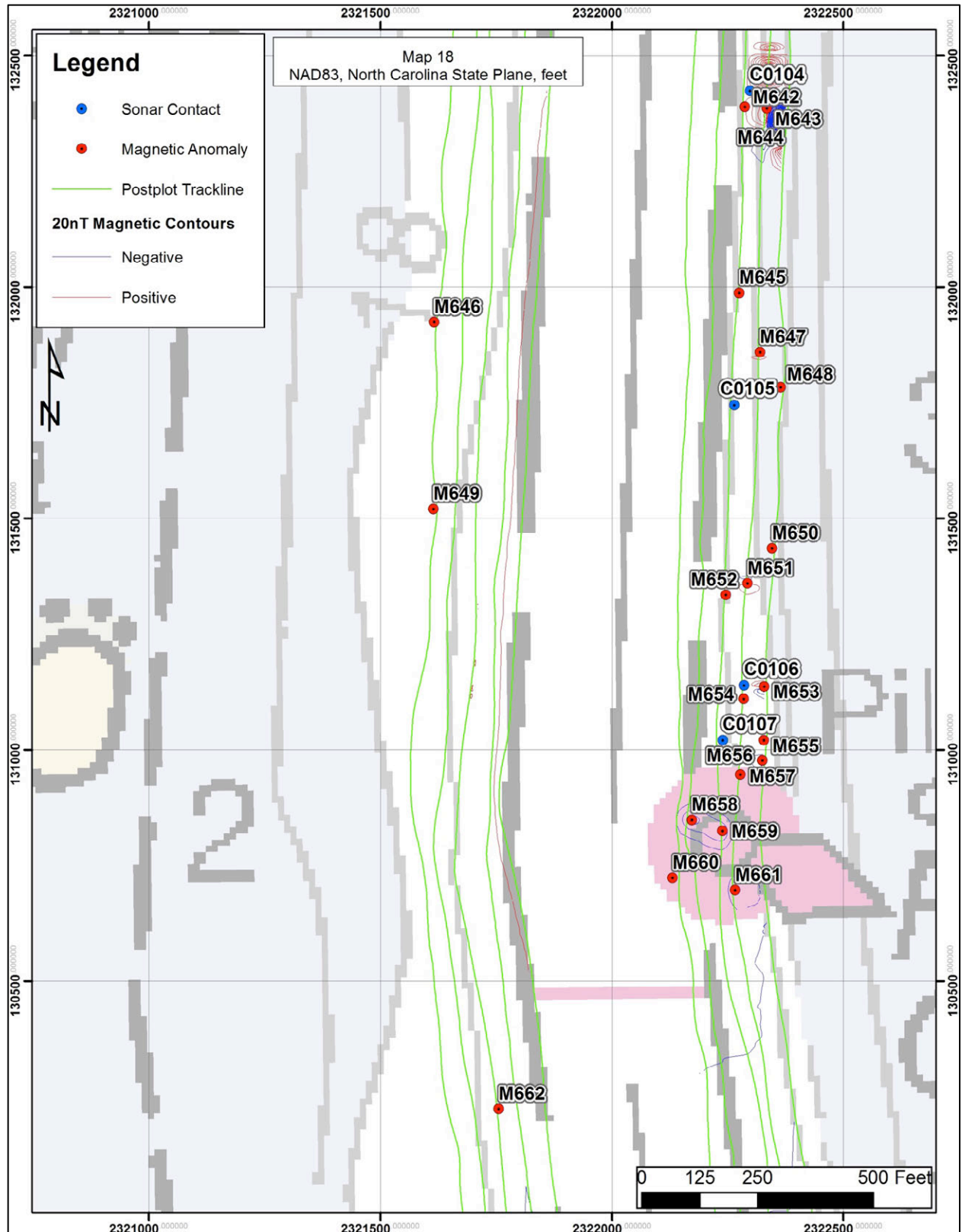


Figure 4-21. Area of Potential Effects Map 18.

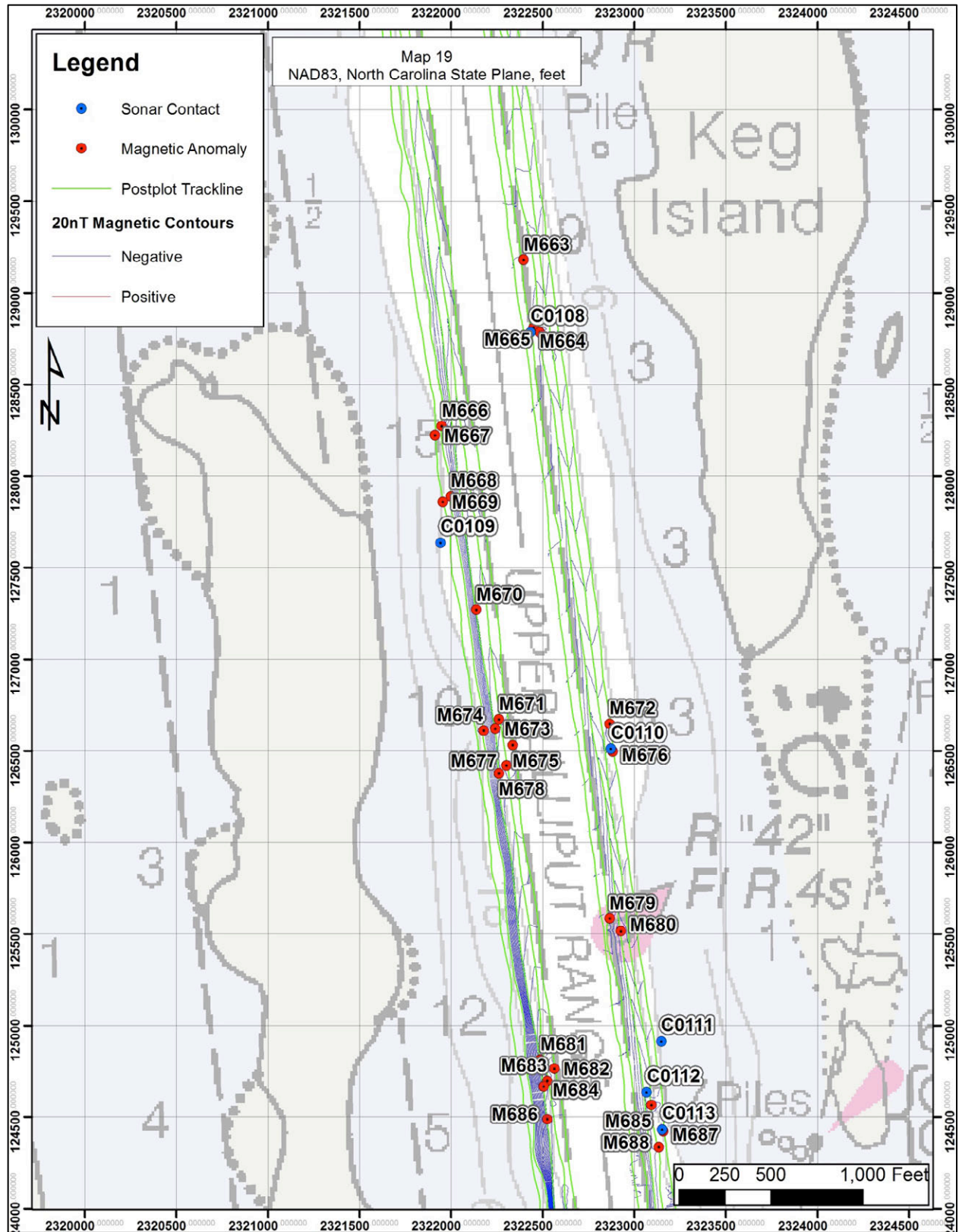


Figure 4-22. Area of Potential Effects Map 19.

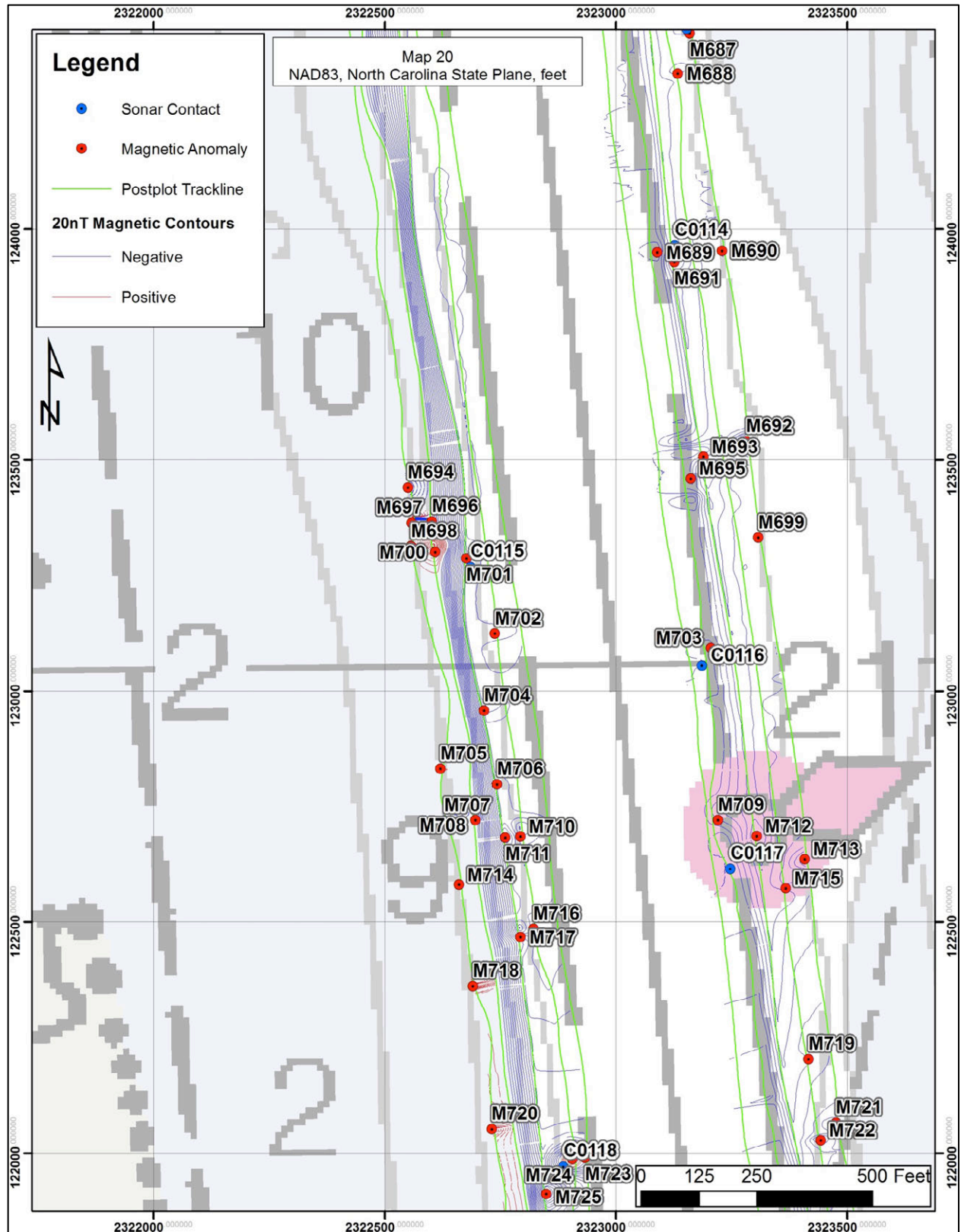


Figure 4-23. Area of Potential Effects Map 20.

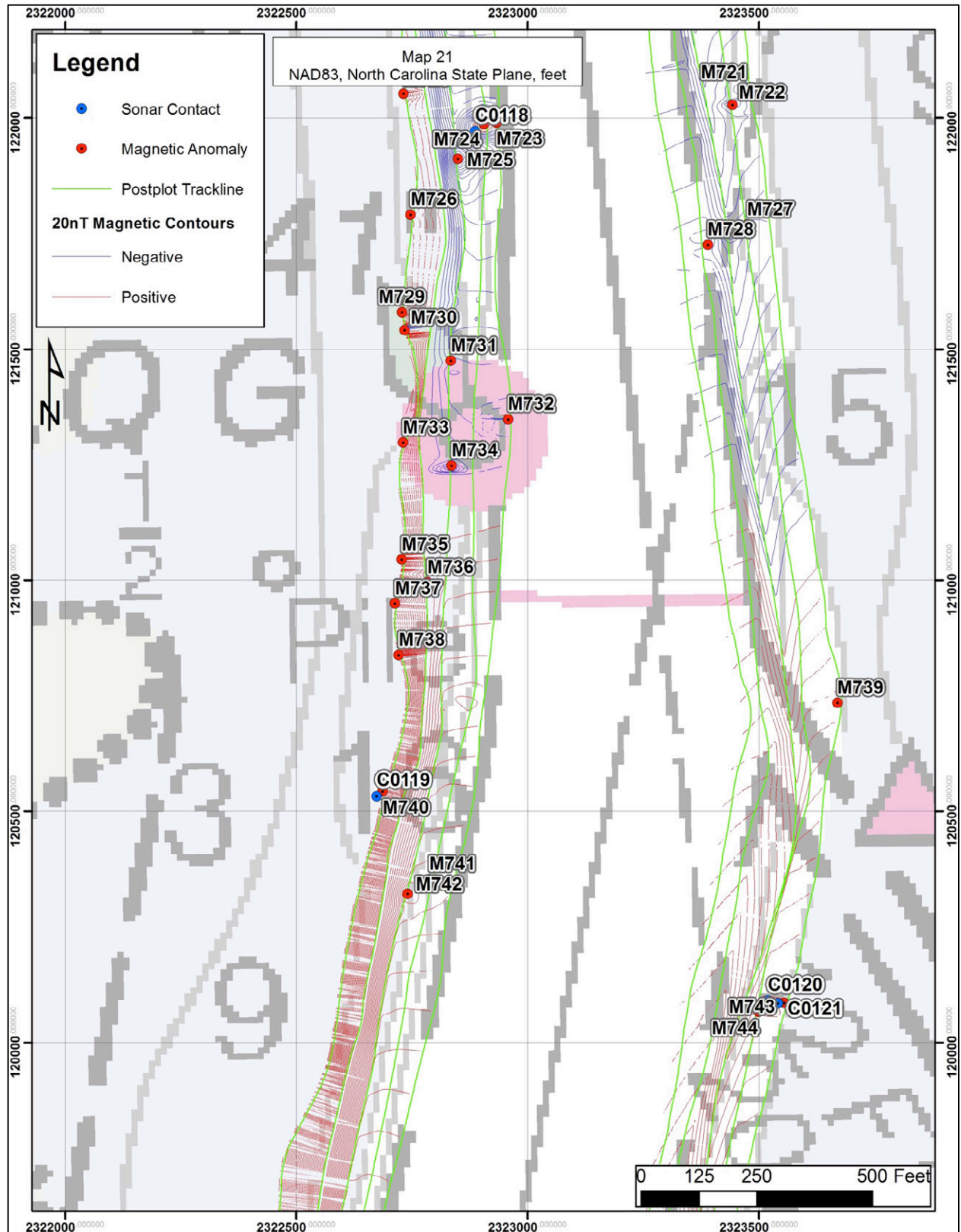


Figure 4-24. Area of Potential Effects Map 21.

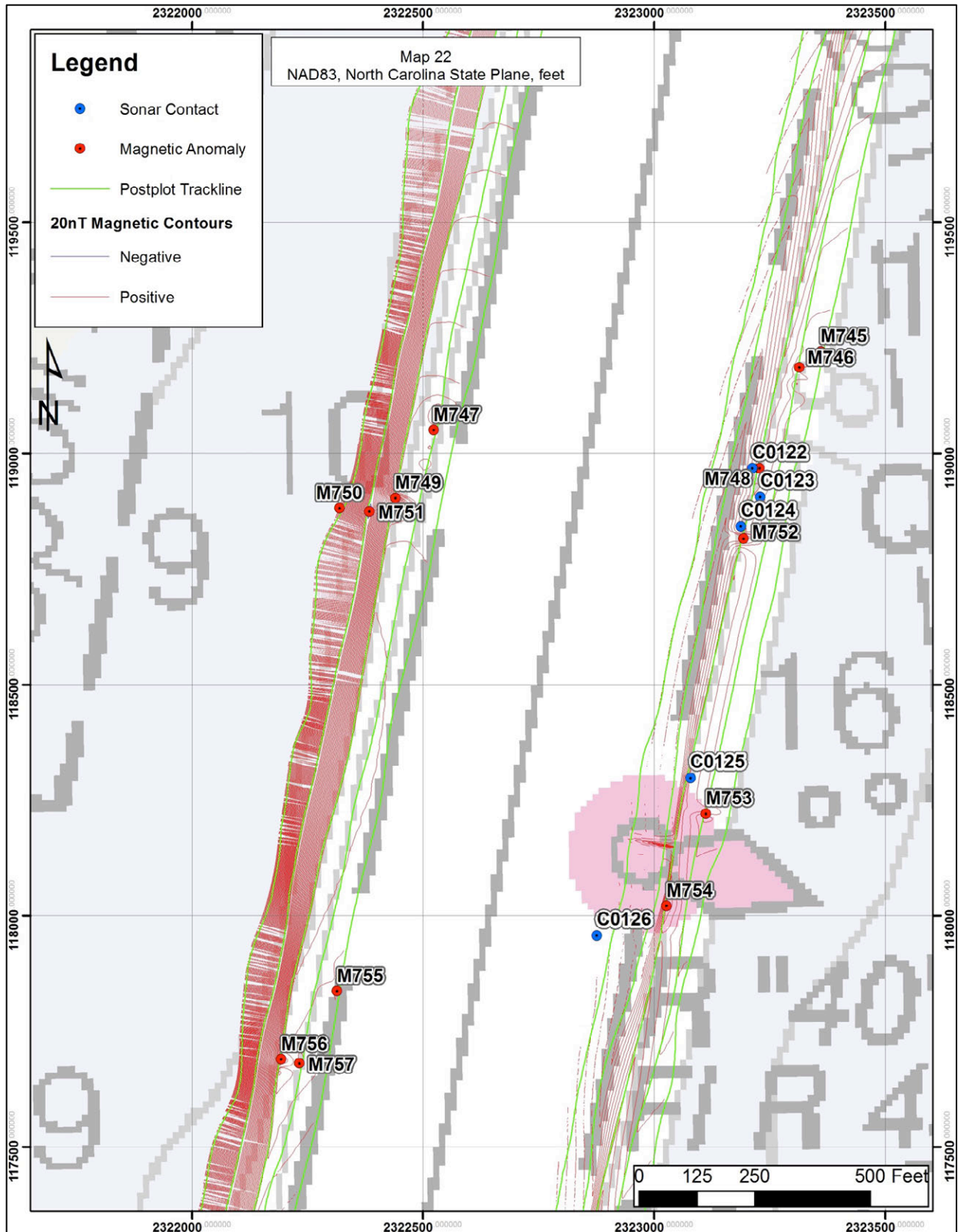


Figure 4-25. Area of Potential Effects Map 22.

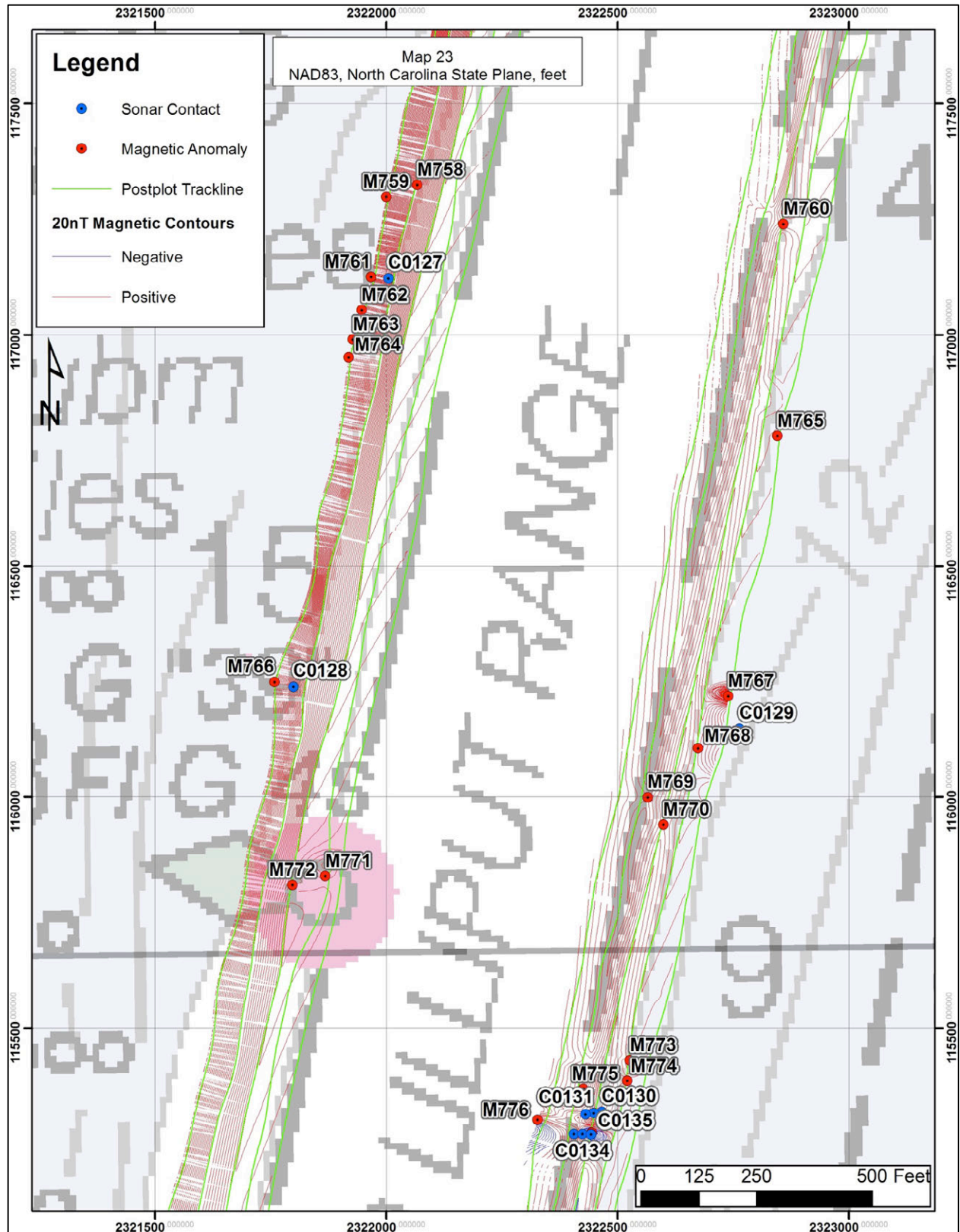


Figure 4-26. Area of Potential Effects Map 23.

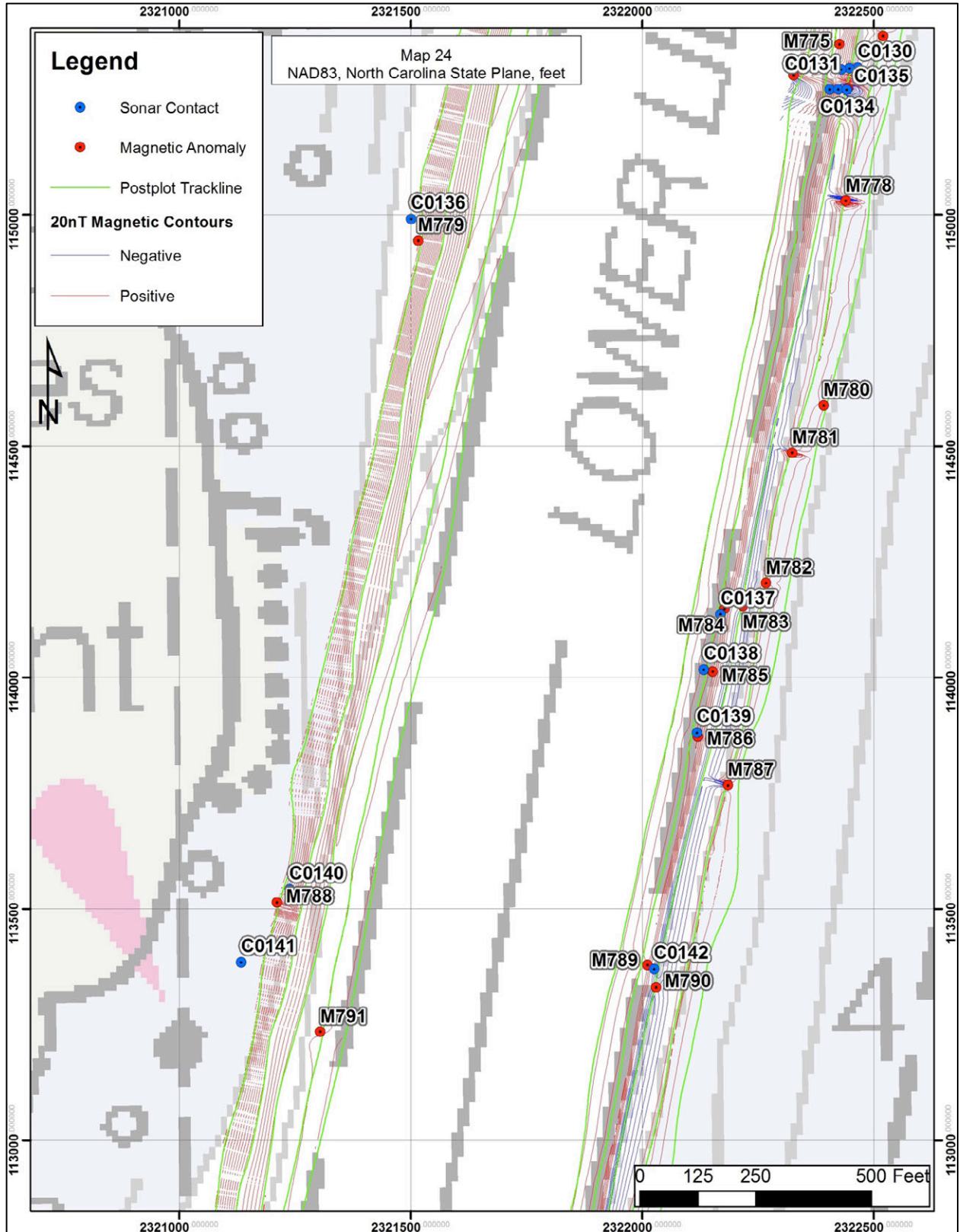


Figure 4-27. Area of Potential Effects Map 24.

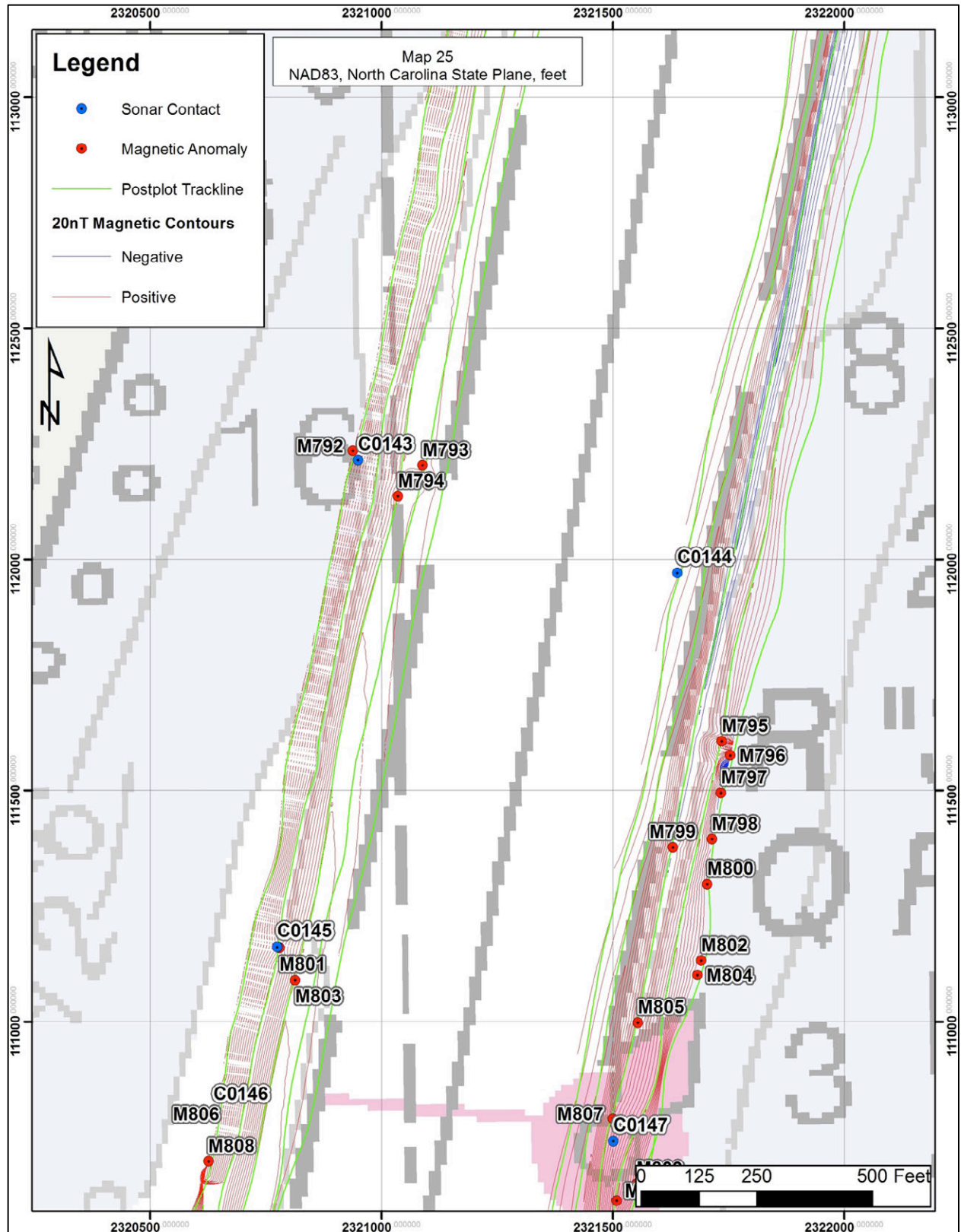


Figure 4-28. Area of Potential Effects Map 25.

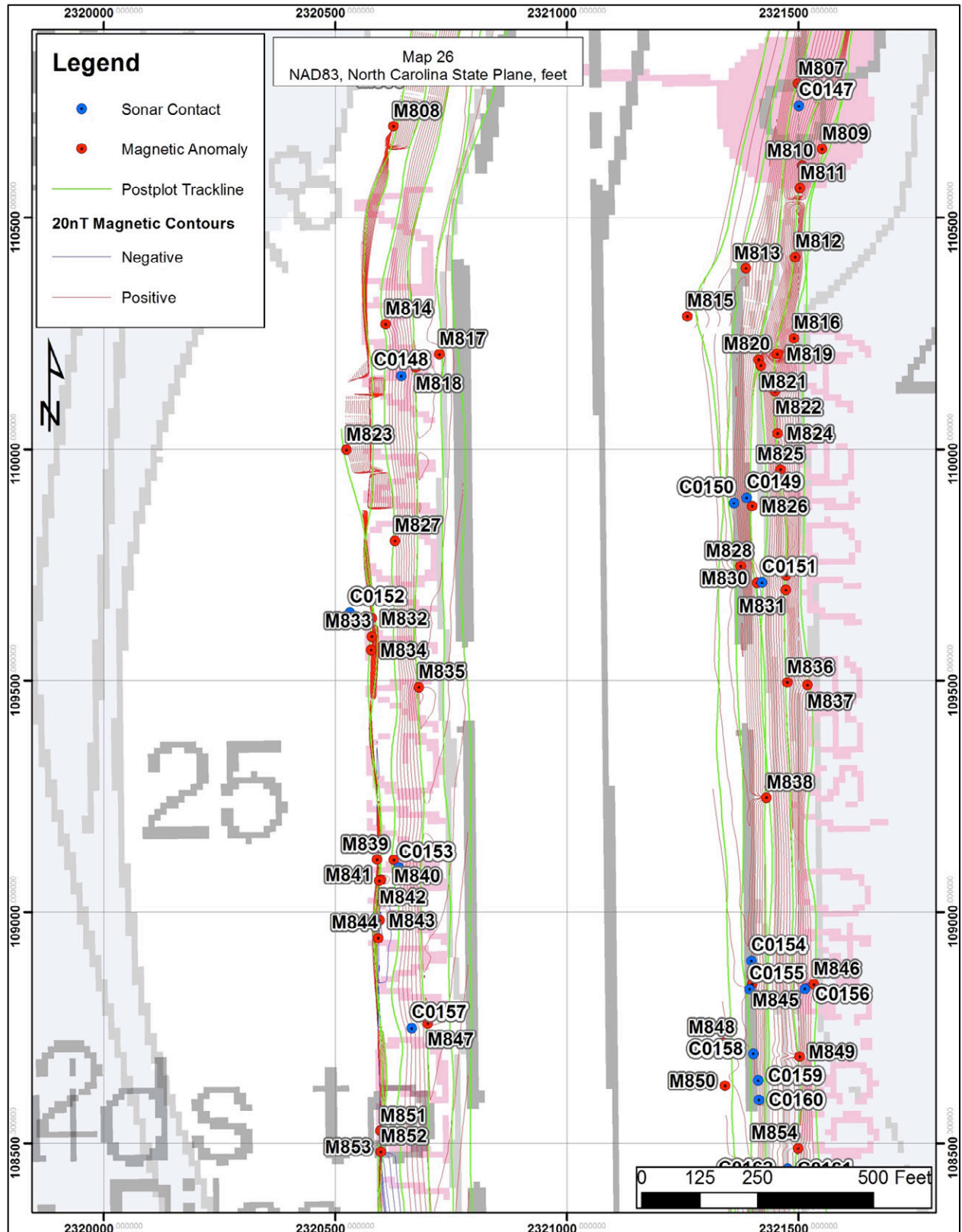


Figure 4-29. Area of Potential Effects Map 26.

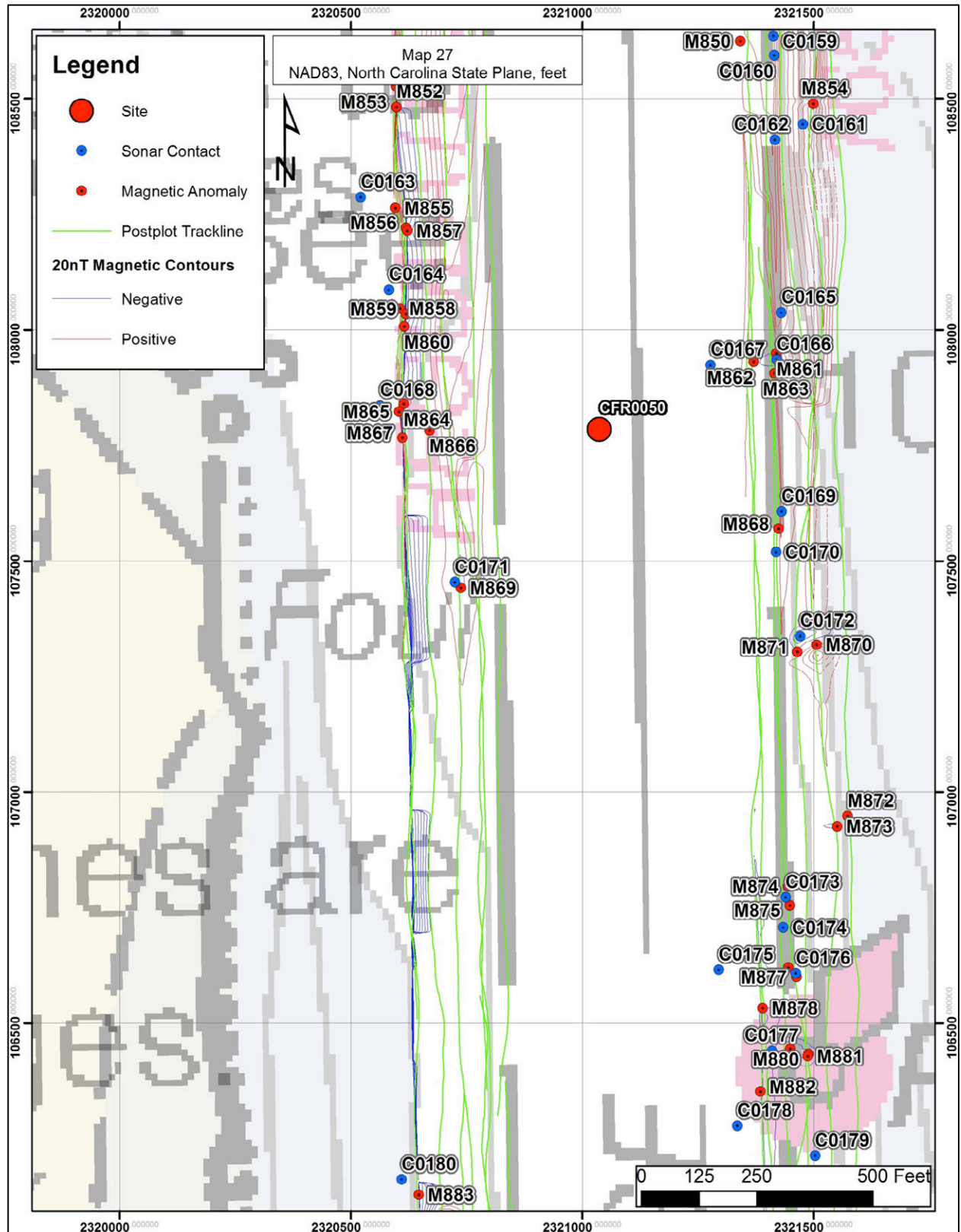


Figure 4-30. Area of Potential Effects Map 27.

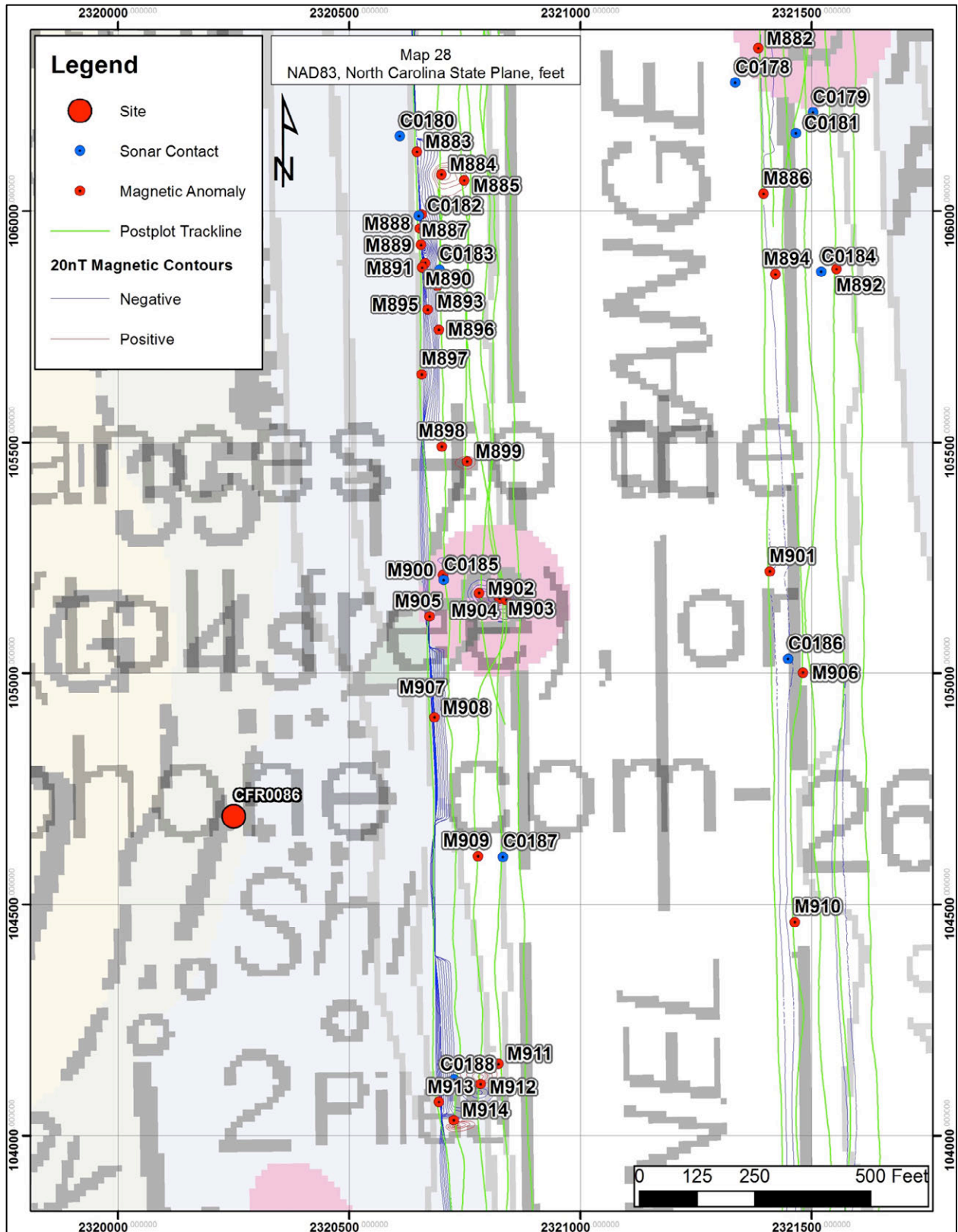


Figure 4-31. Area of Potential Effects Map 28.

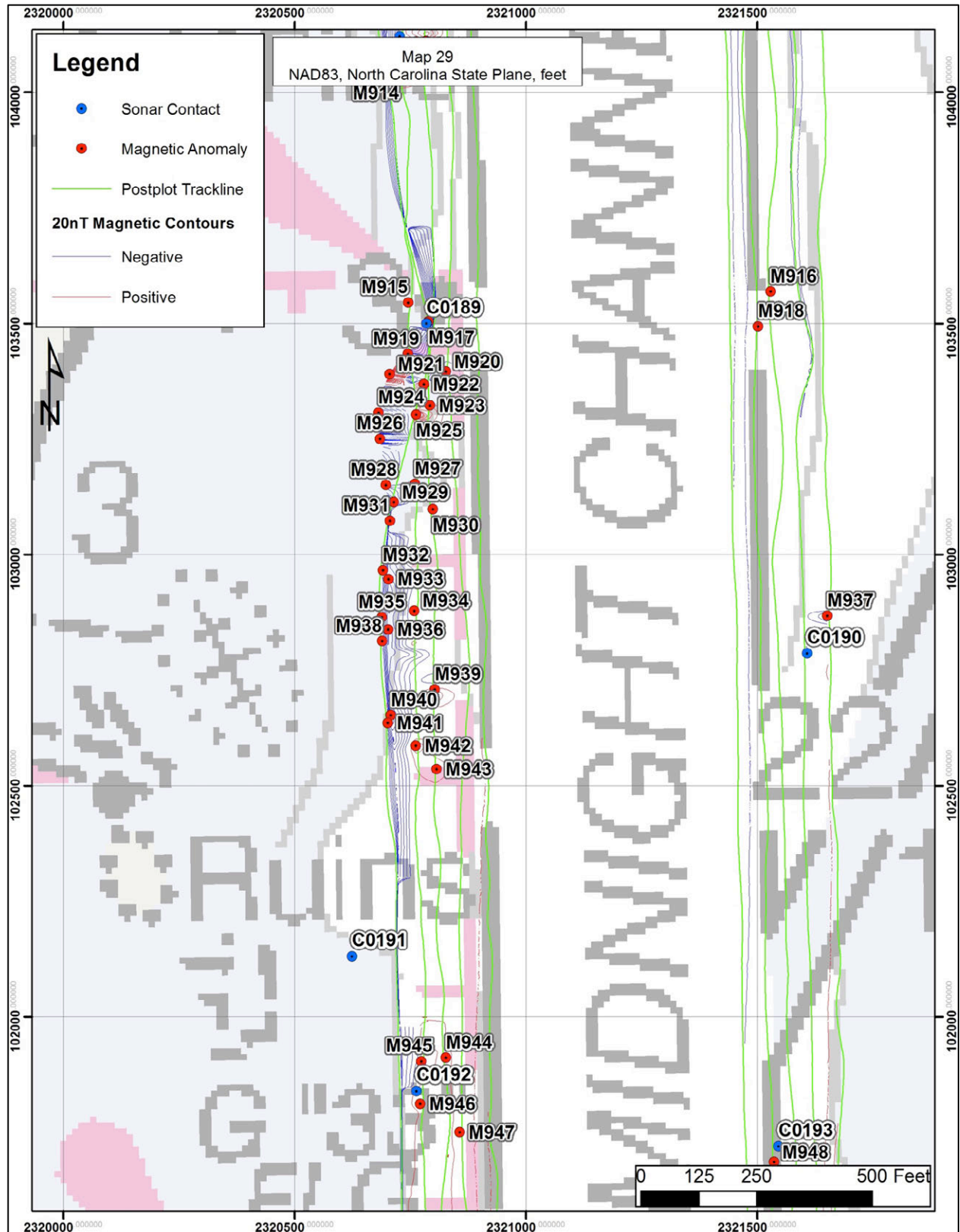


Figure 4-32. Area of Potential Effects Map 29.

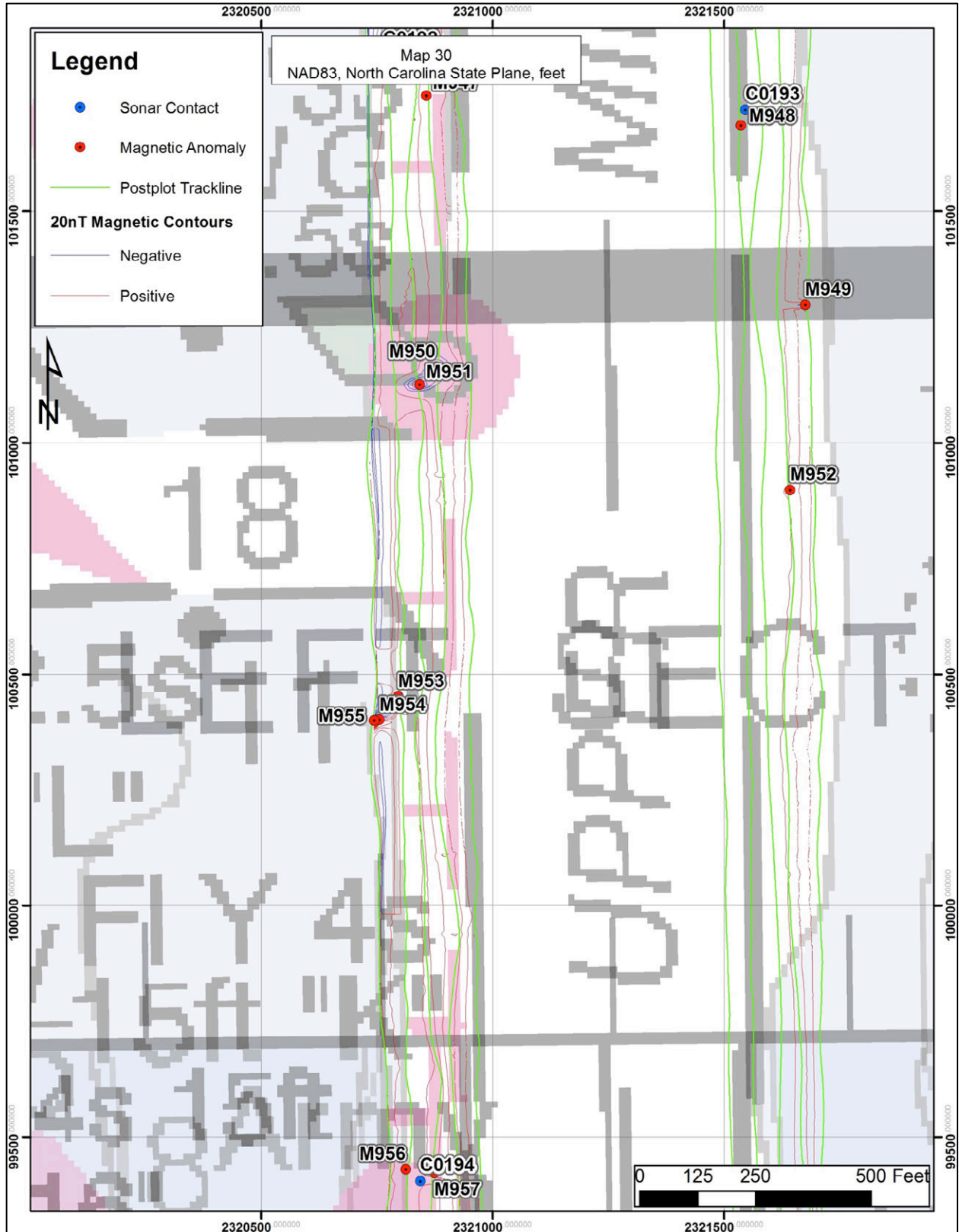


Figure 4-33. Area of Potential Effects Map 30.

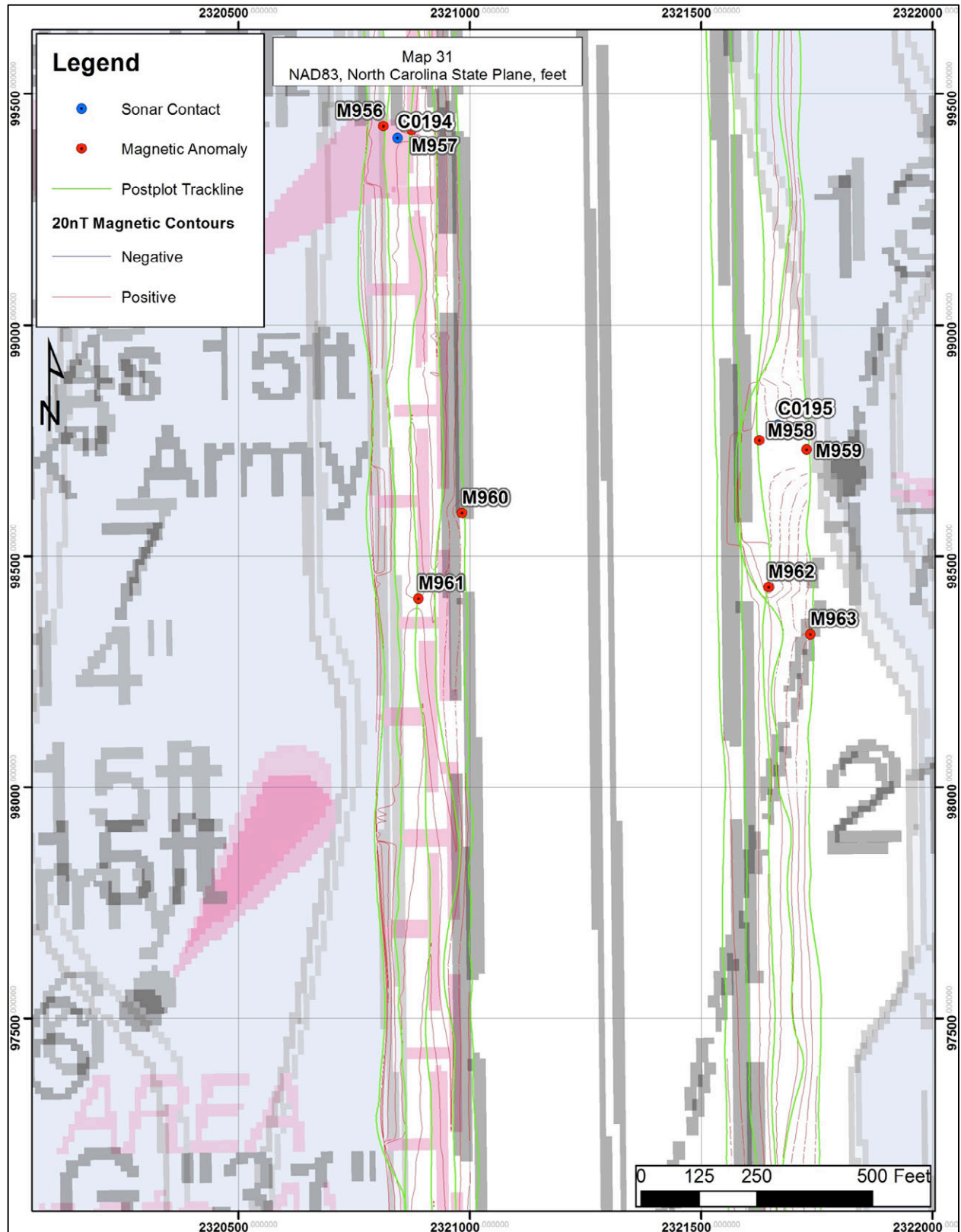


Figure 4-34. Area of Potential Effects Map 31.

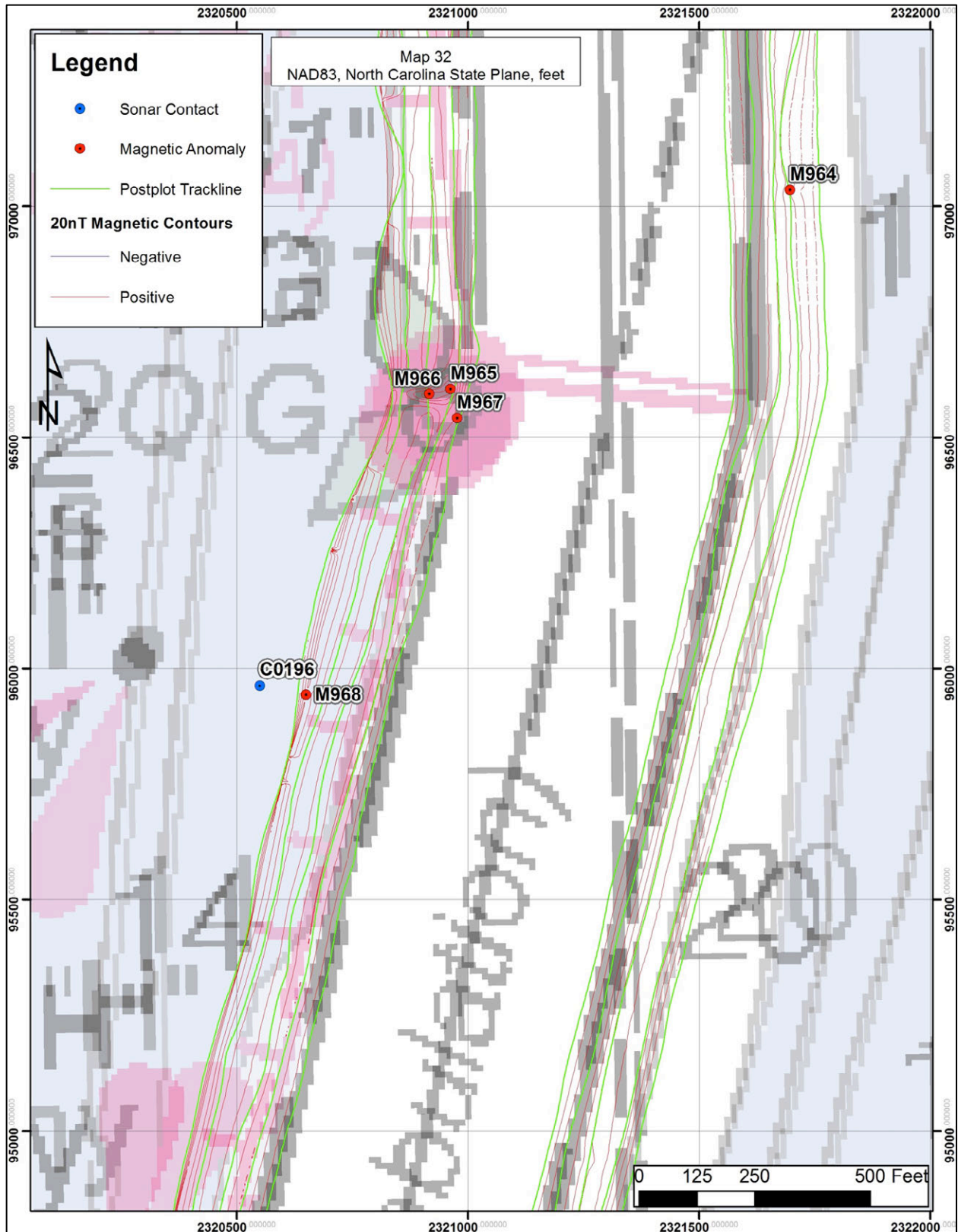


Figure 4-35. Area of Potential Effects Map 32.

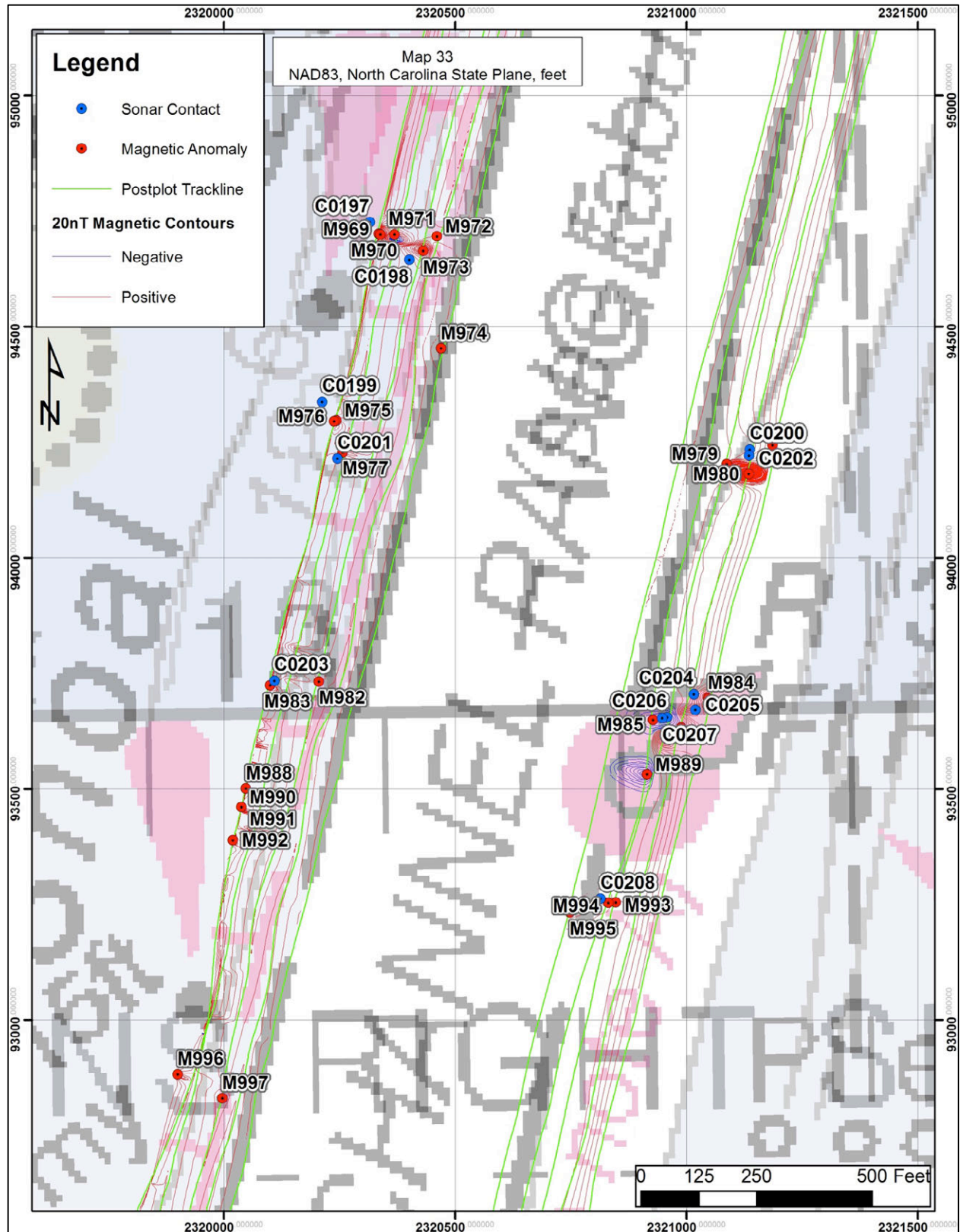


Figure 4-36. Area of Potential Effects Map 33.

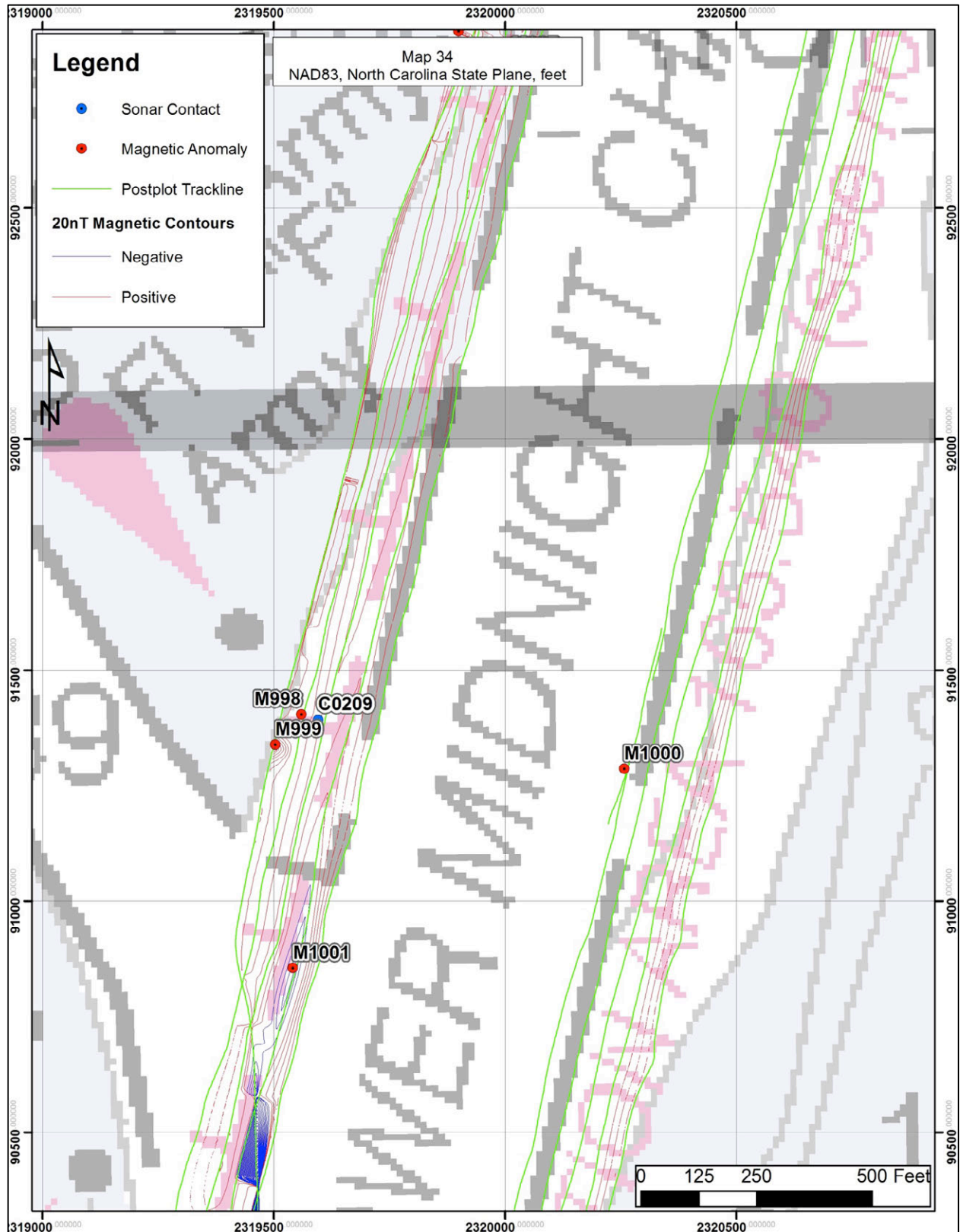


Figure 4-37. Area of Potential Effects Map 34.

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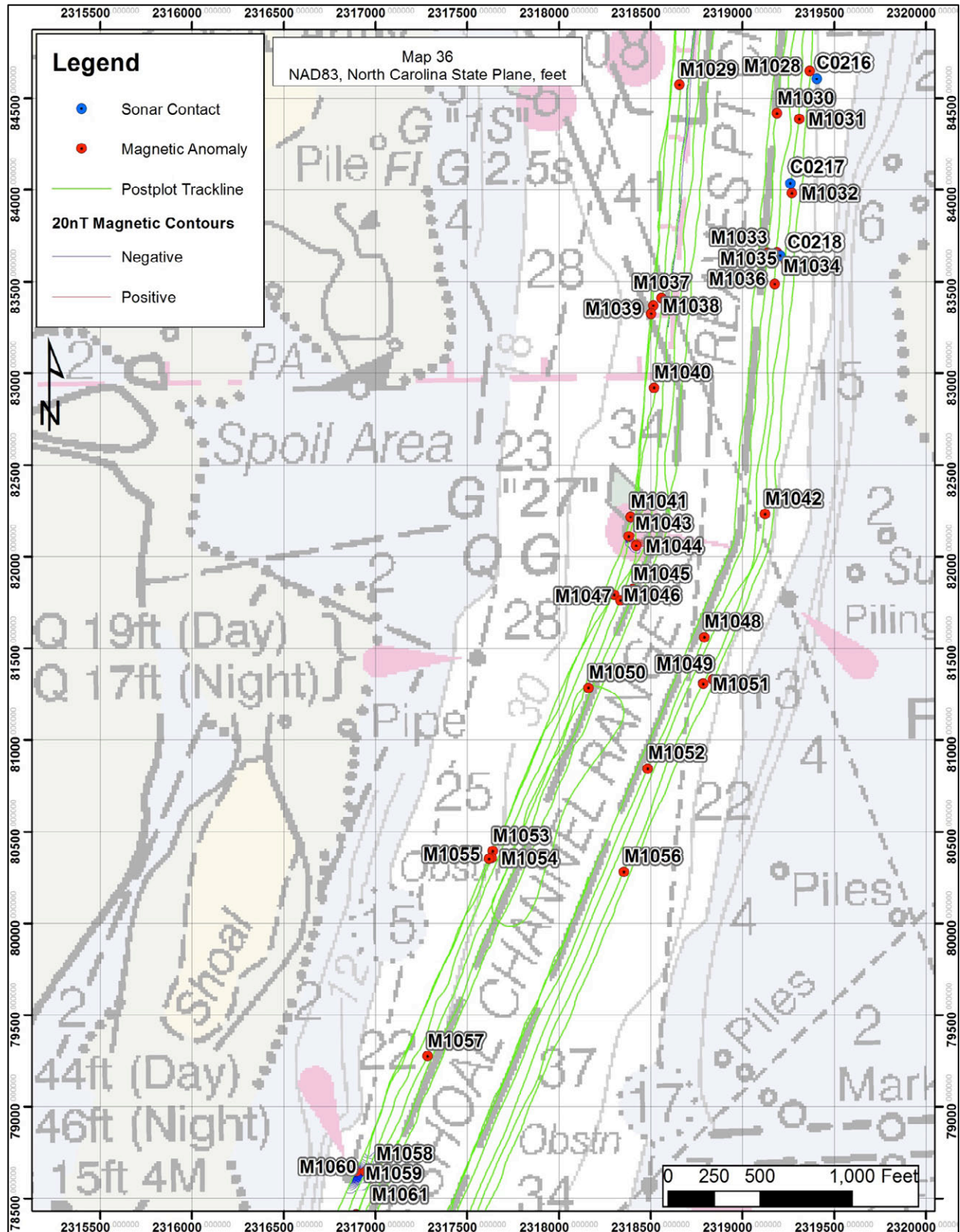


Figure 4-39. Area of Potential Effects Map 36.

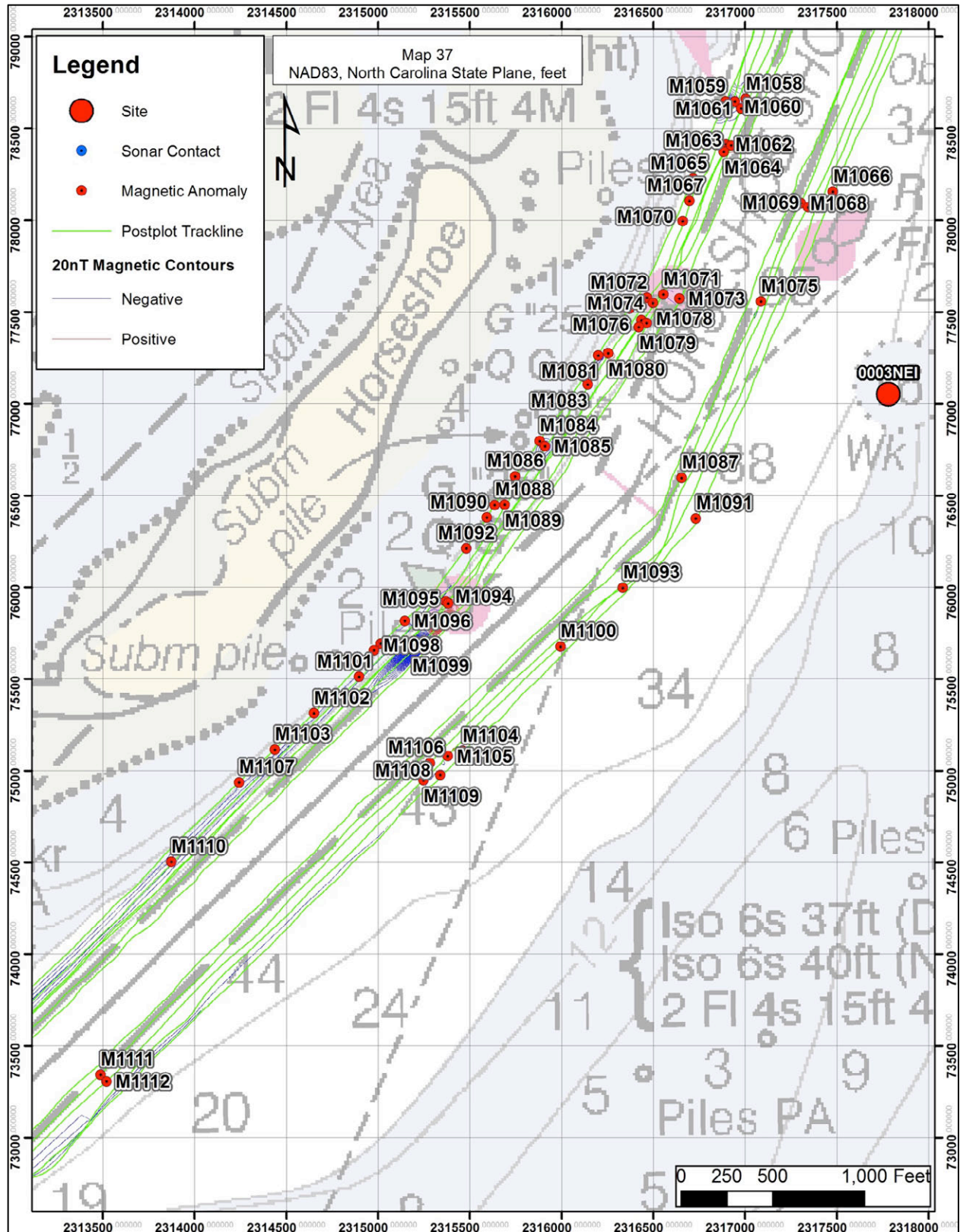


Figure 4-40. Area of Potential Effects Map 37.

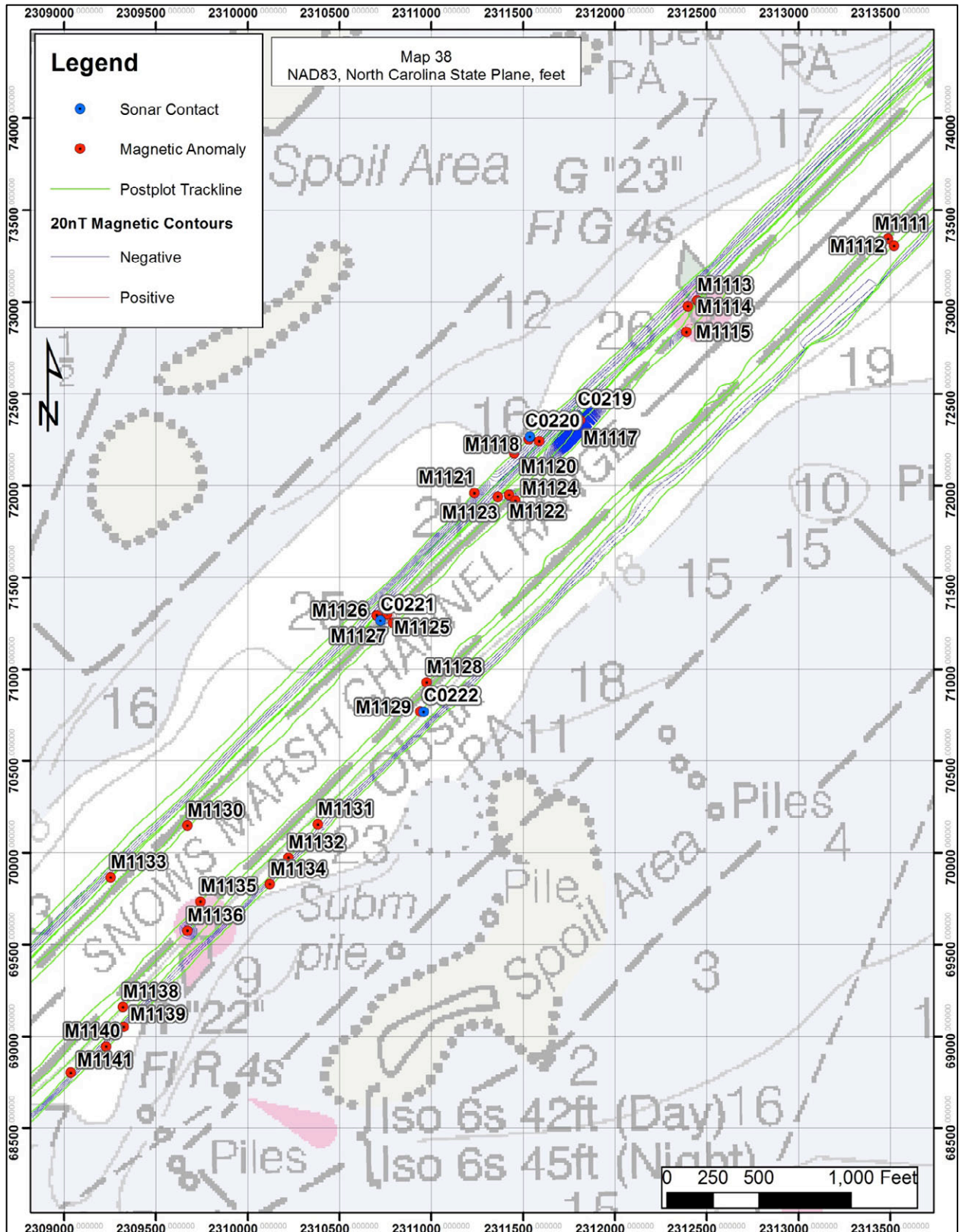


Figure 4-41. Area of Potential Effects Map 38.

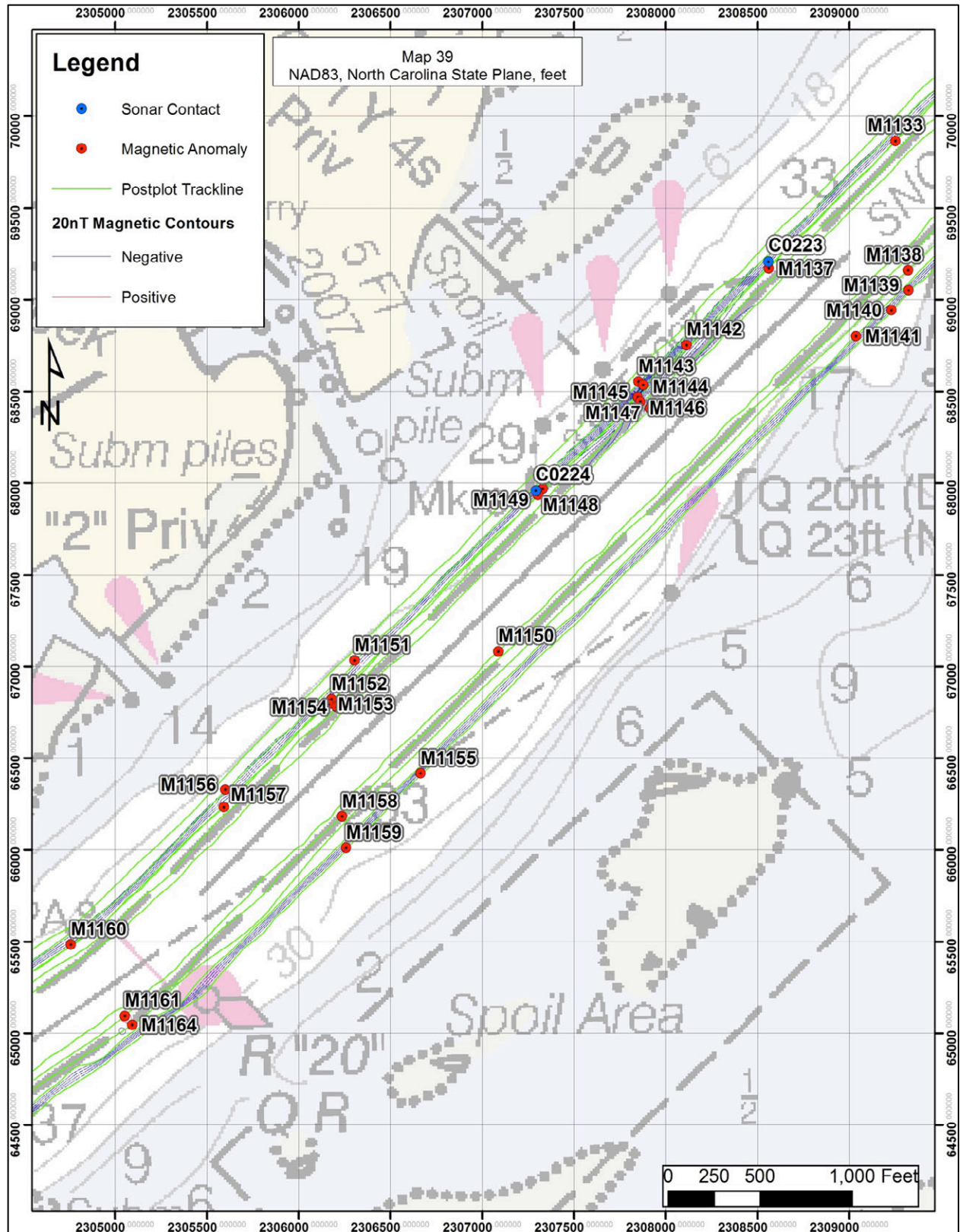


Figure 4-42. Area of Potential Effects Map 39.

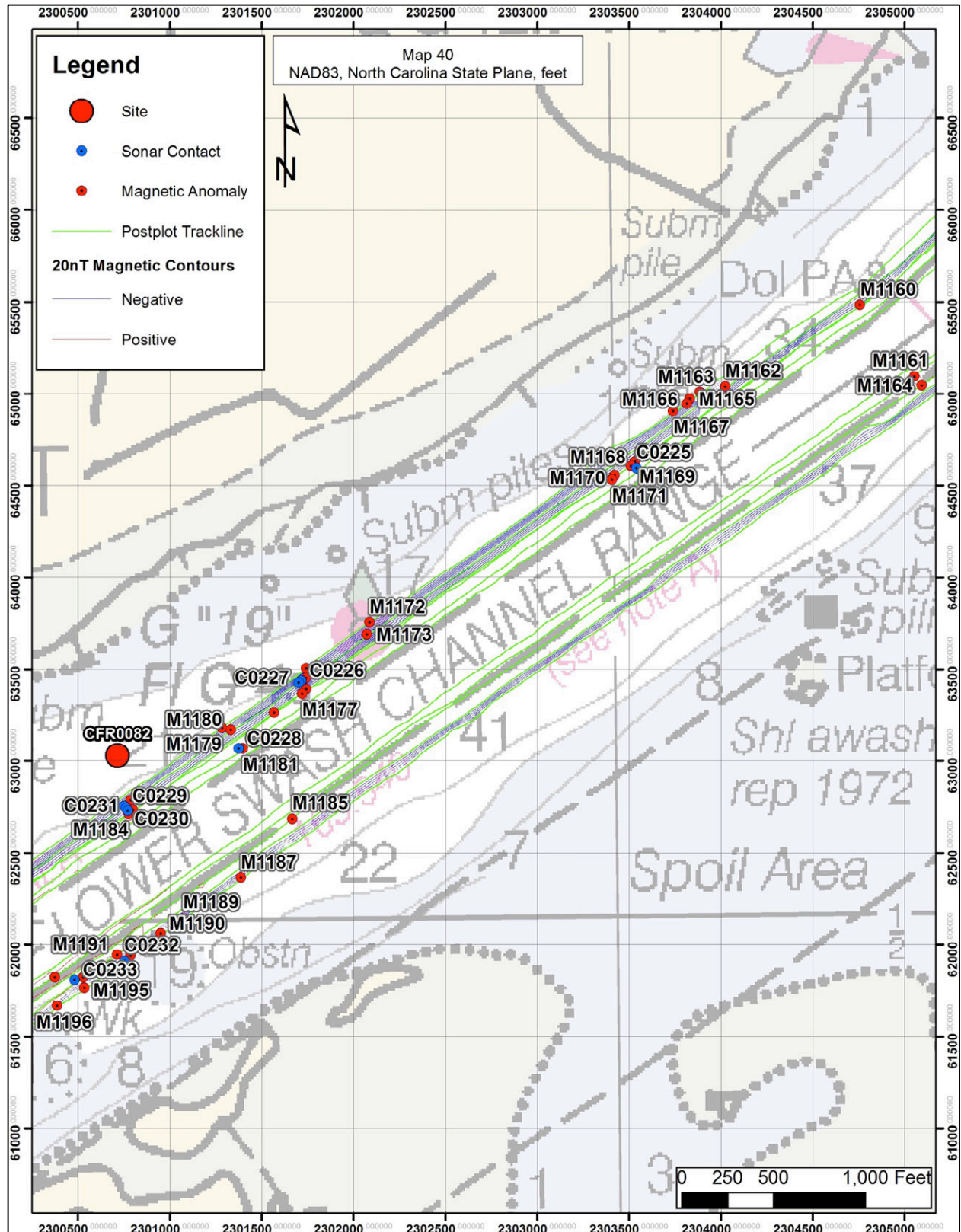


Figure 4-43. Area of Potential Effects Map 40.





Figure 4-46. Area of Potential Effects Map 43.

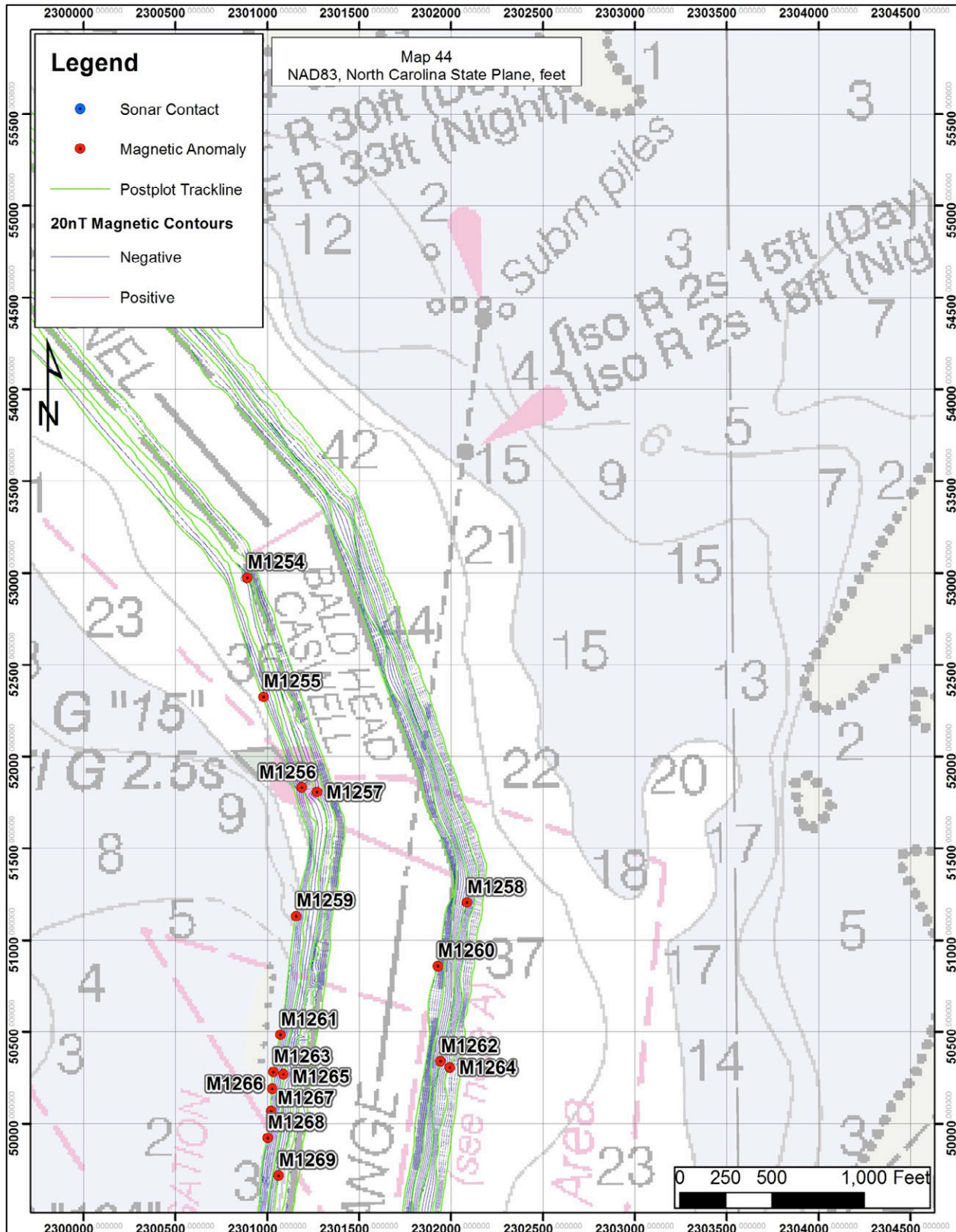


Figure 4-47. Area of Potential Effects Map 44.

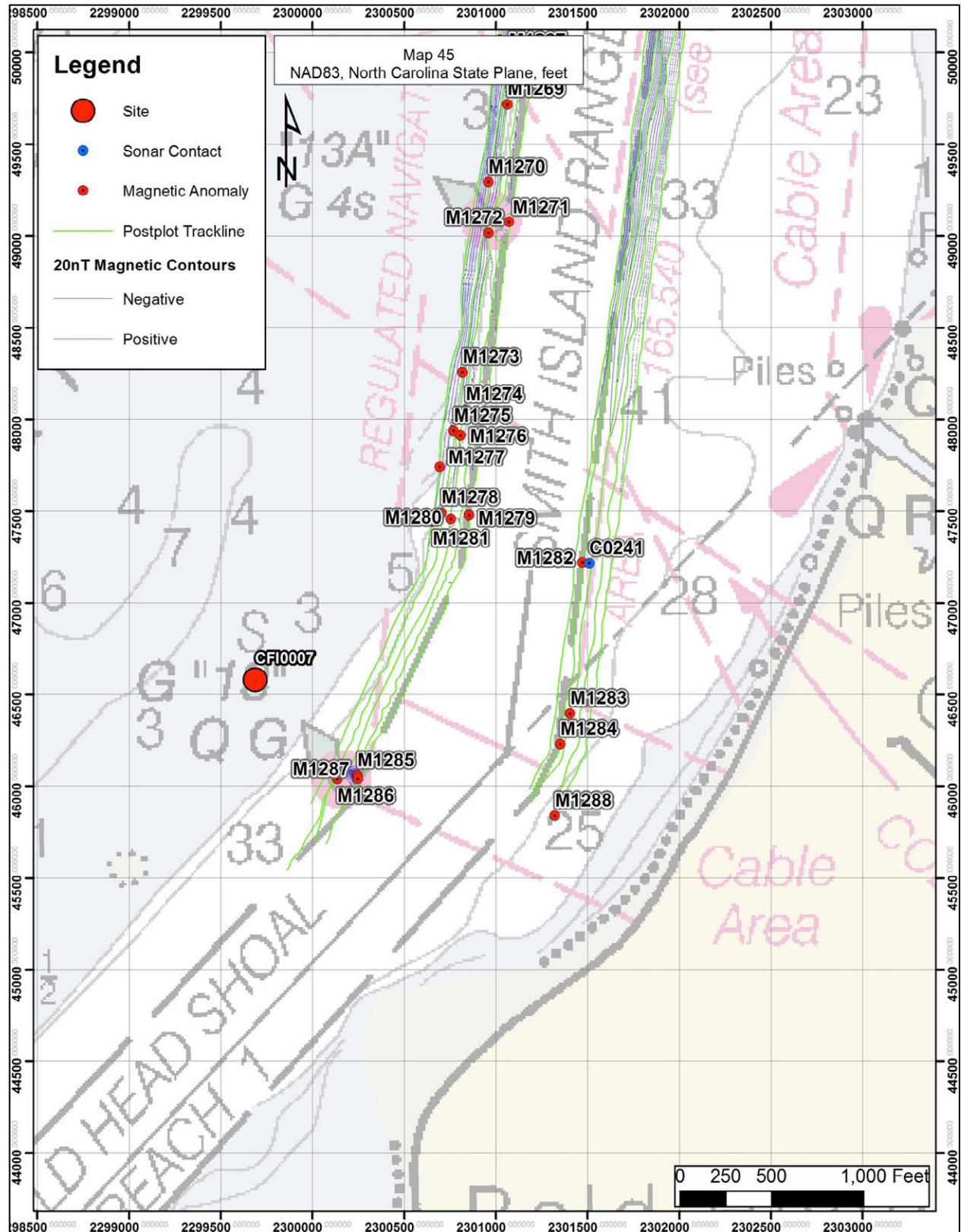


Figure 4-48. Area of Potential Effects Map 45.

SIDECAN SONAR RESULTS

In total, 241 sidescan sonar contacts (see Table 4-02 and Appendix B) were recorded within the survey area. With their locations shown on the magnetic contour maps above, these contacts included any object or anomalous bottom return that appeared to be of human origin. These 204 contacts consist of miscellaneous small debris, unknown objects, pipes, sewer lines or pipelines, and what appears to be rock scatters or limestone rubble.

After an extensive review and analysis of the contacts, it is felt that 14 of the acoustic images, most in conjunction with associated magnetic anomalies form seven separate targets that have the potential to represent historically significant historic resources. These include: C0072; C0095; C0097; C0098; C0099; C0100; C0166; C0167; C0189; C0221; C0237; C0229; C0230; and C0231. The last three (C0229 to C0231) are a paddle wheel from a sidewheel steamboat. All are discussed in detail in the *Diver Assessment of Inner Harbor Area Potentially Significant Targets* section below.

Additionally, there are areas of rock scatters/outcrops/concentrations recorded in the sonar record. It is assumed that these represent dredge material from the channel, as the channel is known to have this type of substrate.

Table 4-02. Sidescan Sonar Targets in the Area of Potential Effects.

Contact	Easting	Northing	Length (ft.)	Width (ft.)	Height (ft.)	Description	Map
C0001	2316460	174915	26.8	3.5	1.0	Unknown Object	1
C0002	2316868	174491	61.4	29.1	2.7	Debris Scatter	1
C0003	2316924	174015	14.5	12.8	8.1	Infrastructure?	1
C0004	2316118	173846	5.7	0.9	1.1	Linear Contact	1
C0005	2315975	173582	25.7	0.8	1.1	Linear Contact	1
C0006	2315903	173425	42.8	1.7	0.6	Linear Contact	1
C0007	2315596	172328	18.6	10.0	2.8	Debris	1
C0008	2315466	171954	67.9	41.8	3.4	Debris Scatter	1
C0009	2315186	171008	5.0	5.4	1.0	Debris	1
C0010	2315069	170582	7.1	2.3	1.3	Linear Contact	1
C0011	2314685	168786	69.9	2.6	1.3	Linear Contact	2
C0012	2314809	167905	39.3	34.8	9.7	Debris or Outcrop	2
C0013	2314793	167612	23.5	1.0	1.3	Linear Contact	2
C0014	2314961	167508	20.4	1.7	0.9	Linear Contact	2
C0015	2314786	167451	115.8	65.8	2.2	Debris Scatter	2
C0016	2314806	167175	39.5	17.8	1.4	Tire and Debris	2
C0017	2314804	167056	11.1	7.4	1.5	Unknown Object	2
C0018	2314969	166455	4.4	4.1	1.2	Tire	2
C0019	2315073	165468	22.8	2.2	1.7	Linear Contact	2
C0020	2315178	164800	11.1	6.8	1.6	Debris	2
C0021	2315038	164584	18.1	4.1	1.0	Linear Contact	2
C0022	2315143	164152	6.1	3.7	1.4	Tires	3

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Contact	Easting	Northing	Length (ft.)	Width (ft.)	Height (ft.)	Description	Map
C0023	2315225	164153	5.8	1.3	0.7	Linear Contact	3
C0024	2315679	163833	10.3	0.5	1.9	Linear Contact	3
C0025	2315099	163655	34.9	2.6	1.2	Linear Contact	3
C0026	2315639	163180	31.5	12.9	3.0	Debris	3
C0027	2315179	162528	3.2	2.9	1.6	Tire	3
C0028	2315048	161195	22.5	1.2	1.2	Linear Contact	3
C0029	2315070	160945	57.8	16.8	0.9	Two Unknown Objects	3
C0030	2315039	160403	23.9	4.9	2.9	Linear Object	3
C0031	2314843	160359	86.8	1.0	0.5	Wire Rope	3
C0032	2314852	160194	76.6	1.7	0.8	Pipe	3
C0033	2315523	159920	2.9	1.8	1.1	Small Contact	3
C0034	2314753	159676	56.0	48.7	6.0	Large Depression	3
C0035	2314863	159001	7.2	6.3	2.1	Unknown	3
C0036	2314932	158832	11.5	10.9	1.6	Unknown	3
C0037	2314802	158509	103.9	1.0	1.0	Linear Object	4
C0038	2314909	158502	4.0	2.6	0.4	Small Contact And Depression	4
C0039	2314928	158282	13.0	7.9	1.4	Unknown Object	4
C0040	2314715	157364	97.6	25.6	4.0	Unknown	4
C0041	2315490	157370	9.6	1.2	12.2	Linear Contact	4
C0042	2315295	155434	26.0	4.2	3.1	Linear Contact	5
C0043	2315091	155234	11.5	3.2	3.4	Possible Wreck	5
C0044	2314952	154445	12.6	3.3	3.6	Unknown Object	5
C0045	2314239	152557	5.8	3.2	1.7	Unknown Object	6
C0046	2314882	152168	36.9	10.9	1.8	Unknown Object	6
C0047	2314843	152022	5.8	4.7	2.0	Rectangular Contact	6
C0048	2314058	151891	38.9	1.8	1.5	Linear Contact	6
C0049	2314900	151805	1.6	3.1	2.0	Small Contact	6
C0050	2314904	151625	7.5	8.3	0.0	Debris Scatter	7
C0051	2314927	151384	7.3	1.1	2.1	Linear Contact	7
C0052	2314265	150665	3.7	3.2	4.5	Small Contact	7
C0053	2314524	149914	55.7	40.9	2.3	Debris Scatter	7
C0054	2314709	149632	147.2	1.7	3.2	Pipe	7
C0055	2315513	149634	51.6	1.6	0.9	Pipe	8
C0056	2315495	149624	25.8	0.8	0.9	Pipe	8
C0057	2315478	149614	66.5	1.8	1.0	Linear Contact	8
C0058	2315663	149356	18.4	0.6	5.6	Linear Contact	8
C0059	2315709	149322	18.7	4.9	3.4	Two Linear Contacts	8
C0060	2314922	149186	9.3	3.7	4.1	Debris	8
C0061	2315061	149105	19.9	1.4	0.5	Linear Contact	8
C0062	2316608	147424	80.7	14.0	4.9	Possible Wreck	9

Contact	Easting	Northing	Length (ft.)	Width (ft.)	Height (ft.)	Description	Map
C0063	2317406	145723	19.8	6.6	2.8	Unknown Object	10
C0064	2317785	145277	35.1	18.2	1.2	Debris Scatter	10
C0065	2317925	145152	74.1	33.5	4.6	Debris Scatter	10
C0066	2317843	145143	17.1	1.8	2.4	Linear Contact	10
C0067	2317243	145037	37.7	1.7	2.4	Linear Contact	10
C0068	2318750	144048	15.4	2.6	1.3	Debris	11
C0069	2318972	143841	5.3	4.7	1.1	Rectangular Contact	11
C0070	2319145	143686	59.1	25.1	2.2	Debris Scatter	11
C0071	2317942	143667	29.0	18.4	0.7	Debris	11
C0072	2317879	143486	174.5	9.5	4.1	Large Linear Object, Possible Wreck	11
C0073	2319530	143308	4.3	3.1	0.7	Unknown Object	12
C0074	2318074	143243	25.3	23.9	2.9	Large Round Depression	11
C0075	2318773	142809	44.0	27.4	3.2	Debris Scatter	12
C0076	2318877	142699	131.1	86.2	6.3	Infrastructure	12
C0077	2321068	141246	2.4	3.2	2.3	Unknown Object	13
C0078	2320628	140706	12.3	3.1	1.6	Linear Contact	13
C0079	2321520	140448	8.2	6.7	1.6	Unknown Object	14
C0080	2322174	139491	84.5	51.4	4.2	Debris Scatter	14
C0081	2322359	139083	58.4	32.2	2.5	Debris Scatter	15
C0082	2322400	138984	22.1	8.9	2.5	Debris or Outcrop	15
C0083	2322627	137488	41.3	7.8	0.0	Unknown Object	15
C0084	2321843	137194	17.5	9.2	1.7	Rectangular Contact	15
C0085	2321833	136926	14.3	1.4	1.2	Linear Contact	15
C0086	2321902	136621	7.1	1.1	7.9	Unknown Object	16
C0087	2321812	136563	146.3	0.9	0.3	Wire Rope	16
C0088	2321870	135531	4.9	3.8	2.1	Small Contact	16
C0089	2321912	135459	31.8	2.4	2.5	Linear Contact	16
C0090	2322377	135094	12.6	3.3	1.5	Linear Contact	16
C0091	2322380	134728	7.2	1.0	0.9	Linear Contact	16
C0092	2321794	134642	35.2	34.7	0.0	Debris or Outcrop	17
C0093	2321839	134334	114.7	1.2	0.6	Linear Contact	17
C0094	2322415	133905	95.9	0.9	2.0	Linear Contact	17
C0095	2322358	133560	66.6	13.1	2.4	Linear Contact, Possible Wreck	17
C0096	2321684	133537	2.7	2.3	2.2	Small Contact	17
C0097	2322398	133542	94.6	11.5	1.4	Possible Wreck	17
C0098	2322291	133497	5.8	4.8	2.0	Rectangular Contact	17
C0099	2322300	133406	3.6	3.1	1.2	Two Unknown Objects	17
C0100	2322344	133321	33.1	5.2	3.4	Unknown Object	17
C0101	2322294	133193	4.0	1.8	0.7	Small Contact	17
C0102	2321649	133169	14.8	9.6	1.2	Unknown Object	17

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Contact	Easting	Northing	Length (ft.)	Width (ft.)	Height (ft.)	Description	Map
C0103	2322314	132684	24.8	0.8	0.5	Wire Rope	17
C0104	2322298	132424	18.6	6.4	0.8	Unknown Object	17
C0105	2322264	131745	21.7	5.7	2.5	Unknown Object	18
C0106	2322286	131139	9.8	2.9	0.9	Unknown Object	18
C0107	2322239	131020	42.8	29.7	3.2	Debris Scatter	18
C0108	2322434	128784	11.5	12.3	0.6	Debris	19
C0109	2321942	127636	32.7	11.0	2.0	Unknown Object	19
C0110	2322872	126510	90.1	0.4	0.6	Wire Rope	19
C0111	2323147	124913	62.0	29.1	7.6	Debris or Outcrop	19
C0112	2323068	124635	44.4	22.4	1.8	Debris or Outcrop	19
C0113	2323153	124432	18.4	7.8	4.9	Unknown Object	19
C0114	2323127	123963	14.2	1.9	0.9	Linear Contact	20
C0115	2322686	123267	13.7	5.4	1.9	Unknown Object	20
C0116	2323185	123055	59.4	20.1	7.5	Debris or Outcrop	20
C0117	2323247	122615	28.6	10.9	4.4	Debris or Outcrop	20
C0118	2322886	121971	35.3	7.1	4.6	Unknown Object	21
C0119	2322673	120532	19.4	7.6	0.9	Rectangular Contact	21
C0120	2323519	120090	36.6	1.5	0.9	Linear Contact	21
C0121	2323541	120085	34.1	1.7	2.0	Linear Contact	21
C0122	2323213	118967	46.3	28.4	2.6	Debris or Outcrop	22
C0123	2323230	118906	140.4	0.6	0.8	Linear Contact	22
C0124	2323188	118842	41.4	1.3	1.6	Pipe	22
C0125	2323079	118298	43.6	34.0	2.4	Debris Scatter	22
C0126	2322876	117957	11.0	6.6	2.4	Unknown Object	22
C0127	2322004	117121	2.9	2.0	1.4	Crab Pot	23
C0128	2321799	116238	77.1	35.5	3.5	Debris or Outcrop	23
C0129	2322764	116147	148.3	1.4	3.4	Linear Contact	23
C0130	2322466	115318	15.8	2.9	1.5	Linear Contact	23
C0131	2322449	115315	7.9	1.5	1.5	Linear Contact	23
C0132	2322431	115313	27.7	2.9	2.2	Unknown Object	23
C0133	2322406	115271	29.4	3.4	1.1	Unknown Object	23
C0134	2322424	115270	19.6	1.4	1.9	Linear Contact	23
C0135	2322443	115270	39.3	2.7	1.9	Linear Contact	23
C0136	2321501	114991	84.2	1.7	0.2	Linear Contact	24
C0137	2322170	114136	4.4	5.8	1.8	Rectangular Contact	24
C0138	2322133	114017	8.8	2.1	1.2	Linear Contact	24
C0139	2322118	113880	13.2	1.3	1.2	Linear Contact	24
C0140	2321238	113542	9.6	5.5	1.0	Unknown Object	24
C0141	2321134	113384	70.6	39.8	6.6	Debris or Outcrop	24
C0142	2322026	113370	4.5	1.4	4.2	Unknown Object	24

Contact	Easting	Northing	Length (ft.)	Width (ft.)	Height (ft.)	Description	Map
C0143	2320949	112214	23.3	16.8	1.3	Debris Scatter	25
C0144	2321640	111970	34.6	16.9	3.9	Unknown Object	25
C0145	2320774	111161	93.1	1.4	0.7	Linear Contact	25
C0146	2320637	110809	145.9	0.6	0.4	Wire Rope	25
C0147	2321501	110741	1.3	1.8	1.0	Small Contact	25
C0148	2320643	110158	15.1	3.6	2.3	Unknown Object	26
C0149	2321389	109894	5.0	2.6	2.2	Unknown Object	26
C0150	2321361	109883	1.6	1.3	0.5	Small Contact	26
C0151	2321422	109711	6.7	4.0	0.8	Unknown Object	26
C0152	2320532	109647	110.9	1.8	0.9	Wire Rope	26
C0153	2320637	109095	101.4	1.2	0.6	Wire Rope	26
C0154	2321399	108894	35.8	13.2	2.0	Unknown Object	26
C0155	2321395	108833	3.1	2.9	1.8	Crab Pot	26
C0156	2321515	108834	2.9	2.3	1.7	Crab Pot	26
C0157	2320665	108748	58.3	26.9	5.4	Debris or Outcrop	26
C0158	2321403	108693	21.7	10.9	0.7	Debris or Outcrop	26
C0159	2321414	108635	1.9	1.8	1.5	Unknown Object	26
C0160	2321415	108594	2.0	1.3	2.0	Unknown Object	26
C0161	2321477	108445	59.5	6.7	2.3	Unknown Object	27
C0162	2321417	108411	26.2	12.7	1.5	Debris or Outcrop	27
C0163	2320521	108287	69.4	50.4	10.5	Debris or Outcrop	27
C0164	2320582	108087	46.0	7.8	3.8	Rectangular Contact	27
C0165	2321430	108037	3.3	2.4	1.1	Rectangular Contact	27
C0166	2321420	107935	14.2	2.3	0.8	Linear Contact	27
C0167	2321277	107924	4.4	4.9	1.2	Rectangular Contact	27
C0168	2320563	107836	8.3	2.0	1.4	Linear Contact	27
C0169	2321431	107607	58.4	11.3	4.0	Debris Scatter	27
C0170	2321419	107519	13.6	6.7	1.9	Unknown Object	27
C0171	2320724	107453	13.3	11.0	2.8	Unknown Object	27
C0172	2321471	107337	55.8	1.5	0.7	Pipe	27
C0173	2321440	106772	19.1	13.6	2.9	Debris	27
C0174	2321434	106707	5.9	6.0	0.7	Tire	27
C0175	2321295	106615	6.2	1.3	0.6	Linear Contact	27
C0176	2321462	106608	44.3	20.7	0.0	Debris or Outcrop	27
C0177	2321410	106440	4.5	2.7	1.9	Rectangular Contact	27
C0178	2321335	106278	9.0	2.3	0.8	Debris	27
C0179	2321503	106213	26.6	2.7	0.6	Linear Contact	28
C0180	2320609	106162	51.9	24.0	2.1	Debris Scatter	28
C0181	2321467	106169	10.6	6.2	1.4	Unknown Object	28
C0182	2320650	105989	65.1	0.9	0.3	Linear Contact	28

Wilmington Harbor Navigation Improvement Project Survey

Contact	Easting	Northing	Length (ft.)	Width (ft.)	Height (ft.)	Description	Map
C0183	2320695	105873	1.6	2.5	1.8	Crab Pot	28
C0184	2321522	105868	26.9	2.3	0.9	Linear Contact	28
C0185	2320704	105202	9.1	1.3	2.1	Linear Contact	28
C0186	2321450	105031	20.8	10.1	0.0	Unknown Object	28
C0187	2320833	104603	6.8	4.9	1.6	Debris	28
C0188	2320727	104121	39.3	31.1	1.3	Debris Scatter	28
C0189	2320785	103500	42.3	7.9	3.1	Unknown, Possible Wreck	29
C0190	2321608	102786	71.2	1.1	1.5	Linear Contact	29
C0191	2320624	102130	64.3	13.0	6.5	Unknown, Possible Wreck	29
C0192	2320763	101839	140.6	1.2	1.2	Linear Contact	29
C0193	2321546	101719	61.9	13.3	4.4	Debris Scatter	29
C0194	2320843	99405	42.8	0.6	0.3	Wire Rope	31
C0195	2321666	98784	23.2	10.2	1.9	Debris	31
C0196	2320550	95963	83.6	4.5	2.0	Linear Contact	32
C0197	2320315	94726	18.0	9.8	1.8	Unknown Object	33
C0198	2320401	94644	74.5	9.5	4.8	Unknown Object	33
C0199	2320212	94337	49.8	4.5	1.9	Linear Contact	33
C0200	2321137	94234	43.0	2.3	7.8	Linear Contact	33
C0201	2320245	94214	12.1	7.5	3.2	Unknown Object	33
C0202	2321136	94221	2.4	2.5	11.0	Unknown Object, Possible Piling	33
C0203	2320109	93734	14.5	3.2	1.1	Unknown Object	33
C0204	2321016	93704	64.7	3.9	5.5	Linear Contact	33
C0205	2321019	93671	59.1	2.6	4.5	Linear Contact and Debris	33
C0206	2320958	93655	53.9	2.1	4.8	Linear Contact	33
C0207	2320948	93653	64.2	2.2	1.9	Linear Contact	33
C0208	2320814	93262	35.6	2.9	2.4	Linear Contact	33
C0209	2319596	91392	29.8	2.1	1.1	Linear Contact	34
C0210	2319149	89815	9.0	6.9	3.0	Debris	35
C0211	2318852	88328	136.8	0.6	0.2	Linear Contact	35
C0212	2318891	88056	140.3	1.2	1.9	Linear Contact	35
C0213	2318722	87369	136.5	0.6	0.2	Wire Rope	35
C0214	2318767	86389	40.3	1.3	2.2	Linear Contact	35
C0215	2318794	85531	7.4	4.5	0.6	Unknown Object	35
C0216	2319405	84604	23.2	9.9	2.0	Unknown Object	35
C0217	2319261	84034	60.2	24.3	0.0	Debris Scatter	36
C0218	2319207	83640	111.8	0.9	0.0	Wire Rope	36
C0219	2311797	72382	43.9	34.8	4.1	Debris Scatter	38
C0220	2311537	72264	59.6	25.5	2.7	Debris Scatter	38
C0221	2310724	71264	79.8	26.0	2.8	Unknown, Possible Wreck	38
C0222	2310959	70767	7.2	2.1	6.2	Unknown Object	38

Contact	Easting	Northing	Length (ft.)	Width (ft.)	Height (ft.)	Description	Map
C0223	2308560	69208	34.6	21.6	5.0	Debris Scatter	39
C0224	2307292	67957	32.8	0.9	1.3	Linear Contact	39
C0225	2303539	64594	36.2	11.9	1.6	Debris Scatter	40
C0226	2301715	63437	22.6	12.2	1.4	Unknown Object	40
C0227	2301702	63428	22.0	11.7	0.5	Unknown Object	40
C0228	2301374	63067	45.0	0.6	0.9	Wire Rope	40
C0229	2300751	62756	26.3	8.0	1.5	Paddle Wheel, Possibly from <i>Kate</i>	40
C0230	2300762	62743	23.3	8.6	2.1	Paddle Wheel, Possibly from <i>Kate</i>	40
C0231	2300772	62729	20.3	9.3	2.1	Paddle Wheel, Possibly from <i>Kate</i>	40
C0232	2300753	61912	144.6	0.6	0.2	Wire Rope	40
C0233	2300481	61807	183.3	1.3	1.0	Linear Contact	41
C0234	2299024	61554	25.0	1.6	0.5	Linear Contact	41
C0235	2299215	60922	71.9	26.8	0.0	Debris Scatter	41
C0236	2299241	60893	130.9	1.1	0.8	Linear Contact	41
C0237	2298575	60376	50.7	24.7	4.1	Large Object Cluster, Possible Wreck	42
C0238	2296933	60007	10.3	2.4	1.1	Unknown Object	42
C0239	2297962	57853	14.1	0.8	1.1	Linear Contact	43
C0240	2299112	54933	66.0	50.1	0.8	Debris Scatter	43
C0241	2301509	47214	84.6	24.6	0.0	Debris Scatter	45

Coordinates in NAD83 North Carolina State Plane U.S. Survey Feet.

SUBBOTTOM PROFILER RESULTS

The subbottom remote sensing over the APE resulted in 6 Gigabytes of data divided into 46 files of Edgetech (*.JSF) data. The subbottom device was operated at the same time as the magnetometer and sidescan sonar over the planned track lines. Each subbottom data file was inspected and the first return bottom tracked in SonarWiz.MAP. The bottom tracking coverage covered all recorded lines.

The subbottom record was negative for the presence of paleolandforms that might be conducive for potential Prehistoric site locations. Presented in Figure 4-49 are subbottom profile images from Line 07 on the eastern side of the channel. The left side of the image is south, right is north, annotations are at 500-foot intervals and depths at 25 feet. The profile near Campbell Island shows all the point source diffractions resulting from going across the buried limestone formations. The profile from Fourth East Jetty Range (just south of the Anchorage Basin) shows the hard, reflective bottom, which we assume is the result of both coarse sand and limestone bottom.

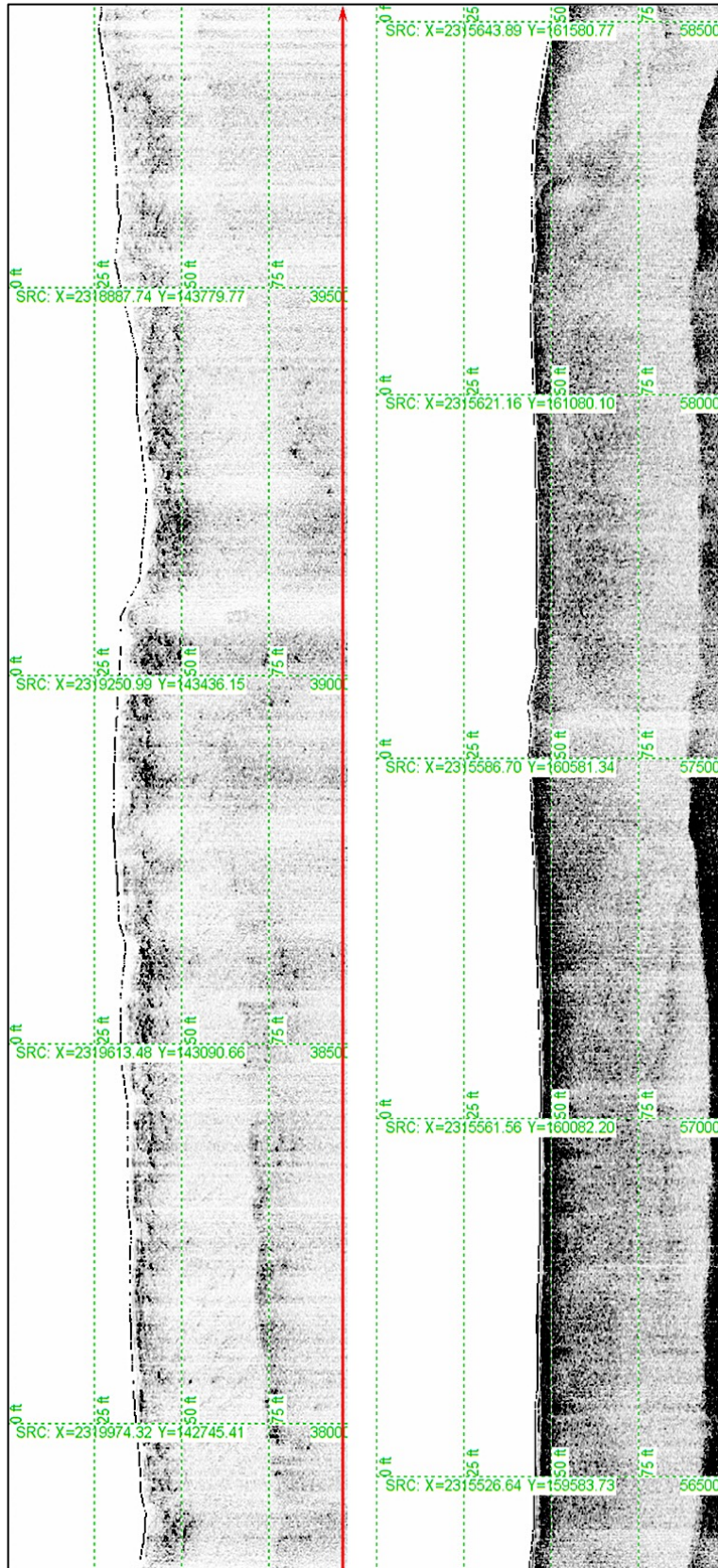


Figure 4-49. Subbottom profile off Campbell Island (top), subbottom profile of the Fourth East Jetty Range (bottom).

DIVER ASSESSMENT OF INNER HARBOR AREA POTENTIALLY SIGNIFICANT TARGETS

Presented in Table 4-03 and their locations illustrated in Figures 4-50 and 4-51, seven targets, comprised of 14 acoustic contacts and 17 magnetic anomalies were identified in the Inner Harbor Area as possible cultural resource sites, and therefore potentially significant. Subsequently recommended for assessment, all seven targets were examined by archaeological divers. Of the seven targets, one was identified as a possible old revetment, three as modern debris, one as a natural ridge, one as the probable remains of a navigation buoy, and one as the paddle wheel shaft from the wreck of the *Kate*. Comprising both sonar contacts and anomaly clusters findings for each target are presented below.

Table 4-03. Potentially Significant Targets Identified in the Inner Harbor Area.

Target No.	Anomaly/Contact	Easting	Northing	Association	Map
1	C0072	2317879	143486		11
2	C0095	2322358	133560	M630, M631, M632, M633, M634, C0097, C0098, C0099, C0100	17
3	C0167	2321277	107924	M861, M862, M863, C0166	27
4	C0189	2320785	103500	M915, M917	29
5	C0221	2310724	71264	M1125, M1126, M1127	38
6	C0230	2300762	62743	M1182, M1183, M1184, C0229, C0231	40
7	C0237	2298575	60376	M1232	42

Coordinates in NAD83 North Carolina State Plane U.S. Survey Feet

Target 1

Target 1 is comprised of Contact C0072 (Figures 4-52 to 4-54). At 174 feet in length and 10 feet wide but with no associated magnetic, it resembles the side of a vessel and was considered potentially significant. Target 1 was investigated on 20 September 2017. It was located during diver sweeps and consisted of a wall constructed of about 140 upright 10-inch square timbers with varying heights of up to 3-foot proud of the bottom. The site also includes non-native stone, likely used to bolster the structure on one side. It appears to be mapped on navigation charts as far back as 1888 (see Figure 4-53). While it is likely an old structure, such a wing dam or dike, it is not considered historically significant.

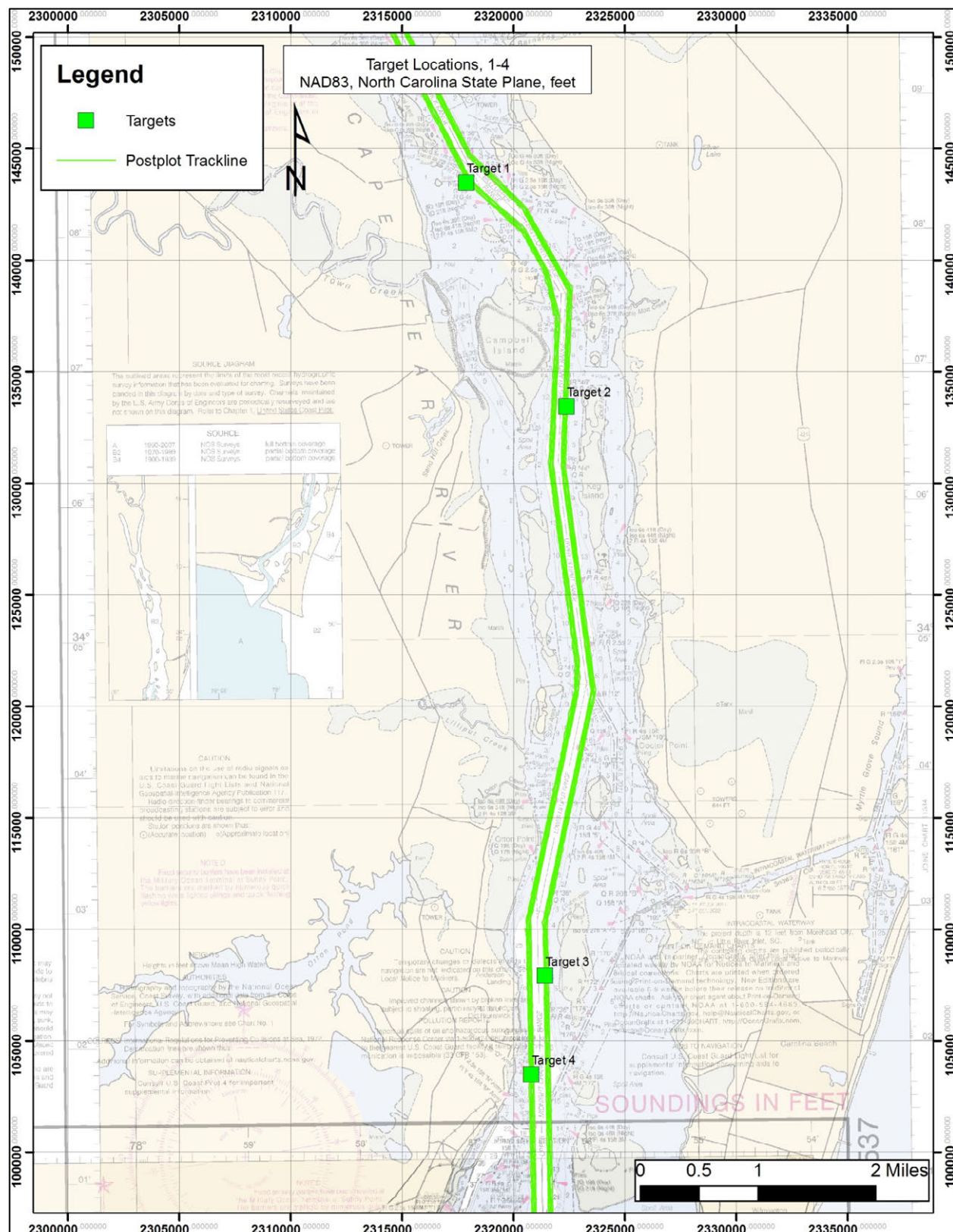


Figure 4-50. Area of Potential Effects with investigated targets, northern area.

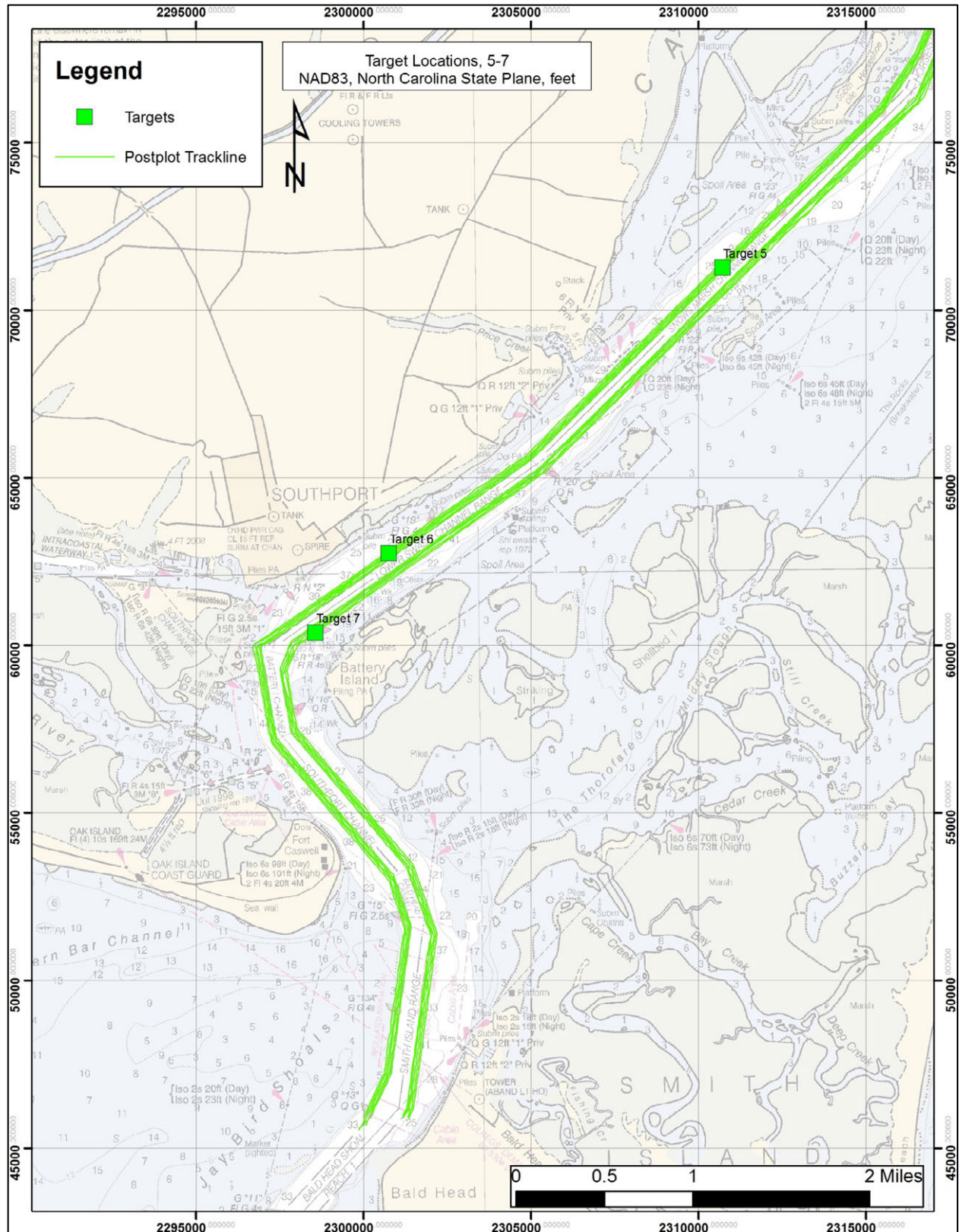


Figure 4-51. Area of Potential Effects with investigated targets, southern area.

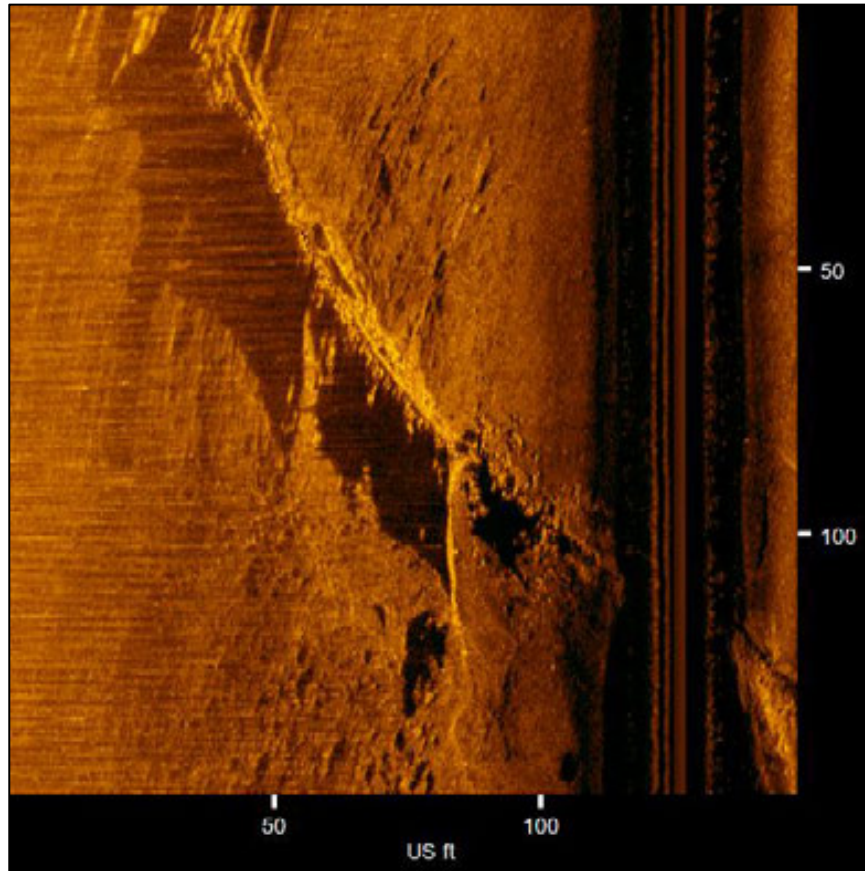


Figure 4-52. Acoustic image of Target 1, Contact C0072.



Figure 4-53. 1888 nautical chart excerpt showing the location of a structure in the vicinity of Target 1 (chart no. LC00150 from National Oceanic and Atmospheric Administration's Office of Coast Survey's Historical Map and Chart Collection).

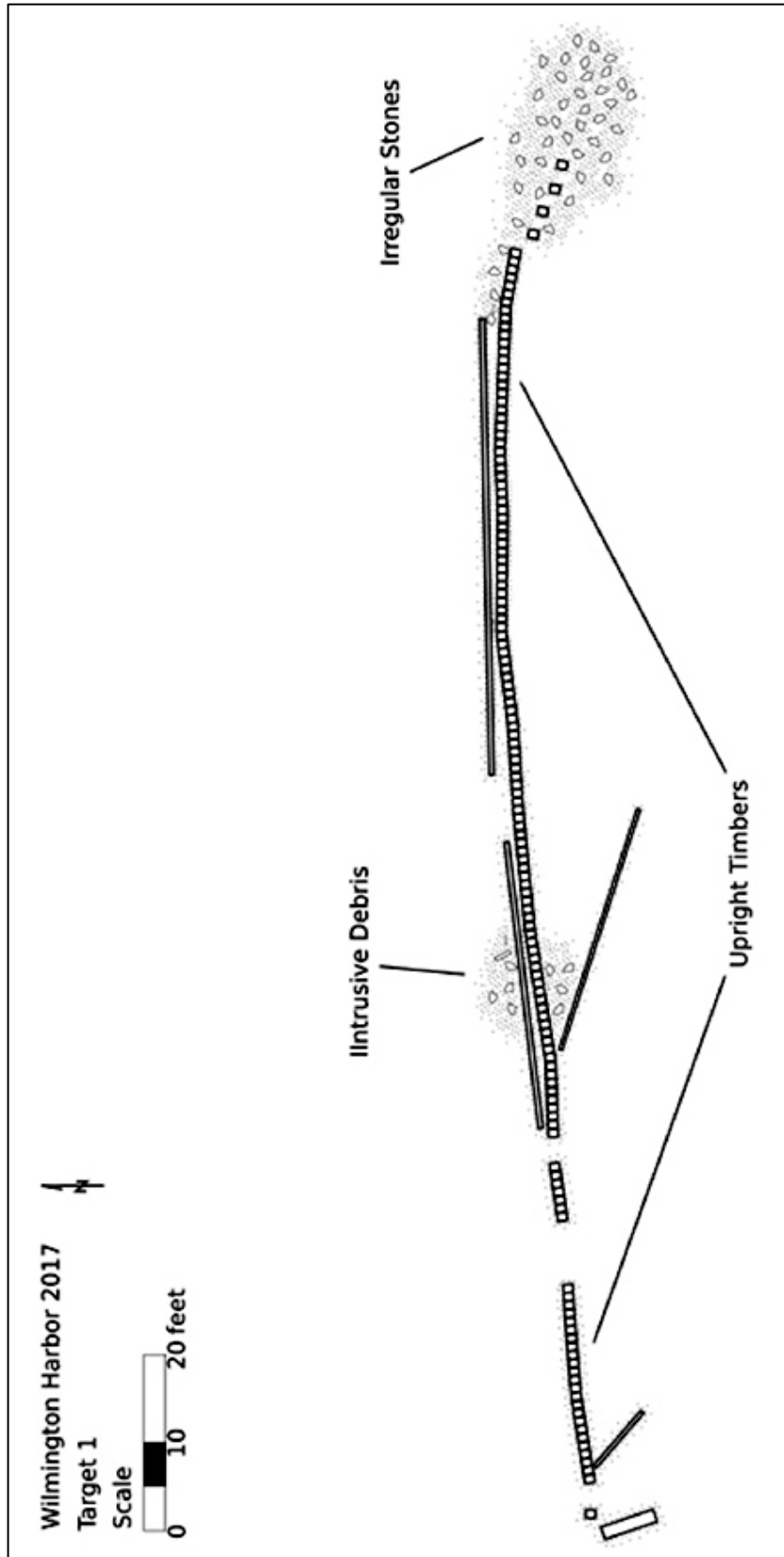


Figure 4-54. Field drawing of Target 1 illustrating the orientation and composition of the site.

Target 2

Target 2 is a cluster comprised of anomalies M630, M631, M632, M633, M634, and contacts C0095, C0097, C0098, C0099, and C0100 (Figures 4-55 and 4-56). Covering an area 66 feet in length and 13 feet wide, Target 2 was a scatter of debris consisting of several large objects and large magnetics. It was investigated 20 September 2017, and again on 24 September to ensure coverage. The target was not located on diver sweeps. Sweeps did, however, locate modern and woody debris, including small fragments of unknown iron objects, wire rope, and pieces of driftwood. The original sonar contact may have been a log that travelled downstream following the original survey. The remaining debris is not considered historically significant.

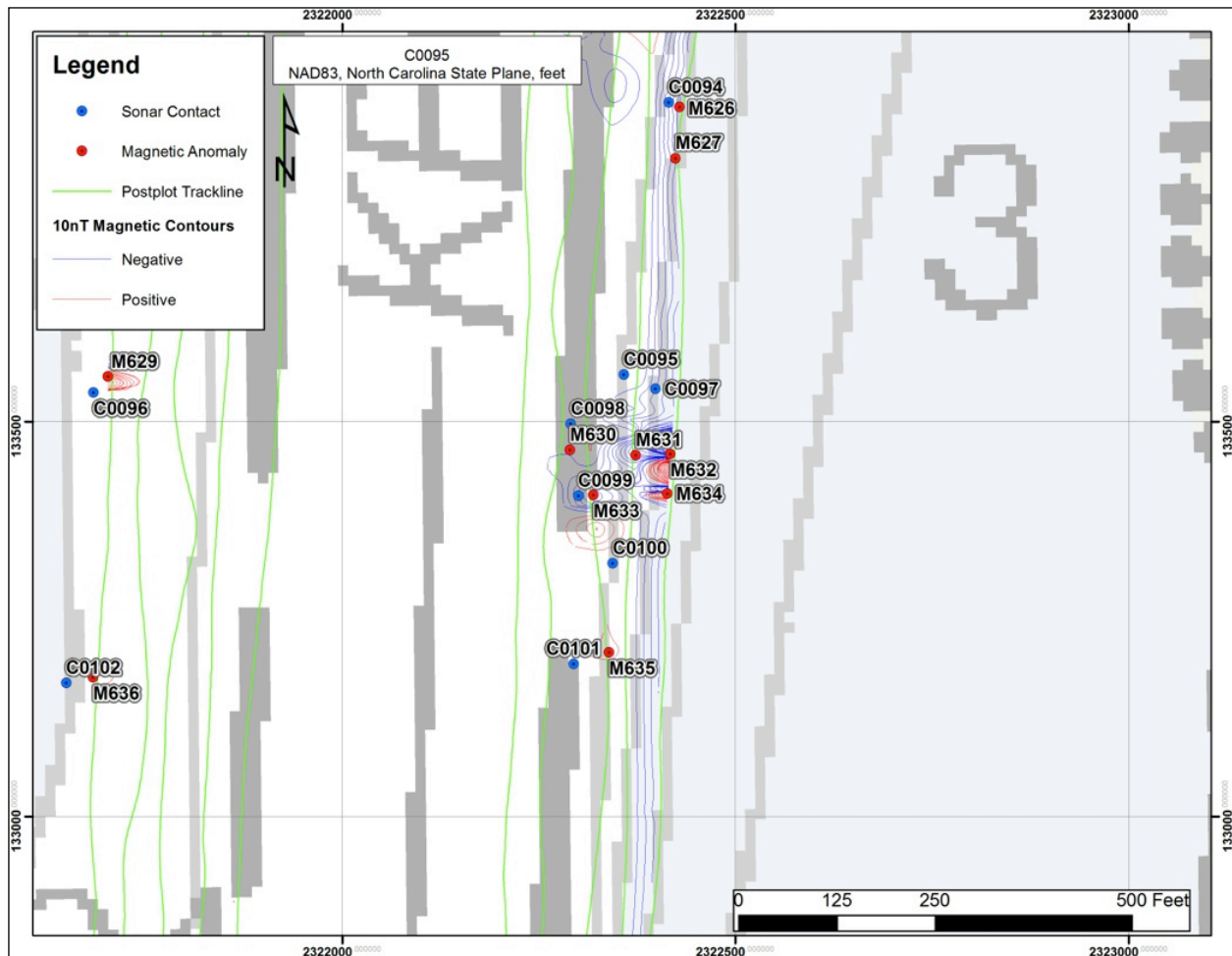


Figure 4-55. Cluster map of Target 2.

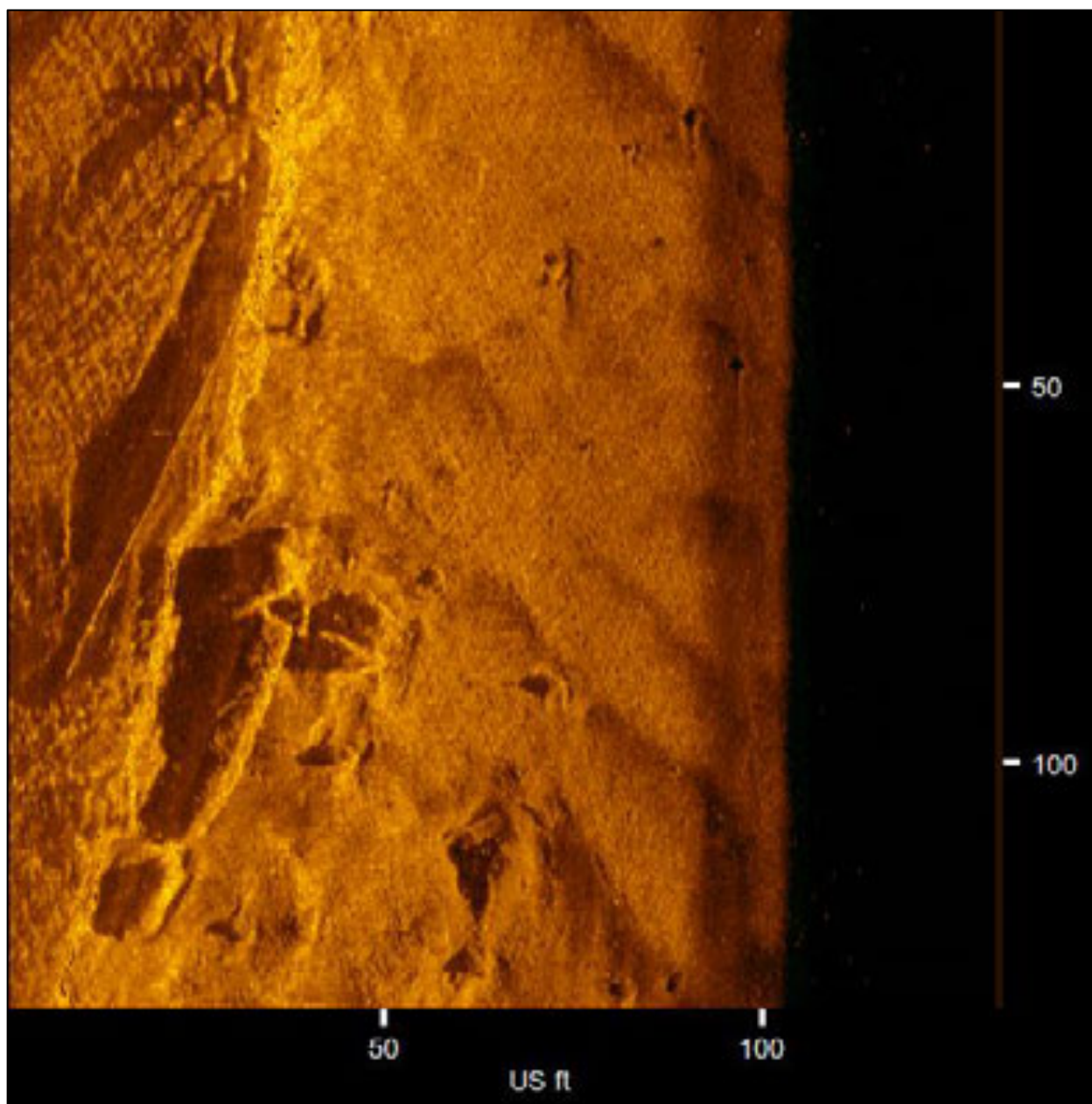


Figure 4-56. Acoustic image of Target 2, Contact C0095.

Target 3

Target 3 is a cluster comprised of anomalies M861, M862, and M863 and contacts C0167 and C0166 (Figures 4-57 and 4-58). It was considered potentially significant mainly because of its proximity to cultural resource CFR0050 (a cannon recovered from the Breece Site), an area believed to contain the wreck of the *Fortuna*. Target 3 was investigated 23 September 2017. It was located during diver sweeps and consisted of a long section of wire rope (18 feet in length), which was wrapped around exposed tree roots. It is not considered historically significant.

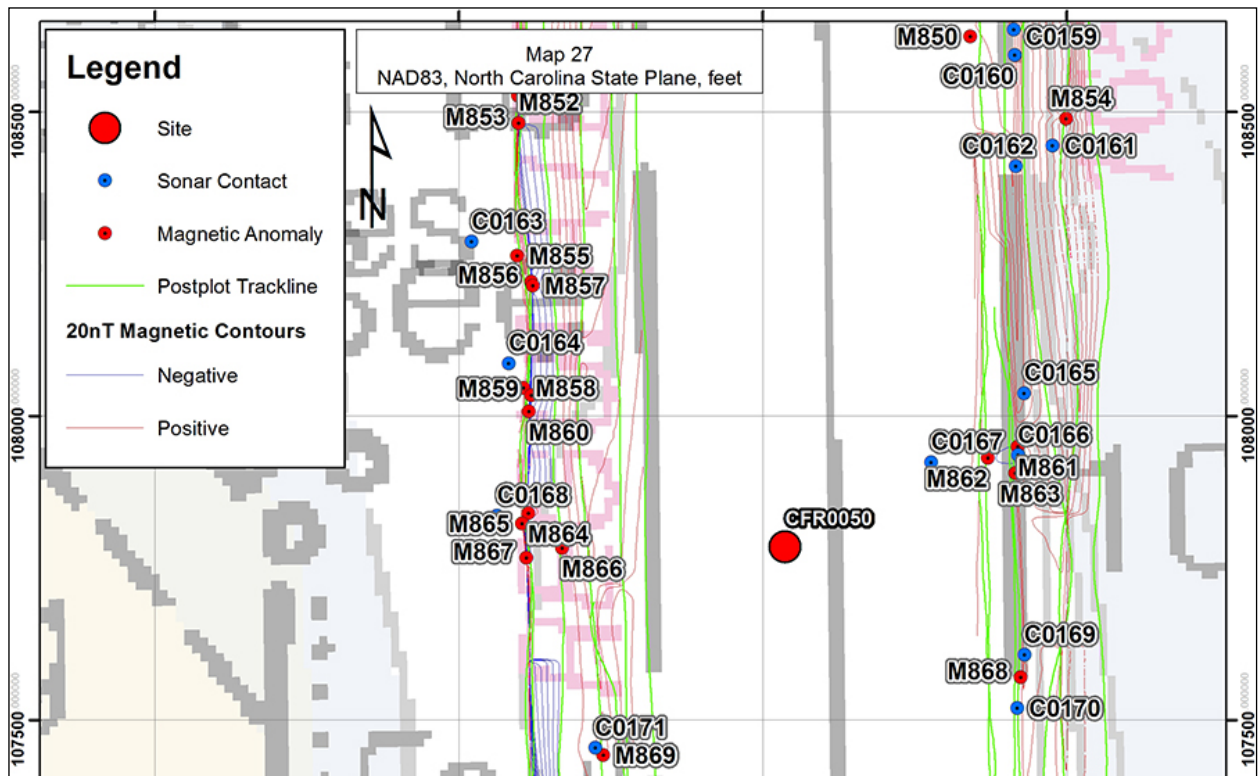


Figure 4-57. Cluster map of Target 3, to the right of the recovered cannon, CFR0050.

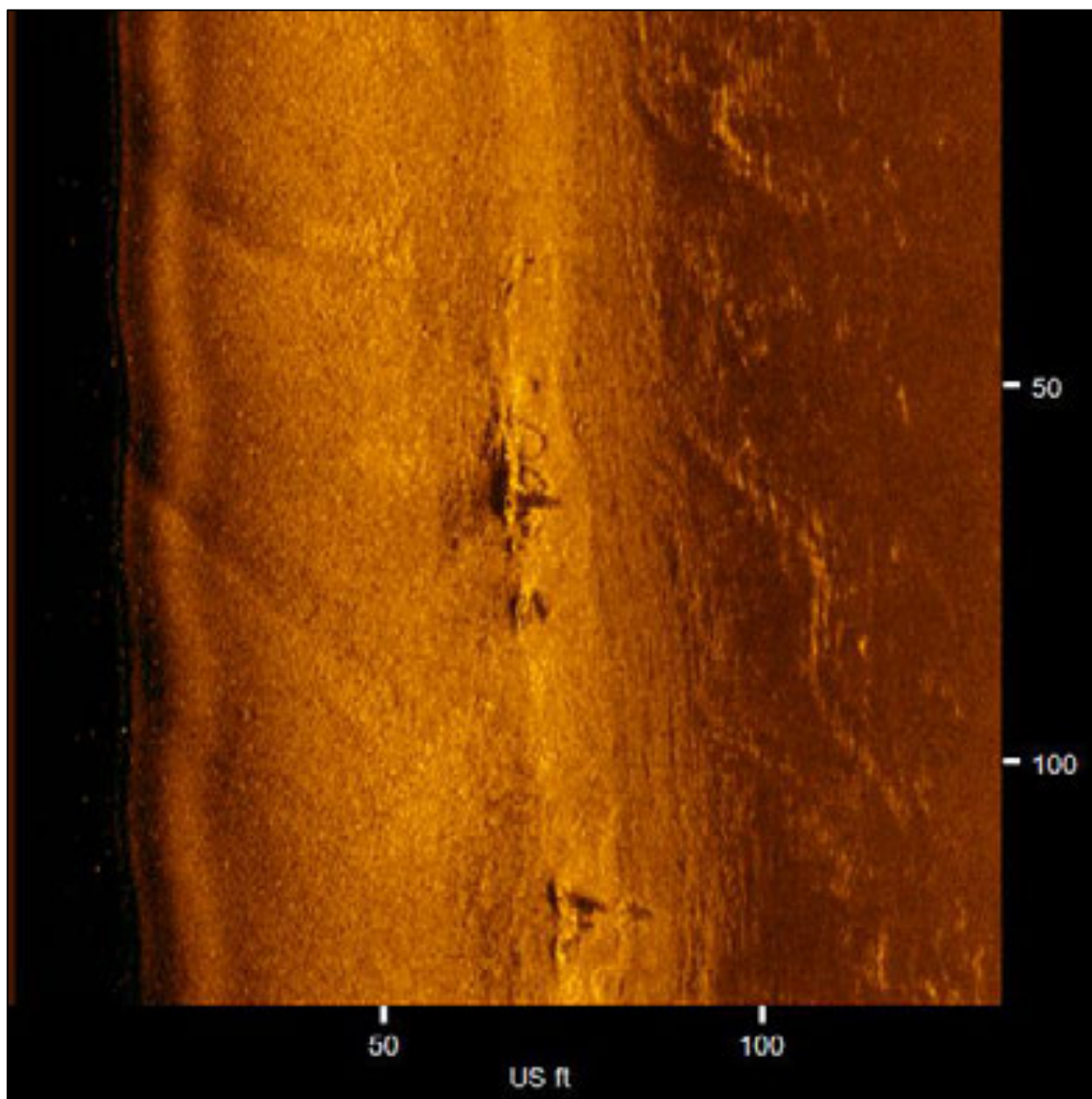


Figure 4-58. Acoustic image of Target 3, Contact C0166.

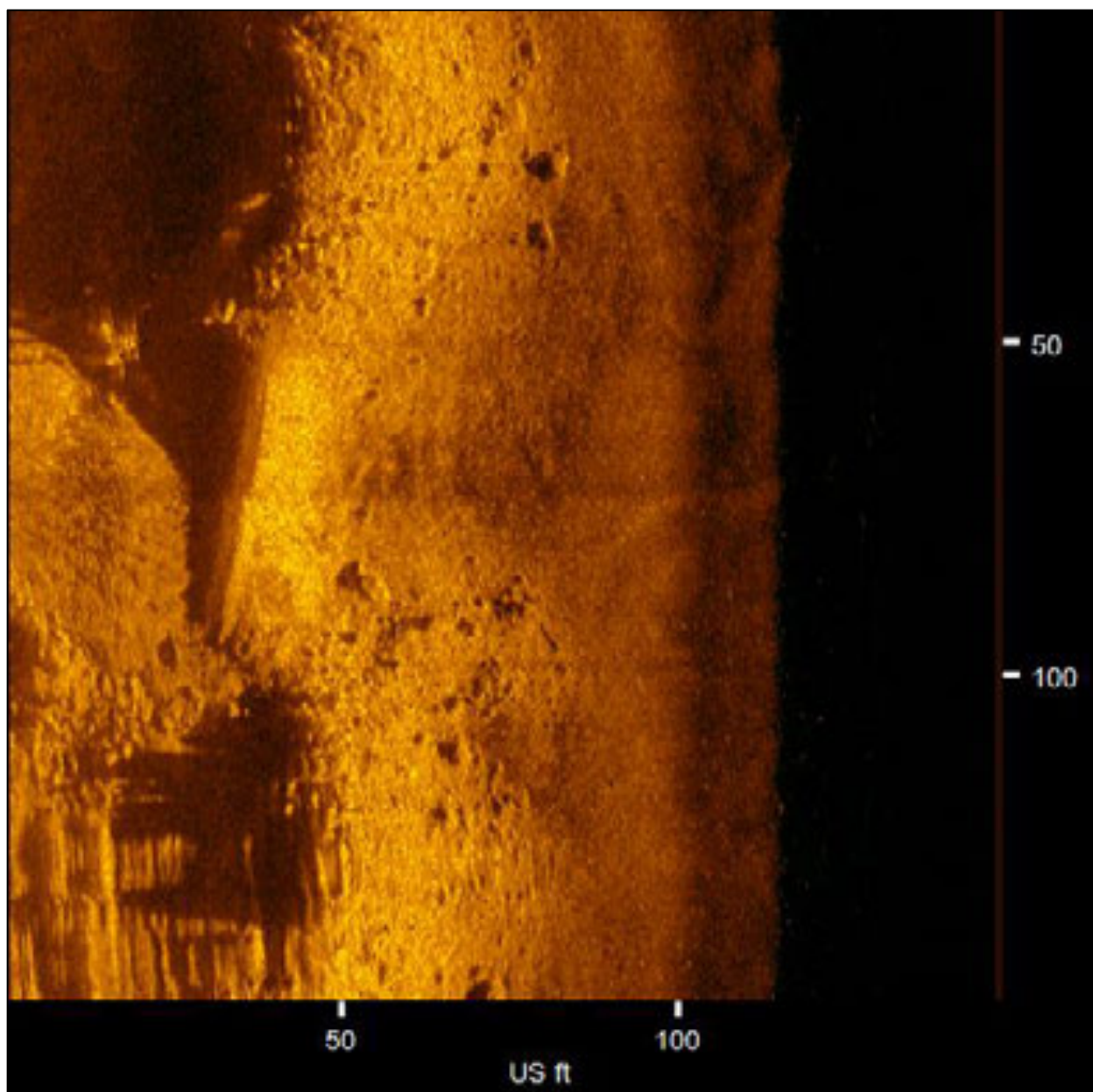


Figure 4-60. Acoustic image of Target 4, Contact C0189.

Target 5

Target 5 is a cluster comprised of anomalies M1125, M1126, and M1127, and contact C0221 (Figures 4-61 and 4-62). A structural wreck-like object 80 feet long and 26 feet wide with large magnetics, Target 5 was investigated on 26 September 2017. The sonar contacts were not present during diver sweeps and are considered to have washed away. Modern debris was found in the area, including a piece of flat iron (5 feet in length and 3 inches wide), fishing net, and natural wood. The target is not considered historically significant.

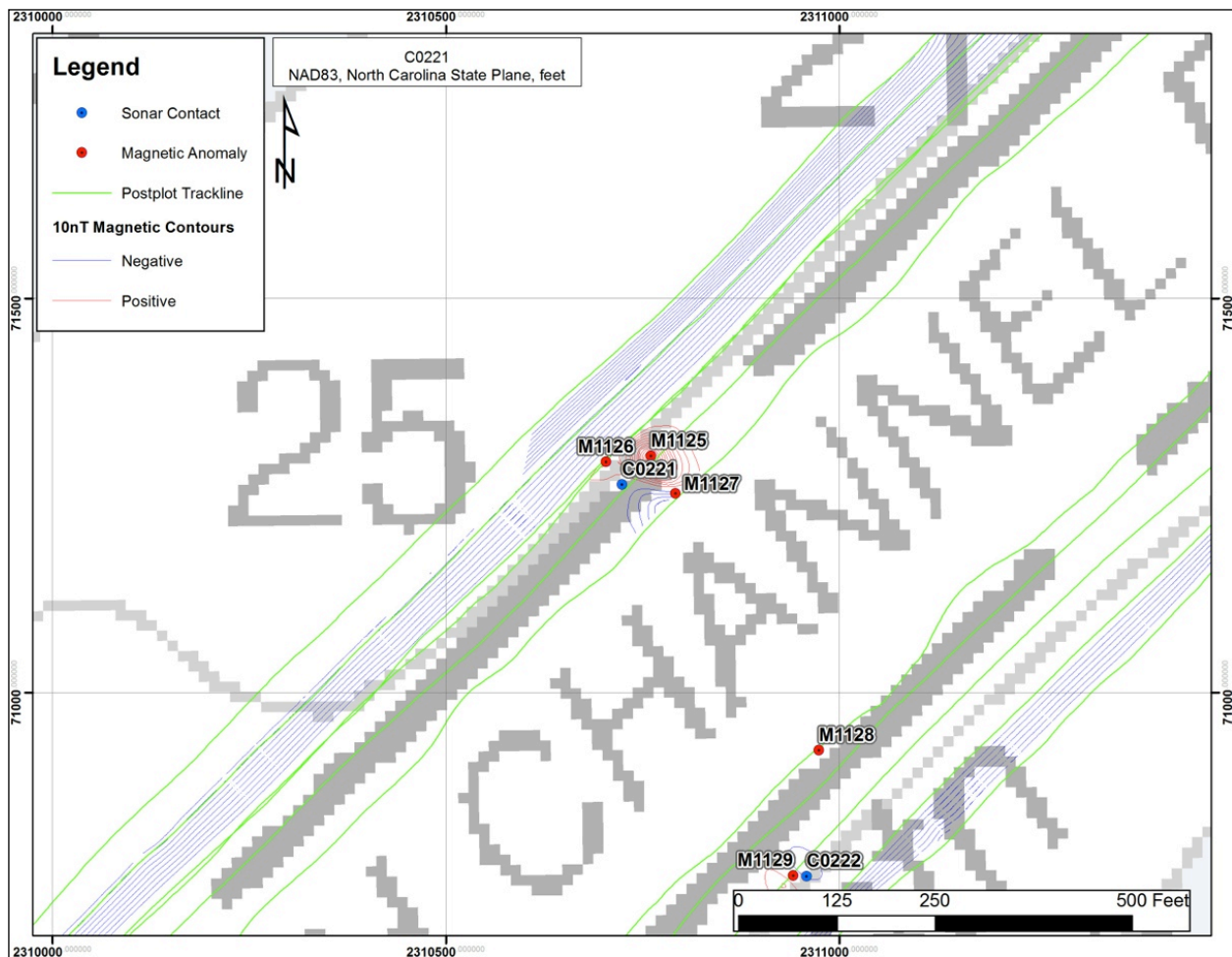


Figure 4-61. Cluster map of Target 5.

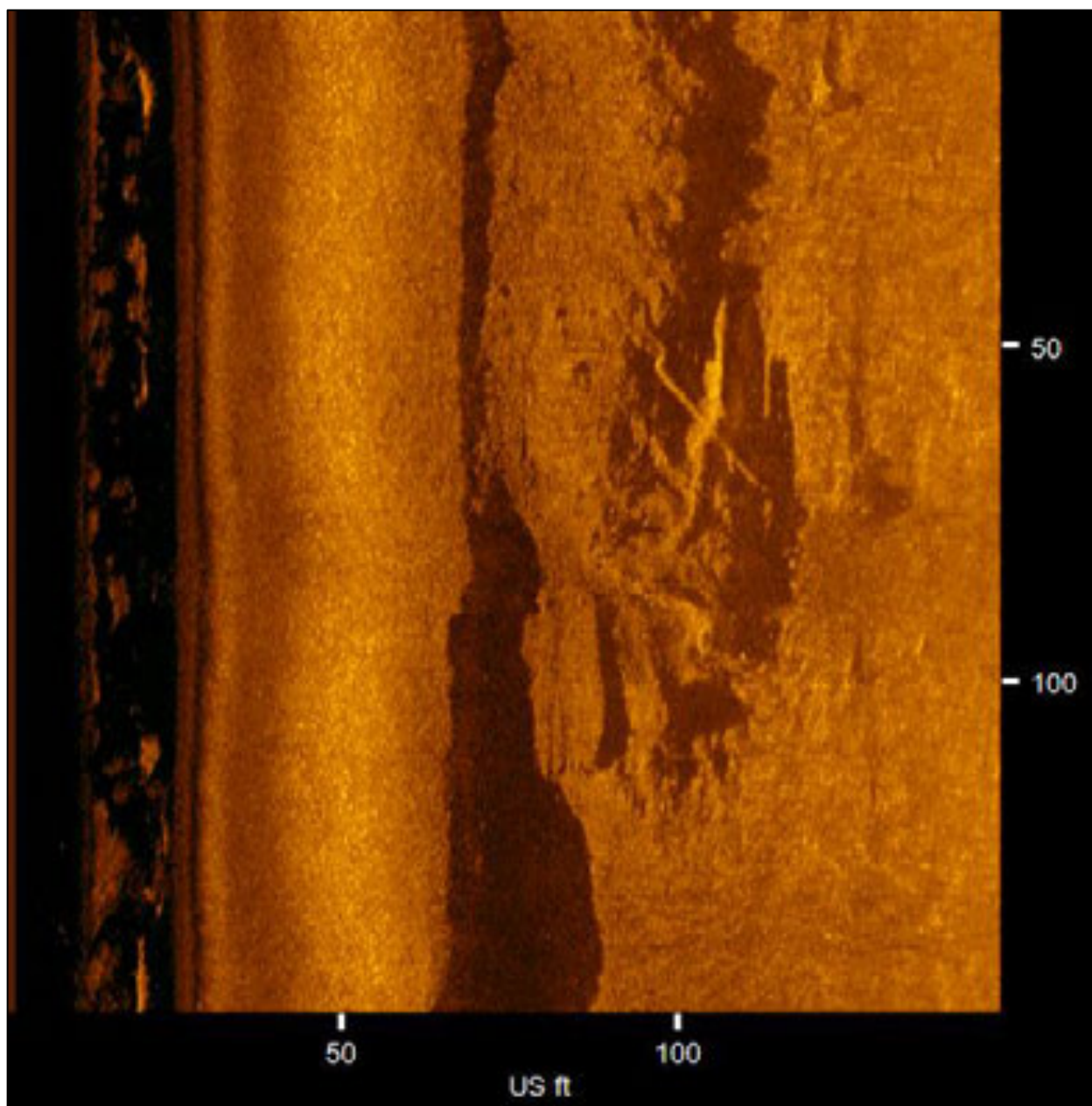


Figure 4-62. Acoustic image of Target 5, Contact C0221.

Target 6

Target 6 is a cluster comprised of anomalies M1182, M1183, and M1184, and contacts C0229, C0230, and C0211 (Figures 4-63 to 4-65). Target 6 was investigated on 22 and 25 September 2017. The target was located during diver sweeps and consisted of an iron paddle wheel shaft believed to be from the *Kate*, a Confederate blockade-runner whose wreckage is located some 250 feet away (see *Kate* (CFR0082) section in Chapter II). The shaft is approximately 23 feet long, varies in diameter from 8 to 20 inches, and includes five circular plates of varying diameter on its northern end. At least two of these plates have 1-inch wide ridges on their interiors. On the southern end is a 5-foot long shaft extending perpendicularly from the main shaft, and possibly part of the crankshaft. Because of its probable association with the *Kate*, the shaft should be considered potentially significant.

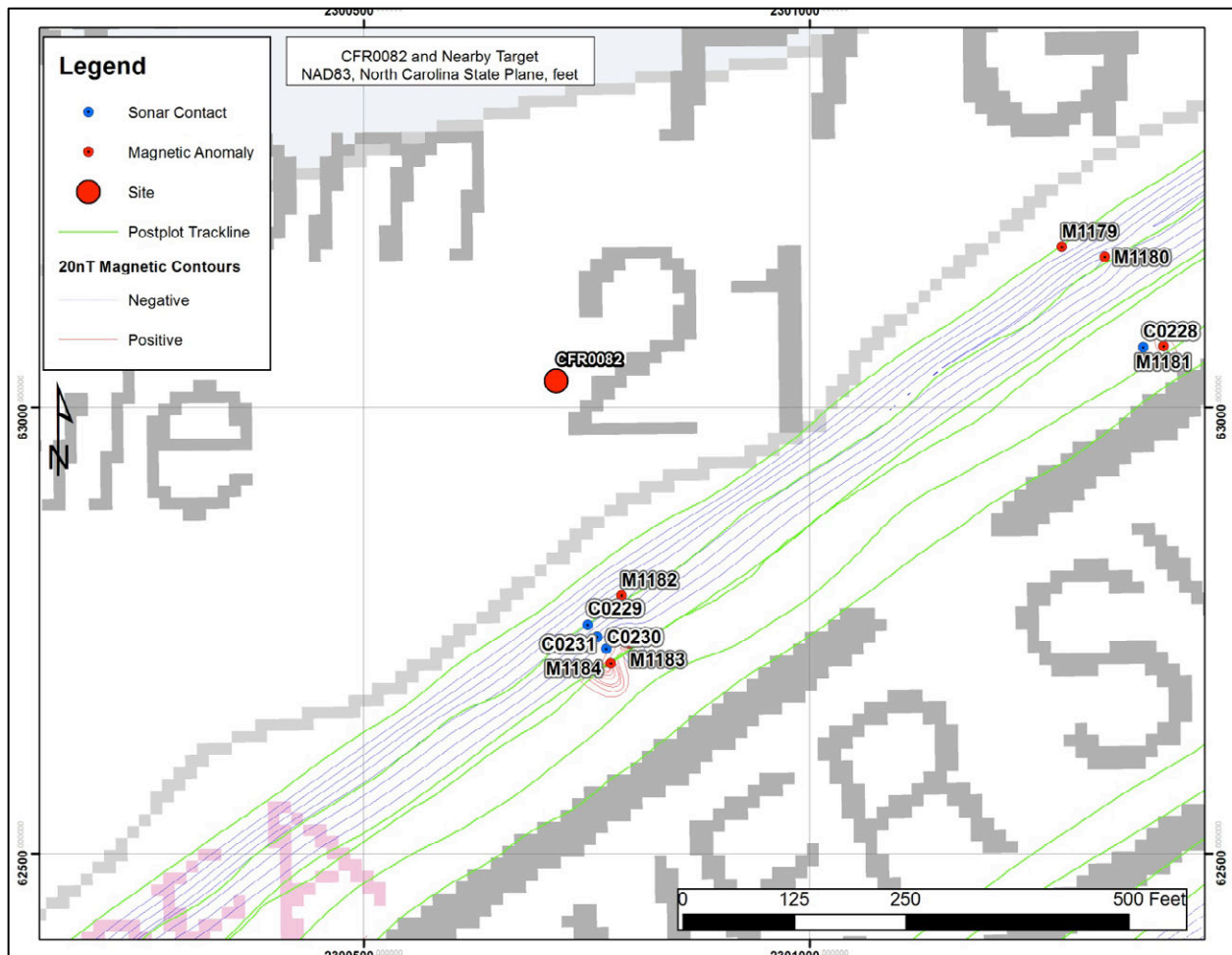


Figure 4-63. Cluster map of Target 6; note proximity to Site CFR0082, the wreck site of the Confederate blockade-runner *Kate*.

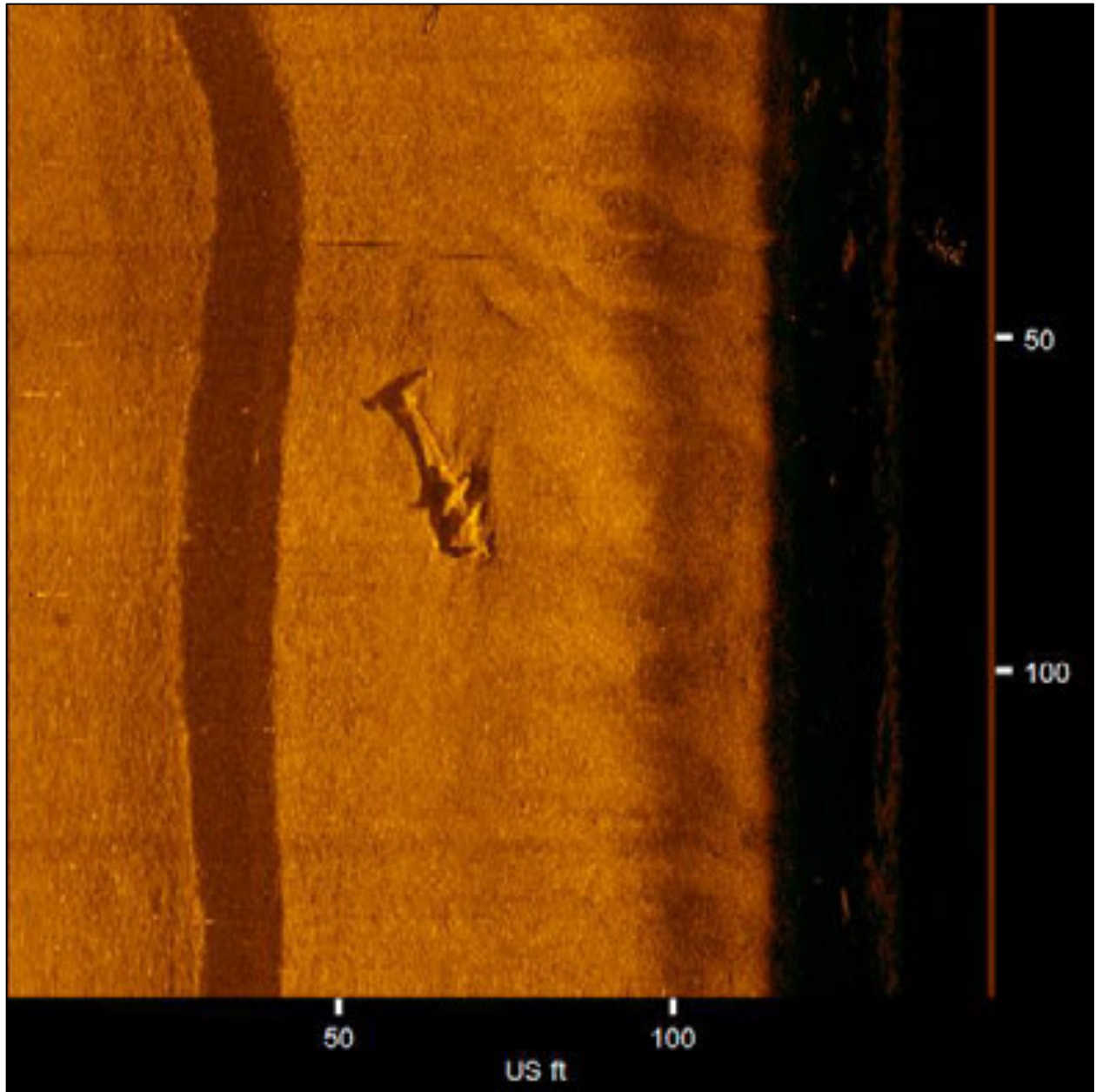


Figure 4-64. Acoustic image of Target 6, Contact C0230, believed to represent a paddlewheel shaft from the Confederate blockade-runner *Kate*.

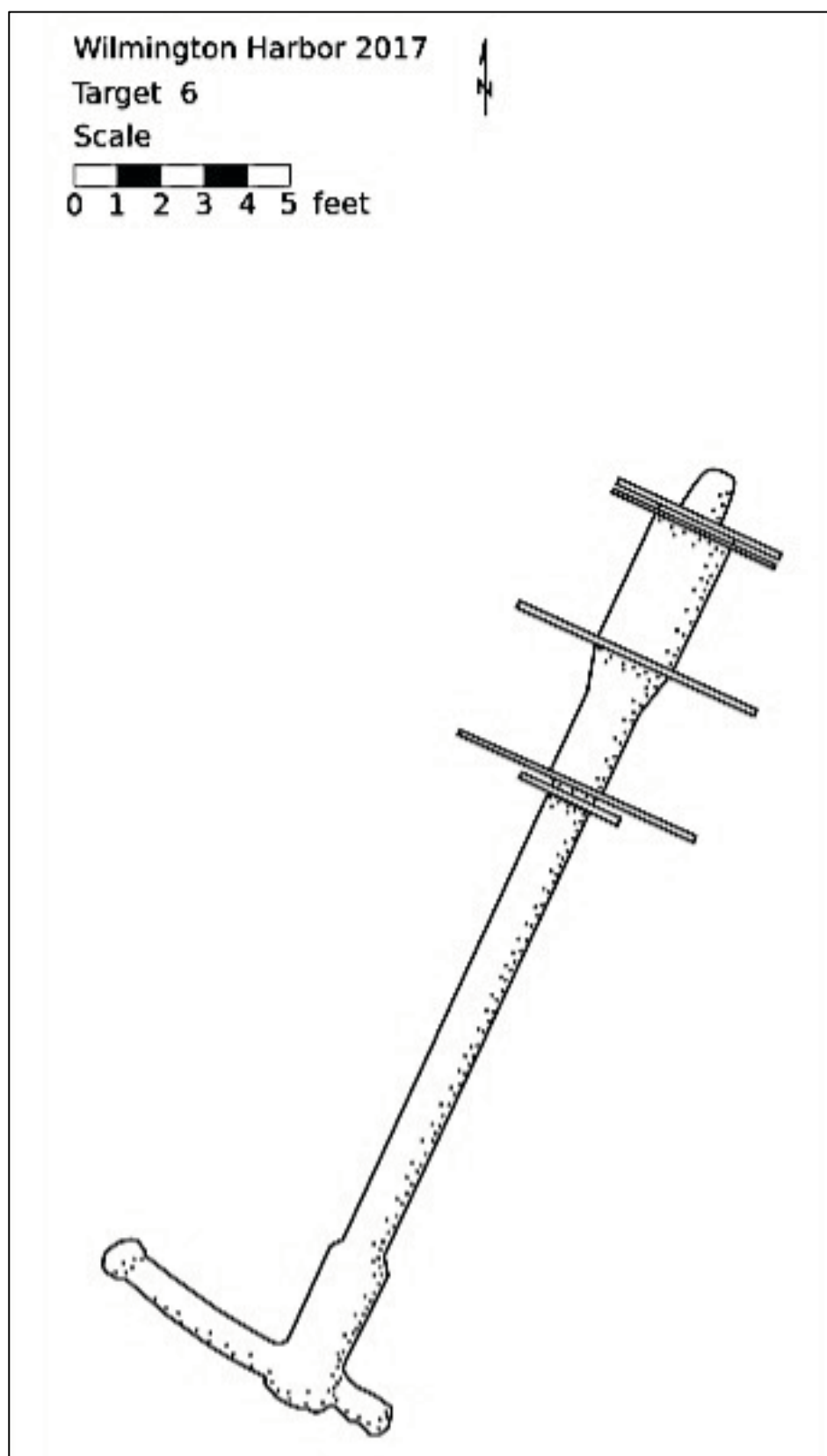


Figure 4-65. Field drawing of Target 6, Contact C0230, believed to represent a paddlewheel shaft from the Confederate blockade-runner *Kate* illustrating the orientation and composition of the object.

Target 7

Target 7 is comprised of anomaly M1232 and contact C0237 (Figures 4-66 and 4-67). A structural machinery-like object 50 feet long and 25 feet wide with magnetics, Target 7 was investigated on 21 September 2017. The target was located during diver sweeps and consisted of a navigation buoy and its anchor. The buoy was constructed using modern welding and has “property of Roberts Construction” printed on the base. The anchor and chain were still connected to the buoy. As the target was clearly a modern navigation buoy, it was not considered historically significant.

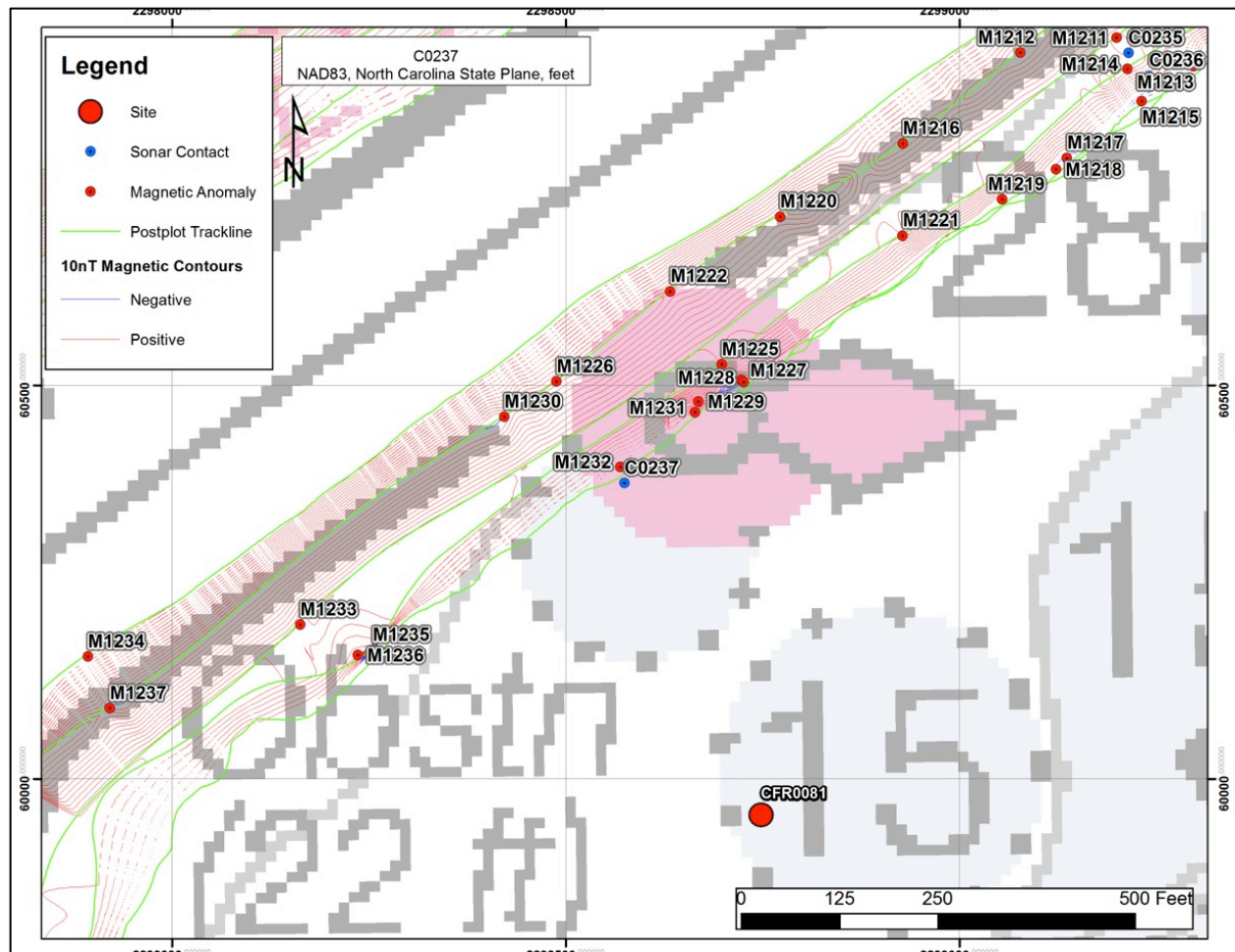


Figure 4-66. Cluster map of Target 7.

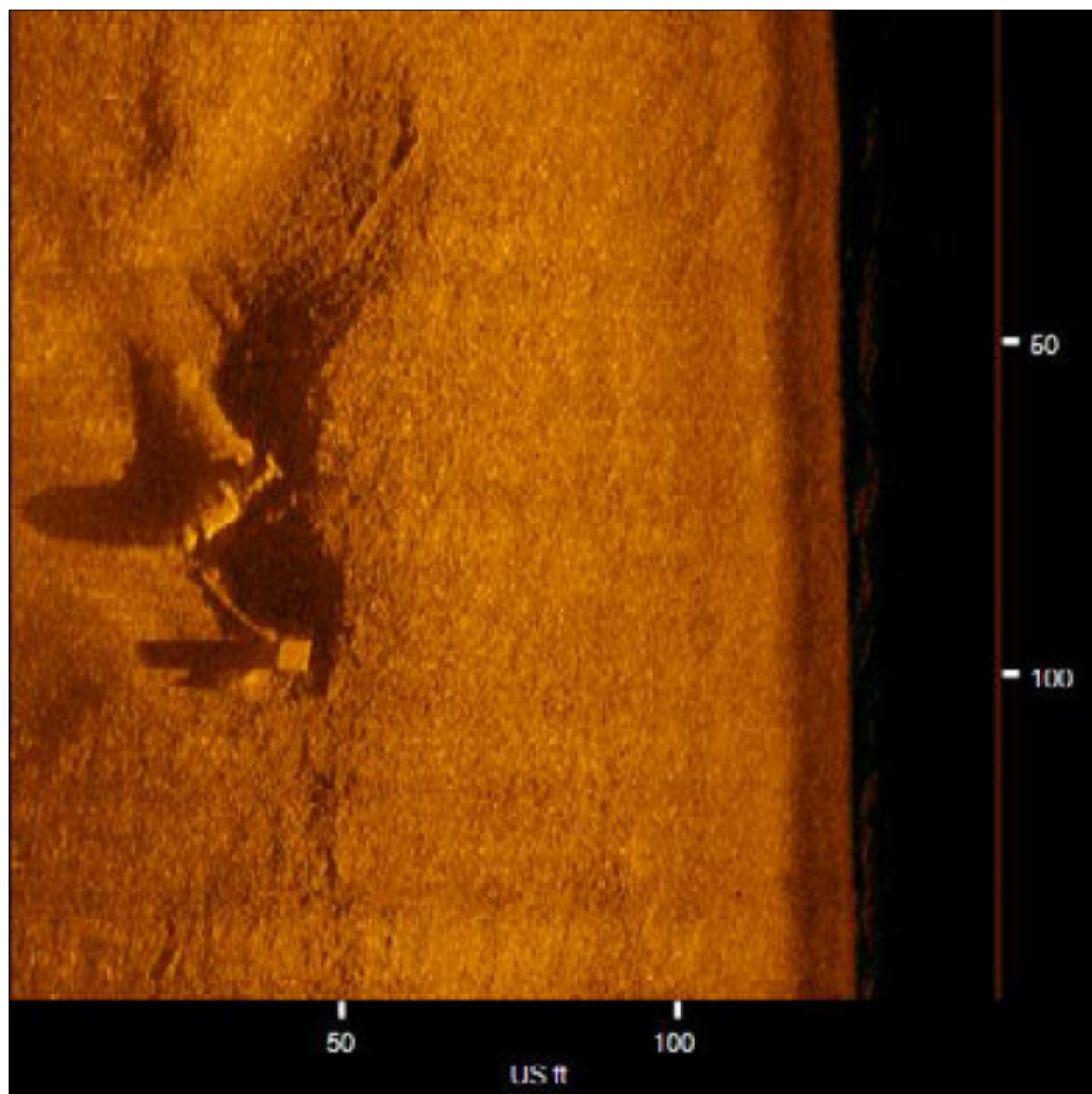


Figure 4-67. Acoustic image of Target 7, Contact C0237, identified as a navigation buoy and its anchor.

INVESTIGATION OF OFFSHORE AREA

REMOTE SENSING SURVEY RESULTS

In total, 205 magnetic anomalies (Table 4-04) and 21 sidescan sonar contacts (Table 4-05 and *Appendix C: Offshore Sonar Targets*) were recorded within the Offshore Area. No subbottom impedance contrast was found in the Offshore Area data. Both tables include target location, type (i.e., monopole, dipole, complex), anomaly deviation in nanoteslas, duration in feet, and association with other targets (both magnetic and sidescan) from the current survey. The magnetic contour maps are presented in Figures 4-68 to 4-81 with both sonar contacts and known cultural resource sites labeled. Maps are presented at a 10-nanotesla contour with the positive magnetic deviation denoted in red and the negative deviation in blue.

Employing the previous discussions on target analysis, magnetic anomalies were assessed for potential significance based on magnetic deviation (above and/or below ambient background), duration (distance in feet, along a trackline, an anomaly influences the ambient background), type (monopole [negative or positive influence], dipole [negative and positive influence], or complex), and association with other magnetic anomalies (i.e., clustering) and/or sidescan sonar contacts. Sidescan sonar contacts, as visual images, were assessed for linearity, height off bottom, size, associated magnetics, backscatter characteristics, and visual surface associations (i.e., jetties, buoys, etc.). Subbottom features were assessed as to feature type, and association with other subbottom features and sidescan targets.

Table 4-04. Magnetic Anomaly Data for the Offshore Area.

Name	X	Y	Line	Type	Duration (ft.)	Intensity (nTs)	Association	Notes	Map
M001	2301043	46250	9	M	130	59.11		SPS	46
M002	2300138	46064	3	D	210	25.59		Channel Marker	46
M003	2300013	45977	1	D	40	29.3	M003, C0001	Linear object	46
M004	2300231	45939	5	M	295	11.73		Channel Marker	46
M005	2301270	45823	1	M	68	11.5		SPS	46
M006	2301219	45765	1	D	77	101.38		SPS	46
M007	2299834	45684	2	M	581	25.39		Passing vessel	46
M008	2301141	45657	1	D	84	110.92		SPS	46
M009	2300814	45463	3	M	105	16.93		SPS	46
M010	2299670	45015	9	D	244	17.32		SPS	46
M011	2300535	44983	1	M	131	16.44		SPS	46
M012	2300211	44780	3	D	166	46.26	M012, M013	Unknown	46
M013	2300293	44701	1	M	135	36.38	M012, M013	Unknown	46
M014	2300029	44412	1	M	41	13.4		SPS	46
M015	2299976	44341	1	D	45	21.31		SPS	46
M016	2298384	44245	1	M	75	21.19		SPS	46
M017	2299894	44249	1	D	61	30.74		SPS	46
M018	2299802	44157	1	D	64	19.67		SPS	46
M019	2299730	44078	1	D	61	9.36		SPS	46
M020	2298211	43730	5	D	72	37.27		SPS	46
M021	2298345	43574	9	D	149	7.46		SPS	46
M022	2298865	43381	5	D	80	27.8	M022, M023	Unknown	46

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Name	X	Y	Line	Type	Duration (ft.)	Intensity (nTs)	Association	Notes	Map
M023	2298929	43335	3	D	82	31.4	M022, M023	Unknown	46
M024	2297562	43025	5	D	63	10.71		SPS	46
M025	2297344	42984	3	D	195	19.97		Channel Marker	47
M026	2297349	42951	2	D	179	15.72		Channel Marker	47
M027	2298611	42987	3	M	75	10.72		SPS	46
M028	2297457	42867	5	M	316	16.36		Channel Marker	46
M029	2298252	42842	7	D	133	16.21		Channel Marker	46
M030	2298496	42832	3	D	68	19.34		Channel Marker	46
M031	2298311	42762	5	M	287	44.51		Channel Marker	46
M032	2298482	42598	1	M	52	41.67		SPS	46
M033	2297232	42425	5	M	110	175.25		Passing vessel	47
M034	2297019	41832	7	M	172	14.68		SPS	47
M035	2296303	40901	3	M	114	17.07	M035, M036, M037	Unknown	47
M036	2296239	40873	2	D	125	11.81	M035, M036, M037	Unknown	47
M037	2296373	40812	5	D	114	20.19	M035, M036, M037	Unknown	47
M038	2297495	40738	1	C	129	35.43	M038, M039	Unknown	46
M039	2297351	40709	3	M	97	16.64	M038, M039	Unknown	47
M040	2297327	40420	1	M	78	7.61		SPS	47
M041	2295967	40268	3	M	74	9.05		SPS	47
M042	2295840	40256	1	M	111	14.95		SPS	47
M043	2296921	39895	3	D	117	10.24		SPS	47
M044	2295584	39757	1	D	82	14.41		SPS	47
M045	2295641	39641	3	D	128	16.06		SPS	47
M046	2296917	39652	1	M	49	7.36		SPS	47
M047	2295524	39430	3	D	220	60.3		Channel Marker	47
M048	2295580	39268	5	M	282	13.12		Channel Marker	47
M049	2295437	39230	2	C	332	20.02		Channel Marker	47
M050	2295426	39164	3	M	95	27.55		SPS	47
M051	2295329	39061	1	C	105	11.66		SPS	47
M052	2296396	39057	5	D	213	10.29		Channel Marker	47
M053	2296501	39042	3	M	304	69.12		Channel Marker	47
M054	2295286	38899	1	C	176	25.5	M054, C0002	Linear object	47
M055	2296528	38849	1	C	440	172.23		Channel Marker	47
M056	2295361	38734	3	M	83	8.57	M056, M057	Unknown	47
M057	2295316	38719	2	D	135	10.01	M056, M057	Unknown	47
M058	2296376	38643	3	C	267	18.52		SPS	47
M059	2295179	38448	1	M	90	10.21		SPS	47
M060	2295263	38320	3	D	60	53.96	M060, C0003	Unknown object	47
M061	2295217	38141	3	D	71	58.12		SPS	47
M062	2295246	37830	5	M	1472	62.68		Passive vessel	47
M063	2295021	37789	1	D	82	28.18	M063, M064, M066	Unknown	47
M064	2295123	37783	3	D	109	40.52	M063, M064, M066	Unknown	47
M065	2296139	37816	3	D	169	56.57	M065, M067	Unknown	47
M066	2295088	37755	2	D	104	71.43	M063, M064, M066	Unknown	47
M067	2296258	37795	1	M	114	22.45	M065, M067	Unknown	47
M068	2295062	37656	2	D	90	21.81	M068, M069	Unknown	47

Name	X	Y	Line	Type	Duration (ft.)	Intensity (nTs)	Association	Notes	Map
M069	2295096	37634	3	D	90	26.75	M068, M069	Unknown	47
M070	2296201	37648	1	D	63	52.52		SPS	47
M071	2295148	37393	5	D	81	22.89		SPS	47
M072	2295034	37366	3	D	47	39.63		SPS	47
M073	2296075	37184	1	D	124	13.36		SPS	47
M074	2295955	37153	3	D	89	23.87		SPS	47
M075	2295075	37085	5	M	53	11.75		SPS	47
M076	2294958	37061	3	D	68	8.04		SPS	47
M077	2295049	36992	5	D	59	21.71		SPS	47
M078	2294587	35471	3	D	41	9.2		SPS	48
M079	2294737	35237	7	D	123	21.81		SPS	48
M080	2294499	35107	3	D	22	16.75		SPS	48
M081	2294392	34656	3	D	38	47.14		SPS	48
M082	2295422	34601	1	M	73	10.95		Channel Marker	48
M083	2295263	34546	3	D	359	114.39		Channel Marker	48
M084	2295203	34497	5	C	252	74.4		Channel Marker	48
M085	2294234	34440	1	M	133	11.67	M085, M086	Unknown	48
M086	2294296	34432	2	M	85	13.2	M085, M086	Unknown	48
M087	2294133	33576	3	D	51	29.15		SPS	48
M088	2295104	33256	1	C	129	35.13		SPS	48
M089	2294857	33115	5	D	48	16.85		SPS	48
M090	2294685	32882	7	D	124	11.05		SPS	48
M091	2294074	32487	7	M	482	73.21		Passing vessel	48
M092	2293821	32251	3	D	45	17.25		SPS	48
M093	2293652	31197	5	D	170	76.55		Channel Marker	48
M094	2293751	31168	7	M	335	42.89		Channel Marker	48
M095	2294039	30625	9	M	98	24.51		SPS	48
M096	2294024	30168	7	D	139	9.77		SPS	49
M097	2293615	28554	7	M	151	9.5		SPS	49
M098	2293509	27319	3	M	253	9.63		Channel Marker	49
M099	2293395	27301	5	C	187	121.9		Channel Marker	49
M100	2292583	27236	2	M	527	79.3		Passing Vessel	49
M101	2292224	25690	2	M	224	7.2		SPS	49
M102	2292388	25361	7	M	98	9.78		SPS	49
M103	2292004	24604	3	M	92	49.97	M103, M104	Unknown	49
M104	2291952	24576	2	M	143	16.54	M103, M104	Unknown	49
M105	2291973	24459	3	C	92	12.62		SPS	49
M106	2291809	23783	3	C	156	11.91		Channel Marker	50
M107	2291678	23706	1	D	97	11.88		SPS	50
M108	2291937	23716	5	M	188	66.01		Channel Marker	50
M109	2291990	23695	7	D	334	11.43		Channel Marker	50
M110	2291740	23465	3	M	84	22.4		SPS	50
M111	2292277	23155	7	D	145	14.93		SPS	50
M112	2292238	22553	5	D	101	57.48	M112, C0004	Small objects	50
M113	2292177	21936	3	M	71	16.88		SPS	50
M114	2291955	21839	7	M	143	10.34		SPS	50

Name	X	Y	Line	Type	Duration (ft.)	Intensity (nTs)	Association	Notes	Map
M115	2292003	21605	5	M	68	11.94		SPS	50
M116	2291960	21445	5	D	258	937.56		Passing vessel	50
M117	2291345	21402	5	D	172	34.25		SPS	50
M118	2292027	21336	3	C	77	8.46		SPS	50
M119	2291899	21174	5	D	94	28.96	M119, C0005	Debris and disposal material	50
M120	2291147	21000	3	D	50	10.56		SPS	50
M121	2291214	20888	5	M	69	13.14		SPS	50
M122	2291923	20899	3	C	374	83.68		SPS	50
M123	2291833	20850	5	M	64	7.71	M123, C0006	Debris and disposal material	50
M124	2291051	20770	2	D	142	13.33		SPS	50
M125	2291578	20725	9	D	134	9.54		SPS	50
M126	2291798	20730	5	M	99	20.72	M126, M127	Unknown	50
M127	2291863	20664	3	M	74	24.64	M126, M127	Unknown	50
M128	2291159	20616	5	M	150	30.51		SPS	50
M129	2290929	20545	1	C	147	9.87	M129, M130	Unknown	50
M130	2290987	20495	2	C	160	23.16	M129, M130	Unknown	50
M131	2291817	20491	3	M	120	16.85	M131, M132, M134, C0009	Debris and disposal material	50
M132	2291726	20465	5	C	391	72.25	M131, M132, M134, C0009	Debris and disposal material	50
M133	2290892	20389	1	D	121	14.73		SPS	50
M134	2291898	20360	1	M	106	56.98	M131, M132, M134, C0009	Debris and disposal material	50
M135	2290935	20296	2	D	137	7.55		SPS	50
M136	2290985	20278	3	C	567	47.26		SPS	50
M137	2290844	20200	1	M	119	31.53		SPS	50
M138	2291755	20230	3	D	64	26.34		SPS	50
M139	2291630	20156	5	D	241	104.79		Channel Marker	50
M140	2290879	20067	2	D	171	51.71	M140, M144, C0011	Debris and disposal material	50
M141	2291704	20021	3	D	126	54.86	M141, M142, C0010	Debris and disposal material	50
M142	2291802	19969	1	M	115	10.61	M141, M142, C0010	Debris and disposal material	50
M143	2291574	19914	5	D	105	45.95	M143, M145, M146, C0012, C0013, C0014	Debris and disposal material	50
M144	2290870	19867	3	C	740	1,417.93	M140, M144, C0011	Debris and disposal material	50
M145	2291664	19868	3	C	178	70.25	M143, M145, M146, C0012, C0013, C0014	Debris and disposal material	50
M146	2291756	19793	1	M	193	105.86	M143, M145, M146, C0012, C0013, C0014	Debris and disposal material	50
M147	2290794	19706	2	D	110	17.39	M147, M144	Unknown	50
M148	2290764	19564	2	M	110	9.85	M148, C0015	Linear object	50
M149	2291689	19505	1	M	177	22.36		SPS	50

Name	X	Y	Line	Type	Duration (ft.)	Intensity (nTs)	Association	Notes	Map
M150	2290761	19380	3	C	161	25.05		SPS	50
M151	2290962	19368	7	D	114	11.71		SPS	50
M152	2291456	19312	5	D	176	61.73		SPS	50
M153	2290616	19227	1	M	137	9.47		SPS	50
M154	2290722	19208	3	C	204	50.05	M154, C0016	Debris and disposal material	50
M155	2290923	19193	7	M	102	15.55		SPS	50
M156	2291388	19129	5	D	110	21.02		SPS	50
M157	2290685	19062	3	M	102	17.33	M157, M158	Unknown	50
M158	2290635	18998	2	C	754	34.62	M157, M158	Unknown	50
M159	2291566	19034	1	M	137	14.62		SPS	50
M160	2291131	18915	9	M	164	12.52		SPS	50
M161	2290529	18869	1	D	263	47.75	M161, M162, M163, M164, C0017, C0018, C0019	Debris and disposal material	50
M162	2290626	18804	3	C	357	72.92	M161, M162, M163, M164, C0017, C0018, C0019	Debris and disposal material	50
M163	2290711	18735	5	D	199	97.59	M161, M162, M163, M164, C0017, C0018, C0019	Debris and disposal material	50
M164	2290488	18660	1	C	222	69.02	M161, M162, M163, M164, C0017, C0018, C0019	Debris and disposal material	50
M165	2290519	18363	3	D	107	35.98		SPS	50
M166	2290485	18230	3	M	171	460.38	M166, M169, M170, M171	Unknown, Passing Vessel	50
M167	2290694	18238	7	D	155	12.6		SPS	50
M168	2290409	18076	2	M	899	133.07		Passing vessel	50
M169	2290340	18067	1	D	104	17.54	M166, M169, M170, M171	Unknown	50
M170	2290429	17985	3	D	67	12.23	M166, M169, M170, M171	Unknown	50
M171	2290398	17853	3	C	186	19.2	M166, M169, M170, M171	Unknown	50
M172	2291047	17698	5	M	90	22.14		SPS	50
M173	2290347	17634	3	M	41	57.22		SPS	50
M174	2290221	17600	1	M	154	11.12		SPS	50
M175	2291104	17591	3	C	252	11.5	M175, M176, C0020, C0021	Linear object and unknown object	50
M176	2291195	17529	1	M	166	15.88	M175, M176, C0020, C0021	Linear object and unknown object	50
M177	2290204	17192	2	D	80	9.58		SPS	51
M178	2290159	17006	2	D	96	25.77		SPS	51
M179	2291053	16953	1	M	98	6.59		SPS	51
M180	2290102	16768	2	M	115	9.43	M180, M181	Unknown	51
M181	2290134	16720	3	C	155	38.18	M180, M181	Unknown	51

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Name	X	Y	Line	Type	Duration (ft.)	Intensity (nTs)	Association	Notes	Map
M182	2290065	16638	2	D	184	57.66		SPS	51
M183	2289898	16199	1	M	147	51.42		SPS	51
M184	2290100	16151	5	M	1158	637.41		Passing Vessel	51
M185	2290812	15988	1	M	210	37.08		SPS	51
M186	2289880	15820	2	D	126	7.64		SPS	51
M187	2289832	15461	3	M	236	11.79		Channel Marker	51
M188	2289920	15382	5	D	164	92.24		Channel Marker	51
M189	2289830	14601	7	D	147	32.42		SPS	51
M190	2289745	14240	7	D	87	9.68		SPS	51
M191	2289938	13253	5	C	179	16.3		Channel Marker	51
M192	2290057	13244	3	M	352	34.04		Channel Marker	51
M193	2289694	12288	5	D	145	24.2		SPS	51
M194	2289046	10133	7	D	93	6.42		SPS	52
M195	2288998	9934	7	D	139	29.25		SPS	52
M196	2289003	9488	5	M	149	28.52		SPS	52
M197	2288674	9173	9	M	244	44.35		Channel Marker	52
M198	2288546	9165	7	M	390	22.98		Channel Marker	52
M199	2288717	9152	9	M	273	12.27		Channel Marker	52
M200	2288659	9047	5	M	309	79.21		Channel Marker	52
M201	2288132	7927	4	M	110	14.46		SPS	52
M202	2287298	6664	5	M	113	16.43		SPS	52
M203	2285591	4424	9	D	183	23.93		SPS	52
M204	2285453	3165	4	M	160	15.16		SPS	53
M205	2283687	254	5	M	129	29.23		SPS	53

Key: M= Monopole; D= Dipole; C= Complex; SPS= Single-point-source
Coordinates in NAD83 North Carolina State Plane U.S. Survey Feet

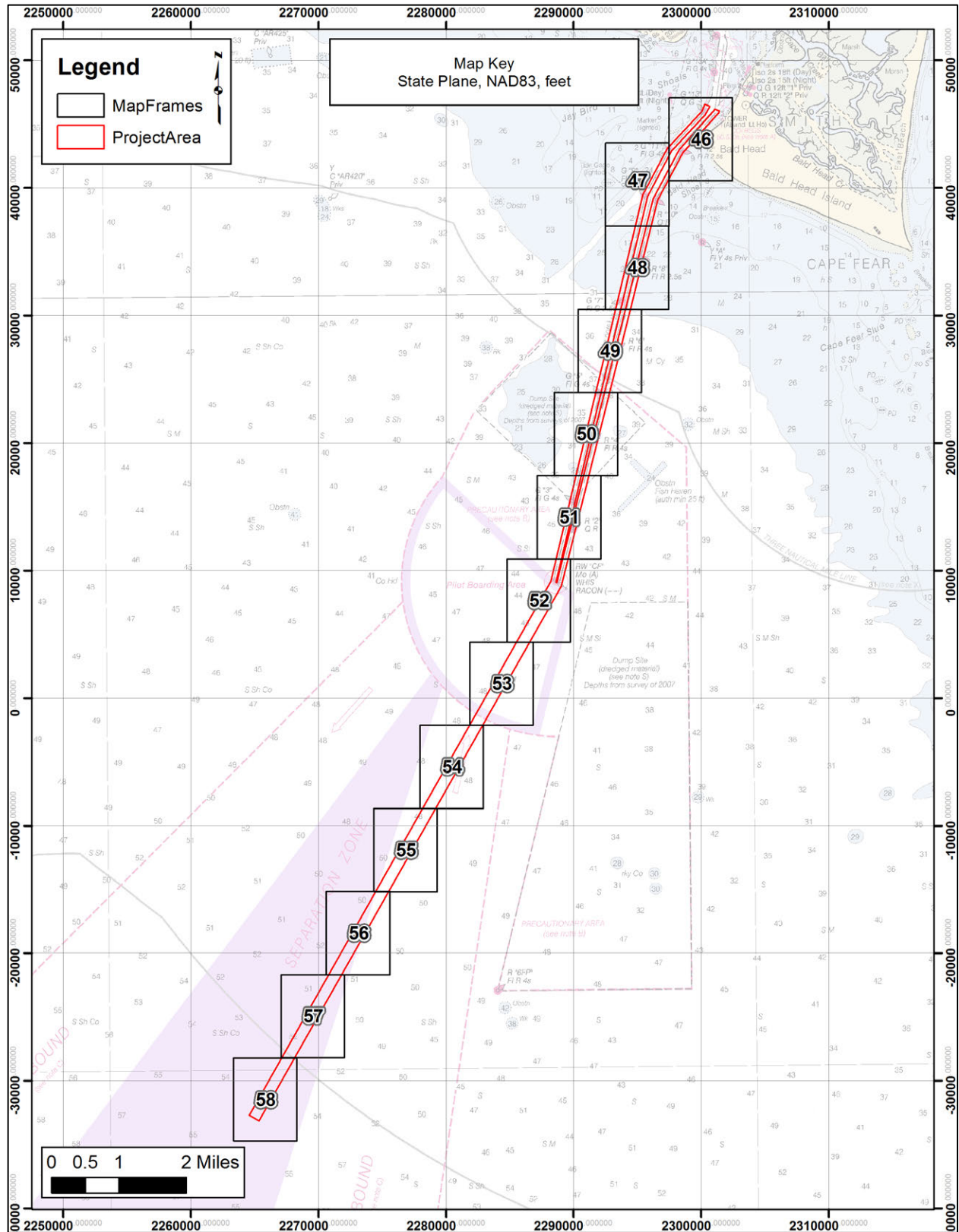


Figure 4-68. Map Key for survey coverage of the Offshore Area (base map 2010 National Oceanic And Atmospheric Administration Chart 11536 “Approaches to Cape Fear River”).

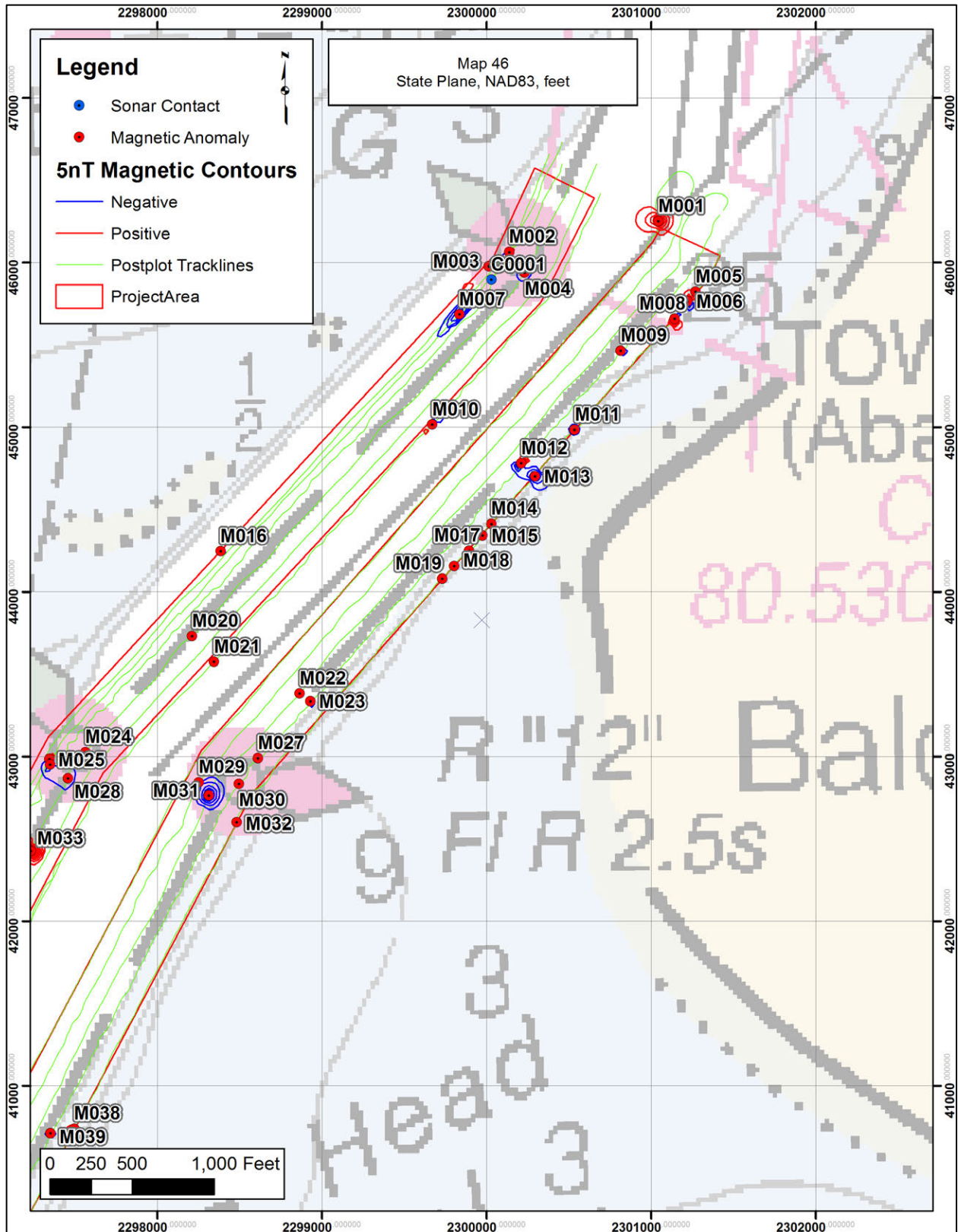


Figure 4-69. Map 46 magnetic contour map for the Offshore Area (base map 2010 National Oceanic And Atmospheric Administration Chart 11536 “Approaches to Cape Fear River”).

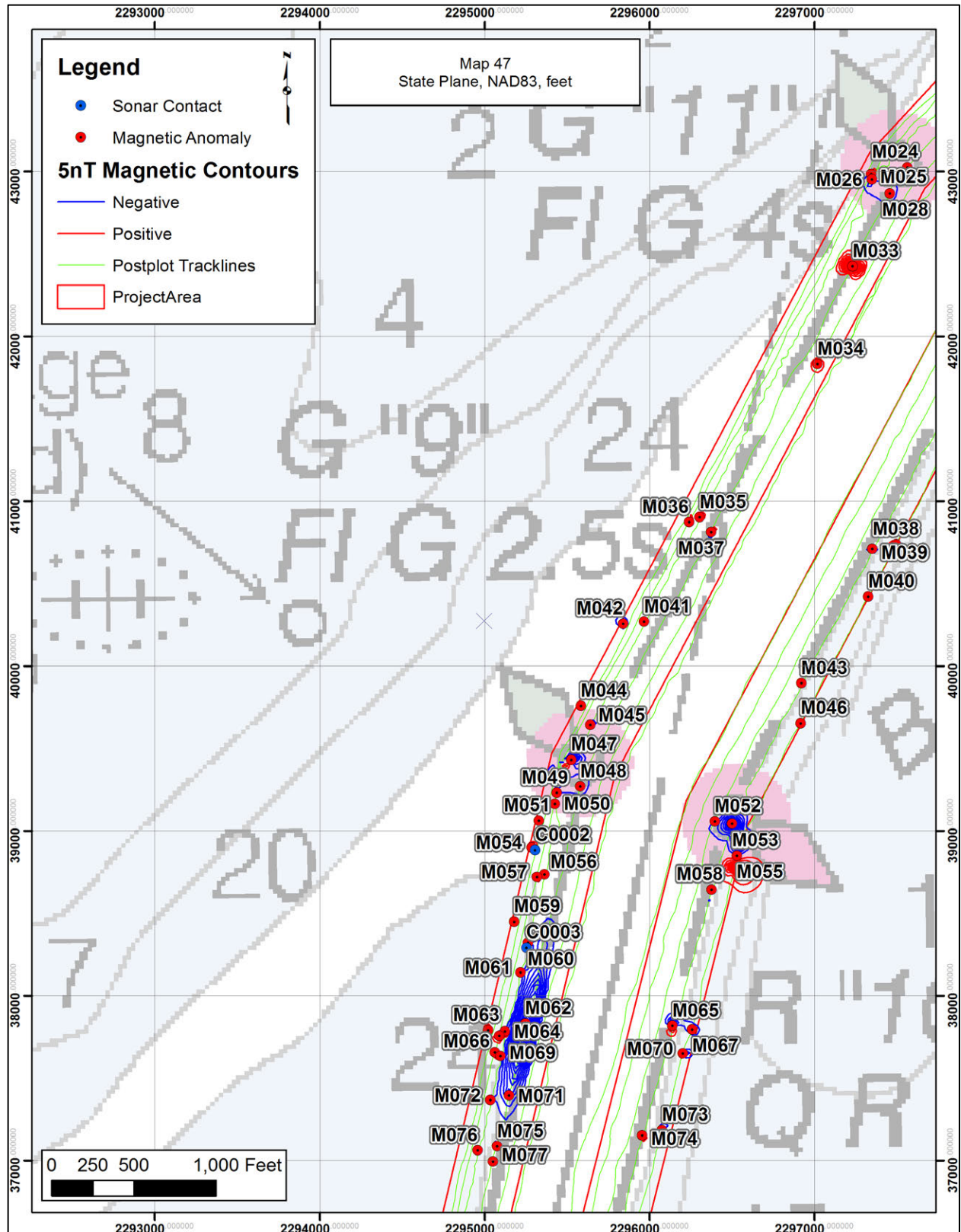


Figure 4-70. Map 47 magnetic contour map for the Offshore Area (base map 2010 National Oceanic And Atmospheric Administration Chart 11536 “Approaches to Cape Fear River”).

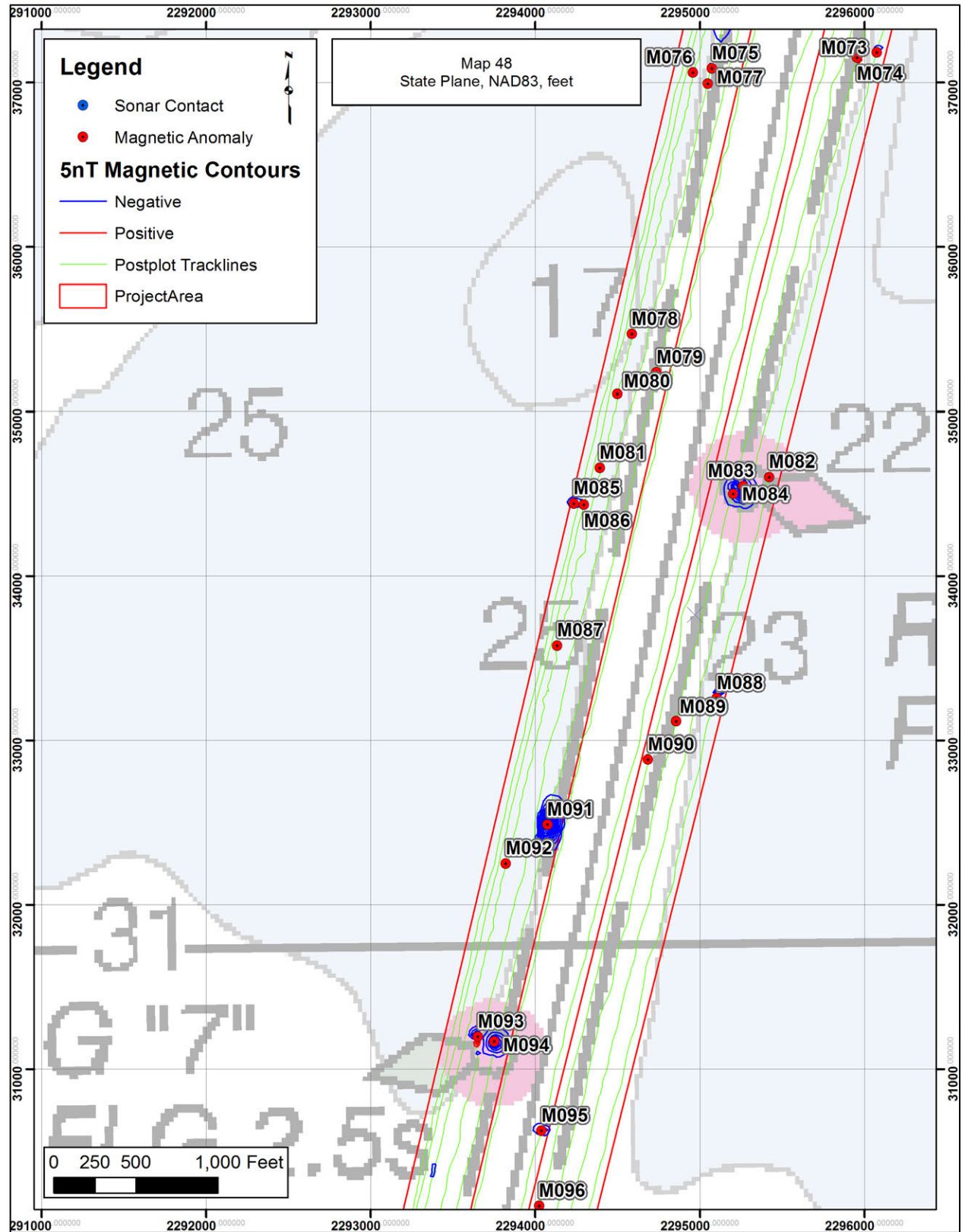


Figure 4-71. Map 48 magnetic contour map for the Offshore Area (base map 2010 National Oceanic And Atmospheric Administration Chart 11536 “Approaches to Cape Fear River”).

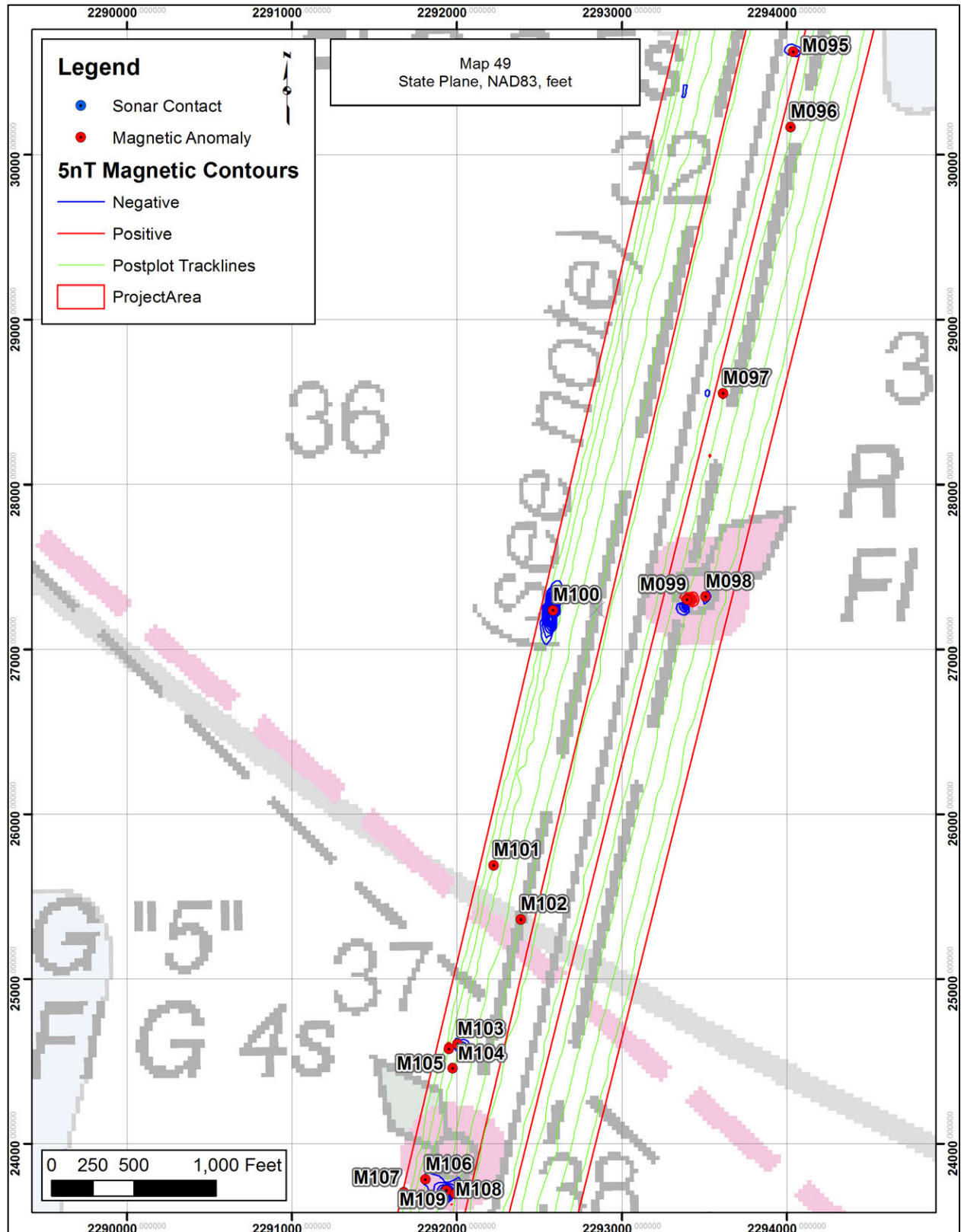


Figure 4-72. Map 49 magnetic contour map for the Offshore Area (base map 2010 National Oceanic And Atmospheric Administration Chart 11536 “Approaches to Cape Fear River”).

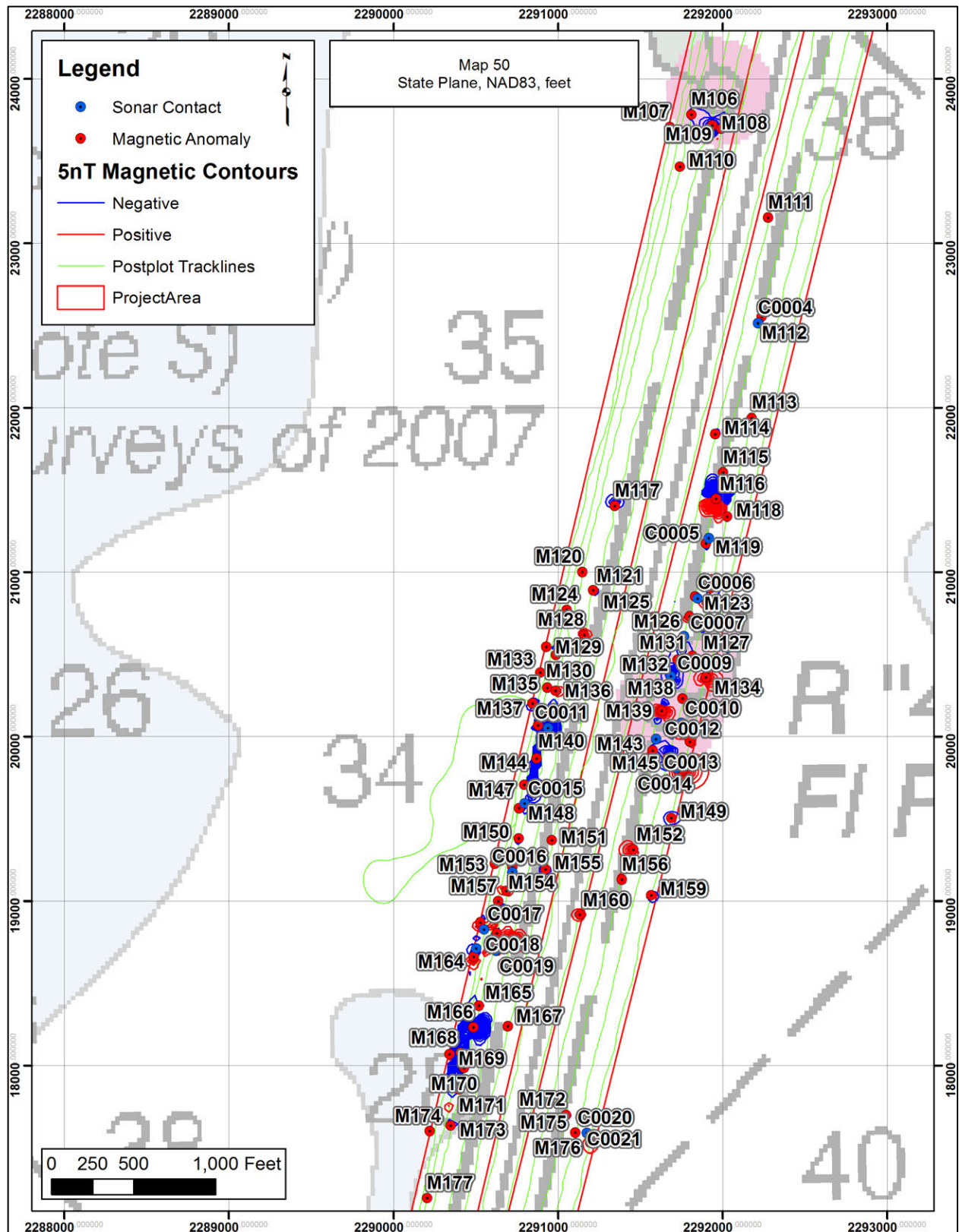


Figure 4-73. Map 50 magnetic contour map for the Offshore Area (base map 2010 National Oceanic And Atmospheric Administration Chart 11536 “Approaches to Cape Fear River”).

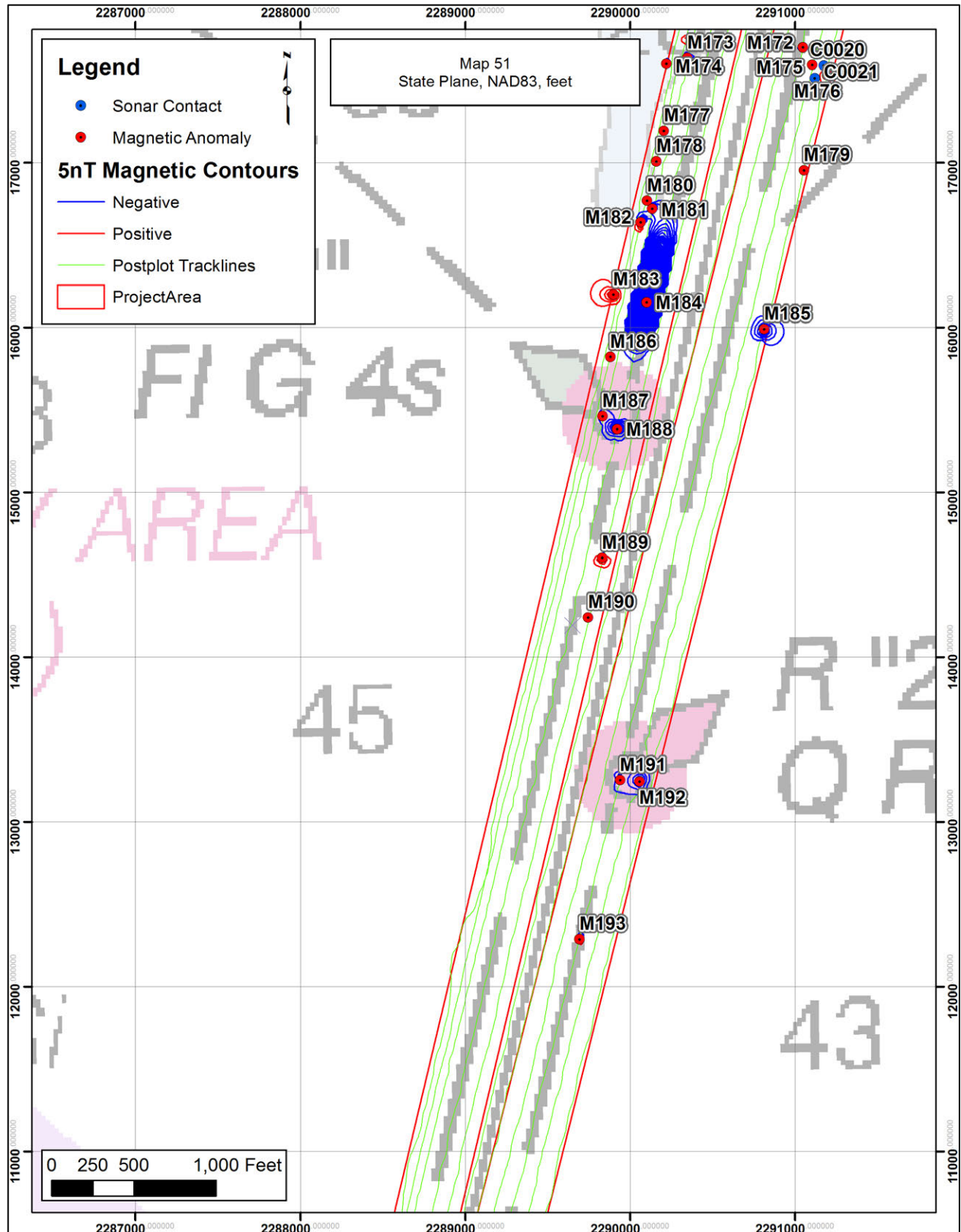


Figure 4-74. Map 51 magnetic contour map for the Offshore Area (base map 2010 National Oceanic And Atmospheric Administration Chart 11536 “Approaches to Cape Fear River”).

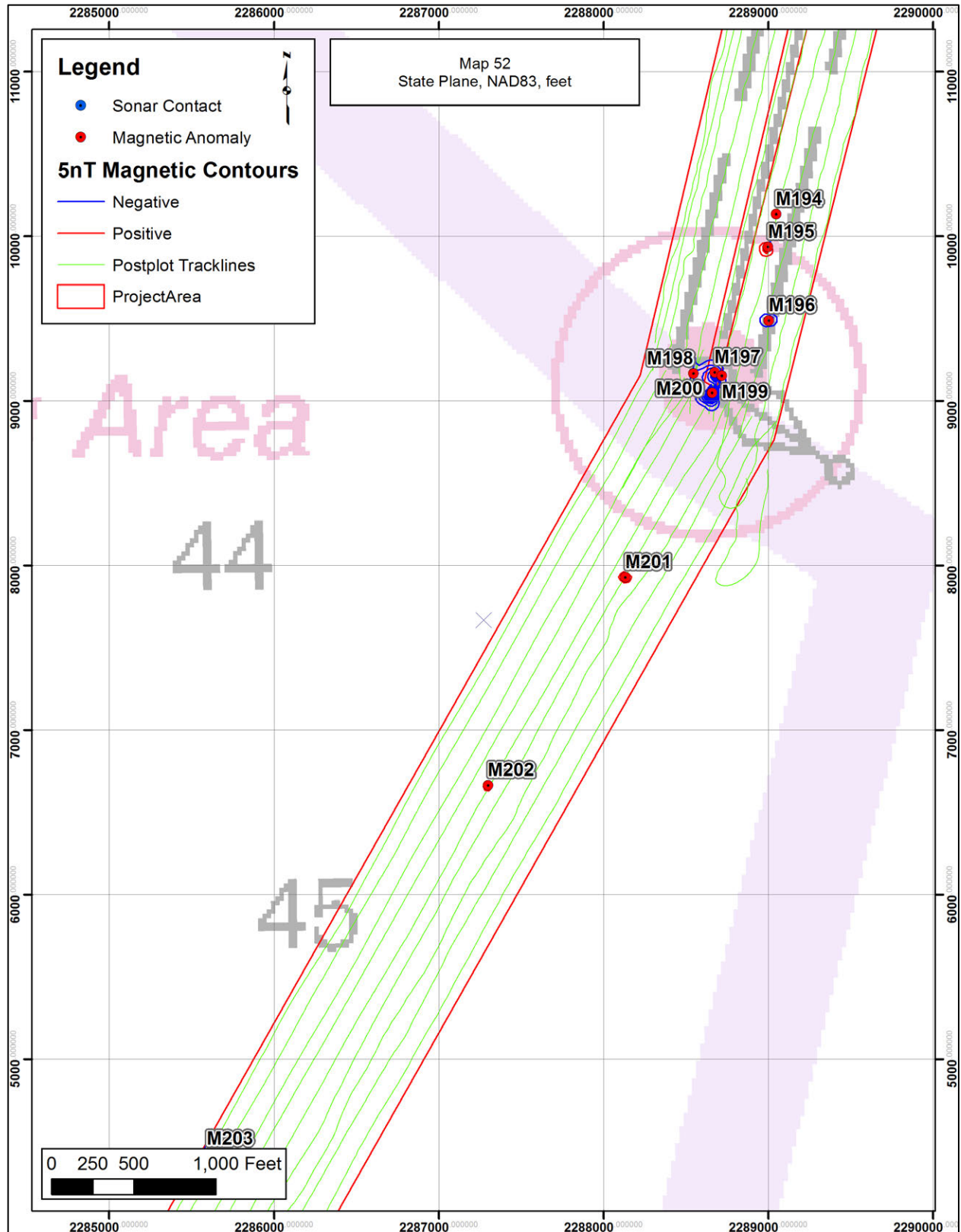


Figure 4-75. Map 52 magnetic contour map for the Offshore Area (base map 2010 National Oceanic And Atmospheric Administration Chart 11536 “Approaches to Cape Fear River”).

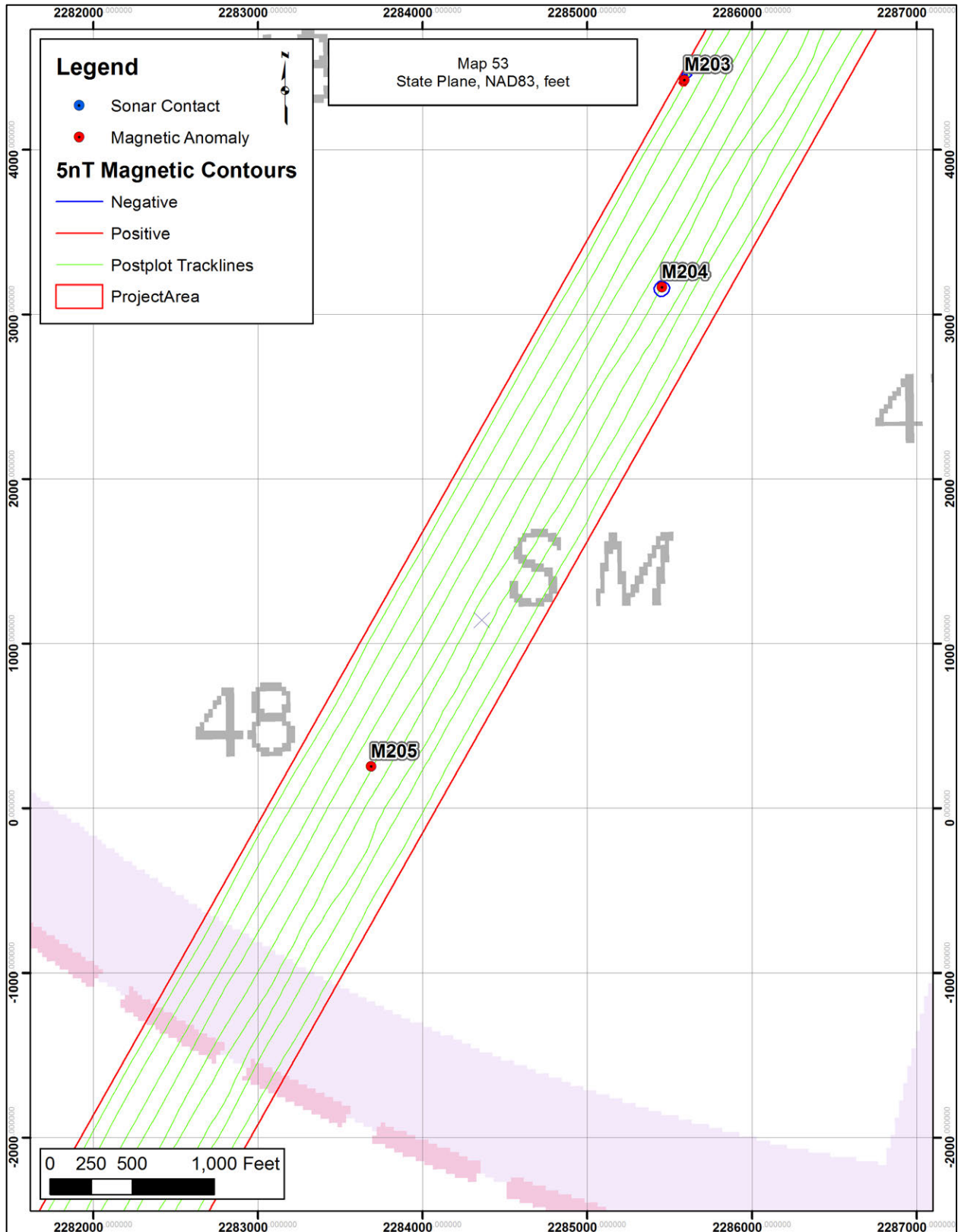


Figure 4-76. Map 53 magnetic contour map for the Offshore Area (base map 2010 National Oceanic And Atmospheric Administration Chart 11536 “Approaches to Cape Fear River”).

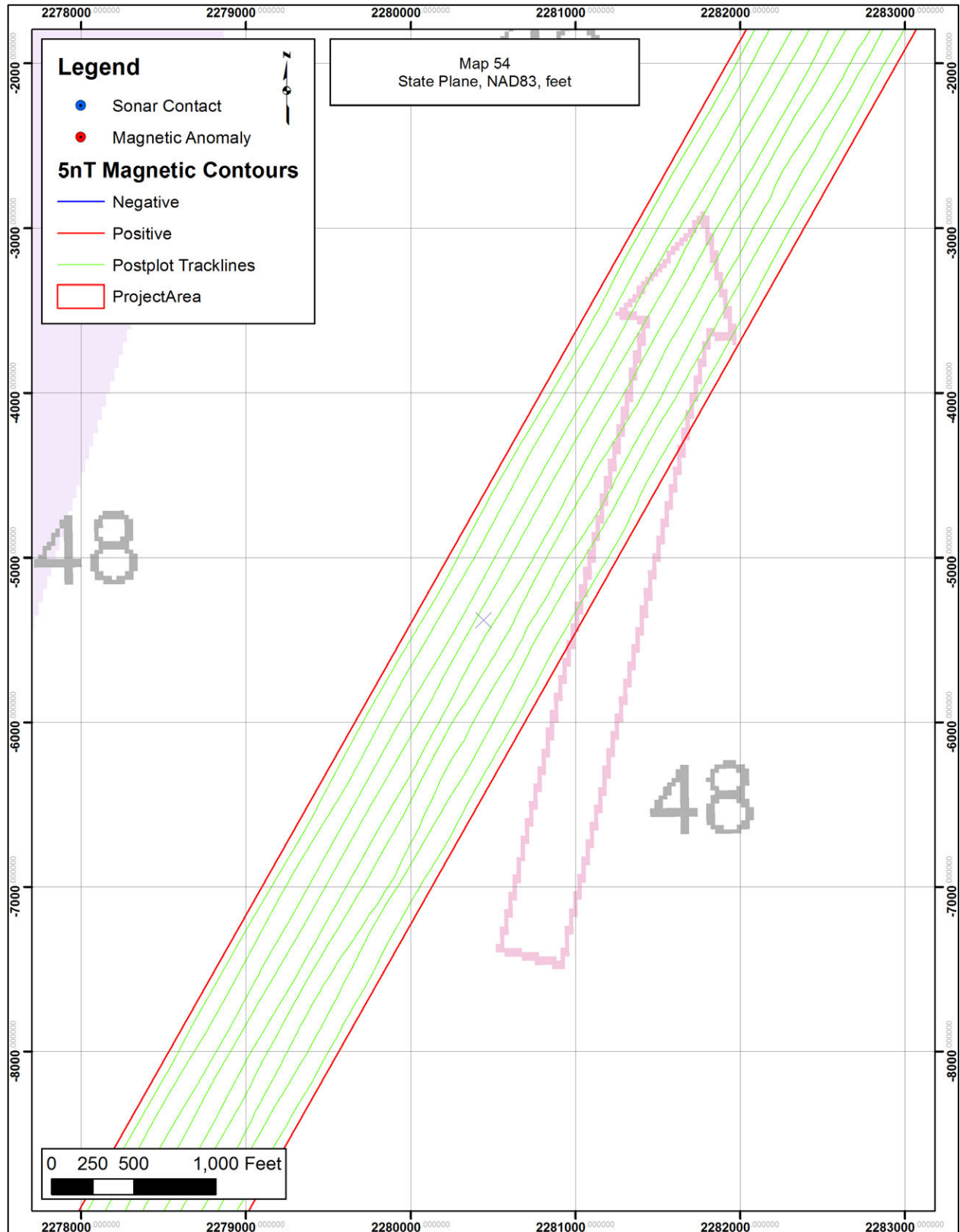


Figure 4-77. Map 54 magnetic contour map for the Offshore Area (base map 2010 National Oceanic And Atmospheric Administration Chart 11536 “Approaches to Cape Fear River”).

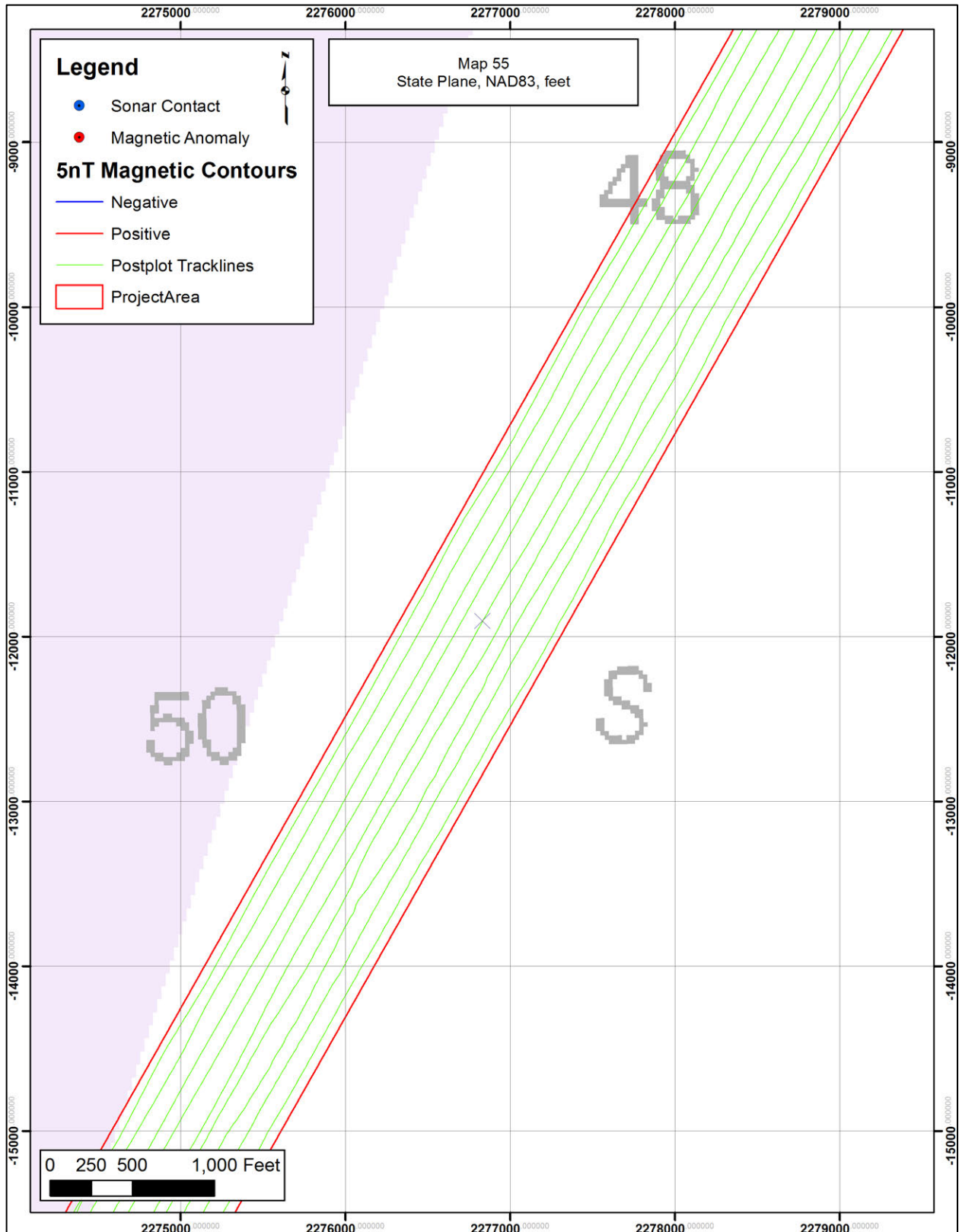


Figure 4-78. Map 55 magnetic contour map for the Offshore Area (base map 2010 National Oceanic And Atmospheric Administration Chart 11536 “Approaches to Cape Fear River”).

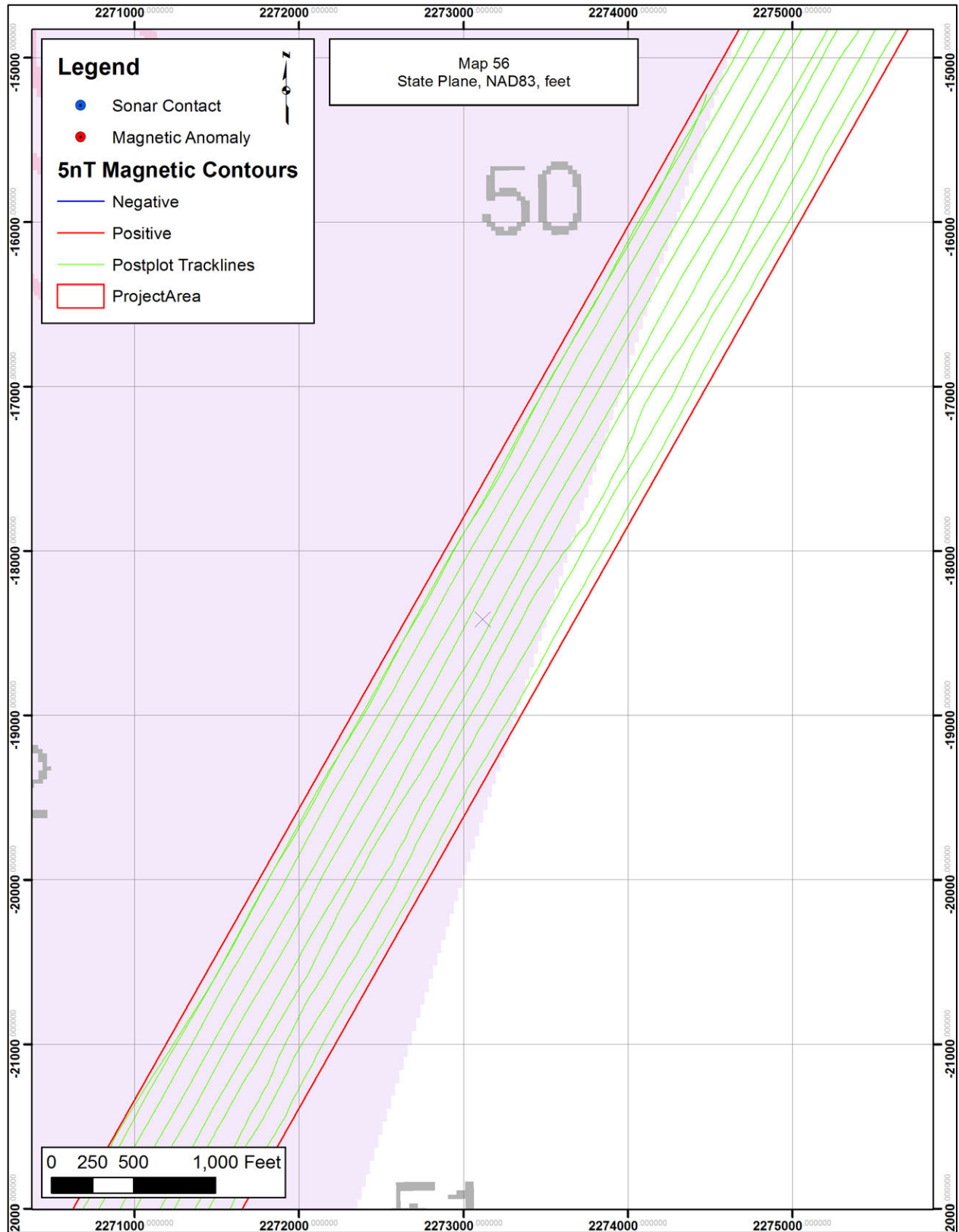


Figure 4-79. Map 56 magnetic contour map for the Offshore Area (base map 2010 National Oceanic And Atmospheric Administration Chart 11536 “Approaches to Cape Fear River”).

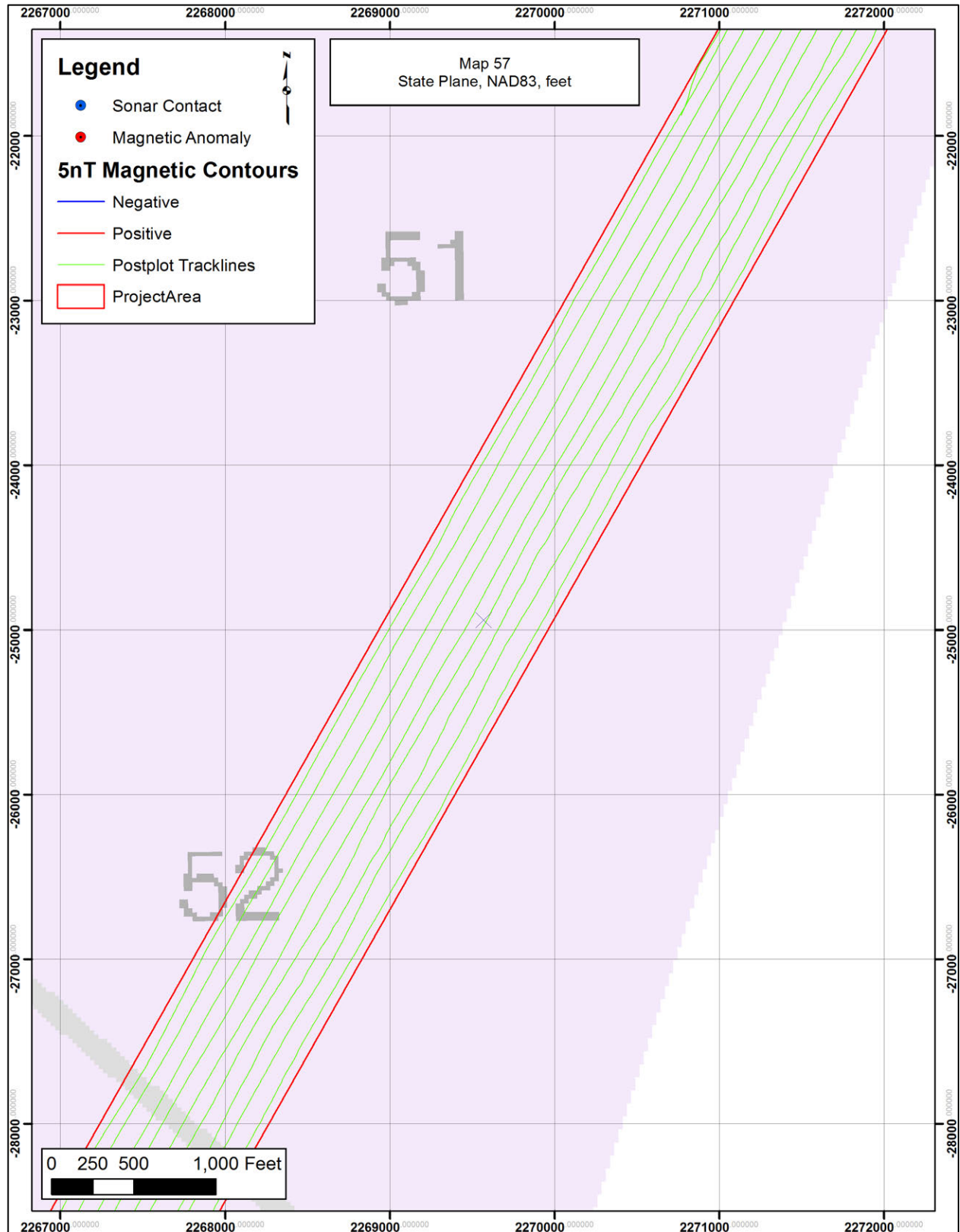


Figure 4-80. Map 57 magnetic contour map for the Offshore Area (base map 2010 National Oceanic And Atmospheric Administration Chart 11536 “Approaches to Cape Fear River”).

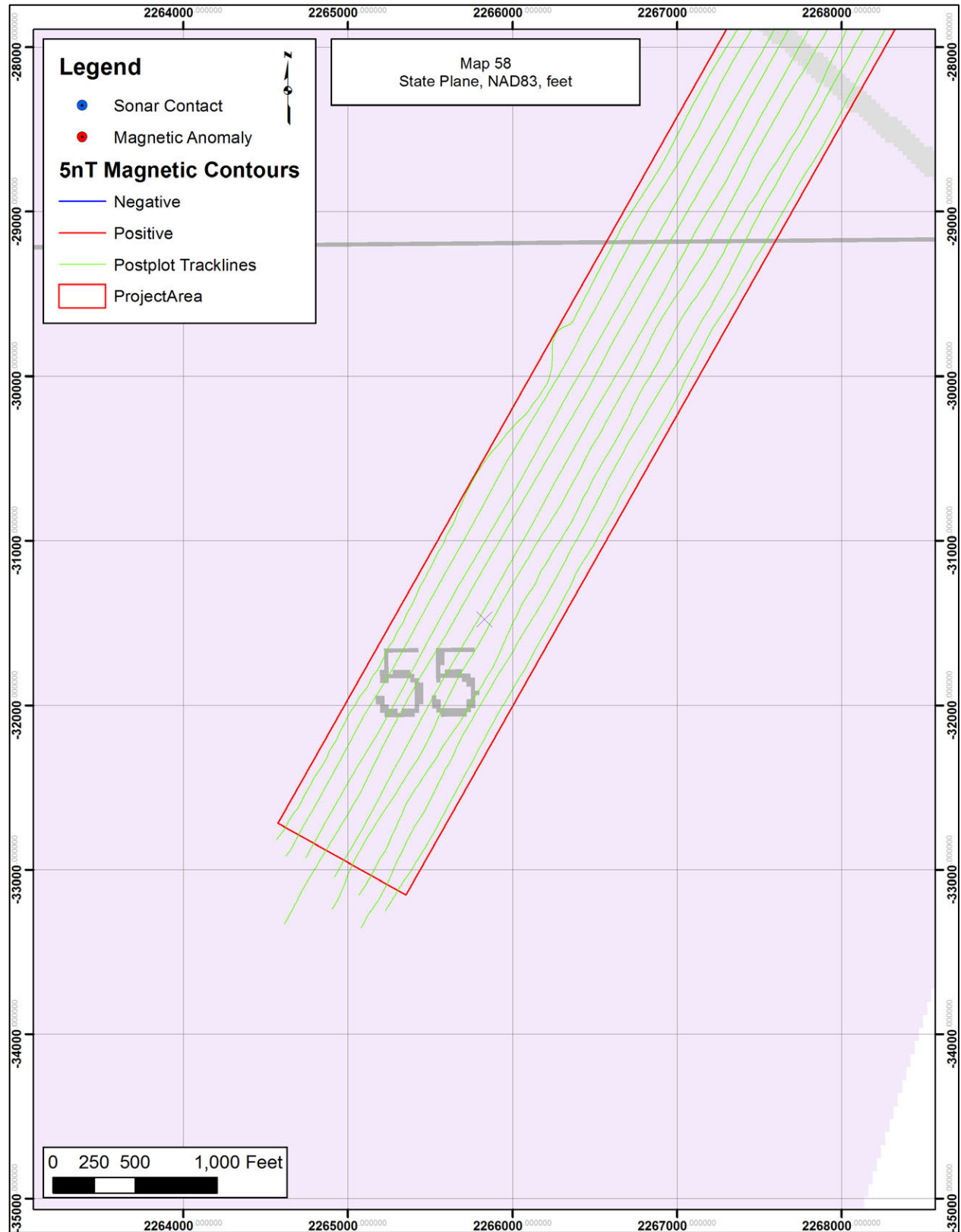


Figure 4-81. Map 58 magnetic contour map for the Offshore Area (base map 2010 National Oceanic And Atmospheric Administration Chart 11536 “Approaches to Cape Fear River”).

MAGNETOMETER RESULTS

Based in part on the anomaly signature and/or sidescan target association, the recorded anomalies have been identified as nonsignificant debris, unknowns, jetties, shoreline infrastructure, and SPS anomalies, with the latter category by far the largest. Analysis of the magnetic data indicates that of the 205 magnetic anomalies, 105, over half of all offshore anomalies, are classified as SPS.

There are 42 classified as Unknowns, although several were objects but not wreck-like (i.e., linear, small objects, etc.). None is thought to be created by potentially significant resources. Navigation buoys and channel markers comprised 35 anomalies, and six anomalies were created by passing vessels. In total, 17 are classified as debris and disposal material, and all have associated sonar contacts. Although some were initially considered to be geologic outcrops, the fact that all have associated magnetics, and more importantly, that all are located in a marked “Dredge Material Dump Site” (Figure 4-82), indicate their “geologic” nature most likely represents dredged limestone from the Inner Harbor Area. The fact that the majority of all recorded offshore anomalies and contacts are within the Dredge Material Dump Site also argues against potential significance (see Figure 4-73).

In summary, analysis of the offshore data indicates that of the 205 anomalies, none is considered to have the potential to represent historically significant resources.

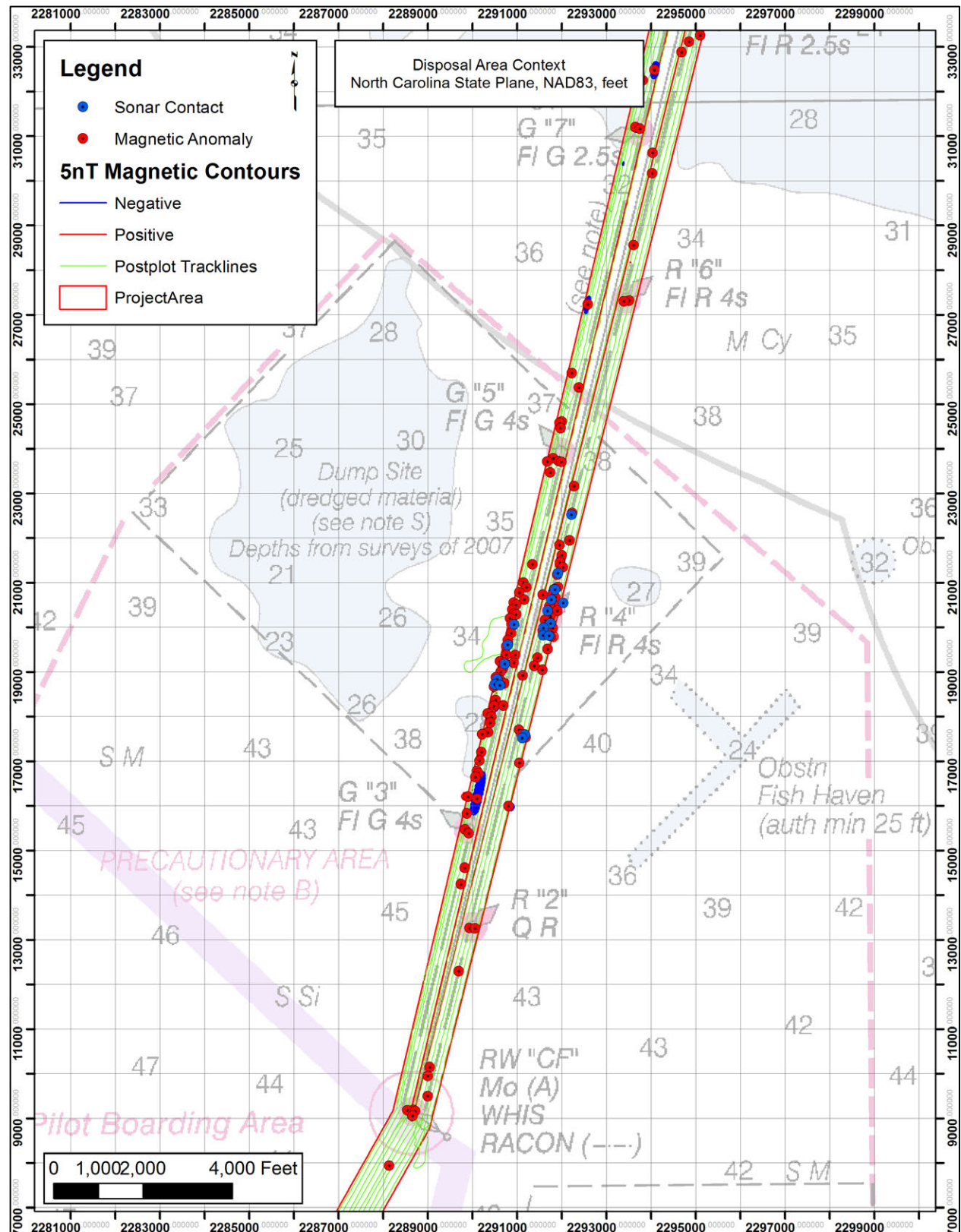


Figure 4-82. In total, 17 anomalies are classified as debris and disposal material, and all have associated sonar contacts (base map 2010 National Oceanic And Atmospheric Administration Chart 11536 "Approaches to Cape Fear River").

SIDECAN SONAR RESULTS

In total, 21 sidescan sonar contacts (Table 4-05 and Appendix C) were recorded within the survey area. With their locations shown on the magnetic contour maps above, these contacts included any object or anomalous bottom return that appeared to be of human origin. These 21 contacts consist of miscellaneous small debris, unknown objects, and numerous rock scatter areas of what is now considered to be disposal material deposited in a marked Dredge Material Dump Site (see Figure 4-82). Eighteen of the 21 contacts (all but three) recorded within the Offshore Area are located within the Dredge Material Dump Site. The remaining contacts are small, non-wreck-like objects.

After an extensive review and analysis of the contacts, none is considered to have the potential to represent historically significant resources.

Table 4-05. Sidescan Sonar Targets in the Offshore Area of Potential Effects.

Contact	X	Y	Description	Length (ft.)	Width (ft.)	Height (ft.)	Map
C0001	2300028	45894	linear	23.7	5.5	3.0	46
C0002	2295306	38882	linear	11.0	3.3	1.1	47
C0003	2295253	38290	unknown object	21.2	0.8	0.7	47
C0004	2292216	22514	small objects	1.8	1.0	0.5	50
C0005	2291916	21205	wire rope and neighboring debris or geological	66.9	58.2	1.5	50
C0006	2291849	20839	debris scatter or geological	128.7	93.0	2.5	50
C0007	2291765	20610	debris scatter or geological	120.5	82.1	2.9	50
C0008	2292033	20538	unknown object, possibly debris or geological	17.2	5.7	0.0	50
C0009	2291685	20366	debris or geological	129.1	90.8	1.7	50
C0010	2291749	20082	debris or geological	123.6	92.0	1.3	50
C0011	2290939	20052	wire rope and geological	54.3	2.3	2.8	50
C0012	2291596	19983	debris or geological	81.6	59.9	3.7	50
C0013	2291588	19813	debris or geological	79.5	53.9	4.8	50
C0014	2291719	19807	debris or geological	109.3	51.8	2.2	50
C0015	2290797	19593	linear	10.9	1.1	0.9	50
C0016	2290723	19175	debris scatter	59.2	39.7	2.3	50
C0017	2290551	18827	debris or geological	6.3	2.2	0.0	50
C0018	2290503	18709	small object	1.8	2.0	0.4	50
C0019	2290622	18696	debris or geological	46.9	68.9	0.8	50
C0020	2291174	17588	linear	15.4	2.0	0.6	50
C0021	2291121	17511	unknown object	19.8	8.8	4.4	50

Key: M= Monopole; D= Dipole; C= Complex; SPS= Single-point-source

Coordinates in NAD83 North Carolina State Plane U.S. Survey Feet

SUBBOTTOM PROFILER RESULTS

Subbottom profiler data were processed in SonarWiz6 to aid in the analysis and mapping of features relevant to reconstructing paleolandscape features, including those having the potential to contain submerged Prehistoric archaeological sites. Analysis indicated that much of the APE consists of unconsolidated marine sediments (sand) to the depth of the instrument capability (Figure 4-83), which ranged from 5 to 10 meters, and several relict features represented by linear reflectors. A ravinement surface, represented by a horizontally oriented reflector generally between 3 and 4 meters below the seafloor, ran throughout much of the APE (Figure 4-84). The result of marine transgression, this feature appears to have truncated any positive relief features with the potential to preserve Prehistoric remains. Subsequently, Panamerican believes the potential for Prehistoric sites throughout the Offshore Area is very low (e.g., such positive relief features would include natural levees and channel margins).

Five buried paleolandscape features were located within the APE, two relict sounds and three relict channels; however, these features are not conducive to Prehistoric site potential (Figure 4-85). The two relict sounds ranged from in depths from approximately 1.5 to 8 meters. The northern sound, located just to the south of the Dredge Material Dump Site, showed parallel horizontal reflectors representing periods of depositions (Figure 4-86). Subbottom profiles for the southern sound, about 305 meters south of the northern sound, showed acoustically homogeneous sediments down to its basal reflector (Figure 4-87). The relict channels were observed as incisions starting at the ravinement surface and penetrating 1 to 2 meters before becoming acoustically transparent. Thusly there was no observed thalweg, and the total depth of the incised channels could not be ascertained.

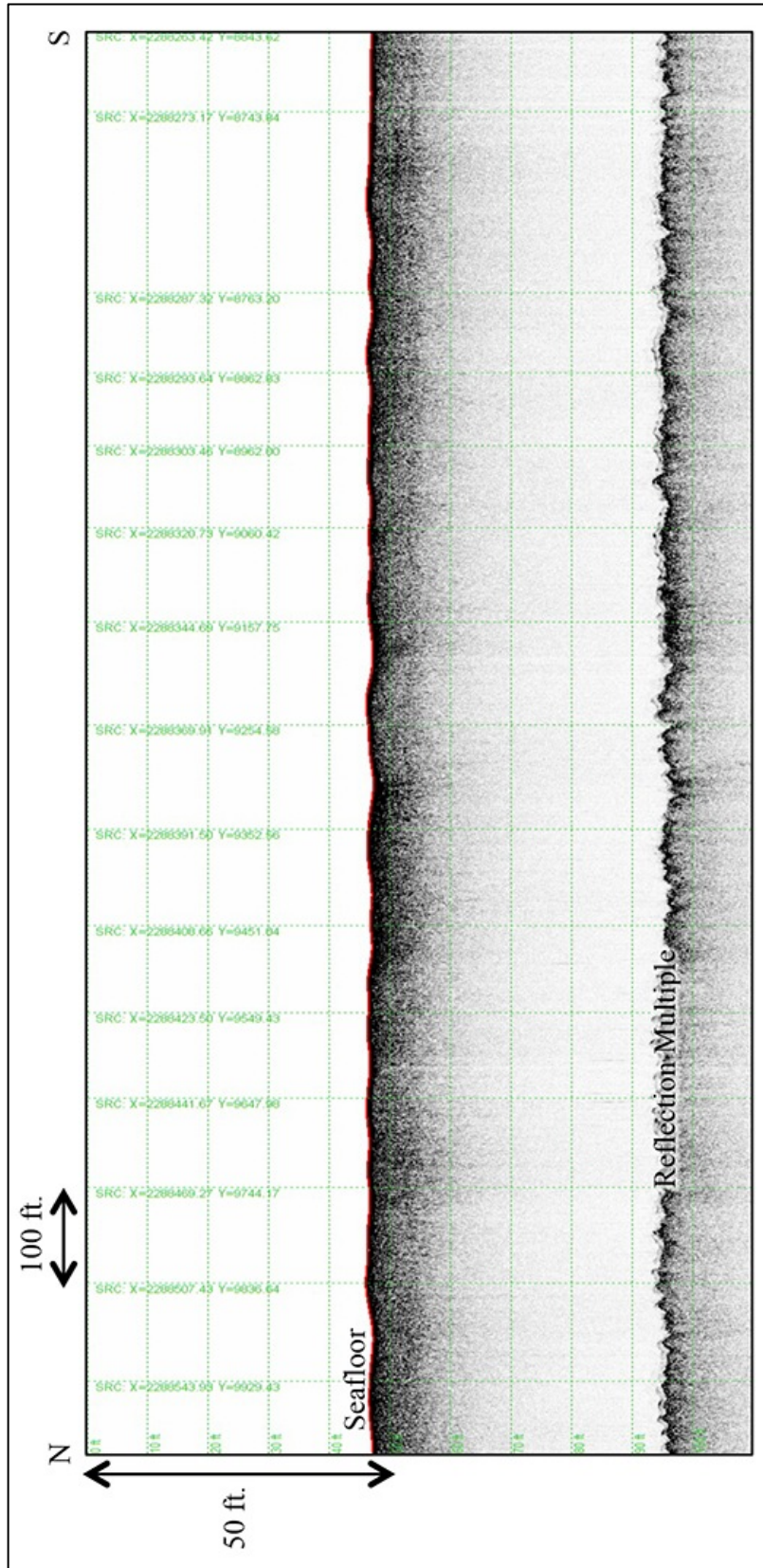


Figure 4-83. Typical subbottom profile in the project area (Line 03), showing unconsolidated marine sediments (sand) down to a depth of approximately 5 to 10 meters.

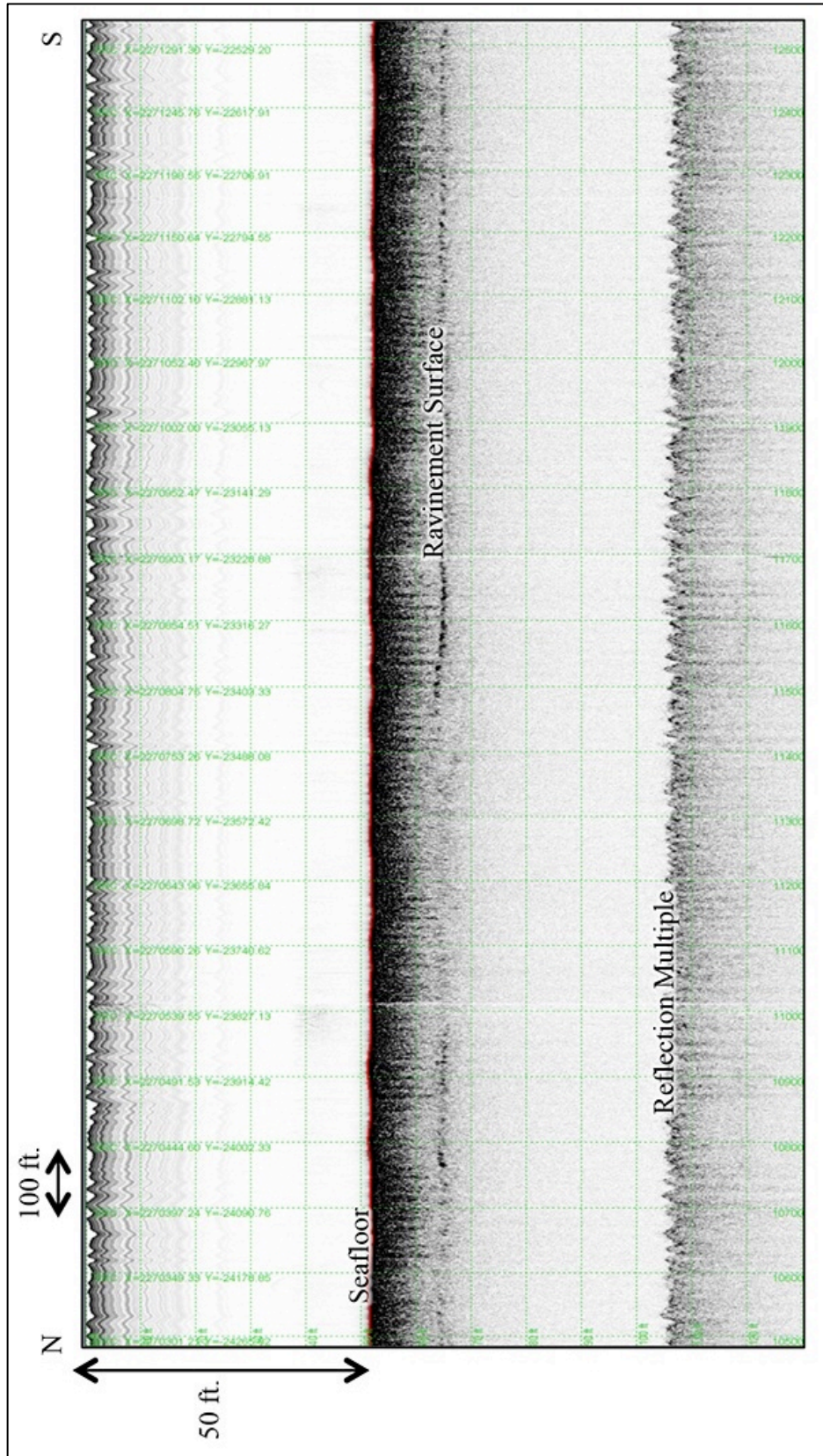


Figure 4-84. Subbottom profile from Line 01 showing typical data from the southern extension of the APE; note a horizontal reflector approximately 3 to 4 meters below the bottom, likely representing a ravinement surface; this reflector can be seen in throughout much of the APE, and likely truncated any positive relief features with the potential to preserve Prehistoric remains.

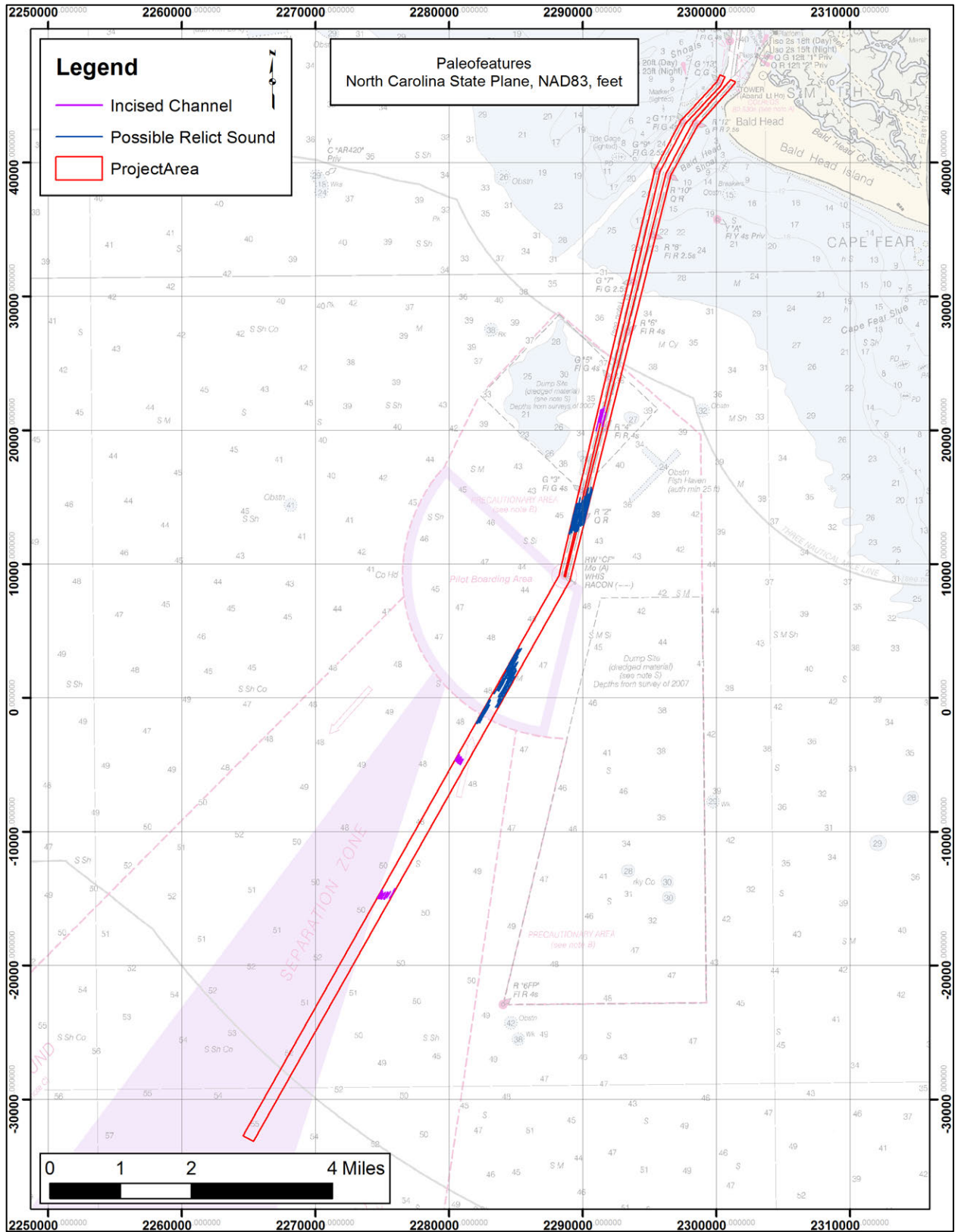


Figure 4-85. Paleofeatures located within the Offshore Area; two relict sounds (blue) and three relict channels (fuchsia).

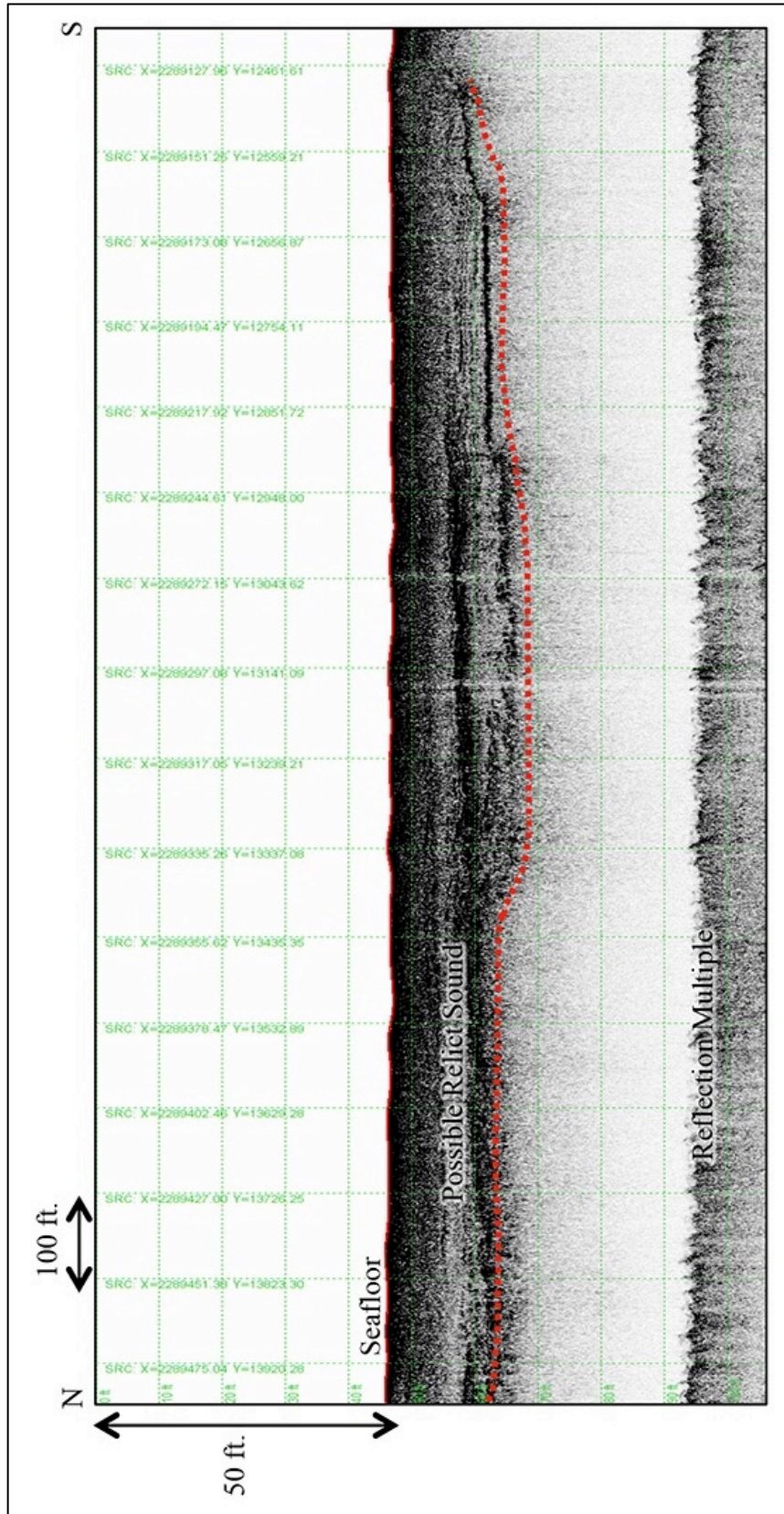


Figure 4-86. Subbottom profile from Line 03 showing a relict sound (“northern sound”) near the center of the APE.

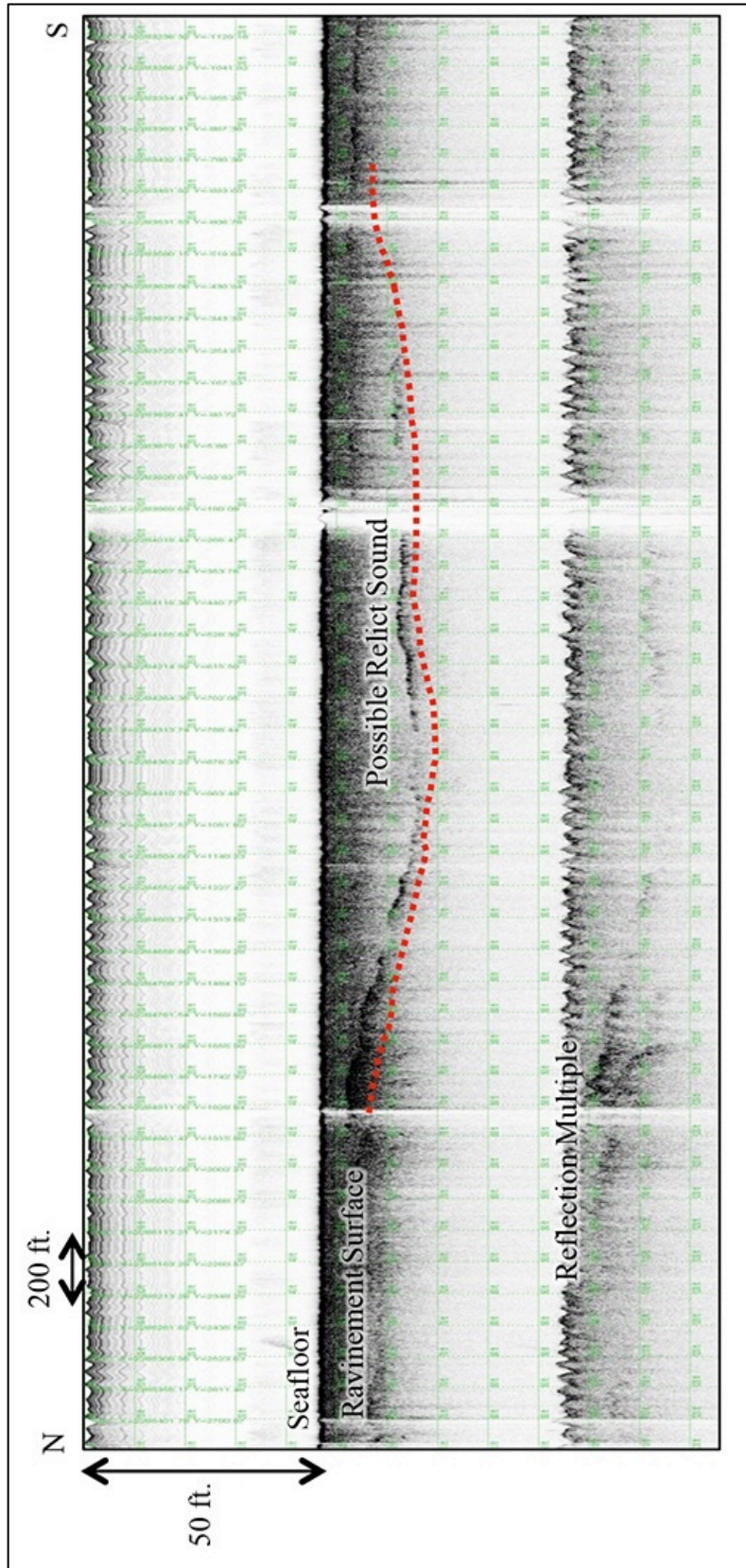


Figure 4-87. Subbottom profile from Line 02 showing a relic sound (“southern sound”) in the southern extension of the APE; note that the ravinement surface appears to have eroded any positive relief features with the potential to preserve Prehistoric remains.

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V. CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS AND RECOMMENDATIONS

The NCSPA is conducting a feasibility study of potential navigational improvements to the WHNIP. Subsequently, Panamerican was subcontracted by DC&A to jointly conduct comprehensive cultural resources investigations of the APE. The focus of the current investigation entailed two survey areas: (1) the Inner Harbor Area, a 26-mile stretch of the channel from the Cape Fear River mouth up to the City of Wilmington; and (2) the Offshore Area, an approximately 16-mile stretch that includes the Outer Bar Channel and Channel Extension (see Figure 1-01). Performing both remote sensing surveys and archaeological diver investigation of selected targets, Panamerican was responsible for determining if any potential cultural resources were located within the APE, and if so, were eligible for listing on the NRHP.

Performed between 5 and 15 April 2017, the remote sensing survey of the Inner Harbor Area APE utilized a magnetometer, sidescan sonar, and subbottom profiler. The survey recorded 1,288 magnetic anomalies, 241 sidescan sonar contacts, and no subbottom paleofeature. Subsequent analysis of the data consisted of assessment of all anomalies and acoustic targets including correlation with other anomalies or contacts; assessment of clustering; and correlation with known documented cultural resource sites, as well as shoreline infrastructure in GIS. The analysis identified seven targets as potentially significant. Subsequent diving investigations of the seven targets, which was conducted between 20 and 26 September 2017, found that of the seven targets, one was identified as an old wooden revetment, three as modern debris, one as a natural ridge, one as the remains of a navigation buoy, and one as the paddle wheel shaft from the wreck of the Confederate blockade runner *Kate*. Of these targets, only the paddle wheel shaft is considered potentially significant and is recommended for avoidance—if it will be adversely affected by project activities. If avoidance is not possible, archaeological recovery from the APE is recommended.

The survey of the Offshore Area, which was conducted between 1 November 2017 and 21 January 2018, recorded 205 anomalies and 21 sidescan sonar contacts, and no subbottom paleofeature; none of which has the potential to represent historically significant cultural resources.

In addition to these findings, subbottom records indicated the potential for Prehistoric sites throughout the APE is very low.

PROCEDURES TO DEAL WITH UNEXPECTED DISCOVERIES

Reasonable effort has been made during this investigation to identify and evaluate possible locations of historic archaeological sites and potential prehistoric site locations within the Project Area; however, the possibility exists that evidence of prehistoric and historic resources may yet be encountered within the project limits not previously identified in the above conclusions and recommendations. Should any evidence of historic resources be discovered during project activities, it is recommended that all work in that portion of the Project Area cease immediately, and that the State Historic Preservation Office (SHPO) and the USACE be contacted for further guidance. Evidence of Historic resources includes: aboriginal or Historic pottery; and Prehistoric stone, bone, and/or shell tools, as well as Historic shipwreck remains. Should questionable materials be uncovered during project activities, procedures contained in the Advisory Council on Historic Preservation's *Procedures for the Protection of Historic and Cultural Properties* (36 CFR Part 800) will take effect.

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**APPENDIX A: DOCUMENTATION OF VESSEL LOSSES AS
PRESENTED IN GAYES ET AL. 2013**

5.3 Documentation of Vessel Losses

Table 2. This list of ship losses reflects consultation with archaeological and historical works and individuals (Spirek & Amer eds. 2004, Watts 1986, Gaines 2008, Spirek 2012). The Stone Fleets are composed of 14 and 16 ships; Spirek (2012) has identified the First Stone Fleet, but the Second has not been located precisely.

The First Stone Fleet includes the barks AMAZON and LEONIDAS; whaling barks AMERICA, FORTUNE, AMERICAN; whalers ARCHER, COURIER, HERALD, MARIA THERESA, REBECCA SIMS, ROBIN HOOD, WILLIAM LEE; TENEDOS; merchant ship KENSINGTON; and ship L.C. RICHMOND among the 14. The Second Stone Fleet includes ships MAJESTIC, METEOR; barks MARCIA, MARGARET SCOTT; whalers MECHANIC, NEWBURYPORT, POTOMAC, NEW ENGLAND; ship PERI, whaling barks MESSENGER, NOBLE; merchant brig STEPHEN YOUNG, TIMOR, merchantman BOGOTA, and merchantman bark JUBILEE among others.

Date	Vessel name	Description	Disposition and Location
15 Dec 1733	ABIGAIL & ANN	10 guns	Wraggs Wharf
12 Sep 1742	Long boat	Lost with 4 cannon	Inside harbor from Fort Sumter
8 July 1743	William Pandridge's boat	Boat	Sunk between Ft. Sumter & Sullivan's Island
4 May 1752	BENNET GALLEY	rowed galley	Lost at Buchannan's Wharf
15 Sep 1752	Mr. Edward's pilot boat	Pilot Boat	lost at The Exchange
15 Sep 1752	POLLY	Unknown	Lost at Wappoo Creek
30 Sep 1752	VINE	Unknown	Lost off Cummings Pt.
21 Mar 1757	GOOD INTENT	Unknown	Lost between Shutes Folly and Crab Bank
4 May 1759	FRANKLAND	Snow	Lost 1/4 mile south of Fort Sumter
14 March 1760	ANNE	Unknown	Lost off Cummings Pt.
4 May 1761	DANIEL	Unknown	Lost in the Middle Ground
4 March 1769	unidentified	Unknown	Wraggs Wharf
25 Feb 1775	CHARMING SALLY	cargo vessel	79:54.20W 32:47.00N
Sep 1775	4 unidentified ships	Hulks	Hog Island Channel
28 July 1776	HMS ACTAEON	frigate (British)	Lost between Forts Sumter & Moultrie; burned

Table 2 continued

1 Nov 1777	LILANEEUR	ship (French)	Lost off Cummings Pt.
March 1780	11 vessels	includes 4 frigates	Scuttled in mouth of Cooper River
9 Mar 1780	BRICOLE	Frigate	Lost between Charleston city and Shutes Folly
9 Mar 1780	TRUITE	Frigate	Lost between Charleston city and Shutes Folly
9 Mar 1780	QUEEN OF FRANCE	Frigate	Lost between Charleston city and Shutes Folly
14 Oct 1780	FRIENDSHIP	Unknown	Lost in the Middle Ground
30 June 1781	LORD NORTH	Warship	79.53W, 32.46N
9 Aug 1781	HMS THETIS	Warship	79.55.40W, 32.47.30N
28 Dec 1781	JAMAICA	Unknown	Inside harbor from Fort Sumter
1 Feb 1785	SWIFT	Unknown	79.50.30W, 32.44N
9 Apr 1786	FRIENDSHIP	Unknown	Off Fort Johnson
5 June 1787	HOPE	Unknown	79.50.30W, 32.45N
13 May 1802	MARY	Unknown	79.53.30W, 32.45.30N
20 May 1803	SALLY	Schooner	Pritchard's Wharf
7 May 1804	BLAKE	Schooner	Lost off Cummings Pt.
7 Sep 1804	CHRISTOPHER	slave ship	Charleston Wharf
7 Sep 1804	CONCORD	Brig	Priolaeus Wharf
7 Sep 1804	MARY	Schooner	Ham's Wharf
18 Jan 1805	unidentified	"Mr. White's sloop"	South end of Daniel's Island.
1 Feb 1806	GEORGE	Sloop	79.50.30W. 32.45N
2 Jun 1806	AURORA	Unknown	Lost off Cummings Pt.
13 Dec 1806	JOHN	slave ship	Lost off Cummings Pt.
18 Feb 1809	unidentified	SC coasting schooner	NW end of Sullivan's Island
1 Dec 1809	JOHN	Sloop	Lost off Cummings Pt.
31 Aug 1812	REGULUS	schooner (Spanish)	79.43.30W, 32.45.30N
1 April 1813	GALLATIN	Revenue cutter (U.S.A.)	Blakes Wharf
16 August 1814	ROSE	Unknown	Lost between Shutes Folly and Middle Ground
20 July 1818	MARY	Schooner	Lost between Shutes Folly and Crab Bank
16 Nov 1820	YOUNG ROMP	Sloop	Lost off Cummings Pt.

Table 2 continued

9 Mar 1822	unidentified	ferry boat	Lost between Shutes Folly and Crab Bank
28 Sep 1822	CERES	Unknown	79.55.00W, 32.46.55N
28 Sep 1822	ENTERPRISE	Sloop	Lost at SW end of Shutes Folly
28 Sep. 1822	GRAMPUS	Schooner	Lost between Shutes Folly and Crab Bank
28 Sep. 1822	MARK-TIME	Schooner	NW end of Sullivan's Island
28 Sep. 1822	PALMYRA	Brig (Spanish pirates)	Tip of Patriots Point
28 Sep. 1822	ROSALIE	schooner (Spanish)	Patriots Point, off bow of USS Yorktown
15 Sep 1824	unidentified	Sloop	79.53.40W, 32.47.10N
14 Nov 1824	S.S. COLUMBIA	Unknown	Western end of Sullivan's Island
26 Aug 1826	HELEN	Sloop	79.50.30W, 32.44N
8 Dec 1830	boat	Saylor Huffman's vessel	Western side of Drum Island, north of bridge
29 Aug 1851	MATAMORAS	Brig	Lost off Crab Bank
7 Sep 1854	ELSABELLA	Schooner	North Atlantic Wharf
7 Sep 1854	PARTIER	Schooner	Commercial Wharf
Jan 1861	4 unidentified ships	"hulks"	In channels outside harbor
19-20 Dec 1861	16 ships	First Stone Fleet*	In channels outside harbor
25/6 Jan 1862	14 ships	Second Stone Fleet**	In channels outside harbor
12 Apr 1862	SAMUEL ADAMS	wooden schooner	Western end of the Isle of Palms
20 Oct 1862	MINHO	iron screw steamer (British)	¼ mile south of Fort Moultrie
19 Mar 1863	GEORGIANA	steamer (iron blockade runner)	Lost off Isle of Palms (scavenged)
6 Apr 1863	C.S.S. ETIWAN	side-wheel steamer	79.53.30W, 32.45.00N
6 Apr 1863	C.S.S. MARION	side-wheel steamer transport (Confederate)	Mouth of Wapoo Creek
8 Apr 1863	U.S.S. KEOKUK	blockader (ironclad)	Shallows off Morris Island
	STONEWALL JACKSON	side-wheel, 2-masted steamer; British	Off Sullivan's Island 1.5 mi from Breach Inlet
11 Apr 1863	(LEOPARD)	blockade runner	Battery
19 May 1863	NORSEMAN	blockade runner	Isle of Palms (on land)
5 Jun 1863	C.S.S. STONO	Warship	Lost on breakwater near Fort Moultrie

Table 2 continued

10 Jun 1863	RUBY	side-wheel steamer; British blockade runner	West of Folly Island; Lighthouse Inlet Lost near Moultrie House; Drunken Dick Shoal
19 Jun 1863	RACCOON	side-wheel steamer (British)	East of Fort Moultrie
30 Aug 1863	C.S.S. SUMTER	Steamer	Main channel near Fort Sumter
6 Dec 1863	U.S.S. WEEHAWKEN	monitor-class iron ship	Sunk in a storm off Morris Island
2 Feb 1864	PRESTO	side wheel steamer (British)	Struck MINHO off Fort Moultrie
17 Feb 1864	H.L. HUNLEY	Submarine	Lost off Sullivan's Island (recovered)
17 Feb 1864	U.S.S. HOUSATONIC	sloop-of-war	Lost off Sullivan's Island (excavated)
28 Mar 1864	U.S.S. KINGFISHER	wooden sailing bark	Ran ashore on Combahee River bank
9 Aug 1864	PRINCE ALBERT	iron side-wheel steamer (British blockade runner)	Struck MINHO on Drunken Dick Shoal
31 Aug 1864	MARY BOWERS	sidewheel steamer (iron blockade runner)	Lost on GEORGIANA off Isle of Palms
6 Oct 1864	CONSTANCE DECIMA	sidewheel steamer (iron blockade runner)	Lost on GEORGIANA off Isle of Palms
22 Oct 1864	FLORA (ANNA)	sidewheel steamer (British, iron)	Southern bank of Maffitt's Chancel, sighted off three forts
23 Oct 1864	C.S.S. FLAMINGO	sloop-rigged sidewheel steamer	Drunken Dick Shoal east of Fort Moultrie near Battery Rutledge
27 Nov 1864	BEATRICE	iron screw steamer (iron, British)	Drunken Dick Shoal east of Fort Moultrie
4 Jan 1865	RATTLESNAKE	blockade runner	Burned between western jetty and Sullivan's Island off Breach Inlet
15 Jan 1865	U.S.S. PATAPSCO	blockader (ironclad)	Struck a mine below Fort Sumter (38CH270)
20 Jan 1865	JOHN RANDOLPH	transport (iron, Confederate)	Sullivan's Island
14 Feb 1865	CELT (COLT) (SYLPH)	blockade runner	Breakwater off Sullivan's Island (Buoy No. 2)
18 Feb 1865	C.S.S. CHARLESTON	steamer (ironclad)	Charleston Harbor; 79.55.21W, 32.47.29N
18 Feb 1865	C.S.S. CHICORA	steamer (ironclad ram)	Charleston Harbor; 79.55.21W, 32.47.29N
18 Feb 1865	C.S.S. INDIAN CHIEF	Schooner	Town Creek, Charleston Harbor

Table 2 continued

18 Feb 1865	C.S.S. PALMETTO STATE	steamer (ironclad)	South end of Drum Island
21 Feb 1874	PORDICHO	wrecking bark	South end of Daniel's Island.
13 Apr 1875	ELLA ANNA	Unknown	Between Forts Sumter and Moultrie
23 Apr 1908	STONEWALL	Sloop	Between Forts Sumter and Moultrie
?	"four hulks"	Unknown	Between the tip of Patriots Point and Castle Pickney, Shutes Folly Island
?	MAJOR BUTT	concrete wreck	Shoreline between Ravenel Bridge and USS Yorktown
?	unidentified	unknown vessel	W side Drum Island, just S of bridge
?	unidentified	unknown vessel	79.55.30W, 32.47.40N
?	unidentified	unknown vessel	Off bow of USS YORKTOWN
?	unidentified	two wrecks	S of Remely's Pt. boat ramp

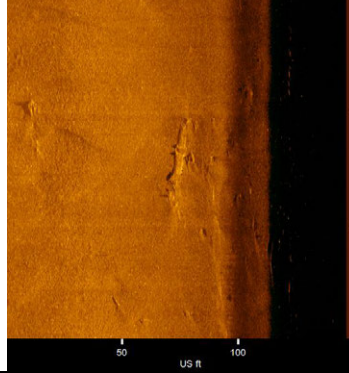
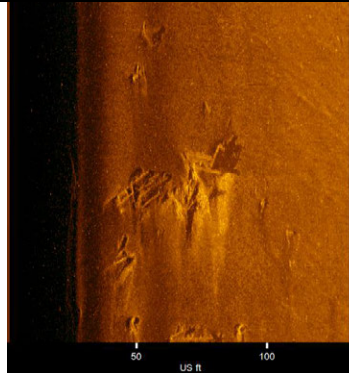
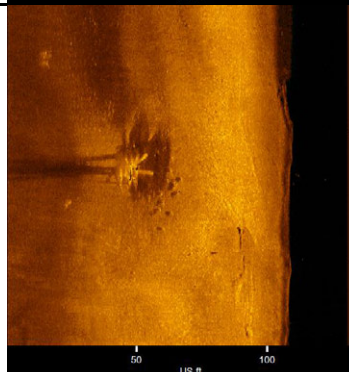
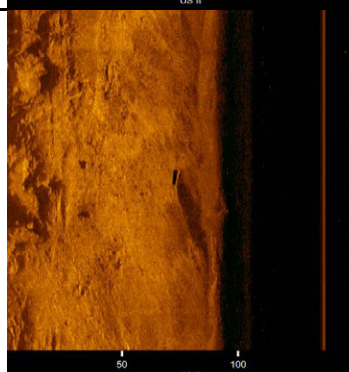
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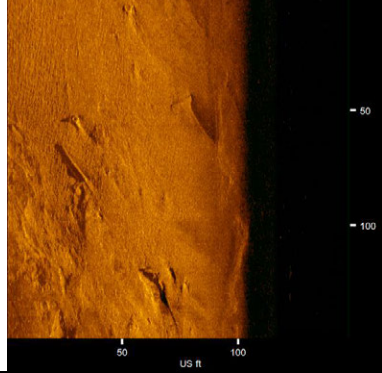
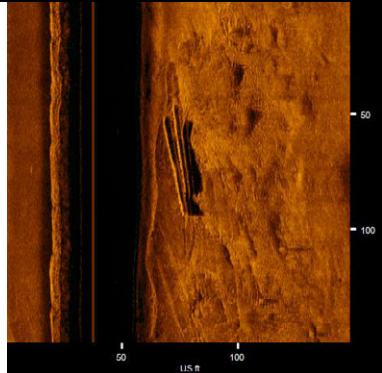
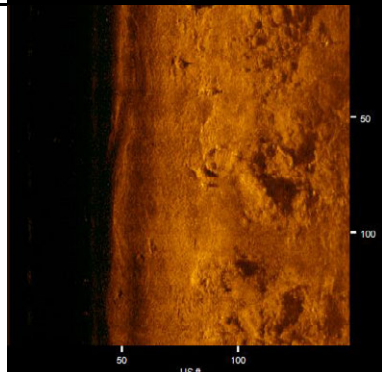
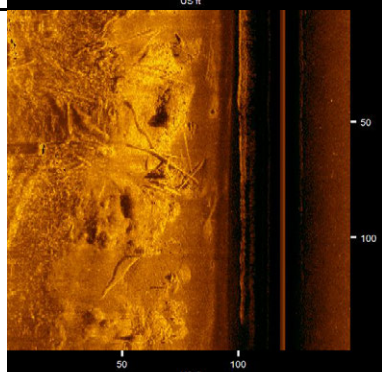
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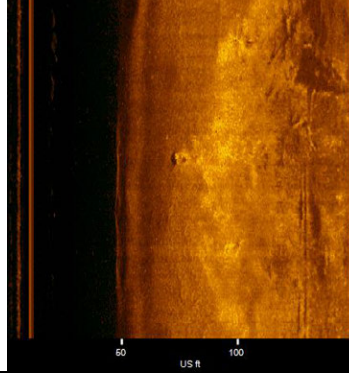
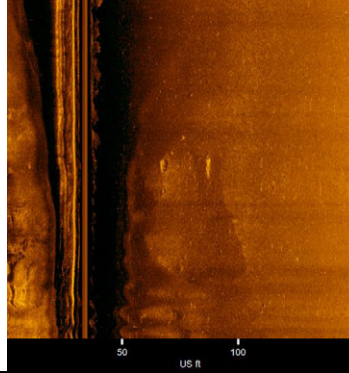
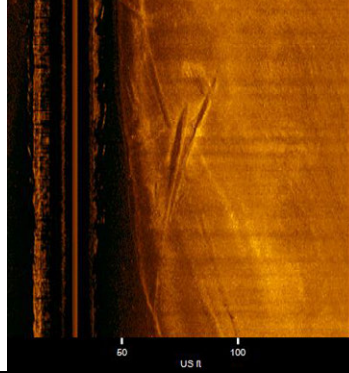
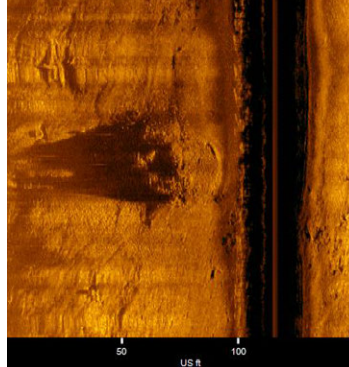
1992 "A late Holocene Sea-Level Fluctuation in South Carolina" in *Quaternary Coasts of the United States: Marine and Lacustrine Systems*, edited by C.H. Fletcher III and J.F. Wehmiller. SEPM Society for Sedimentary Geology, Special Publication No. 48, Tulsa, Oklahoma.

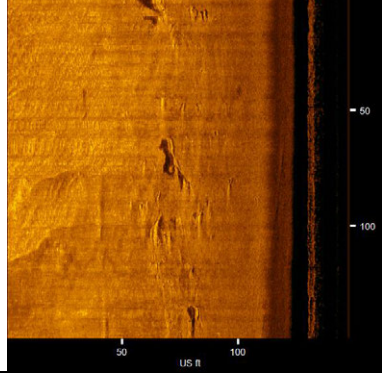
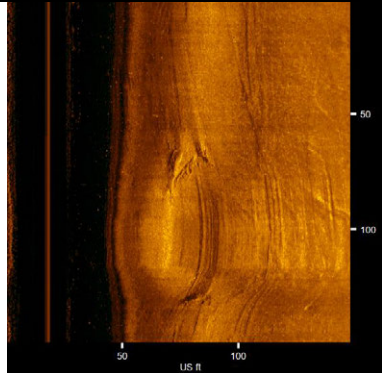
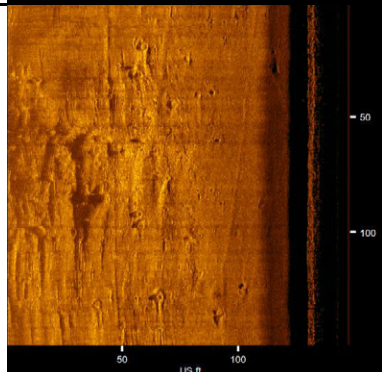
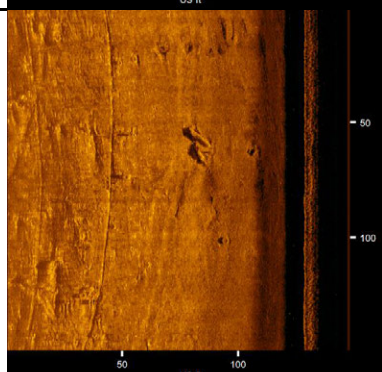
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APPENDIX B: INNER HARBOR SONAR TARGETS

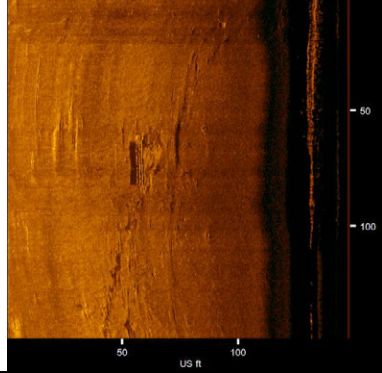
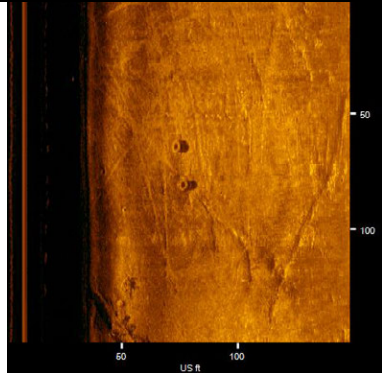
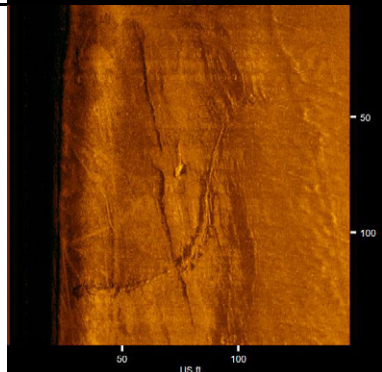
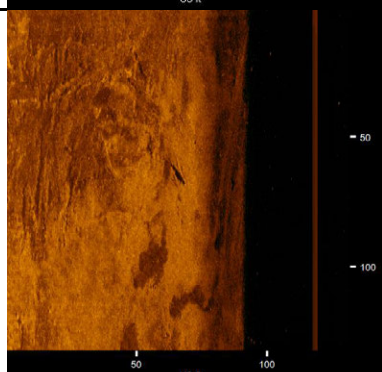
Target Image	Target Info	User Entered Info
	C0001 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 1:07:52 AM • Click Position <ul style="list-style-type: none"> 34.2260055234 -77.9531502836 (WGS84) 34.2258354935 -77.9534397416 (NAD27LL) 34.2260055234 -77.9531502836 (Local LL) (X) 2316460.49 (Y) 174915.35 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170411pow1\2017APR11_0006.sds • Ping Number: 35546 • Range to target: 65.07 US ft. • Fish Height: 34.22 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR11_0006 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 3.50 US ft. • Target Height: 1.04 US ft. • Target Length: 26.81 US ft. • Target Shadow: 2.30 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0002 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 7:02:53 PM • Click Position <ul style="list-style-type: none"> 34.2248267397 -77.9518157868 (WGS84) 34.2246566941 -77.9521053022 (NAD27LL) 34.2248267397 -77.9518157868 (Local LL) (X) 2316868.42 (Y) 174490.63 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0003.sds • Ping Number: 44651 • Range to target: 65.86 US ft. • Fish Height: 22.35 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0003 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 29.09 US ft. • Target Height: 2.68 US ft. • Target Length: 61.40 US ft. • Target Shadow: 9.49 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:
	C0003 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 7:03:50 PM • Click Position <ul style="list-style-type: none"> 34.2235191608 -77.9516473502 (WGS84) 34.2233490975 -77.9519368762 (NAD27LL) 34.2235191608 -77.9516473502 () (X) 2316924.36 (Y) 174015.31 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0003.sds • Ping Number: 45537 • Range to target: 75.37 US ft. • Fish Height: 22.99 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0003 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 12.77 US ft. • Target Height: 8.08 US ft. • Target Length: 14.55 US ft. • Target Shadow: 42.74 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Infrastructure? • Classification2: • Area: • Block: • Description:
	C0004 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 1:05:18 AM • Click Position <ul style="list-style-type: none"> 34.2230778481 -77.9543203782 (WGS84) 34.2229077784 -77.9546097978 (NAD27LL) 34.2230778481 -77.9543203782 (Local LL) (X) 2316118.01 (Y) 173846.18 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170411pow1\2017APR11_0006.sds • Ping Number: 33603 • Range to target: 53.87 US ft. • Fish Height: 31.58 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR11_0006 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 0.87 US ft. • Target Height: 1.13 US ft. • Target Length: 5.68 US ft. • Target Shadow: 2.32 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:

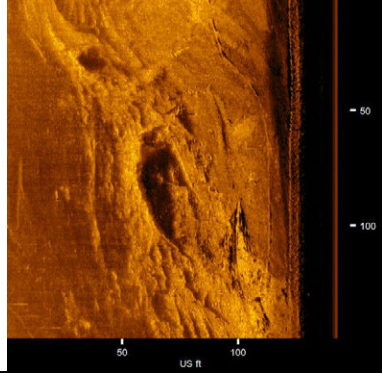
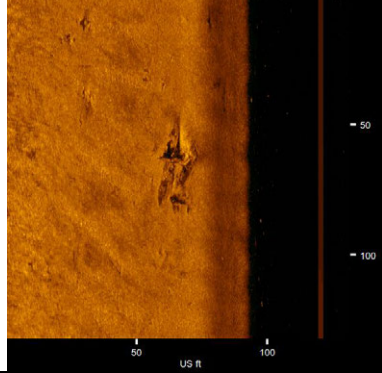
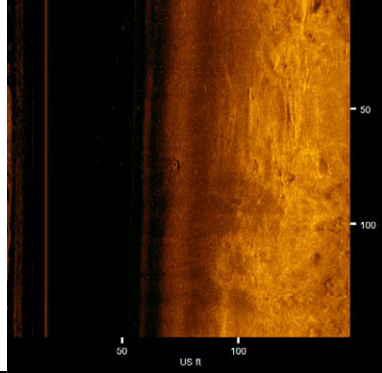
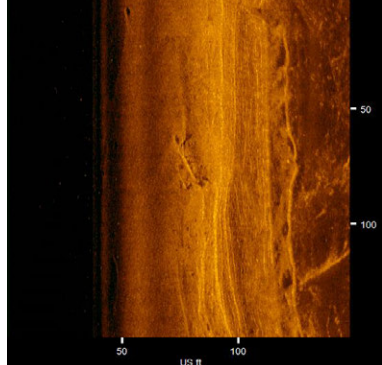
Target Image	Target Info	User Entered Info
	C0005 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 1:04:37 AM • Click Position <ul style="list-style-type: none"> 34.2223551228 -77.9548023657 (WGS84) 34.2221850433 -77.9550917682 (NAD27LL) 34.2223551228 -77.9548023657 (Local LL) (X) 2315975.07 (Y) 173581.63 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170411pow\2017APR11_0006.sds • Ping Number: 33083 • Range to target: 113.95 US ft. • Fish Height: 32.54 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR11_0006 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 0.82 US ft. • Target Height: 1.07 US ft. • Target Length: 25.74 US ft. • Target Shadow: 4.04 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0006 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 4:45:34 PM • Click Position <ul style="list-style-type: none"> 34.2219258533 -77.9550450840 (WGS84) 34.2217557680 -77.9553344779 (NAD27LL) 34.2219258533 -77.9550450840 (Local LL) (X) 2315903.35 (Y) 173424.64 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0005.sds • Ping Number: 18176 • Range to target: 28.86 US ft. • Fish Height: 22.43 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0005 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.74 US ft. • Target Height: 0.62 US ft. • Target Length: 42.82 US ft. • Target Shadow: 1.05 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0007 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 6:27:00 PM • Click Position <ul style="list-style-type: none"> 34.2189215537 -77.9560982150 (WGS84) 34.2187514277 -77.9563875757 (NAD27LL) 34.2189215537 -77.9560982150 (Local LL) (X) 2315596.48 (Y) 172327.95 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0007.sds • Ping Number: 7030 • Range to target: 76.20 US ft. • Fish Height: 36.61 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0007 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 10.04 US ft. • Target Height: 2.78 US ft. • Target Length: 18.60 US ft. • Target Shadow: 6.95 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris • Classification2: • Area: • Block: • Description:
	C0008 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 4:31:49 PM • Click Position <ul style="list-style-type: none"> 34.2178990656 -77.9565433966 (WGS84) 34.2177289258 -77.9568327424 (NAD27LL) 34.2178990656 -77.9565433966 () (X) 2315465.81 (Y) 171954.43 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0005.sds • Ping Number: 8931 • Range to target: 38.25 US ft. • Fish Height: 23.02 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0005 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 41.78 US ft. • Target Height: 3.44 US ft. • Target Length: 67.95 US ft. • Target Shadow: 7.85 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:

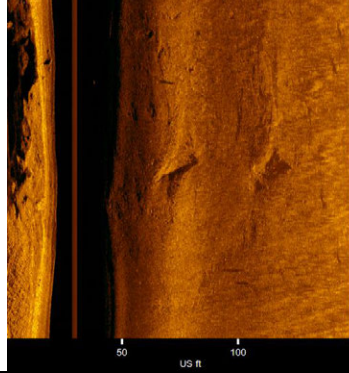
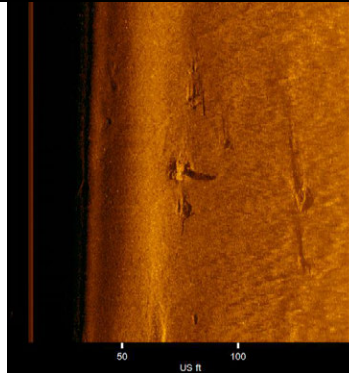
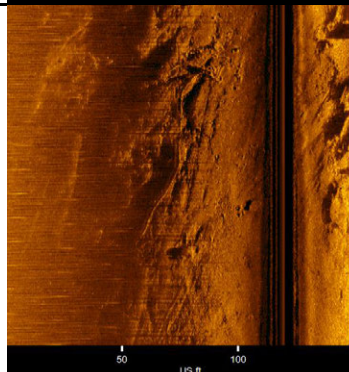
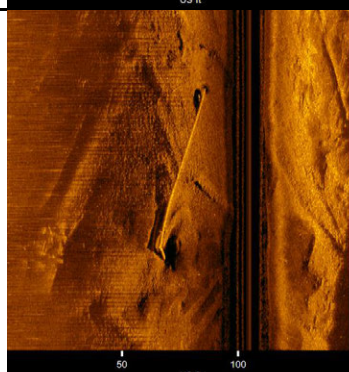
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	C0010 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 4:27:50 PM • Click Position <ul style="list-style-type: none"> 34.2141389483 -77.9579046723 (WGS84) 34.2139687578 -77.9581939748 (NAD27LL) 34.2141389483 -77.9579046723 (Local LL) (X) 2315068.64 (Y) 170581.71 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0005.sds • Ping Number: 6403 • Range to target: 29.92 US ft. • Fish Height: 16.47 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0005 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.27 US ft. • Target Height: 1.26 US ft. • Target Length: 7.14 US ft. • Target Shadow: 2.82 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0011 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 5:22:02 PM • Click Position <ul style="list-style-type: none"> 34.2092155193 -77.9592356110 (WGS84) 34.2090452625 -77.9595248750 (NAD27LL) 34.2092155193 -77.9592356110 (Local LL) (X) 2314685.04 (Y) 168785.74 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0006.sds • Ping Number: 2658 • Range to target: 38.57 US ft. • Fish Height: 24.23 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0006 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.62 US ft. • Target Height: 1.32 US ft. • Target Length: 69.91 US ft. • Target Shadow: 2.62 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0012 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 5:23:28 PM • Click Position <ul style="list-style-type: none"> 34.2067913927 -77.9588577921 (WGS84) 34.2066211033 -77.9591470786 (NAD27LL) 34.2067913927 -77.9588577921 (Local LL) (X) 2314808.52 (Y) 167904.74 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0006.sds • Ping Number: 3979 • Range to target: 36.89 US ft. • Fish Height: 16.59 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0006 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 34.76 US ft. • Target Height: 9.67 US ft. • Target Length: 39.32 US ft. • Target Shadow: 56.48 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris or Outcrop • Classification2: • Area: • Block: • Description:

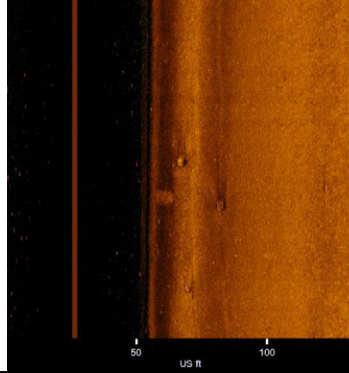
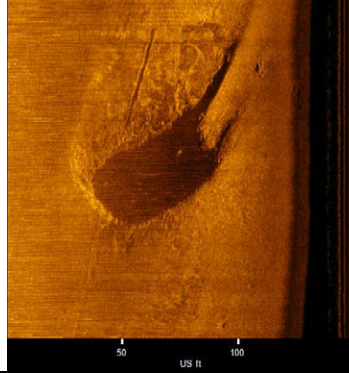
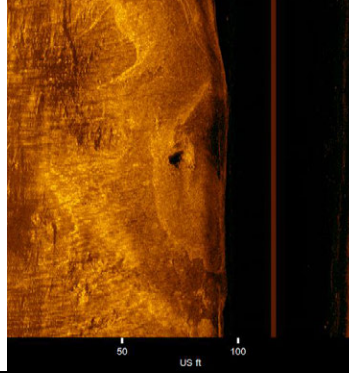
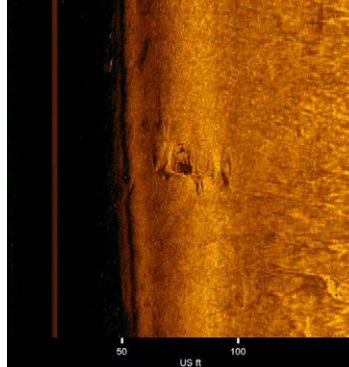
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	C0013 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 5:17:45 PM • Click Position <ul style="list-style-type: none"> 34.2059888388 -77.9589200844 (WGS84) 34.2058185387 -77.9592093709 (NAD27LL) 34.2059888388 -77.9589200844 (Local LL) (X) 2314792.75 (Y) 167612.48 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0005.sds • Ping Number: 42432 • Range to target: 71.52 US ft. • Fish Height: 25.14 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0005 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.02 US ft. • Target Height: 1.34 US ft. • Target Length: 23.54 US ft. • Target Shadow: 4.26 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0014 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 4:19:34 PM • Click Position <ul style="list-style-type: none"> 34.2056972825 -77.9583673033 (WGS84) 34.2055269785 -77.9586566128 (NAD27LL) 34.2056972825 -77.9583673033 (Local LL) (X) 2314961.01 (Y) 167508.12 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0005.sds • Ping Number: 924 • Range to target: 47.70 US ft. • Fish Height: 30.53 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0005 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.73 US ft. • Target Height: 0.90 US ft. • Target Length: 20.38 US ft. • Target Shadow: 1.71 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0015 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 5:17:17 PM • Click Position <ul style="list-style-type: none"> 34.2055465633 -77.9589494411 (WGS84) 34.2053762572 -77.9592387278 (NAD27LL) 34.2055465633 -77.9589494411 (Local LL) (X) 2314785.56 (Y) 167451.43 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0005.sds • Ping Number: 42151 • Range to target: 80.66 US ft. • Fish Height: 27.12 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0005 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 65.81 US ft. • Target Height: 2.20 US ft. • Target Length: 115.76 US ft. • Target Shadow: 7.50 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:
	C0016 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 4:18:33 PM • Click Position <ul style="list-style-type: none"> 34.2047859135 -77.9588929823 (WGS84) 34.2046155972 -77.9591822736 (NAD27LL) 34.2047859135 -77.9588929823 (Local LL) (X) 2314805.54 (Y) 167174.79 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0005.sds • Ping Number: 324 • Range to target: 92.01 US ft. • Fish Height: 29.04 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0005 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 17.76 US ft. • Target Height: 1.40 US ft. • Target Length: 39.47 US ft. • Target Shadow: 4.90 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Tire and Debris • Classification2: • Area: • Block: • Description:

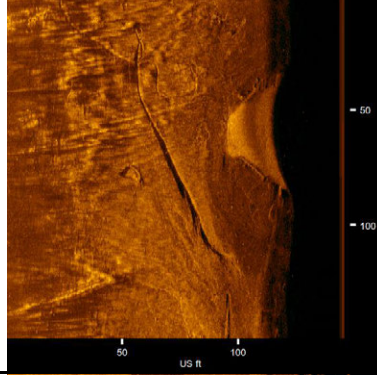
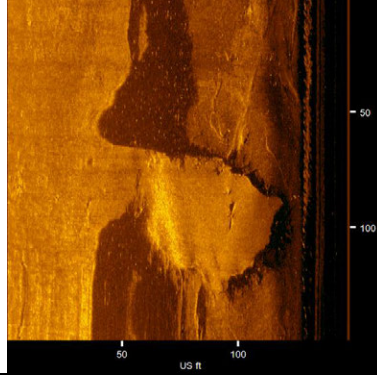
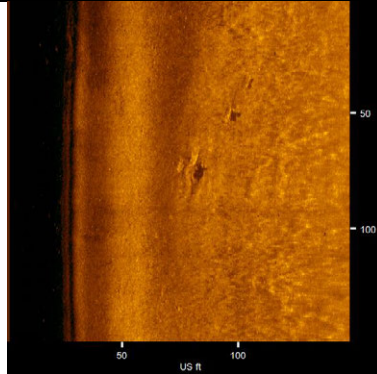
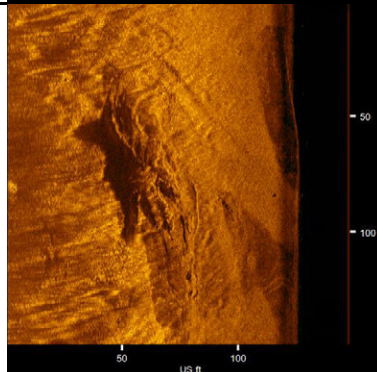
Target Image	Target Info	User Entered Info
	C0017 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 4:18:16 PM • Click Position <ul style="list-style-type: none"> 34.2044587843 -77.9589014378 (WGS84) 34.2042884636 -77.9591907297 (NAD27LL) 34.2044587843 -77.9589014378 (Local LL) (X) 2314804.23 (Y) 167055.71 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0005.sds • Ping Number: 148 • Range to target: 97.11 US ft. • Fish Height: 29.79 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0005 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 7.40 US ft. • Target Height: 1.45 US ft. • Target Length: 11.05 US ft. • Target Shadow: 5.21 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0018 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 6:37:32 PM • Click Position <ul style="list-style-type: none"> 34.2028040009 -77.9583772307 (WGS84) 34.2026336580 -77.9586665487 (NAD27LL) 34.2028040009 -77.9583772307 (Local LL) (X) 2314969.05 (Y) 166455.16 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0007.sds • Ping Number: 16487 • Range to target: 87.01 US ft. • Fish Height: 35.71 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0007 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 4.12 US ft. • Target Height: 1.16 US ft. • Target Length: 4.42 US ft. • Target Shadow: 3.17 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Tire • Classification2: • Area: • Block: • Description:
	C0019 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 6:39:14 PM • Click Position <ul style="list-style-type: none"> 34.2000901024 -77.9580678480 (WGS84) 34.1999197229 -77.9583571866 (NAD27LL) 34.2000901024 -77.9580678480 (Local LL) (X) 2315072.97 (Y) 165468.49 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0007.sds • Ping Number: 18049 • Range to target: 93.73 US ft. • Fish Height: 35.99 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0007 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.23 US ft. • Target Height: 1.74 US ft. • Target Length: 22.76 US ft. • Target Shadow: 5.09 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0020 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 6:40:24 PM • Click Position <ul style="list-style-type: none"> 34.1982509842 -77.9577433145 (WGS84) 34.1980805800 -77.9580326717 (NAD27LL) 34.1982509842 -77.9577433145 (Local LL) (X) 2315178.13 (Y) 164800.22 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0007.sds • Ping Number: 19137 • Range to target: 65.79 US ft. • Fish Height: 36.64 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0007 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 6.78 US ft. • Target Height: 1.62 US ft. • Target Length: 11.07 US ft. • Target Shadow: 3.49 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris • Classification2: • Area: • Block: • Description:

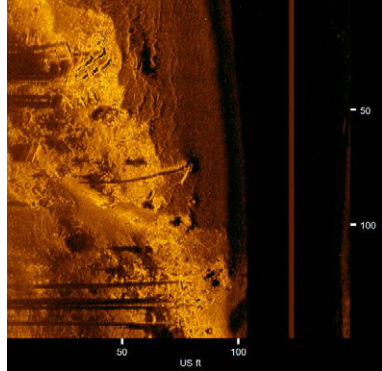
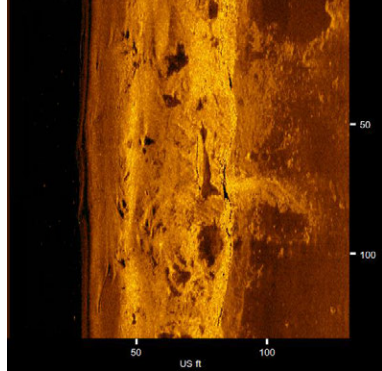
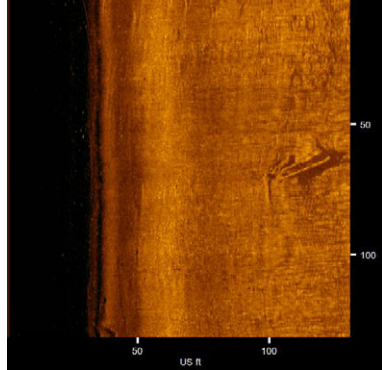
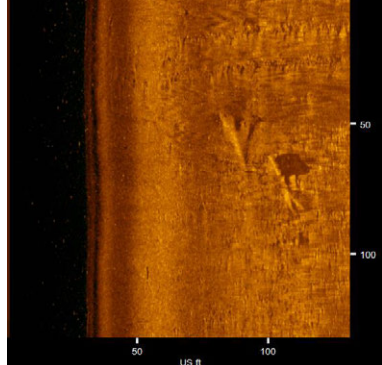
Target Image	Target Info	User Entered Info
	C0021 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 5:08:55 PM • Click Position <ul style="list-style-type: none"> 34.1976596694 -77.9582132159 (WGS84) 34.1974892573 -77.9585025561 (NAD27LL) 34.1976596694 -77.9582132159 (Local LL) (X) 2315038.29 (Y) 164583.53 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0005.sds • Ping Number: 37160 • Range to target: 87.94 US ft. • Fish Height: 26.97 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0005 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 4.13 US ft. • Target Height: 0.98 US ft. • Target Length: 18.11 US ft. • Target Shadow: 3.46 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0022 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 5:02:27 PM • Click Position <ul style="list-style-type: none"> 34.1964716523 -77.9578822089 (WGS84) 34.1963012241 -77.9581715660 (NAD27LL) 34.1964716523 -77.9578822089 (Local LL) (X) 2315142.93 (Y) 164152.24 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0005.sds • Ping Number: 32833 • Range to target: 60.54 US ft. • Fish Height: 26.83 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0005 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 3.74 US ft. • Target Height: 1.38 US ft. • Target Length: 6.12 US ft. • Target Shadow: 3.59 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Tires • Classification2: • Area: • Block: • Description:
	C0023 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 5:07:20 PM • Click Position <ul style="list-style-type: none"> 34.1964704792 -77.9576096360 (WGS84) 34.1963000510 -77.9578990040 (NAD27LL) 34.1964704792 -77.9576096360 (Local LL) (X) 2315225.36 (Y) 164152.67 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0005.sds • Ping Number: 36375 • Range to target: 70.76 US ft. • Fish Height: 21.67 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0005 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.28 US ft. • Target Height: 0.73 US ft. • Target Length: 5.78 US ft. • Target Shadow: 2.58 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0024 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 6:31:09 PM • Click Position <ul style="list-style-type: none"> 34.1955797552 -77.9561209855 (WGS84) 34.1954093150 -77.9564104158 (NAD27LL) 34.1955797552 -77.9561209855 (Local LL) (X) 2315678.92 (Y) 163833.25 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0003.sds • Ping Number: 15155 • Range to target: 45.47 US ft. • Fish Height: 27.48 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0003 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 0.51 US ft. • Target Height: 1.86 US ft. • Target Length: 10.34 US ft. • Target Shadow: 3.85 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:

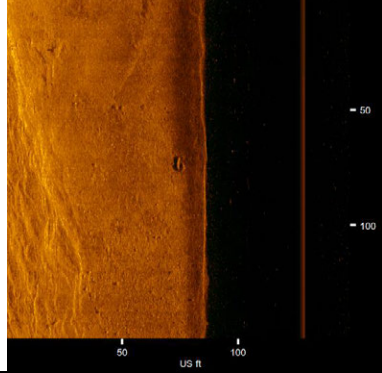
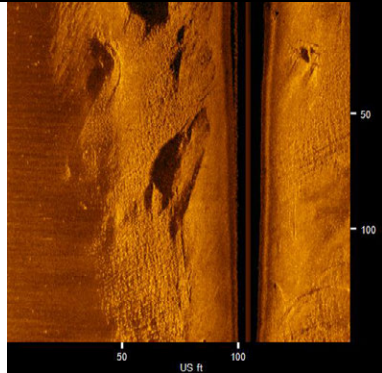
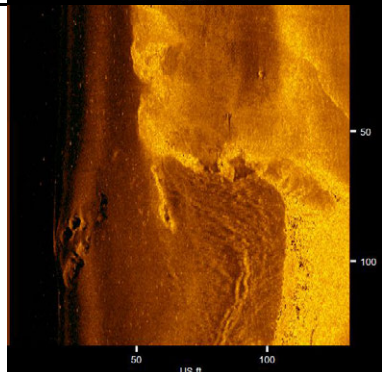
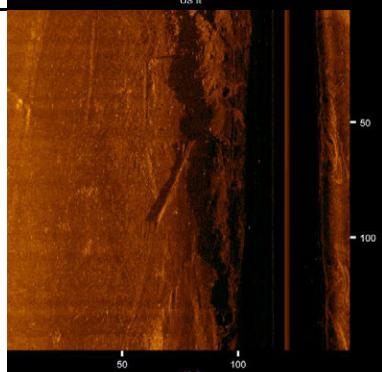
Target Image	Target Info	User Entered Info
	C0025 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 4:08:59 PM • Click Position <ul style="list-style-type: none"> 34.1951080033 -77.9580441564 (WGS84) 34.1949375568 -77.9583335111 (NAD27LL) 34.1951080033 -77.9580441564 (Local LL) (X) 2315099.16 (Y) 163655.46 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0004.sds • Ping Number: 36254 • Range to target: 63.94 US ft. • Fish Height: 19.38 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0004 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.58 US ft. • Target Height: 1.18 US ft. • Target Length: 34.91 US ft. • Target Shadow: 4.33 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: • Classification2: • Area: • Block: • Description:
	C0026 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 6:29:45 PM • Click Position <ul style="list-style-type: none"> 34.1937860951 -77.9562767856 (WGS84) 34.1936156307 -77.9565662151 (NAD27LL) 34.1937860951 -77.9562767856 (Local LL) (X) 2315638.67 (Y) 163180.00 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0003.sds • Ping Number: 13874 • Range to target: 46.48 US ft. • Fish Height: 28.12 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0003 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 12.90 US ft. • Target Height: 2.96 US ft. • Target Length: 31.52 US ft. • Target Shadow: 6.39 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris • Classification2: • Area: • Block: • Description:
	C0027 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 6:44:44 PM • Click Position <ul style="list-style-type: none"> 34.1920081279 -77.9578191781 (WGS84) 34.1918376397 -77.9581085512 (NAD27LL) 34.1920081279 -77.9578191781 (Local LL) (X) 2315179.04 (Y) 162528.05 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0007.sds • Ping Number: 23025 • Range to target: 36.64 US ft. • Fish Height: 41.55 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0007 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.88 US ft. • Target Height: 1.65 US ft. • Target Length: 3.20 US ft. • Target Shadow: 2.29 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Tire • Classification2: • Area: • Block: • Description:
	C0028 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 6:47:20 PM • Click Position <ul style="list-style-type: none"> 34.1883498236 -77.9582996290 (WGS84) 34.1881792863 -77.9585889941 (NAD27LL) 34.1883498236 -77.9582996290 (Local LL) (X) 2315047.72 (Y) 161195.18 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0007.sds • Ping Number: 25350 • Range to target: 66.25 US ft. • Fish Height: 40.97 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0007 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.16 US ft. • Target Height: 1.19 US ft. • Target Length: 22.49 US ft. • Target Shadow: 2.33 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:

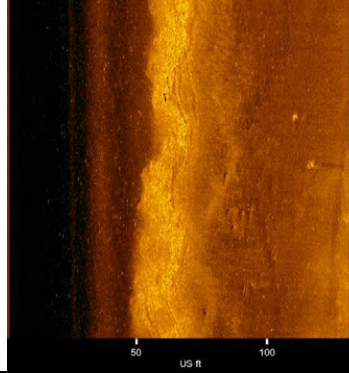
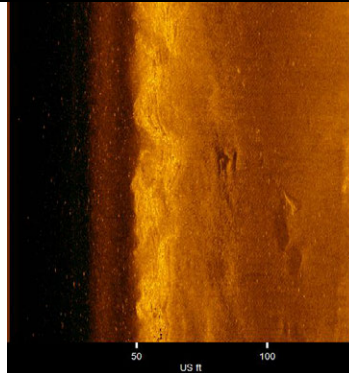
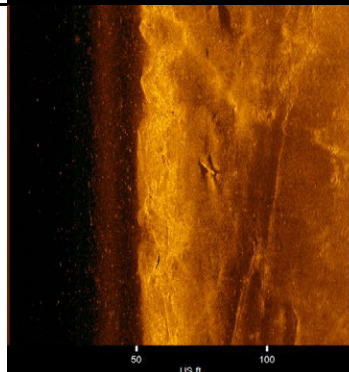
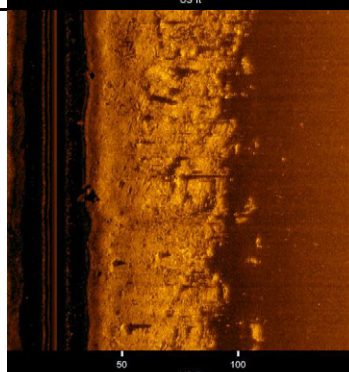
Target Image	Target Info	User Entered Info
	C0029 <ul style="list-style-type: none"> • Sonar Time at Target: 4/15/2017 4:50:47 PM • Click Position <ul style="list-style-type: none"> 34.1876615889 -77.9582352859 (WGS84) 34.1874910424 -77.9585246556 (NAD27LL) 34.1876615889 -77.9582352859 (Local LL) (X) 2315069.81 (Y) 160944.92 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170415POW\2017APR15_0001.sds • Ping Number: 10236 • Range to target: 62.79 US ft. • Fish Height: 7.68 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR15_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 16.81 US ft. • Target Height: 0.87 US ft. • Target Length: 57.82 US ft. • Target Shadow: 8.11 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Two Unknown Objects • Classification2: • Area: • Block: • Description:
	C0030 <ul style="list-style-type: none"> • Sonar Time at Target: 4/15/2017 4:49:30 PM • Click Position <ul style="list-style-type: none"> 34.1861735431 -77.9583575276 (WGS84) 34.1860029765 -77.9586468970 (NAD27LL) 34.1861735431 -77.9583575276 (Local LL) (X) 2315038.52 (Y) 160402.99 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170415POW\2017APR15_0001.sds • Ping Number: 9304 • Range to target: 61.10 US ft. • Fish Height: 15.90 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR15_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 4.90 US ft. • Target Height: 2.86 US ft. • Target Length: 23.90 US ft. • Target Shadow: 13.85 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: linear object • Classification2: • Area: • Block: • Description:
	C0031 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 4:01:19 PM • Click Position <ul style="list-style-type: none"> 34.1860572934 -77.9590071256 (WGS84) 34.1858867254 -77.9592964693 (NAD27LL) 34.1860572934 -77.9590071256 (Local LL) (X) 2314842.50 (Y) 160358.62 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0004.sds • Ping Number: 30482 • Range to target: 44.31 US ft. • Fish Height: 7.54 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0004 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.04 US ft. • Target Height: 0.50 US ft. • Target Length: 86.85 US ft. • Target Shadow: 3.19 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Wire Rope • Classification2: • Area: • Block: • Description:
	C0032 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 4:01:01 PM • Click Position <ul style="list-style-type: none"> 34.1856033384 -77.9589813045 (WGS84) 34.1854327642 -77.9592706506 (NAD27LL) 34.1856033384 -77.9589813045 (Local LL) (X) 2314852.04 (Y) 160193.50 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0004.sds • Ping Number: 30200 • Range to target: 29.53 US ft. • Fish Height: 6.64 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0004 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.74 US ft. • Target Height: 0.78 US ft. • Target Length: 76.60 US ft. • Target Shadow: 4.05 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Pipe • Classification2: • Area: • Block: • Description:

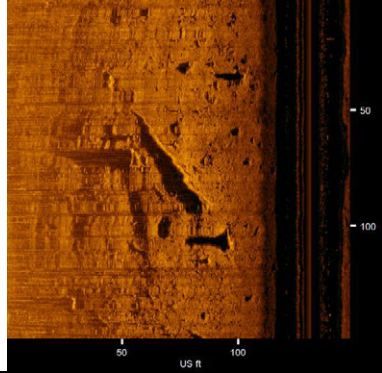
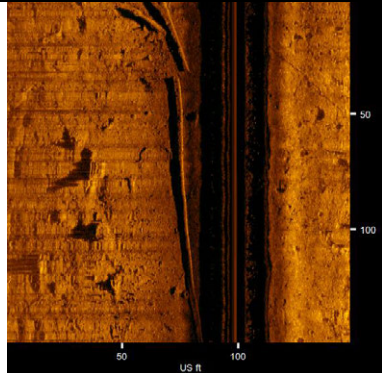
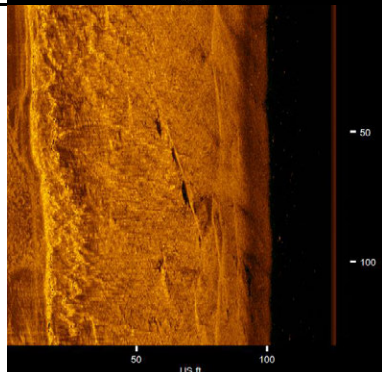
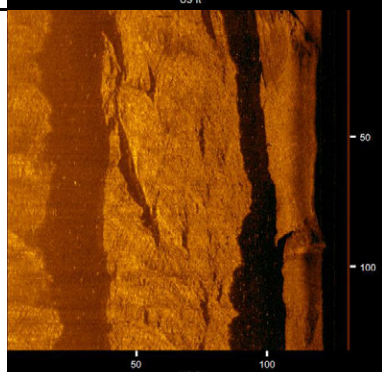
Target Image	Target Info	User Entered Info
	C0033 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 6:22:50 PM • Click Position <ul style="list-style-type: none"> 34.1848311998 -77.9567719526 (WGS84) 34.1846606149 -77.9570613894 (NAD27LL) 34.1848311998 -77.9567719526 (Local LL) (X) 2315523.18 (Y) 159919.51 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0003.sds • Ping Number: 7507 • Range to target: 26.68 US ft. • Fish Height: 30.43 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0003 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.82 US ft. • Target Height: 1.12 US ft. • Target Length: 2.87 US ft. • Target Shadow: 1.55 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Small Contact • Classification2: • Area: • Block: • Description:
	C0034 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 4:00:02 PM • Click Position <ul style="list-style-type: none"> 34.1841846595 -77.9593252870 (WGS84) 34.1840140663 -77.9596146237 (NAD27LL) 34.1841846595 -77.9593252870 (Local LL) (X) 2314753.42 (Y) 159676.12 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0004.sds • Ping Number: 29305 • Range to target: 88.17 US ft. • Fish Height: 17.49 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0004 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 48.73 US ft. • Target Height: 6.02 US ft. • Target Length: 55.96 US ft. • Target Shadow: 47.16 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Large Depression • Classification2: • Area: • Block: • Description:
	C0035 <ul style="list-style-type: none"> • Sonar Time at Target: 4/15/2017 4:46:11 PM • Click Position <ul style="list-style-type: none"> 34.1823256784 -77.9589863313 (WGS84) 34.1821550602 -77.9592756872 (NAD27LL) 34.1823256784 -77.9589863313 (Local LL) (X) 2314863.03 (Y) 159000.66 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170415POW\2017APR15_0001.sds • Ping Number: 6836 • Range to target: 32.02 US ft. • Fish Height: 20.38 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR15_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 6.35 US ft. • Target Height: 2.09 US ft. • Target Length: 7.21 US ft. • Target Shadow: 4.33 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: unknown • Classification2: • Area: • Block: • Description:
	C0036 <ul style="list-style-type: none"> • Sonar Time at Target: 4/15/2017 4:45:46 PM • Click Position <ul style="list-style-type: none"> 34.1818591484 -77.9587635032 (WGS84) 34.1816885239 -77.9590528695 (NAD27LL) 34.1818591484 -77.9587635032 (Local LL) (X) 2314932.21 (Y) 158831.59 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170415POW\2017APR15_0001.sds • Ping Number: 6549 • Range to target: 48.76 US ft. • Fish Height: 25.57 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR15_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 10.94 US ft. • Target Height: 1.62 US ft. • Target Length: 11.54 US ft. • Target Shadow: 3.74 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: unknown • Classification2: • Area: • Block: • Description:

Target Image	Target Info	User Entered Info
	C0037 <ul style="list-style-type: none"> • Sonar Time at Target: 4/15/2017 4:44:59 PM • Click Position <ul style="list-style-type: none"> 34.1809756838 -77.9592064069 (WGS84) 34.1808050475 -77.9594957582 (NAD27LL) 34.1809756838 -77.9592064069 (Local LL) (X) 2314801.62 (Y) 158508.67 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170415POW\2017APR15_0001.sds • Ping Number: 5971 • Range to target: 66.36 US ft. • Fish Height: 26.00 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR15_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.04 US ft. • Target Height: 1.01 US ft. • Target Length: 103.93 US ft. • Target Shadow: 2.89 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: linear object • Classification2: • Area: • Block: • Description:
	C0038 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 6:53:46 PM • Click Position <ul style="list-style-type: none"> 34.1809542265 -77.9588510808 (WGS84) 34.1807835899 -77.9591404463 (NAD27LL) 34.1809542265 -77.9588510808 (Local LL) (X) 2314909.17 (Y) 158501.99 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0007.sds • Ping Number: 30162 • Range to target: 108.72 US ft. • Fish Height: 19.76 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0007 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.62 US ft. • Target Height: 0.36 US ft. • Target Length: 4.05 US ft. • Target Shadow: 2.03 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Small Contact and Depression • Classification2: • Area: • Block: • Description:
	C0039 <ul style="list-style-type: none"> • Sonar Time at Target: 4/15/2017 4:44:28 PM • Click Position <ul style="list-style-type: none"> 34.1803489265 -77.9587969228 (WGS84) 34.1801782817 -77.9590862923 (NAD27LL) 34.1803489265 -77.9587969228 (Local LL) (X) 2314927.86 (Y) 158281.87 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170415POW\2017APR15_0001.sds • Ping Number: 5593 • Range to target: 77.71 US ft. • Fish Height: 23.69 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR15_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 7.95 US ft. • Target Height: 1.42 US ft. • Target Length: 12.96 US ft. • Target Shadow: 5.17 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0040 <ul style="list-style-type: none"> • Sonar Time at Target: 4/15/2017 4:42:25 PM • Click Position <ul style="list-style-type: none"> 34.1778331596 -77.9595315190 (WGS84) 34.1776624811 -77.9598208669 (NAD27LL) 34.1778331596 -77.9595315190 (Local LL) (X) 2314715.28 (Y) 157363.99 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170415POW\2017APR15_0001.sds • Ping Number: 3982 • Range to target: 81.07 US ft. • Fish Height: 21.67 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR15_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 25.64 US ft. • Target Height: 4.02 US ft. • Target Length: 97.58 US ft. • Target Shadow: 19.12 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: unknown • Classification2: • Area: • Block: • Description:

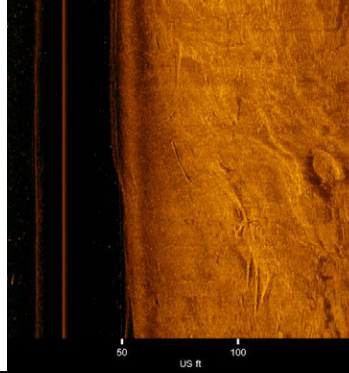
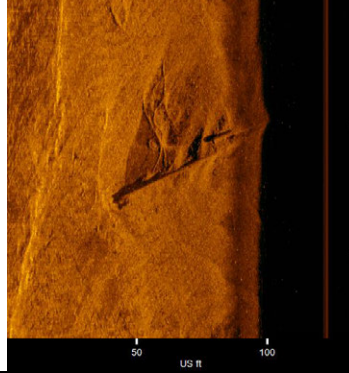
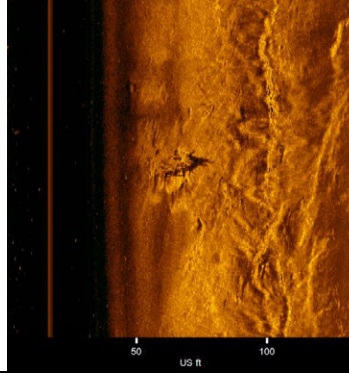
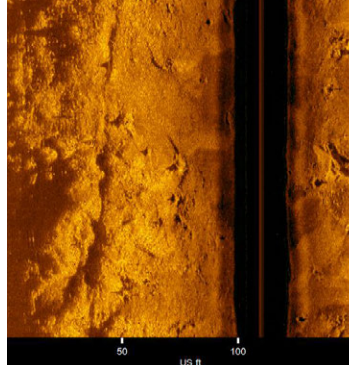
Target Image	Target Info	User Entered Info
	C0041 <ul style="list-style-type: none"> • Sonar Time at Target: 4/9/2017 3:42:36 PM • Click Position <ul style="list-style-type: none"> 34.1778278568 -77.9569705395 (WGS84) 34.1776571778 -77.9572599897 (NAD27LL) 34.1778278568 -77.9569705395 (Local LL) (X) 2315489.90 (Y) 157370.19 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170409pow\2017APR09_0004.sds • Ping Number: 7267 • Range to target: 38.30 US ft. • Fish Height: 24.23 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR09_0004 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.18 US ft. • Target Height: 12.22 US ft. • Target Length: 9.60 US ft. • Target Shadow: 46.09 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0042 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 6:14:11 PM • Click Position <ul style="list-style-type: none"> 34.1725150456 -77.9576829288 (WGS84) 34.1723442952 -77.9579723667 (NAD27LL) 34.1725150456 -77.9576829288 (Local LL) (X) 2315294.73 (Y) 155434.46 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0002.sds • Ping Number: 55111 • Range to target: 67.13 US ft. • Fish Height: 31.20 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 4.15 US ft. • Target Height: 3.13 US ft. • Target Length: 26.00 US ft. • Target Shadow: 8.24 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0043 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 6:13:46 PM • Click Position <ul style="list-style-type: none"> 34.1719700476 -77.9583619280 (WGS84) 34.1717992900 -77.9586513404 (NAD27LL) 34.1719700476 -77.9583619280 (Local LL) (X) 2315091.43 (Y) 155233.97 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0002.sds • Ping Number: 54678 • Range to target: 65.94 US ft. • Fish Height: 33.64 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 3.21 US ft. • Target Height: 3.36 US ft. • Target Length: 11.50 US ft. • Target Shadow: 8.21 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Possible Wreck • Classification2: • Area: • Block: • Description: Rationalized contact created from contacts: C0059_2, C0059
	C0044 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 6:12:13 PM • Click Position <ul style="list-style-type: none"> 34.1698065760 -77.9588504386 (WGS84) 34.1696688727 -77.9590306445 (NAD27LL) 34.1698065760 -77.9588504386 (Local LL) (X) 2314951.92 (Y) 154445.07 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0002.sds • Ping Number: 53126 • Range to target: 46.58 US ft. • Fish Height: 32.35 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 3.34 US ft. • Target Height: 3.64 US ft. • Target Length: 12.60 US ft. • Target Shadow: 7.18 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description: Rationalized contact created from contacts: C0058_2, C0058


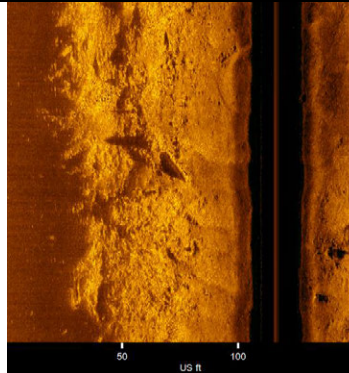
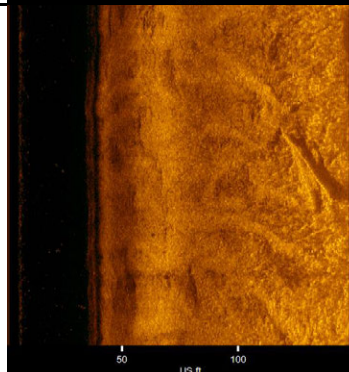
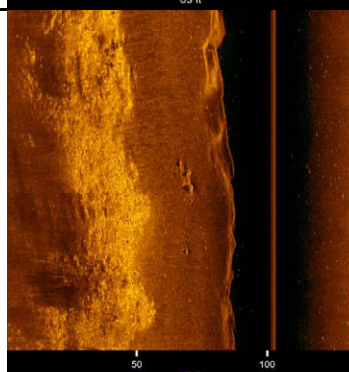
Target Image	Target Info	User Entered Info
	C0045 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 12:16:24 AM • Click Position <ul style="list-style-type: none"> 34.1646396134 -77.9612725101 (WGS84) 34.1644687582 -77.9615618289 (NAD27LL) 34.1646396134 -77.9612725101 (Local LL) (X) 2314238.94 (Y) 152557.00 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170411pow\2017APR11_0005.sds • Ping Number: 47873 • Range to target: 32.76 US ft. • Fish Height: 41.29 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR11_0005 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 3.23 US ft. • Target Height: 1.73 US ft. • Target Length: 5.77 US ft. • Target Shadow: 2.31 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0046 <ul style="list-style-type: none"> • Sonar Time at Target: 4/13/2017 12:08:04 AM • Click Position <ul style="list-style-type: none"> 34.1635522235 -77.9591612349 (WGS84) 34.1633813530 -77.9594506411 (NAD27LL) 34.1635522235 -77.9591612349 (Local LL) (X) 2314881.77 (Y) 152167.96 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0010.sds • Ping Number: 10033 • Range to target: 28.84 US ft. • Fish Height: 6.43 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0010 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 10.94 US ft. • Target Height: 1.79 US ft. • Target Length: 36.88 US ft. • Target Shadow: 11.41 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0047 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 6:07:23 PM • Click Position <ul style="list-style-type: none"> 34.1631524700 -77.9592959955 (WGS84) 34.1629815942 -77.9595853976 (NAD27LL) 34.1631524700 -77.9592959955 (Local LL) (X) 2314842.53 (Y) 152022.06 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0002.sds • Ping Number: 48303 • Range to target: 79.97 US ft. • Fish Height: 25.30 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 4.69 US ft. • Target Height: 1.96 US ft. • Target Length: 5.83 US ft. • Target Shadow: 7.04 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Rectangular Contact • Classification2: • Area: • Block: • Description:
	C0048 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 7:07:10 PM • Click Position <ul style="list-style-type: none"> 34.1628143077 -77.9618951248 (WGS84) 34.1626434283 -77.9621844244 (NAD27LL) 34.1628143077 -77.9618951248 (Local LL) (X) 2314057.53 (Y) 151890.76 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0007.sds • Ping Number: 41753 • Range to target: 45.24 US ft. • Fish Height: 13.85 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0007 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.82 US ft. • Target Height: 1.51 US ft. • Target Length: 38.90 US ft. • Target Shadow: 5.77 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:

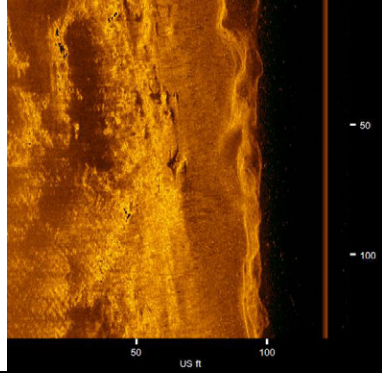
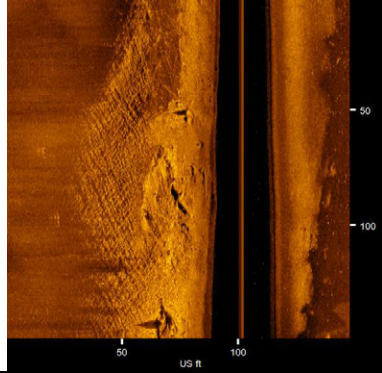
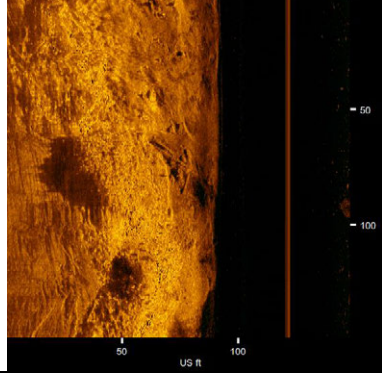
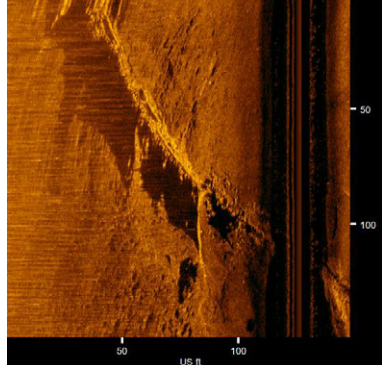
Target Image	Target Info	User Entered Info
	C0049 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 6:06:57 PM • Click Position <ul style="list-style-type: none"> 34.1625541639 -77.9591125058 (WGS84) 34.1623832800 -77.9594019170 (NAD27LL) 34.1625541639 -77.9591125058 (Local LL) (X) 2314900.32 (Y) 151804.90 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0002.sds • Ping Number: 47861 • Range to target: 113.98 US ft. • Fish Height: 26.45 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 3.10 US ft. • Target Height: 1.99 US ft. • Target Length: 1.56 US ft. • Target Shadow: 9.53 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Small Contact • Classification2: • Area: • Block: • Description:
	C0050 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 6:06:36 PM • Click Position <ul style="list-style-type: none"> 34.1620595265 -77.9591077244 (WGS84) 34.1618886360 -77.9593971373 (NAD27LL) 34.1620595265 -77.9591077244 (Local LL) (X) 2314903.66 (Y) 151624.90 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0002.sds • Ping Number: 47509 • Range to target: 81.48 US ft. • Fish Height: 26.45 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 8.32 US ft. • Target Height: 0.00 US ft. • Target Length: 7.52 US ft. • Target Shadow: 0.00 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:
	C0051 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 6:06:09 PM • Click Position <ul style="list-style-type: none"> 34.1613973377 -77.9590373490 (WGS84) 34.1612264382 -77.9593267667 (NAD27LL) 34.1613973377 -77.9590373490 (Local LL) (X) 2314927.47 (Y) 151384.14 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0002.sds • Ping Number: 47051 • Range to target: 72.06 US ft. • Fish Height: 27.99 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.15 US ft. • Target Height: 2.14 US ft. • Target Length: 7.26 US ft. • Target Shadow: 6.41 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0052 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 3:38:30 PM • Click Position <ul style="list-style-type: none"> 34.1594401293 -77.9612511814 (WGS84) 34.1592692043 -77.9615405170 (NAD27LL) 34.1594401293 -77.9612511814 (Local LL) (X) 2314265.19 (Y) 150664.84 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0004.sds • Ping Number: 13325 • Range to target: 52.03 US ft. • Fish Height: 13.02 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0004 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 3.21 US ft. • Target Height: 4.48 US ft. • Target Length: 3.73 US ft. • Target Shadow: 28.16 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Small Contact • Classification2: • Area: • Block: • Description:

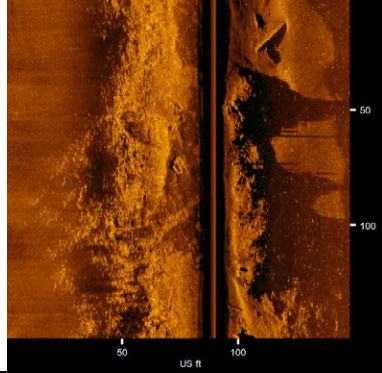
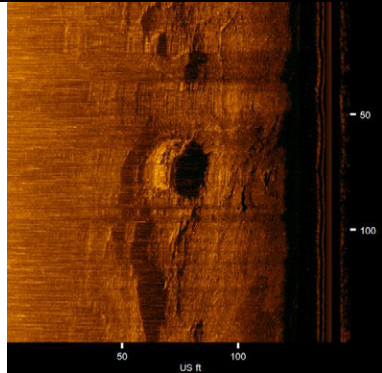
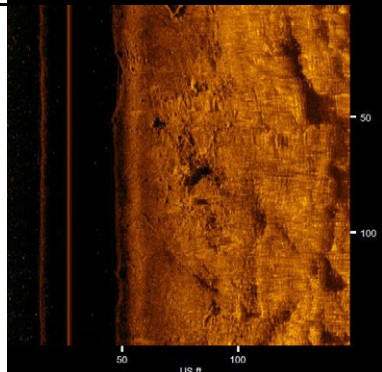
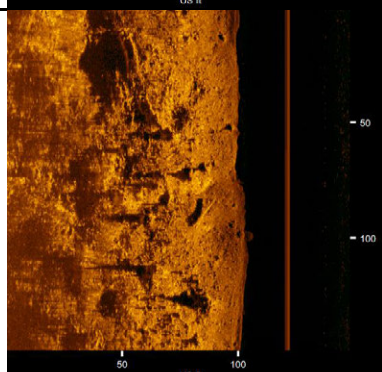
Target Image	Target Info	User Entered Info
	C0053 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 3:36:08 PM • Click Position <ul style="list-style-type: none"> 34.1573708136 -77.9604204400 (WGS84) 34.1571998605 -77.9607098150 (NAD27LL) 34.1573708136 -77.9604204400 (Local LL) • (X) 2314524.40 (Y) 149914.39 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0004.sds • Ping Number: 11955 • Range to target: 54.25 US ft. • Fish Height: 14.03 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0004 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 40.93 US ft. • Target Height: 2.34 US ft. • Target Length: 55.72 US ft. • Target Shadow: 11.21 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:
	C0054 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 3:35:06 PM • Click Position <ul style="list-style-type: none"> 34.1565902133 -77.9598186811 (WGS84) 34.1564192495 -77.9601080824 (NAD27LL) 34.1565902133 -77.9598186811 (Local LL) • (X) 2314709.43 (Y) 149632.22 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0004.sds • Ping Number: 11366 • Range to target: 18.47 US ft. • Fish Height: 14.32 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0004 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.72 US ft. • Target Height: 3.16 US ft. • Target Length: 147.24 US ft. • Target Shadow: 6.61 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Pipe • Classification2: • Area: • Block: • Description:
	C0055 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 7:58:23 PM • Click Position <ul style="list-style-type: none"> 34.1565712640 -77.9571643843 (WGS84) 34.1564002989 -77.9574538912 (NAD27LL) 34.1565712640 -77.9571643843 (Local LL) • (X) 2315512.54 (Y) 149633.75 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0004.sds • Ping Number: 37383 • Range to target: 53.74 US ft. • Fish Height: 25.30 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0004 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.62 US ft. • Target Height: 0.95 US ft. • Target Length: 51.60 US ft. • Target Shadow: 2.31 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Pipe • Classification2: • Area: • Block: • Description:
	C0056 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 7:58:23 PM • Click Position <ul style="list-style-type: none"> 34.1565450008 -77.9572220041 (WGS84) 34.1564002989 -77.9574538912 (NAD27LL) 34.1565450008 -77.9572220041 (Local LL) • (X) 2315495.21 (Y) 149624.01 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0004.sds • Ping Number: 37383 • Range to target: 53.74 US ft. • Fish Height: 25.30 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0004 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 0.81 US ft. • Target Height: 0.95 US ft. • Target Length: 25.80 US ft. • Target Shadow: 2.31 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Pipe • Classification2: • Area: • Block: • Description: Rationalized contact created from contacts: C0062_2, C0062

Target Image	Target Info	User Entered Info
	C0057 <ul style="list-style-type: none"> • Sonar Time at Target: 4/13/2017 12:02:39 AM • Click Position <ul style="list-style-type: none"> 34.1565187376 -77.9572796240 (WGS84) 34.1563477718 -77.9575691265 (NAD27LL) 34.1565187376 -77.9572796240 (Local LL) (X) 2315477.88 (Y) 149614.27 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0010.sds • Ping Number: 5517 • Range to target: 91.05 US ft. • Fish Height: 13.13 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0010 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 0.00 US ft. • Target Height: 0.00 US ft. • Target Length: 0.00 US ft. • Target Shadow: 0.00 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: • Classification2: • Area: • Block: • Description:
	C0058 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 7:59:13 PM • Click Position <ul style="list-style-type: none"> 34.1558028333 -77.9566754338 (WGS84) 34.1556318577 -77.9569649625 (NAD27LL) 34.1558028333 -77.9566754338 (Local LL) (X) 2315663.41 (Y) 149355.65 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0004.sds • Ping Number: 37998 • Range to target: 79.88 US ft. • Fish Height: 27.48 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0004 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 0.64 US ft. • Target Height: 5.60 US ft. • Target Length: 18.40 US ft. • Target Shadow: 21.63 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description: Rationalized contact created from contacts: C0063_2, C0063
	C0059 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 7:59:22 PM • Click Position <ul style="list-style-type: none"> 34.1557092980 -77.9565268885 (WGS84) 34.1555383211 -77.9568164234 (NAD27LL) 34.1557092980 -77.9565268885 (Local LL) (X) 2315708.71 (Y) 149322.08 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0004.sds • Ping Number: 38102 • Range to target: 103.99 US ft. • Fish Height: 27.09 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0004 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 4.93 US ft. • Target Height: 3.41 US ft. • Target Length: 18.74 US ft. • Target Shadow: 15.45 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Two Linear Contacts • Classification2: • Area: • Block: • Description: Rationalized contact created from contacts: C0064_2, C0064
	C0060 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 3:33:40 PM • Click Position <ul style="list-style-type: none"> 34.1553577482 -77.9591302084 (WGS84) 34.1551867675 -77.9594196408 (NAD27LL) 34.1553577482 -77.9591302084 (Local LL) (X) 2314922.43 (Y) 149185.88 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0004.sds • Ping Number: 10508 • Range to target: 44.98 US ft. • Fish Height: 14.75 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0004 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 3.68 US ft. • Target Height: 4.13 US ft. • Target Length: 9.32 US ft. • Target Shadow: 18.39 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris • Classification2: • Area: • Block: • Description:

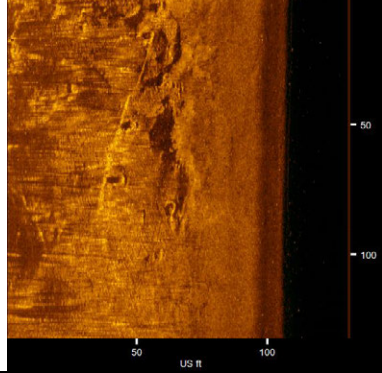
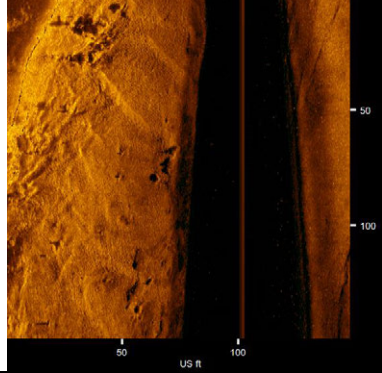
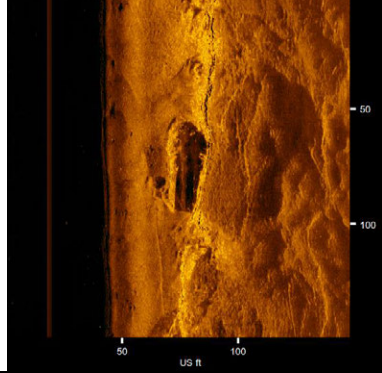
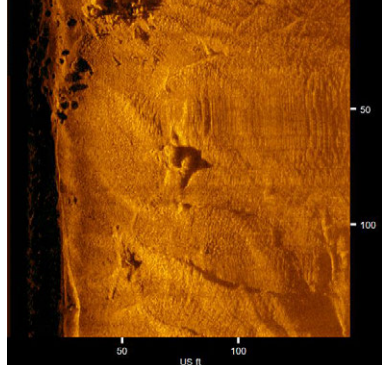
Target Image	Target Info	User Entered Info
	C0061 <ul style="list-style-type: none"> • Sonar Time at Target: 4/13/2017 12:45:44 AM • Click Position <ul style="list-style-type: none"> 34.1551316778 -77.9586757199 (WGS84) 34.1549606940 -77.9589651711 (NAD27LL) 34.1551316778 -77.9586757199 (Local LL) (X) 2315060.79 (Y) 149105.05 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0010.sds • Ping Number: 29574 • Range to target: 44.80 US ft. • Fish Height: 21.49 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0010 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.45 US ft. • Target Height: 0.49 US ft. • Target Length: 19.94 US ft. • Target Shadow: 1.16 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0062 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 5:57:15 PM • Click Position <ul style="list-style-type: none"> 34.1504669669 -77.9536208138 (WGS84) 34.1502959181 -77.9539104800 (NAD27LL) 34.1504669669 -77.9536208138 (Local LL) (X) 2316608.03 (Y) 147423.52 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0002.sds • Ping Number: 38506 • Range to target: 79.58 US ft. • Fish Height: 25.56 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 14.01 US ft. • Target Height: 4.89 US ft. • Target Length: 80.66 US ft. • Target Shadow: 19.75 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Possible Wreck • Classification2: • Area: • Block: • Description: Rationalized contact created from contacts: C0053_2, C0053
	C0063 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 5:53:21 PM • Click Position <ul style="list-style-type: none"> 34.1457716235 -77.9510440183 (WGS84) 34.1456005102 -77.9513338010 (NAD27LL) 34.1457716235 -77.9510440183 (Local LL) (X) 2317405.73 (Y) 145722.98 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0002.sds • Ping Number: 34830 • Range to target: 45.95 US ft. • Fish Height: 18.54 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 6.65 US ft. • Target Height: 2.78 US ft. • Target Length: 19.78 US ft. • Target Shadow: 8.72 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0064 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 11:53:02 PM • Click Position <ul style="list-style-type: none"> 34.1445348423 -77.9498073725 (WGS84) 34.1443637116 -77.9500972079 (NAD27LL) 34.1445348423 -77.9498073725 (Local LL) (X) 2317784.68 (Y) 145276.84 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0009.sds • Ping Number: 44378 • Range to target: 33.86 US ft. • Fish Height: 12.01 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0009 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 18.23 US ft. • Target Height: 1.21 US ft. • Target Length: 35.12 US ft. • Target Shadow: 4.04 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:

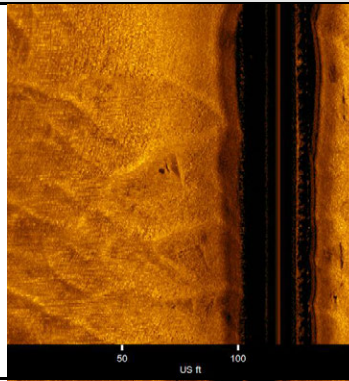
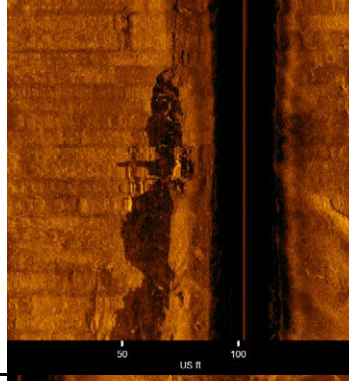
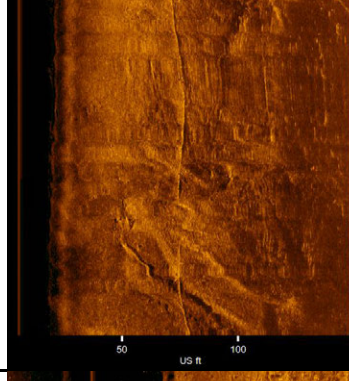
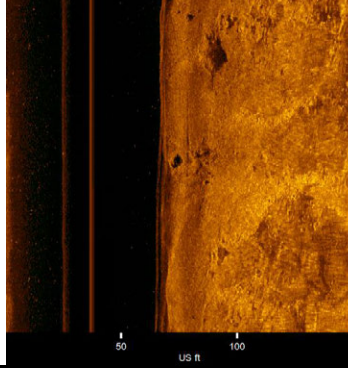
Target Image	Target Info	User Entered Info
	C0065 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 11:52:42 PM • Click Position <ul style="list-style-type: none"> 34.1441872940 -77.9493468744 (WGS84) 34.1440161584 -77.9496367290 (NAD27LL) 34.1441872940 -77.9493468744 (Local LL) (X) 2317925.36 (Y) 145151.83 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0009.sds • Ping Number: 44075 • Range to target: 36.66 US ft. • Fish Height: 11.00 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0009 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 33.47 US ft. • Target Height: 4.62 US ft. • Target Length: 74.13 US ft. • Target Shadow: 27.70 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:
	C0066 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 11:52:45 PM • Click Position <ul style="list-style-type: none"> 34.1441649431 -77.9496193877 (WGS84) 34.1439938074 -77.9499092316 (NAD27LL) 34.1441649431 -77.9496193877 (Local LL) (X) 2317842.99 (Y) 145142.83 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0009.sds • Ping Number: 44126 • Range to target: 40.82 US ft. • Fish Height: 12.30 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0009 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.84 US ft. • Target Height: 2.41 US ft. • Target Length: 17.10 US ft. • Target Shadow: 10.39 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0067 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 3:21:37 PM • Click Position <ul style="list-style-type: none"> 34.1438922502 -77.9516063960 (WGS84) 34.1437211118 -77.9518961619 (NAD27LL) 34.1438922502 -77.9516063960 (Local LL) (X) 2317242.79 (Y) 145037.23 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0004.sds • Ping Number: 2249 • Range to target: 124.09 US ft. • Fish Height: 36.82 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0004 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.69 US ft. • Target Height: 2.39 US ft. • Target Length: 37.75 US ft. • Target Shadow: 8.98 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0068 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 8:15:22 PM • Click Position <ul style="list-style-type: none"> 34.1411293603 -77.9466599312 (WGS84) 34.1409581819 -77.9469499015 (NAD27LL) 34.1411293603 -77.9466599312 (Local LL) (X) 2318750.20 (Y) 144047.58 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0004.sds • Ping Number: 50092 • Range to target: 30.40 US ft. • Fish Height: 15.94 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0004 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.58 US ft. • Target Height: 1.32 US ft. • Target Length: 15.42 US ft. • Target Shadow: 3.10 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris • Classification2: • Area: • Block: • Description:

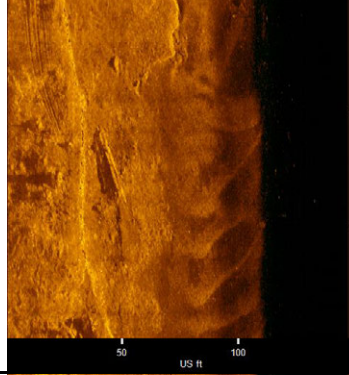
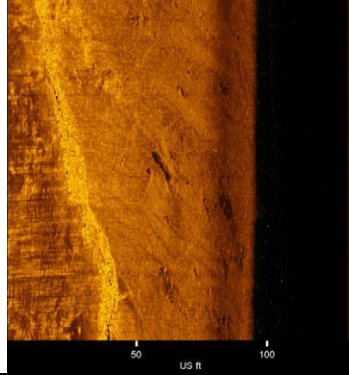
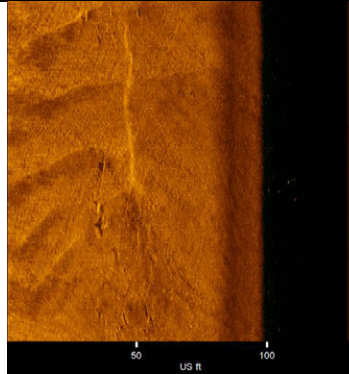
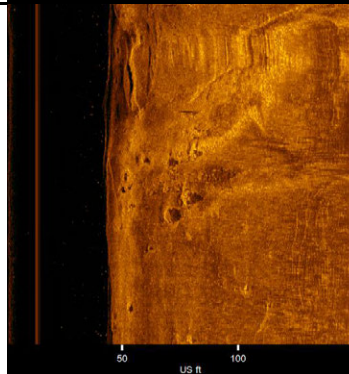
Target Image	Target Info	User Entered Info
	C0069 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 8:16:05 PM • Click Position <ul style="list-style-type: none"> 34.1405546357 -77.9459352967 (WGS84) 34.1403834491 -77.9462252975 (NAD27LL) 34.1405546357 -77.9459352967 (Local LL) • (X) 2318971.70 (Y) 143840.75 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0005.sds • Ping Number: 315 • Range to target: 50.26 US ft. • Fish Height: 24.27 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0005 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 4.74 US ft. • Target Height: 1.07 US ft. • Target Length: 5.28 US ft. • Target Shadow: 2.58 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Rectangular Contact • Classification2: • Area: • Block: • Description:
	C0070 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 3:38:29 AM • Click Position <ul style="list-style-type: none"> 34.1401255351 -77.9453671175 (WGS84) 34.1399543424 -77.9456571421 (NAD27LL) 34.1401255351 -77.9453671175 (Local LL) • (X) 2319145.29 (Y) 143686.42 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170411pow1\2017APR11_0009.sds • Ping Number: 11590 • Range to target: 25.60 US ft. • Fish Height: 11.00 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR11_0009 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 25.08 US ft. • Target Height: 2.20 US ft. • Target Length: 59.12 US ft. • Target Shadow: 6.95 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:
	C0071 <ul style="list-style-type: none"> • Sonar Time at Target: 4/9/2017 2:14:24 PM • Click Position <ul style="list-style-type: none"> 34.1401084037 -77.9493444777 (WGS84) 34.1399372130 -77.9496343446 (NAD27LL) 34.1401084037 -77.9493444777 (Local LL) • (X) 2317941.80 (Y) 143667.42 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170409pow\2017APR09_0002.sds • Ping Number: 27891 • Range to target: 36.03 US ft. • Fish Height: 30.19 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR09_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 18.45 US ft. • Target Height: 0.72 US ft. • Target Length: 28.95 US ft. • Target Shadow: 1.15 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris • Classification2: • Area: • Block: • Description:
	C0072 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 3:16:45 PM • Click Position <ul style="list-style-type: none"> 34.1396116480 -77.9495571563 (WGS84) 34.1394404507 -77.9498470163 (NAD27LL) 34.1396116480 -77.9495571563 (Local LL) • (X) 2317879.35 (Y) 143485.96 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0003.sds • Ping Number: 37060 • Range to target: 50.22 US ft. • Fish Height: 14.02 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0003 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 9.53 US ft. • Target Height: 4.05 US ft. • Target Length: 174.54 US ft. • Target Shadow: 21.18 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Large Linear Object, Possible Wreck • Classification2: • Area: • Block: • Description:

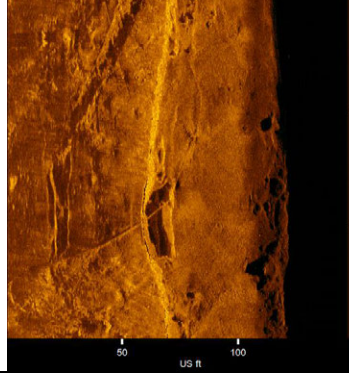
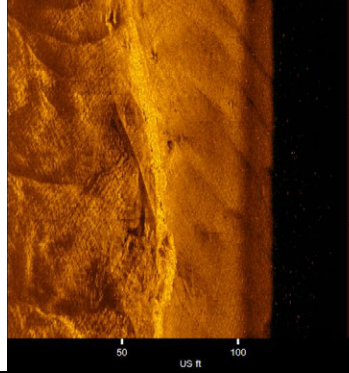
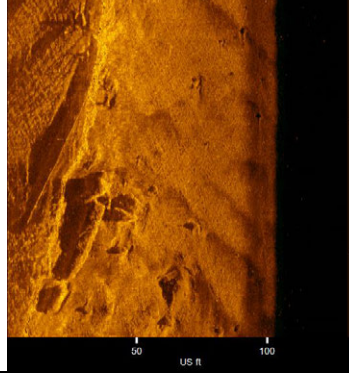
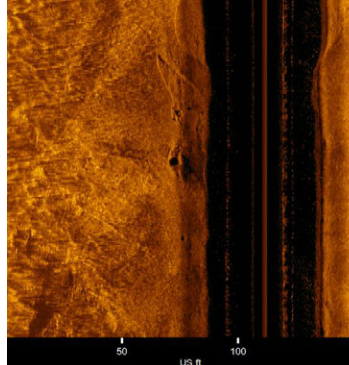
Target Image	Target Info	User Entered Info
	C0073 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 3:39:49 AM • Click Position <ul style="list-style-type: none"> 34.1390755401 -77.9441102723 (WGS84) 34.1389043326 -77.9444003498 (NAD27LL) 34.1390755401 -77.9441102723 (Local LL) (X) 2319529.67 (Y) 143308.34 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170411pow\2017APR11_0009.sds • Ping Number: 12520 • Range to target: 14.05 US ft. • Fish Height: 6.40 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR11_0009 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 3.11 US ft. • Target Height: 0.74 US ft. • Target Length: 4.33 US ft. • Target Shadow: 2.02 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0074 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 3:15:45 PM • Click Position <ul style="list-style-type: none"> 34.1389387349 -77.9489216846 (WGS84) 34.1387675281 -77.9492115718 (NAD27LL) 34.1389387349 -77.9489216846 (Local LL) (X) 2318074.24 (Y) 143243.10 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0003.sds • Ping Number: 36498 • Range to target: 62.84 US ft. • Fish Height: 15.50 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0003 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 23.95 US ft. • Target Height: 2.87 US ft. • Target Length: 25.32 US ft. • Target Shadow: 14.71 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Large Round Depression • Classification2: • Area: • Block: • Description:
	C0075 <ul style="list-style-type: none"> • Sonar Time at Target: 4/13/2017 1:13:36 AM • Click Position <ul style="list-style-type: none"> 34.1377262792 -77.9466294793 (WGS84) 34.1375550548 -77.9469194609 (NAD27LL) 34.1377262792 -77.9466294793 (Local LL) (X) 2318772.56 (Y) 142809.21 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0011.sds • Ping Number: 7420 • Range to target: 43.21 US ft. • Fish Height: 19.33 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0011 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 27.36 US ft. • Target Height: 3.20 US ft. • Target Length: 44.01 US ft. • Target Shadow: 9.38 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:
	C0076 <ul style="list-style-type: none"> • Sonar Time at Target: 4/9/2017 2:10:49 PM • Click Position <ul style="list-style-type: none"> 34.1374192323 -77.9462893043 (WGS84) 34.1372480034 -77.9465793003 (NAD27LL) 34.1374192323 -77.9462893043 (Local LL) (X) 2318876.69 (Y) 142698.56 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170409pow\2017APR09_0002.sds • Ping Number: 25564 • Range to target: 41.63 US ft. • Fish Height: 21.82 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR09_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 86.16 US ft. • Target Height: 6.29 US ft. • Target Length: 131.11 US ft. • Target Shadow: 19.04 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Infrastructure • Classification2: • Area: • Block: • Description:

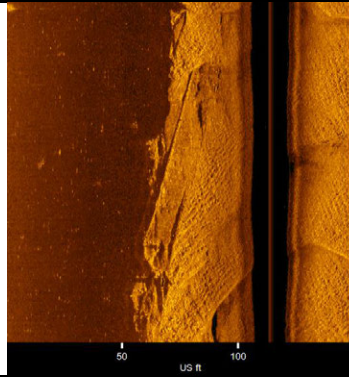
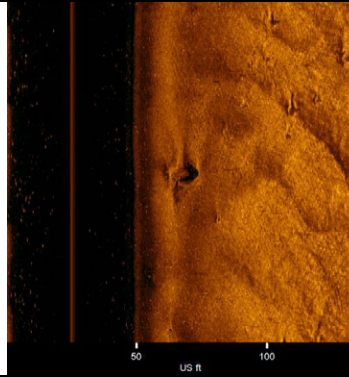
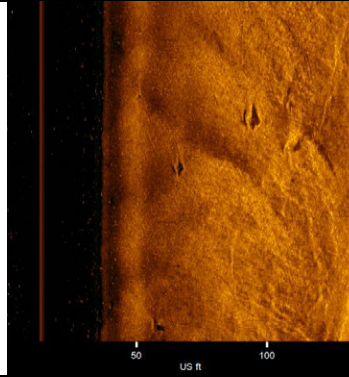
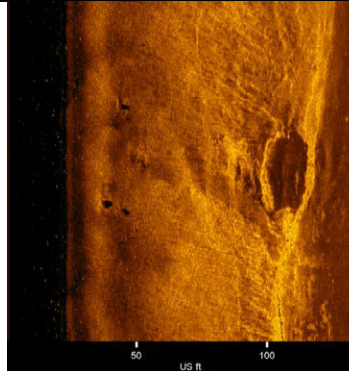
Target Image	Target Info	User Entered Info
	C0077 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 5:41:20 PM • Click Position <ul style="list-style-type: none"> 34.1333638006 -77.9390993070 (WGS84) 34.1331925127 -77.9393895997 (NAD27LL) 34.1333638006 -77.9390993070 (Local LL) (X) 2321068.23 (Y) 141245.85 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0002.sds • Ping Number: 23438 • Range to target: 79.24 US ft. • Fish Height: 29.28 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 3.15 US ft. • Target Height: 2.29 US ft. • Target Length: 2.36 US ft. • Target Shadow: 7.18 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description: Rationalized contact created from contacts: C0051_2, C0051
	C0078 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 3:05:06 PM • Click Position <ul style="list-style-type: none"> 34.1318927929 -77.9405732116 (WGS84) 34.1317214858 -77.9408634501 (NAD27LL) 34.1318927929 -77.9405732116 (Local LL) (X) 2320627.90 (Y) 140705.75 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0003.sds • Ping Number: 30180 • Range to target: 31.72 US ft. • Fish Height: 11.83 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0003 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 3.13 US ft. • Target Height: 1.58 US ft. • Target Length: 12.25 US ft. • Target Shadow: 5.21 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0079 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 5:39:28 PM • Click Position <ul style="list-style-type: none"> 34.1311589099 -77.9376359261 (WGS84) 34.1309875910 -77.9379262830 (NAD27LL) 34.1311589099 -77.9376359261 (Local LL) (X) 2321519.68 (Y) 140448.17 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0002.sds • Ping Number: 21657 • Range to target: 88.86 US ft. • Fish Height: 25.81 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 6.67 US ft. • Target Height: 1.61 US ft. • Target Length: 8.17 US ft. • Target Shadow: 6.16 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description: Rationalized contact created from contacts: C0050_2, C0050
	C0080 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 3:51:08 AM • Click Position <ul style="list-style-type: none"> 34.1285106857 -77.9355092767 (WGS84) 34.1283393295 -77.9357997254 (NAD27LL) 34.1285106857 -77.9355092767 (Local LL) (X) 2322173.61 (Y) 139491.30 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170411pow\2017APR11_0009.sds • Ping Number: 20627 • Range to target: 69.92 US ft. • Fish Height: 29.46 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR11_0009 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 51.45 US ft. • Target Height: 4.21 US ft. • Target Length: 84.48 US ft. • Target Shadow: 12.64 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:

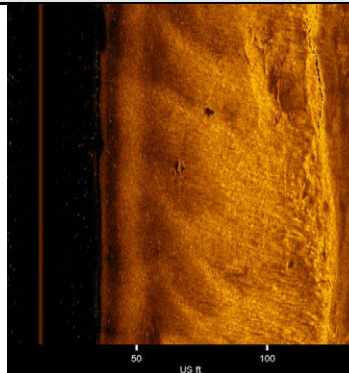
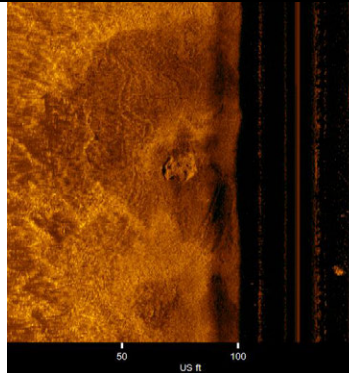
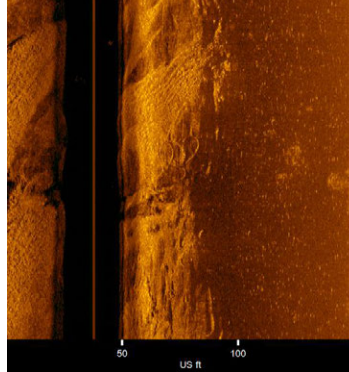
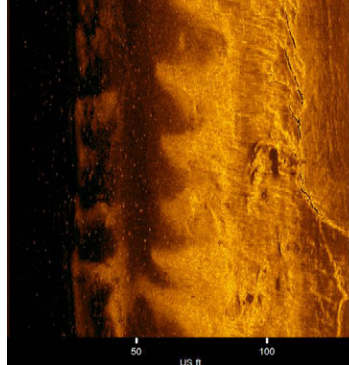
Target Image	Target Info	User Entered Info
	C0081 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 8:30:59 PM • Click Position <ul style="list-style-type: none"> 34.1273842058 -77.9349111611 (WGS84) 34.1272128338 -77.9352016367 (NAD27LL) 34.1273842058 -77.9349111611 (Local LL) (X) 2322359.02 (Y) 139083.28 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0005.sds • Ping Number: 11812 • Range to target: 71.06 US ft. • Fish Height: 25.56 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0005 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 32.25 US ft. • Target Height: 2.45 US ft. • Target Length: 58.39 US ft. • Target Shadow: 8.01 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:
	C0082 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 3:52:36 AM • Click Position <ul style="list-style-type: none"> 34.1271104506 -77.9347797294 (WGS84) 34.1269390747 -77.9350702110 (NAD27LL) 34.1271104506 -77.9347797294 (Local LL) (X) 2322399.87 (Y) 138984.08 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170411pow1\2017APR11_0009.sds • Ping Number: 21603 • Range to target: 22.01 US ft. • Fish Height: 22.14 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR11_0009 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 8.85 US ft. • Target Height: 2.53 US ft. • Target Length: 22.10 US ft. • Target Shadow: 4.02 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris or Outcrop • Classification2: • Area: • Block: • Description:
	C0083 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 11:32:17 PM • Click Position <ul style="list-style-type: none"> 34.1229943110 -77.9340836432 (WGS84) 34.1228228785 -77.9343741640 (NAD27LL) 34.1229943110 -77.9340836432 (Local LL) (X) 2322626.62 (Y) 137488.37 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0009.sds • Ping Number: 28052 • Range to target: 48.58 US ft. • Fish Height: 27.30 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0009 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 7.81 US ft. • Target Height: 0.00 US ft. • Target Length: 41.25 US ft. • Target Shadow: 0.00 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0084 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 8:06:48 PM • Click Position <ul style="list-style-type: none"> 34.1222098084 -77.9366827638 (WGS84) 34.1220383670 -77.9369731842 (NAD27LL) 34.1222098084 -77.9366827638 (Local LL) (X) 2321843.02 (Y) 137194.43 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0008.sds • Ping Number: 28778 • Range to target: 71.83 US ft. • Fish Height: 22.28 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0008 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 9.25 US ft. • Target Height: 1.72 US ft. • Target Length: 17.53 US ft. • Target Shadow: 6.30 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Rectangular Contact • Classification2: • Area: • Block: • Description:

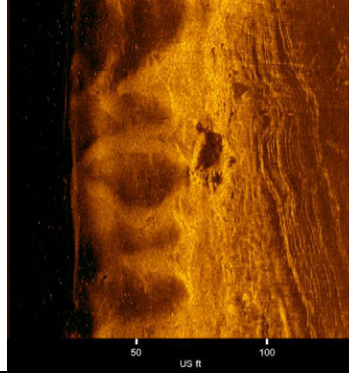
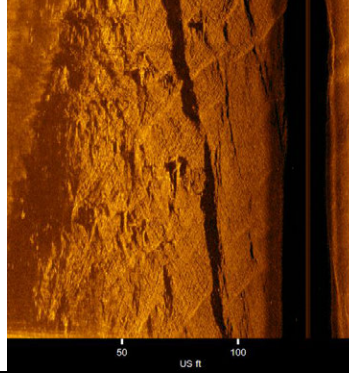
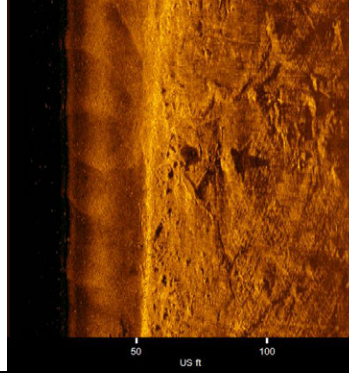
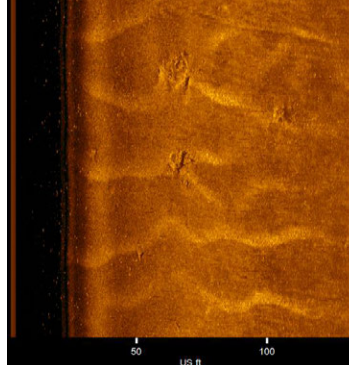
Target Image	Target Info	User Entered Info
	C0085 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 2:55:09 PM • Click Position <ul style="list-style-type: none"> 34.1214732427 -77.9367256619 (WGS84) 34.1213017913 -77.9370160827 (NAD27LL) 34.1214732427 -77.9367256619 (Local LL) (X) 2321832.91 (Y) 136926.23 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0003.sds • Ping Number: 23036 • Range to target: 38.65 US ft. • Fish Height: 16.30 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0003 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.44 US ft. • Target Height: 1.24 US ft. • Target Length: 14.31 US ft. • Target Shadow: 3.46 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0086 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 8:08:06 PM • Click Position <ul style="list-style-type: none"> 34.1206316261 -77.9365076077 (WGS84) 34.1204601631 -77.9367980395 (NAD27LL) 34.1206316261 -77.9365076077 (Local LL) (X) 2321902.19 (Y) 136620.65 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0008.sds • Ping Number: 29788 • Range to target: 23.80 US ft. • Fish Height: 16.68 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0008 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.14 US ft. • Target Height: 7.87 US ft. • Target Length: 7.12 US ft. • Target Shadow: 25.95 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0087 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 8:08:22 PM • Click Position <ul style="list-style-type: none"> 34.1204745644 -77.9368091924 (WGS84) 34.1203030994 -77.9370996127 (NAD27LL) 34.1204745644 -77.9368091924 (Local LL) (X) 2321811.52 (Y) 136562.52 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0008.sds • Ping Number: 29893 • Range to target: 66.38 US ft. • Fish Height: 16.16 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0008 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 0.87 US ft. • Target Height: 0.34 US ft. • Target Length: 146.30 US ft. • Target Shadow: 1.45 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Wire Rope • Classification2: • Area: • Block: • Description:
	C0088 <ul style="list-style-type: none"> • Sonar Time at Target: 4/13/2017 1:45:45 AM • Click Position <ul style="list-style-type: none"> 34.1176381521 -77.9366536497 (WGS84) 34.1174666484 -77.9369440844 (NAD27LL) 34.1176381521 -77.9366536497 (Local LL) (X) 2321869.66 (Y) 135530.77 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0011.sds • Ping Number: 22043 • Range to target: 21.77 US ft. • Fish Height: 29.00 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0011 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 3.75 US ft. • Target Height: 2.14 US ft. • Target Length: 4.91 US ft. • Target Shadow: 2.89 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Small Contact • Classification2: • Area: • Block: • Description:

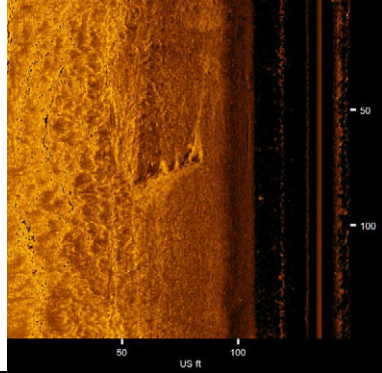
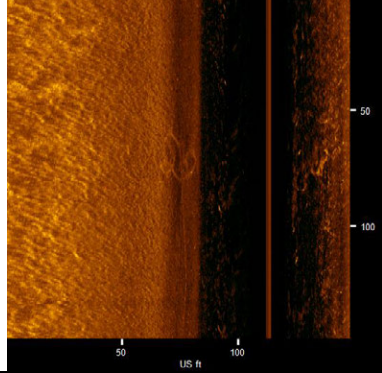
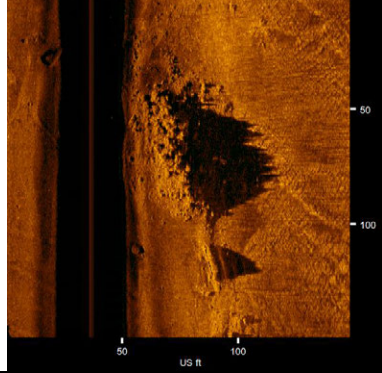
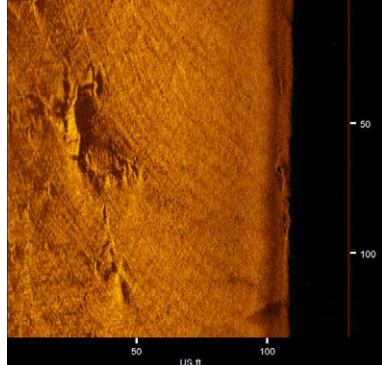
Target Image	Target Info	User Entered Info
	C0089 <ul style="list-style-type: none"> • Sonar Time at Target: 4/11/2017 11:36:20 PM • Click Position <ul style="list-style-type: none"> 34.1174386504 -77.9365170089 (WGS84) 34.1172671439 -77.9368074496 (NAD27LL) 34.1174386504 -77.9365170089 (Local LL) (X) 2321911.79 (Y) 135458.61 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170411pow1\2017APR11_0005.sds • Ping Number: 14267 • Range to target: 95.05 US ft. • Fish Height: 38.98 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR11_0005 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.36 US ft. • Target Height: 2.53 US ft. • Target Length: 31.82 US ft. • Target Shadow: 7.14 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0090 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 8:40:40 PM • Click Position <ul style="list-style-type: none"> 34.1164234819 -77.9349944430 (WGS84) 34.1162519604 -77.9352849467 (NAD27LL) 34.1164234819 -77.9349944430 (Local LL) (X) 2322376.61 (Y) 135094.10 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0005.sds • Ping Number: 19602 • Range to target: 61.24 US ft. • Fish Height: 36.59 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0005 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 3.28 US ft. • Target Height: 1.51 US ft. • Target Length: 12.64 US ft. • Target Shadow: 3.08 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0091 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 8:41:37 PM • Click Position <ul style="list-style-type: none"> 34.1154183256 -77.9349965086 (WGS84) 34.1152467904 -77.9352870151 (NAD27LL) 34.1154183256 -77.9349965086 (Local LL) (X) 2322379.91 (Y) 134728.29 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0005.sds • Ping Number: 20316 • Range to target: 88.49 US ft. • Fish Height: 33.51 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0005 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.03 US ft. • Target Height: 0.88 US ft. • Target Length: 7.19 US ft. • Target Shadow: 2.57 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0092 <ul style="list-style-type: none"> • Sonar Time at Target: 4/13/2017 1:50:00 AM • Click Position <ul style="list-style-type: none"> 34.1151992709 -77.9369342716 (WGS84) 34.1150277341 -77.9372247022 (NAD27LL) 34.1151992709 -77.9369342716 (Local LL) (X) 2321794.22 (Y) 134642.28 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0011.sds • Ping Number: 23594 • Range to target: 51.96 US ft. • Fish Height: 28.13 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0011 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 34.68 US ft. • Target Height: 0.00 US ft. • Target Length: 35.15 US ft. • Target Shadow: 0.00 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris or Outcrop • Classification2: • Area: • Block: • Description:

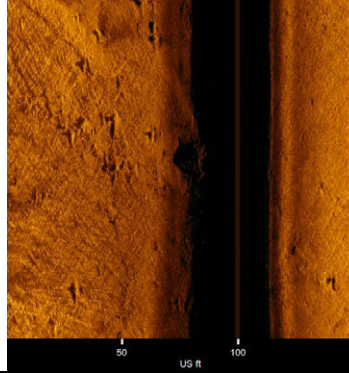
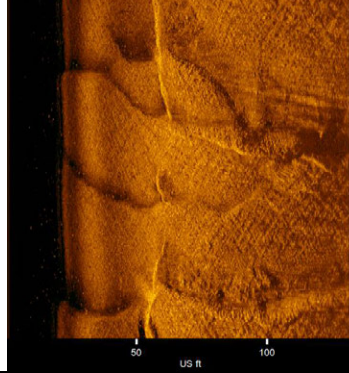
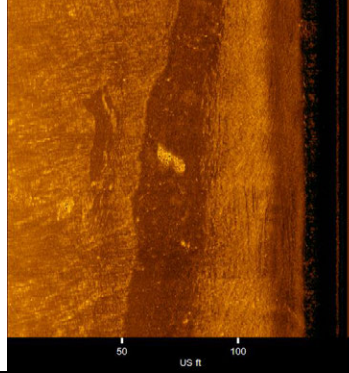
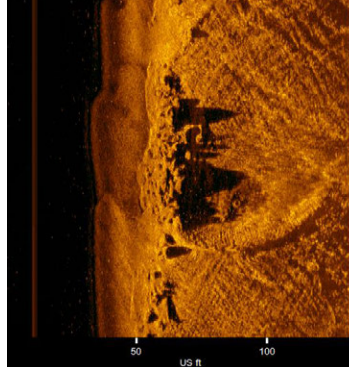
Target Image	Target Info	User Entered Info
	<p>C0093</p> <ul style="list-style-type: none"> • Sonar Time at Target: 4/9/2017 1:45:23 PM • Click Position <ul style="list-style-type: none"> 34.1143503195 -77.9367988846 (WGS84) 34.1141787711 -77.9370893230 (NAD27LL) 34.1143503195 -77.9367988846 (Local LL) (X) 2321838.51 (Y) 134333.76 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170409pow\2017APR09_0002.sds • Ping Number: 9107 • Range to target: 67.79 US ft. • Fish Height: 27.59 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR09_0002 • Water Depth: 0.00 US ft. 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> • Target Width: 1.15 US ft. • Target Height: 0.64 US ft. • Target Length: 114.69 US ft. • Target Shadow: 1.73 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	<p>C0094</p> <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 4:04:57 AM • Click Position <ul style="list-style-type: none"> 34.1131542406 -77.9349093208 (WGS84) 34.1129826745 -77.9351998372 (NAD27LL) 34.1131542406 -77.9349093208 (Local LL) (X) 2322415.14 (Y) 133904.61 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170411pow1\2017APR11_0009.sds • Ping Number: 30461 • Range to target: 85.00 US ft. • Fish Height: 33.36 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR11_0009 • Water Depth: 0.00 US ft. 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> • Target Width: 0.87 US ft. • Target Height: 1.99 US ft. • Target Length: 95.95 US ft. • Target Shadow: 5.79 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	<p>C0095</p> <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 8:44:41 PM • Click Position <ul style="list-style-type: none"> 34.1122080206 -77.9351103534 (WGS84) 34.1120364417 -77.9354008645 (NAD27LL) 34.1122080206 -77.9351103534 (Local LL) (X) 2322357.99 (Y) 133559.60 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0005.sds • Ping Number: 22584 • Range to target: 109.69 US ft. • Fish Height: 28.89 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0005 • Water Depth: 0.00 US ft. 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> • Target Width: 13.09 US ft. • Target Height: 2.43 US ft. • Target Length: 66.62 US ft. • Target Shadow: 10.44 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact - Poss Wreck • Classification2: • Area: • Block: • Description:
	<p>C0096</p> <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 2:46:19 PM • Click Position <ul style="list-style-type: none"> 34.1121662047 -77.9373386237 (WGS84) 34.1119946269 -77.9376290471 (NAD27LL) 34.1121662047 -77.9373386237 (Local LL) (X) 2321683.64 (Y) 133537.15 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0003.sds • Ping Number: 17134 • Range to target: 26.16 US ft. • Fish Height: 25.53 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0003 • Water Depth: 0.00 US ft. 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> • Target Width: 2.32 US ft. • Target Height: 2.22 US ft. • Target Length: 2.66 US ft. • Target Shadow: 3.48 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Small Contact • Classification2: • Area: • Block: • Description:

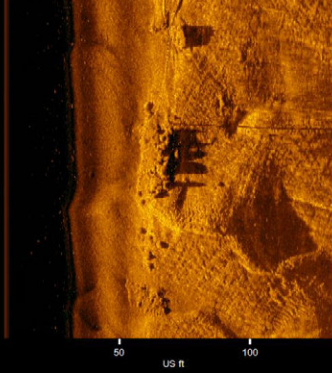
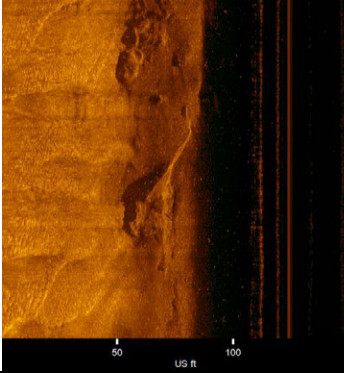
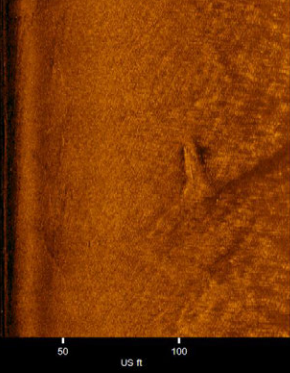
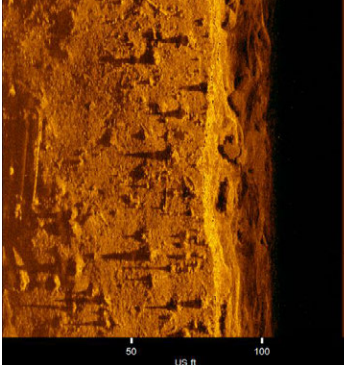
Target Image	Target Info	User Entered Info
	C0097 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 11:22:54 PM • Click Position <ul style="list-style-type: none"> 34.1121577223 -77.9349776335 (WGS84) 34.1119861426 -77.9352681501 (NAD27LL) 34.1121577223 -77.9349776335 (Local LL) (X) 2322398.36 (Y) 133541.72 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0009.sds • Ping Number: 21194 • Range to target: 39.12 US ft. • Fish Height: 8.11 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0009 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 11.46 US ft. • Target Height: 1.37 US ft. • Target Length: 94.60 US ft. • Target Shadow: 8.11 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Possible Wreck • Classification2: • Area: • Block: • Description:
	C0098 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 5:23:56 PM • Click Position <ul style="list-style-type: none"> 34.1120387560 -77.9353352263 (WGS84) 34.1118671750 -77.9356257290 (NAD27LL) 34.1120387560 -77.9353352263 (Local LL) (X) 2322290.58 (Y) 133497.27 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0002.sds • Ping Number: 7632 • Range to target: 31.59 US ft. • Fish Height: 24.53 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 4.83 US ft. • Target Height: 2.02 US ft. • Target Length: 5.76 US ft. • Target Shadow: 3.59 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Rectangular Contact • Classification2: • Area: • Block: • Description:
	C0099 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 5:23:44 PM • Click Position <ul style="list-style-type: none"> 34.1117883329 -77.9353062670 (WGS84) 34.1116167484 -77.9355967717 (NAD27LL) 34.1117883329 -77.9353062670 (Local LL) (X) 2322300.32 (Y) 133406.23 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0002.sds • Ping Number: 7457 • Range to target: 46.12 US ft. • Fish Height: 23.89 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 3.08 US ft. • Target Height: 1.23 US ft. • Target Length: 3.59 US ft. • Target Shadow: 2.82 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Two Unknown Objects • Classification2: • Area: • Block: • Description:
	C0100 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 5:23:33 PM • Click Position <ul style="list-style-type: none"> 34.1115516046 -77.9351652104 (WGS84) 34.1113800167 -77.9354557212 (NAD27LL) 34.1115516046 -77.9351652104 (Local LL) (X) 2322343.94 (Y) 133320.53 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0002.sds • Ping Number: 7291 • Range to target: 94.02 US ft. • Fish Height: 23.89 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 5.16 US ft. • Target Height: 3.36 US ft. • Target Length: 33.06 US ft. • Target Shadow: 15.90 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:

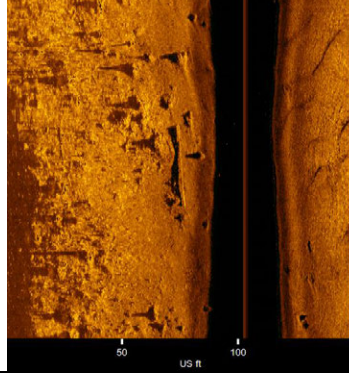
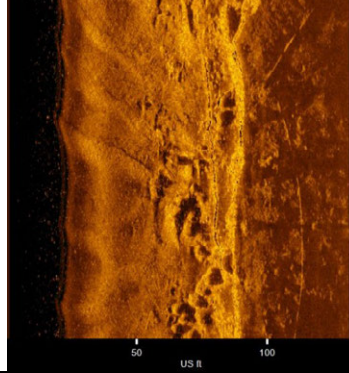
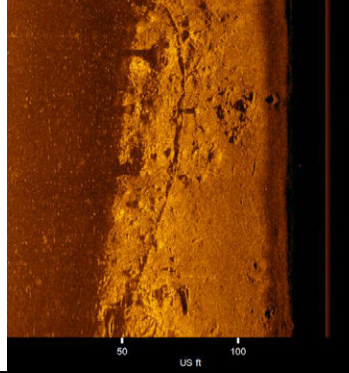
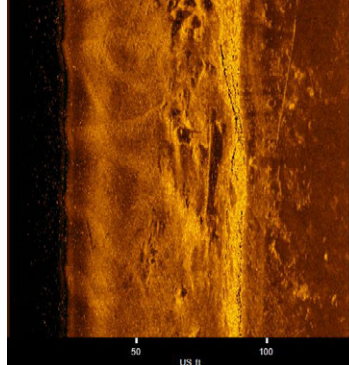
Target Image	Target Info	User Entered Info
	C0101 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 5:23:15 PM • Click Position <ul style="list-style-type: none"> 34.1112027919 -77.9353332979 (WGS84) 34.1110311994 -77.9356238032 (NAD27LL) 34.1112027919 -77.9353332979 (Local LL) (X) 2322294.42 (Y) 133193.04 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0002.sds • Ping Number: 7034 • Range to target: 46.73 US ft. • Fish Height: 23.35 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.79 US ft. • Target Height: 0.67 US ft. • Target Length: 3.96 US ft. • Target Shadow: 1.53 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Small Contact • Classification2: • Area: • Block: • Description:
	C0102 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 2:45:18 PM • Click Position <ul style="list-style-type: none"> 34.1111561099 -77.9374658549 (WGS84) 34.1109845185 -77.9377562762 (NAD27LL) 34.1111561099 -77.9374658549 (Local LL) (X) 2321649.07 (Y) 133169.14 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0003.sds • Ping Number: 16486 • Range to target: 44.32 US ft. • Fish Height: 25.10 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0003 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 9.60 US ft. • Target Height: 1.22 US ft. • Target Length: 14.77 US ft. • Target Shadow: 2.61 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0103 <ul style="list-style-type: none"> • Sonar Time at Target: 4/9/2017 4:42:17 PM • Click Position <ul style="list-style-type: none"> 34.1098031136 -77.9352876401 (WGS84) 34.1096315020 -77.9355781512 (NAD27LL) 34.1098031136 -77.9352876401 (Local LL) (X) 2322313.71 (Y) 132683.81 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170409pow\2017APR09_0005.sds • Ping Number: 8359 • Range to target: 34.67 US ft. • Fish Height: 12.73 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR09_0005 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 0.82 US ft. • Target Height: 0.48 US ft. • Target Length: 24.78 US ft. • Target Shadow: 1.44 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Wire Rope • Classification2: • Area: • Block: • Description:
	C0104 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 5:21:32 PM • Click Position <ul style="list-style-type: none"> 34.1090890049 -77.9353482646 (WGS84) 34.1089173837 -77.9356387754 (NAD27LL) 34.1090890049 -77.9353482646 (Local LL) (X) 2322298.14 (Y) 132423.73 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0002.sds • Ping Number: 5538 • Range to target: 94.31 US ft. • Fish Height: 25.17 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 6.41 US ft. • Target Height: 0.83 US ft. • Target Length: 18.57 US ft. • Target Shadow: 3.33 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:

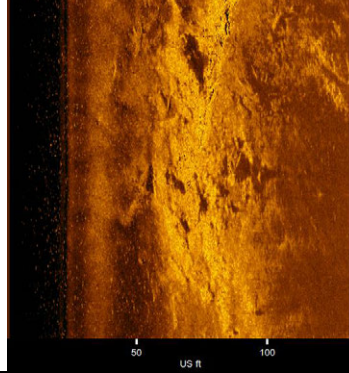
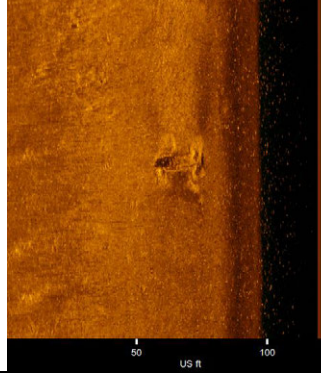
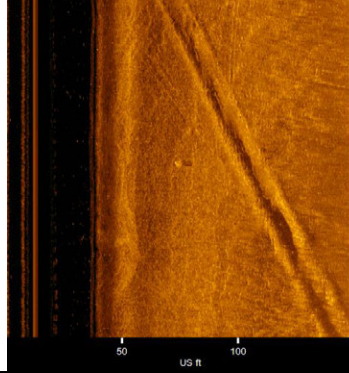
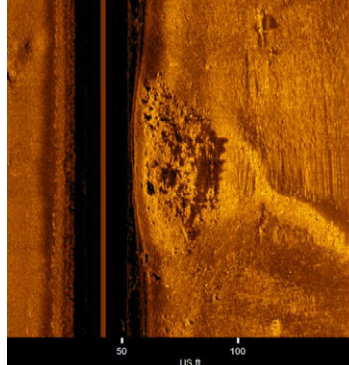
Target Image	Target Info	User Entered Info
	C0105 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 5:20:01 PM • Click Position <ul style="list-style-type: none"> 34.1072239339 -77.9354841863 (WGS84) 34.1070522873 -77.9357746970 (NAD27LL) 34.1072239339 -77.9354841863 (Local LL) (X) 2322264.28 (Y) 131744.53 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0002.sds • Ping Number: 4204 • Range to target: 72.37 US ft. • Fish Height: 26.33 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 5.67 US ft. • Target Height: 2.54 US ft. • Target Length: 21.69 US ft. • Target Shadow: 8.24 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0106 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 11:17:35 PM • Click Position <ul style="list-style-type: none"> 34.1055585991 -77.9354344989 (WGS84) 34.1053869298 -77.9357250164 (NAD27LL) 34.1055585991 -77.9354344989 (Local LL) (X) 2322285.82 (Y) 131138.63 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0009.sds • Ping Number: 17024 • Range to target: 55.14 US ft. • Fish Height: 10.14 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0009 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.91 US ft. • Target Height: 0.86 US ft. • Target Length: 9.83 US ft. • Target Shadow: 5.21 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0107 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 5:18:25 PM • Click Position <ul style="list-style-type: none"> 34.1052340295 -77.9355919536 (WGS84) 34.1050623559 -77.9358824658 (NAD27LL) 34.1052340295 -77.9355919536 (Local LL) (X) 2322239.42 (Y) 131020.00 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0002.sds • Ping Number: 2775 • Range to target: 67.67 US ft. • Fish Height: 24.40 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 29.74 US ft. • Target Height: 3.19 US ft. • Target Length: 42.80 US ft. • Target Shadow: 10.82 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:
	C0108 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 5:13:21 PM • Click Position <ul style="list-style-type: none"> 34.0990861209 -77.9350271211 (WGS84) 34.0989143629 -77.9353176732 (NAD27LL) 34.0990861209 -77.9350271211 (Local LL) (X) 2322434.41 (Y) 128784.43 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 45457 • Range to target: 59.26 US ft. • Fish Height: 21.32 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 12.32 US ft. • Target Height: 0.59 US ft. • Target Length: 11.49 US ft. • Target Shadow: 1.80 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris • Classification2: • Area: • Block: • Description:

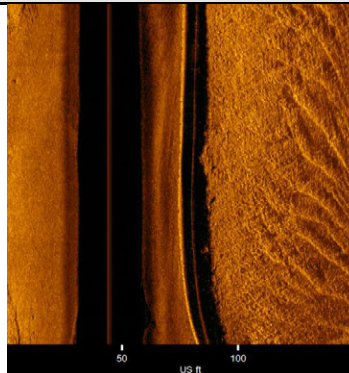
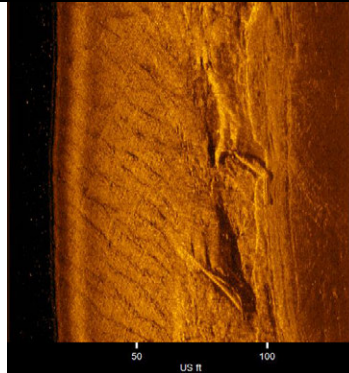
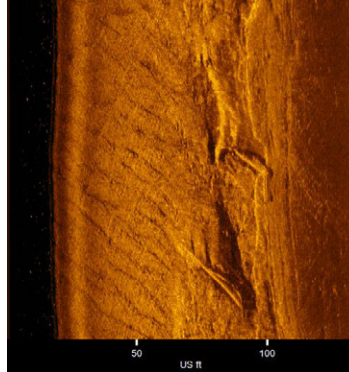
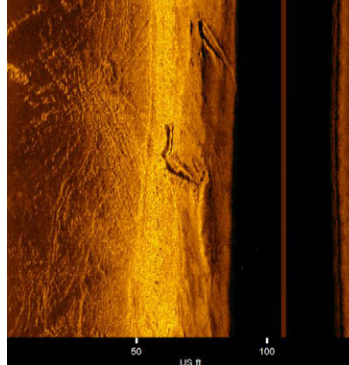
Target Image	Target Info	User Entered Info
	C0109 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 2:29:30 PM • Click Position <ul style="list-style-type: none"> 34.0959444559 -77.9366928840 (WGS84) 34.0957726566 -77.9369833795 (NAD27LL) 34.0959444559 -77.9366928840 (Local LL) (X) 2321942.35 (Y) 127635.68 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0003.sds • Ping Number: 6804 • Range to target: 52.96 US ft. • Fish Height: 32.29 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0003 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 11.01 US ft. • Target Height: 1.97 US ft. • Target Length: 32.66 US ft. • Target Shadow: 4.02 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0110 <ul style="list-style-type: none"> • Sonar Time at Target: 4/9/2017 4:54:07 PM • Click Position <ul style="list-style-type: none"> 34.0928235995 -77.9336629995 (WGS84) 34.0926517549 -77.9339536231 (NAD27LL) 34.0928235995 -77.9336629995 (Local LL) (X) 2322871.89 (Y) 126509.75 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170409pow\2017APR09_0005.sds • Ping Number: 19068 • Range to target: 27.00 US ft. • Fish Height: 28.07 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR09_0005 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 0.42 US ft. • Target Height: 0.63 US ft. • Target Length: 90.05 US ft. • Target Shadow: 0.90 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Wire Rope • Classification2: • Area: • Block: • Description:
	C0111 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 11:04:11 PM • Click Position <ul style="list-style-type: none"> 34.0884271708 -77.9328097134 (WGS84) 34.0882552653 -77.9331003830 (NAD27LL) 34.0884271708 -77.9328097134 (Local LL) (X) 2323147.44 (Y) 124912.53 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0009.sds • Ping Number: 6126 • Range to target: 34.59 US ft. • Fish Height: 14.75 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0009 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 29.13 US ft. • Target Height: 7.64 US ft. • Target Length: 61.99 US ft. • Target Shadow: 40.39 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris or Outcrop • Classification2: • Area: • Block: • Description:
	C0112 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 9:09:16 PM • Click Position <ul style="list-style-type: none"> 34.0876663517 -77.9330819354 (WGS84) 34.0874944361 -77.9333725965 (NAD27LL) 34.0876663517 -77.9330819354 (Local LL) (X) 2323067.99 (Y) 124634.76 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0005.sds • Ping Number: 40148 • Range to target: 83.04 US ft. • Fish Height: 23.38 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0005 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 22.38 US ft. • Target Height: 1.85 US ft. • Target Length: 44.37 US ft. • Target Shadow: 7.41 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris or Outcrop • Classification2: • Area: • Block: • Description:

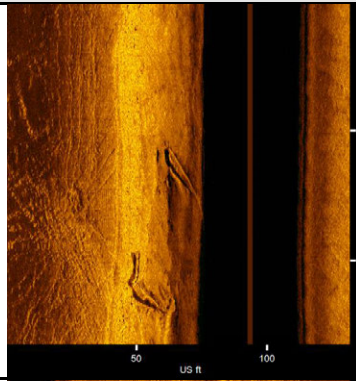
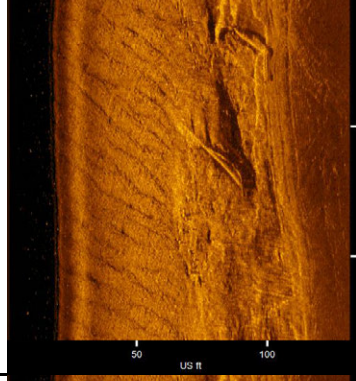
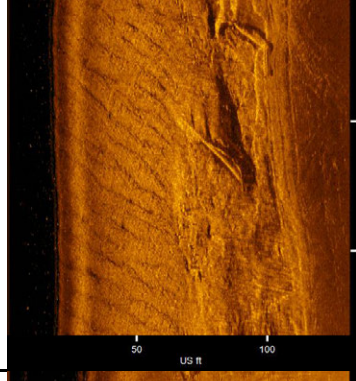
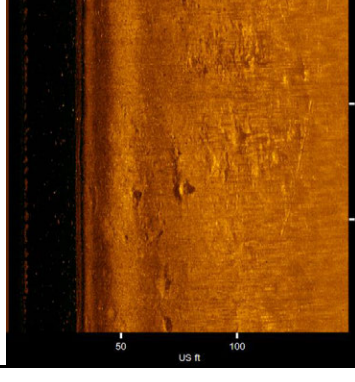
Target Image	Target Info	User Entered Info
	C0113 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 11:03:08 PM • Click Position <ul style="list-style-type: none"> 34.0871064353 -77.9328096405 (WGS84) 34.0869345117 -77.9331003138 (NAD27LL) 34.0871064353 -77.9328096405 (Local LL) (X) 2323152.63 (Y) 124431.88 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0009.sds • Ping Number: 5297 • Range to target: 15.67 US ft. • Fish Height: 15.18 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0009 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 7.76 US ft. • Target Height: 4.88 US ft. • Target Length: 18.41 US ft. • Target Shadow: 10.35 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0114 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 5:02:01 PM • Click Position <ul style="list-style-type: none"> 34.0858187460 -77.9329119896 (WGS84) 34.0856468050 -77.9332026626 (NAD27LL) 34.0858187460 -77.9329119896 (Local LL) (X) 2323126.68 (Y) 123962.91 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 35948 • Range to target: 114.55 US ft. • Fish Height: 22.35 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.86 US ft. • Target Height: 0.90 US ft. • Target Length: 14.22 US ft. • Target Shadow: 4.87 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0115 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 8:37:12 PM • Click Position <ul style="list-style-type: none"> 34.0839207486 -77.9343933676 (WGS84) 34.0837487831 -77.9346839879 (NAD27LL) 34.0839207486 -77.9343933676 (Local LL) (X) 2322685.53 (Y) 123267.36 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0009.sds • Ping Number: 14298 • Range to target: 72.21 US ft. • Fish Height: 20.31 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0009 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 5.43 US ft. • Target Height: 1.92 US ft. • Target Length: 13.72 US ft. • Target Shadow: 7.82 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0116 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:59:52 PM • Click Position <ul style="list-style-type: none"> 34.0833221309 -77.9327500336 (WGS84) 34.0831501556 -77.9330407200 (NAD27LL) 34.0833221309 -77.9327500336 (Local LL) (X) 2323185.49 (Y) 123054.85 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 34176 • Range to target: 48.23 US ft. • Fish Height: 22.99 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 20.10 US ft. • Target Height: 7.53 US ft. • Target Length: 59.39 US ft. • Target Shadow: 26.01 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris or Outcrop • Classification2: • Area: • Block: • Description:

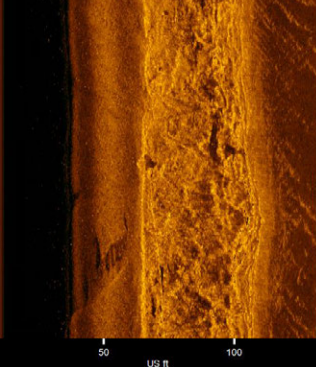
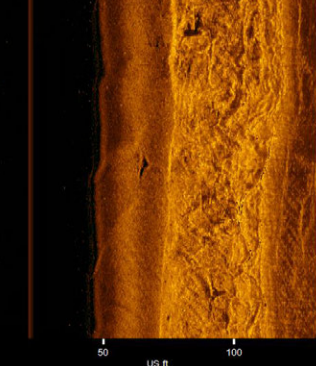
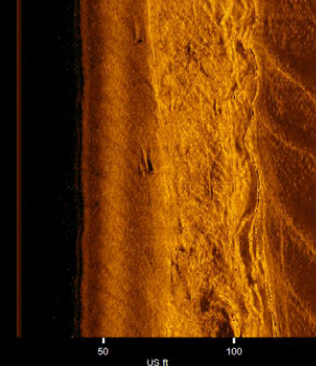
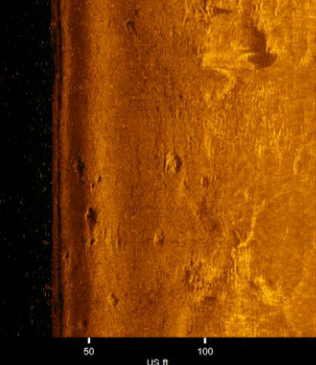
Target Image	Target Info	User Entered Info
	C0117 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:58:48 PM • Click Position <ul style="list-style-type: none"> 34.0821113043 -77.9325620169 (WGS84) 34.0819393122 -77.9328527142 (NAD27LL) 34.0821113043 -77.9325620169 (Local LL) (X) 2323247.16 (Y) 122614.80 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 33314 • Range to target: 53.33 US ft. • Fish Height: 26.84 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 10.89 US ft. • Target Height: 4.36 US ft. • Target Length: 28.56 US ft. • Target Shadow: 11.59 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris or Outcrop • Classification2: • Area: • Block: • Description:
	C0118 <ul style="list-style-type: none"> • Sonar Time at Target: 4/13/2017 2:21:23 AM • Click Position <ul style="list-style-type: none"> 34.0803522531 -77.9337763666 (WGS84) 34.0801802383 -77.9340670213 (NAD27LL) 34.0803522531 -77.9337763666 (Local LL) (X) 2322886.31 (Y) 121970.68 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0012.sds • Ping Number: 18967 • Range to target: 44.06 US ft. • Fish Height: 24.38 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0012 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 7.09 US ft. • Target Height: 4.64 US ft. • Target Length: 35.27 US ft. • Target Shadow: 11.83 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0119 <ul style="list-style-type: none"> • Sonar Time at Target: 4/13/2017 2:25:01 AM • Click Position <ul style="list-style-type: none"> 34.0764070379 -77.9345306173 (WGS84) 34.0762349700 -77.9348212537 (NAD27LL) 34.0764070379 -77.9345306173 (Local LL) (X) 2322673.32 (Y) 120532.44 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0012.sds • Ping Number: 21504 • Range to target: 103.30 US ft. • Fish Height: 22.65 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0012 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 7.60 US ft. • Target Height: 0.89 US ft. • Target Length: 19.44 US ft. • Target Shadow: 4.34 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Rectangular Contact • Classification2: • Area: • Block: • Description:
	C0120 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 9:22:07 PM • Click Position <ul style="list-style-type: none"> 34.0751665854 -77.9317528538 (WGS84) 34.0749944976 -77.9320436025 (NAD27LL) 34.0751665854 -77.9317528538 (Local LL) (X) 2323519.38 (Y) 120090.04 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0006.sds • Ping Number: 4568 • Range to target: 115.02 US ft. • Fish Height: 28.51 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0006 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.54 US ft. • Target Height: 0.90 US ft. • Target Length: 36.55 US ft. • Target Shadow: 3.85 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:

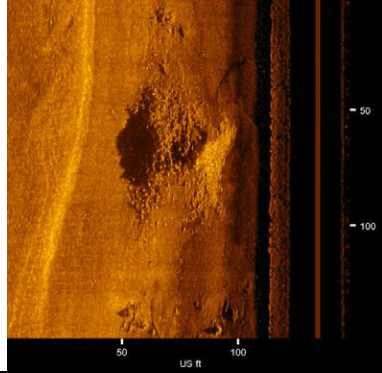
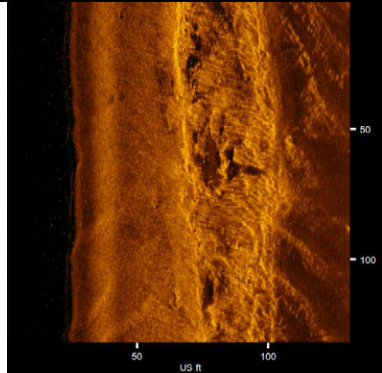
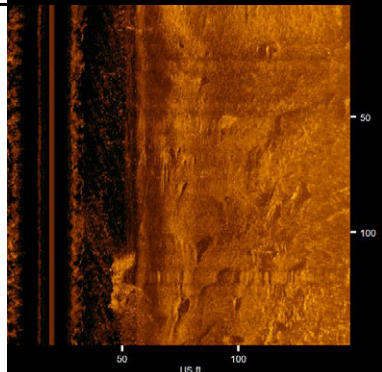
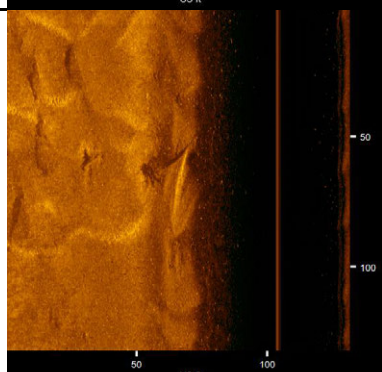
Target Image	Target Info	User Entered Info
	C0121 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 10:52:55 PM • Click Position <ul style="list-style-type: none"> 34.0751515101 -77.9316820217 (WGS84) 34.0749794220 -77.9319727732 (NAD27LL) 34.0751515101 -77.9316820217 (Local LL) (X) 2323540.89 (Y) 120084.79 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0008.sds • Ping Number: 39693 • Range to target: 24.70 US ft. • Fish Height: 13.16 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0008 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.74 US ft. • Target Height: 1.97 US ft. • Target Length: 34.13 US ft. • Target Shadow: 4.92 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: • Classification2: • Area: • Block: • Description:
	C0122 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:49:56 PM • Click Position <ul style="list-style-type: none"> 34.0720913761 -77.9328053166 (WGS84) 34.0719192474 -77.9330960329 (NAD27LL) 34.0720913761 -77.9328053166 (Local LL) (X) 2323212.69 (Y) 118967.45 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 26412 • Range to target: 66.93 US ft. • Fish Height: 23.82 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 28.44 US ft. • Target Height: 2.57 US ft. • Target Length: 46.26 US ft. • Target Shadow: 8.58 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris or Outcrop • Classification2: • Area: • Block: • Description:
	C0123 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 10:49:53 PM • Click Position <ul style="list-style-type: none"> 34.0719221166 -77.9327518726 (WGS84) 34.0717499855 -77.9330425914 (NAD27LL) 34.0719221166 -77.9327518726 (Local LL) (X) 2323229.53 (Y) 118906.03 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0008.sds • Ping Number: 37579 • Range to target: 61.83 US ft. • Fish Height: 17.78 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0008 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 0.64 US ft. • Target Height: 0.76 US ft. • Target Length: 140.38 US ft. • Target Shadow: 2.89 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0124 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:49:35 PM • Click Position <ul style="list-style-type: none"> 34.0717469435 -77.9328913686 (WGS84) 34.0715748102 -77.9331820825 (NAD27LL) 34.0717469435 -77.9328913686 (Local LL) (X) 2323187.97 (Y) 118841.82 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 26160 • Range to target: 74.17 US ft. • Fish Height: 22.86 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.31 US ft. • Target Height: 1.58 US ft. • Target Length: 41.41 US ft. • Target Shadow: 5.78 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Pipe • Classification2: • Area: • Block: • Description:

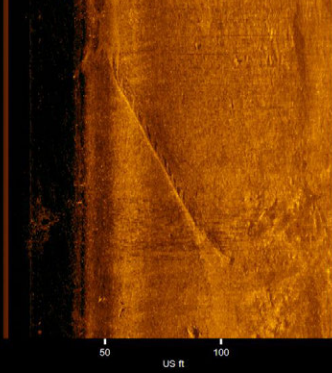
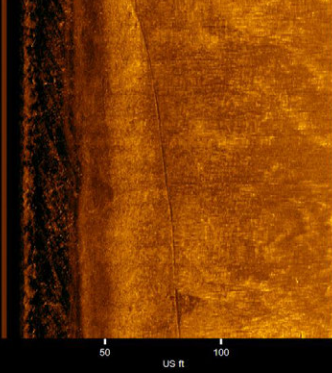
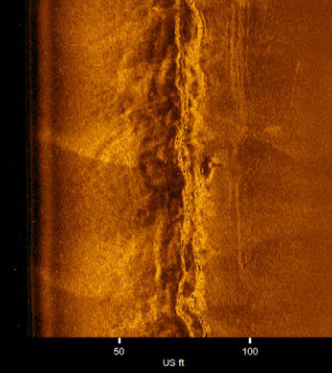
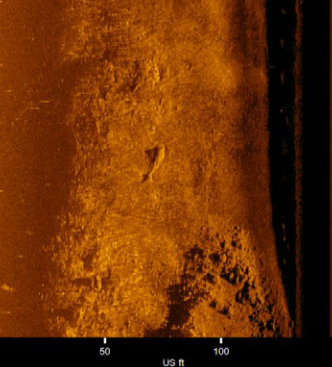
Target Image	Target Info	User Entered Info
	C0125 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:48:10 PM • Click Position <ul style="list-style-type: none"> 34.0702554834 -77.9332719226 (WGS84) 34.0700833302 -77.9335626258 (NAD27LL) 34.0702554834 -77.9332719226 (Local LL) (X) 2323078.55 (Y) 118297.79 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 25080 • Range to target: 83.70 US ft. • Fish Height: 23.24 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 33.98 US ft. • Target Height: 2.39 US ft. • Target Length: 43.58 US ft. • Target Shadow: 9.97 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:
	C0126 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:47:12 PM • Click Position <ul style="list-style-type: none"> 34.0693252235 -77.9339536864 (WGS84) 34.0691530584 -77.9342443657 (NAD27LL) 34.0693252235 -77.9339536864 (Local LL) (X) 2322875.71 (Y) 117957.02 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 24338 • Range to target: 48.97 US ft. • Fish Height: 22.83 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 6.64 US ft. • Target Height: 2.41 US ft. • Target Length: 10.98 US ft. • Target Shadow: 6.39 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0127 <ul style="list-style-type: none"> • Sonar Time at Target: 4/13/2017 2:33:18 AM • Click Position <ul style="list-style-type: none"> 34.0670546411 -77.9368596822 (WGS84) 34.0668824482 -77.9371502544 (NAD27LL) 34.0670546411 -77.9368596822 (Local LL) (X) 2322004.45 (Y) 117121.25 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0012.sds • Ping Number: 27549 • Range to target: 56.82 US ft. • Fish Height: 23.37 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0012 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.03 US ft. • Target Height: 1.45 US ft. • Target Length: 2.94 US ft. • Target Shadow: 4.05 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Crab Pot • Classification2: • Area: • Block: • Description:
	C0128 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 1:57:11 PM • Click Position <ul style="list-style-type: none"> 34.0646337528 -77.9375686531 (WGS84) 34.0644615278 -77.9378592045 (NAD27LL) 34.0646337528 -77.9375686531 (Local LL) (X) 2321799.16 (Y) 116237.91 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0002.sds • Ping Number: 23360 • Range to target: 27.20 US ft. • Fish Height: 13.27 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 35.51 US ft. • Target Height: 3.49 US ft. • Target Length: 77.05 US ft. • Target Shadow: 10.79 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris or Outcrop • Classification2: • Area: • Block: • Description:

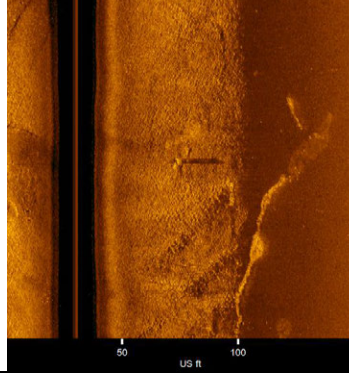
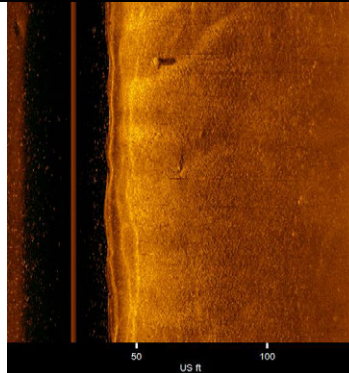
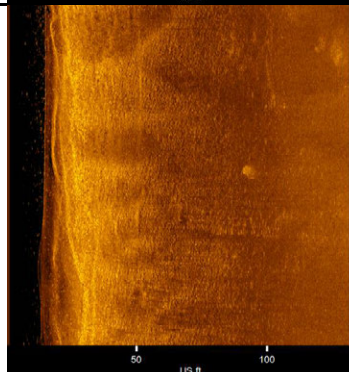
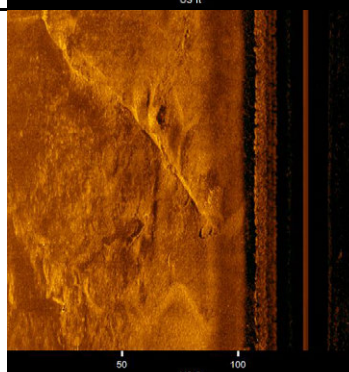
Target Image	Target Info	User Entered Info
	C0129 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 10:43:52 PM • Click Position <ul style="list-style-type: none"> 34.0643546941 -77.9343880315 (WGS84) 34.0641824616 -77.9346787080 (NAD27LL) 34.0643546941 -77.9343880315 (Local LL) (X) 2322763.59 (Y) 116146.68 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0008.sds • Ping Number: 33671 • Range to target: 26.67 US ft. • Fish Height: 13.74 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0008 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.45 US ft. • Target Height: 3.40 US ft. • Target Length: 148.28 US ft. • Target Shadow: 9.85 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0130 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:40:25 PM • Click Position <ul style="list-style-type: none"> 34.0620858418 -77.9353990175 (WGS84) 34.0619135795 -77.9356896609 (NAD27LL) 34.0620858418 -77.9353990175 (Local LL) (X) 2322466.24 (Y) 115317.69 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 19134 • Range to target: 91.81 US ft. • Fish Height: 20.30 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.92 US ft. • Target Height: 1.50 US ft. • Target Length: 15.78 US ft. • Target Shadow: 7.50 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0131 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 9:34:06 PM • Click Position <ul style="list-style-type: none"> 34.0620803460 -77.9354576396 (WGS84) 34.0619025879 -77.9358069007 (NAD27LL) 34.0620803460 -77.9354576396 (Local LL) (X) 2322448.50 (Y) 115315.49 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0006.sds • Ping Number: 14127 • Range to target: 35.92 US ft. • Fish Height: 20.17 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0006 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.46 US ft. • Target Height: 1.50 US ft. • Target Length: 7.89 US ft. • Target Shadow: 7.50 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description: Rationalized contact created from contacts: C0034, C0034_2
	C0132 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 9:34:06 PM • Click Position <ul style="list-style-type: none"> 34.0620748502 -77.9355162618 (WGS84) 34.0619025879 -77.9358069007 (NAD27LL) 34.0620748502 -77.9355162618 (Local LL) (X) 2322430.77 (Y) 115313.30 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0006.sds • Ping Number: 14127 • Range to target: 35.92 US ft. • Fish Height: 20.17 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0006 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 0.00 US ft. • Target Height: 0.00 US ft. • Target Length: 0.00 US ft. • Target Shadow: 0.00 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: • Classification2: • Area: • Block: • Description:

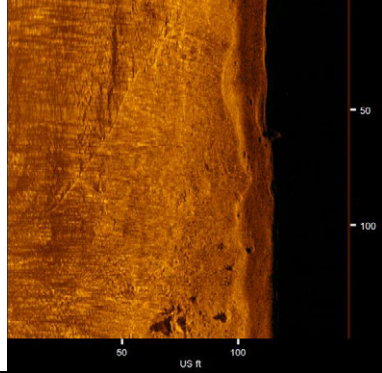
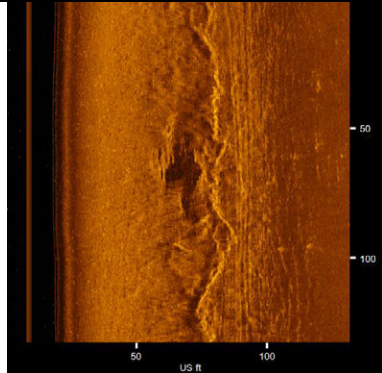
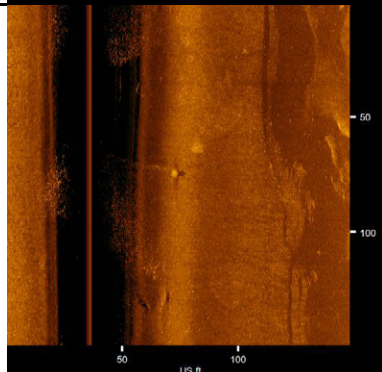
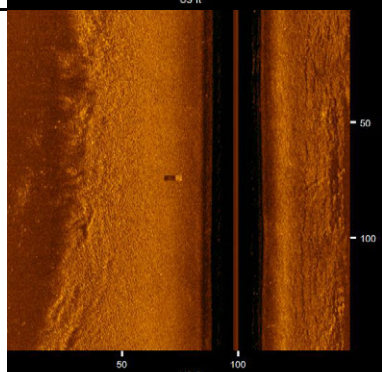
Target Image	Target Info	User Entered Info
	C0133 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 9:34:14 PM • Click Position <ul style="list-style-type: none"> 34.0619587421 -77.9356007275 (WGS84) 34.0617864783 -77.9358913635 (NAD27LL) 34.0619587421 -77.9356007275 (Local LL) (X) 2322405.64 (Y) 115270.77 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0006.sds • Ping Number: 14218 • Range to target: 20.98 US ft. • Fish Height: 18.63 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0006 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 0.00 US ft. • Target Height: 0.00 US ft. • Target Length: 0.00 US ft. • Target Shadow: 0.00 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: • Classification2: • Area: • Block: • Description:
	C0134 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 9:34:14 PM • Click Position <ul style="list-style-type: none"> 34.0619571561 -77.9355392952 (WGS84) 34.0617864783 -77.9358913635 (NAD27LL) 34.0619571561 -77.9355392952 (Local LL) (X) 2322424.25 (Y) 115270.40 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0006.sds • Ping Number: 14218 • Range to target: 20.98 US ft. • Fish Height: 18.63 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0006 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.37 US ft. • Target Height: 1.89 US ft. • Target Length: 19.64 US ft. • Target Shadow: 8.27 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description: Rationalized contact created from contacts: C0033, C0033_2
	C0135 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:40:18 PM • Click Position <ul style="list-style-type: none"> 34.0619555702 -77.9354778628 (WGS84) 34.0617833063 -77.9357685036 (NAD27LL) 34.0619555702 -77.9354778628 (Local LL) (X) 2322442.86 (Y) 115270.02 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 19043 • Range to target: 80.61 US ft. • Fish Height: 20.94 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.75 US ft. • Target Height: 1.89 US ft. • Target Length: 39.28 US ft. • Target Shadow: 8.27 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0136 <ul style="list-style-type: none"> • Sonar Time at Target: 4/13/2017 2:38:05 AM • Click Position <ul style="list-style-type: none"> 34.0612156346 -77.9385984406 (WGS84) 34.0610433643 -77.9388889617 (NAD27LL) 34.0612156346 -77.9385984406 (Local LL) (X) 2321500.56 (Y) 114990.61 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0012.sds • Ping Number: 31351 • Range to target: 122.27 US ft. • Fish Height: 30.00 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0012 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.74 US ft. • Target Height: 0.21 US ft. • Target Length: 84.20 US ft. • Target Shadow: 0.87 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:

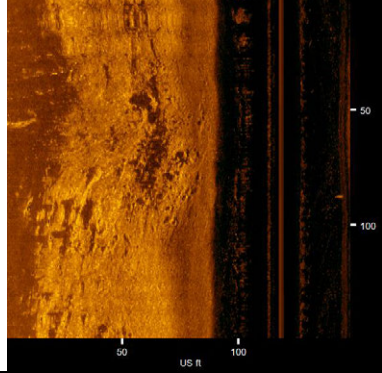
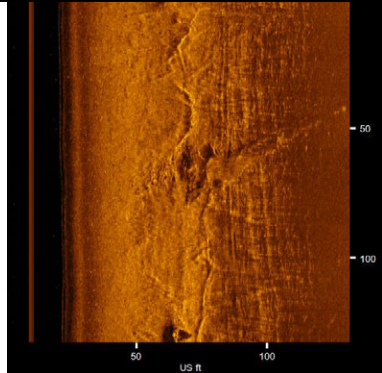
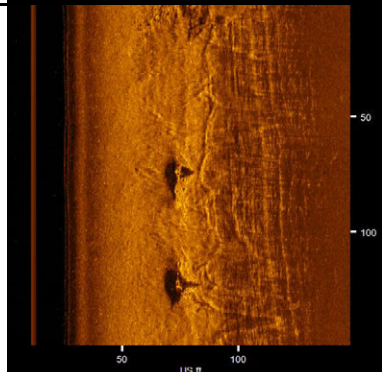
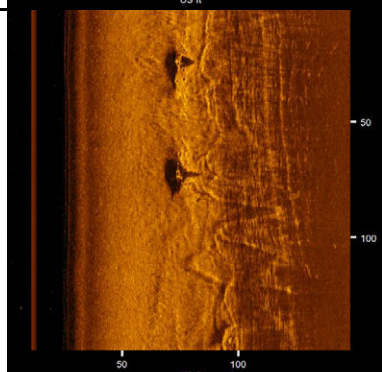
Target Image	Target Info	User Entered Info
	C0137 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:37:31 PM • Click Position <ul style="list-style-type: none"> 34.0588487641 -77.9364196726 (WGS84) 34.0586764589 -77.9367102855 (NAD27LL) 34.0588487641 -77.9364196726 (Local LL) (X) 2322169.71 (Y) 114136.29 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 16751 • Range to target: 47.63 US ft. • Fish Height: 27.35 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 5.84 US ft. • Target Height: 1.80 US ft. • Target Length: 4.38 US ft. • Target Shadow: 3.88 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Rectangular Contact • Classification2: • Area: • Block: • Description:
	C0138 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:37:16 PM • Click Position <ul style="list-style-type: none"> 34.0585210644 -77.9365443815 (WGS84) 34.0583487549 -77.9368349905 (NAD27LL) 34.0585210644 -77.9365443815 (Local LL) (X) 2322133.22 (Y) 114016.63 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 16507 • Range to target: 33.47 US ft. • Fish Height: 26.97 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.08 US ft. • Target Height: 1.23 US ft. • Target Length: 8.82 US ft. • Target Shadow: 2.06 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0139 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:36:59 PM • Click Position <ul style="list-style-type: none"> 34.0581474910 -77.9365984047 (WGS84) 34.0579751765 -77.9368890127 (NAD27LL) 34.0581474910 -77.9365984047 (Local LL) (X) 2322118.31 (Y) 113880.50 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 16242 • Range to target: 41.63 US ft. • Fish Height: 26.33 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.31 US ft. • Target Height: 1.18 US ft. • Target Length: 13.23 US ft. • Target Shadow: 2.32 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0140 <ul style="list-style-type: none"> • Sonar Time at Target: 4/13/2017 2:41:16 AM • Click Position <ul style="list-style-type: none"> 34.0572423482 -77.9395165188 (WGS84) 34.0570700249 -77.9398070156 (NAD27LL) 34.0572423482 -77.9395165188 (Local LL) (X) 2321237.93 (Y) 113541.63 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0012.sds • Ping Number: 33899 • Range to target: 79.10 US ft. • Fish Height: 33.61 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0012 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 5.51 US ft. • Target Height: 0.99 US ft. • Target Length: 9.56 US ft. • Target Shadow: 2.61 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:

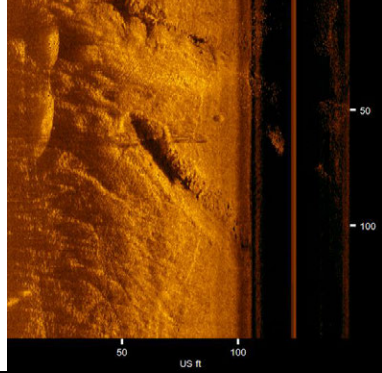
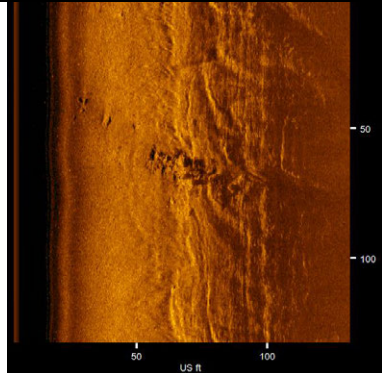
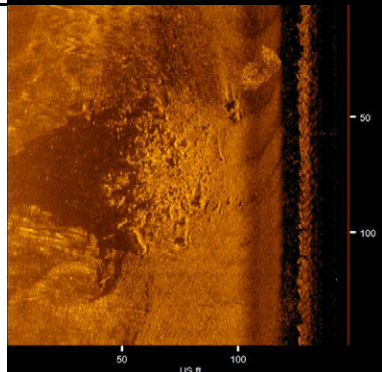
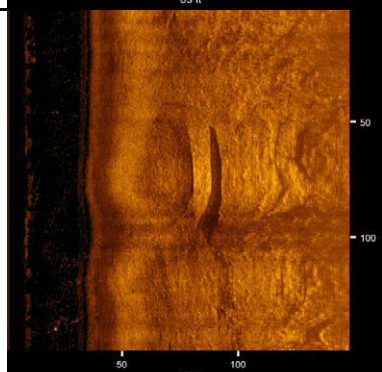
Target Image	Target Info	User Entered Info
	<p>C0141</p> <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 1:49:38 PM • Click Position 34.0568126020 -77.9398667132 (WGS84) 34.0566402733 -77.9401571975 (NAD27LL) 34.0568126020 -77.9398667132 (Local LL) (X) 2321133.52 (Y) 113384.10 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0002.sds • Ping Number: 18240 • Range to target: 52.54 US ft. • Fish Height: 27.55 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0002 • Water Depth: 0.00 US ft. 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> • Target Width: 39.75 US ft. • Target Height: 6.64 US ft. • Target Length: 70.61 US ft. • Target Shadow: 18.83 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris or Outcrop • Classification2: • Area: • Block: • Description:
	<p>C0142</p> <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 9:39:36 PM • Click Position 34.0567470720 -77.9369219054 (WGS84) 34.0565764795 -77.9372701104 (NAD27LL) 34.0567470720 -77.9369219054 (Local LL) (X) 2322025.78 (Y) 113369.79 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0006.sds • Ping Number: 18004 • Range to target: 25.27 US ft. • Fish Height: 19.53 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0006 • Water Depth: 0.00 US ft. 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> • Target Width: 1.41 US ft. • Target Height: 4.24 US ft. • Target Length: 4.48 US ft. • Target Shadow: 15.13 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description: Rationalized contact created from contacts: C0029, C0029_2
	<p>C0143</p> <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 9:05:36 PM • Click Position 34.0536037454 -77.9405163283 (WGS84) 34.0534313739 -77.9408067967 (NAD27LL) 34.0536037454 -77.9405163283 (Local LL) (X) 2320949.21 (Y) 112214.19 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0009.sds • Ping Number: 33855 • Range to target: 41.11 US ft. • Fish Height: 35.39 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0009 • Water Depth: 0.00 US ft. 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> • Target Width: 16.85 US ft. • Target Height: 1.26 US ft. • Target Length: 23.32 US ft. • Target Shadow: 2.00 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:
	<p>C0144</p> <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:32:37 PM • Click Position 34.0529130220 -77.9382452760 (WGS84) 34.0527406382 -77.9385358348 (NAD27LL) 34.0529130220 -77.9382452760 (Local LL) (X) 2321639.85 (Y) 111970.17 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 12401 • Range to target: 27.95 US ft. • Fish Height: 25.17 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> • Target Width: 16.92 US ft. • Target Height: 3.90 US ft. • Target Length: 34.61 US ft. • Target Shadow: 6.90 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:

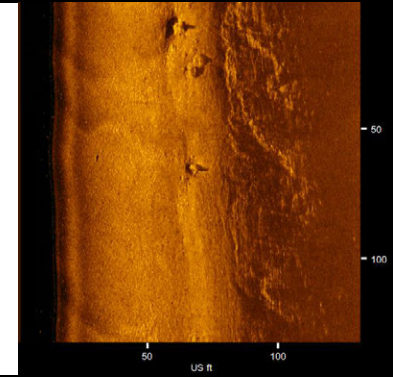
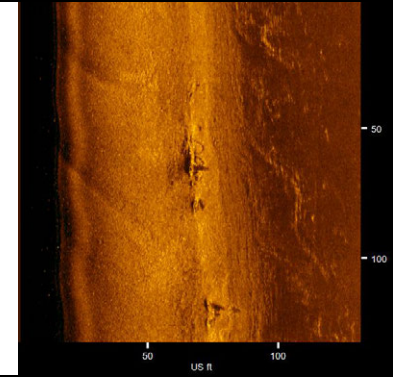
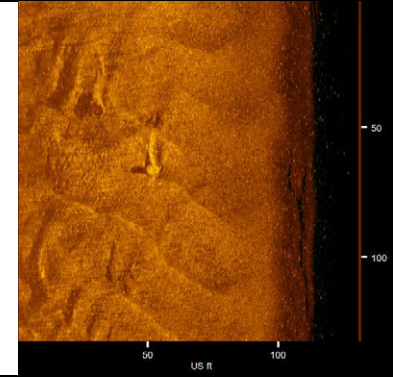
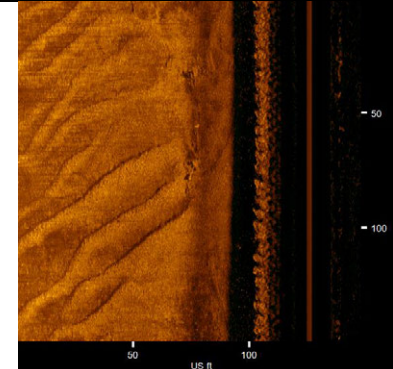
Target Image	Target Info	User Entered Info
	C0145 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 1:43:43 PM • Click Position <ul style="list-style-type: none"> 34.0507160939 -77.9411308542 (WGS84) 34.0505436839 -77.9414213070 (NAD27LL) 34.0507160939 -77.9411308542 (Local LL) (X) 2320774.27 (Y) 111161.29 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0002.sds • Ping Number: 14331 • Range to target: 57.94 US ft. • Fish Height: 33.87 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.45 US ft. • Target Height: 0.72 US ft. • Target Length: 93.11 US ft. • Target Shadow: 1.45 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0146 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 9:09:12 PM • Click Position <ul style="list-style-type: none"> 34.0497514940 -77.9415955967 (WGS84) 34.0495790715 -77.9418860342 (NAD27LL) 34.0497514940 -77.9415955967 (Local LL) (X) 2320637.23 (Y) 110808.74 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0009.sds • Ping Number: 36360 • Range to target: 59.35 US ft. • Fish Height: 33.95 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0009 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 0.58 US ft. • Target Height: 0.43 US ft. • Target Length: 145.87 US ft. • Target Shadow: 0.87 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Wire Rope • Classification2: • Area: • Block: • Description:
	C0147 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:30:02 PM • Click Position <ul style="list-style-type: none"> 34.0495402405 -77.9387457396 (WGS84) 34.0493678114 -77.9390362887 (NAD27LL) 34.0495402405 -77.9387457396 (Local LL) (X) 2321501.37 (Y) 110741.08 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 9993 • Range to target: 81.03 US ft. • Fish Height: 23.89 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.80 US ft. • Target Height: 1.04 US ft. • Target Length: 1.29 US ft. • Target Shadow: 3.86 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Small Contact • Classification2: • Area: • Block: • Description:
	C0148 <ul style="list-style-type: none"> • Sonar Time at Target: 4/14/2017 2:14:03 PM • Click Position <ul style="list-style-type: none"> 34.0479633247 -77.9416005595 (WGS84) 34.0477908778 -77.9418910020 (NAD27LL) 34.0479633247 -77.9416005595 (Local LL) (X) 2320642.67 (Y) 110157.95 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170414POW\2017APR14_0001.sds • Ping Number: 870 • Range to target: 71.44 US ft. • Fish Height: 26.54 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR14_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 3.63 US ft. • Target Height: 2.30 US ft. • Target Length: 15.11 US ft. • Target Shadow: 7.24 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:

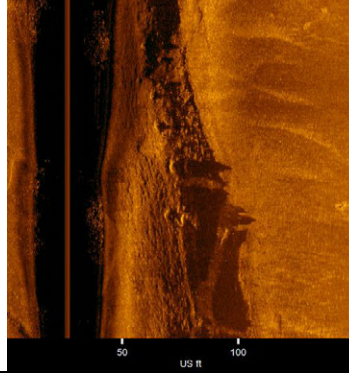
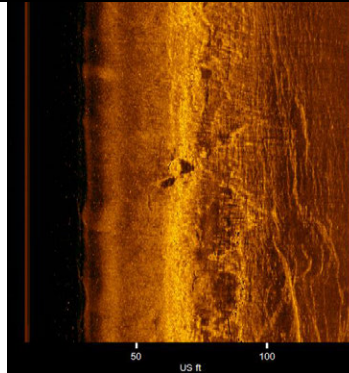
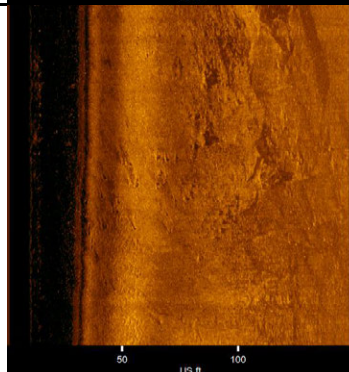
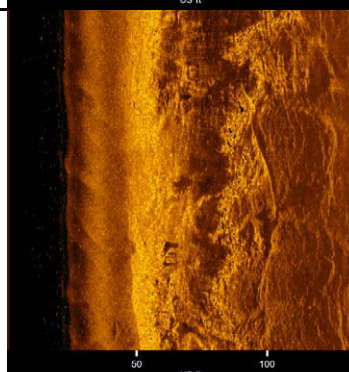
Target Image	Target Info	User Entered Info
	<p>C0149</p> <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 3:25:44 PM • Click Position <ul style="list-style-type: none"> 34.0472173746 -77.9391479494 (WGS84) 34.0470449144 -77.9394384896 (NAD27LL) 34.0472173746 -77.9391479494 (Local LL) (X) 2321388.56 (Y) 109894.41 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0001.sds • Ping Number: 910 • Range to target: 43.53 US ft. • Fish Height: 7.34 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0001 • Water Depth: 0.00 US ft. 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> • Target Width: 2.61 US ft. • Target Height: 2.21 US ft. • Target Length: 4.97 US ft. • Target Shadow: 19.04 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	<p>C0150</p> <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:28:05 PM • Click Position <ul style="list-style-type: none"> 34.0471864664 -77.9392380166 (WGS84) 34.0470140060 -77.9395285533 (NAD27LL) 34.0471864664 -77.9392380166 (Local LL) (X) 2321361.40 (Y) 109882.87 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 8222 • Range to target: 35.87 US ft. • Fish Height: 19.01 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> • Target Width: 1.30 US ft. • Target Height: 0.47 US ft. • Target Length: 1.55 US ft. • Target Shadow: 1.02 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Small Contact • Classification2: • Area: • Block: • Description:
	<p>C0151</p> <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:27:45 PM • Click Position <ul style="list-style-type: none"> 34.0467136993 -77.9390444785 (WGS84) 34.0465412322 -77.9393350242 (NAD27LL) 34.0467136993 -77.9390444785 (Local LL) (X) 2321421.86 (Y) 109711.44 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 7900 • Range to target: 90.82 US ft. • Fish Height: 19.22 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> • Target Width: 3.99 US ft. • Target Height: 0.77 US ft. • Target Length: 6.68 US ft. • Target Shadow: 3.85 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	<p>C0152</p> <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 1:39:59 PM • Click Position <ul style="list-style-type: none"> 34.0465617340 -77.9419848127 (WGS84) 34.0463892686 -77.9422752444 (NAD27LL) 34.0465617340 -77.9419848127 (Local LL) (X) 2320531.70 (Y) 109646.63 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0002.sds • Ping Number: 11647 • Range to target: 47.69 US ft. • Fish Height: 26.45 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0002 • Water Depth: 0.00 US ft. 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> • Target Width: 1.84 US ft. • Target Height: 0.94 US ft. • Target Length: 110.93 US ft. • Target Shadow: 2.01 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Wire Rope • Classification2: • Area: • Block: • Description:

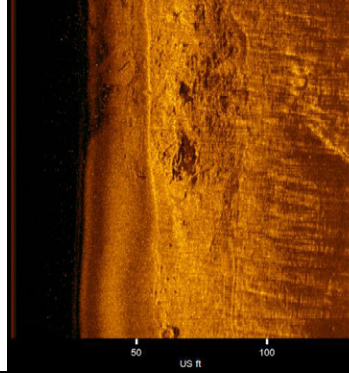
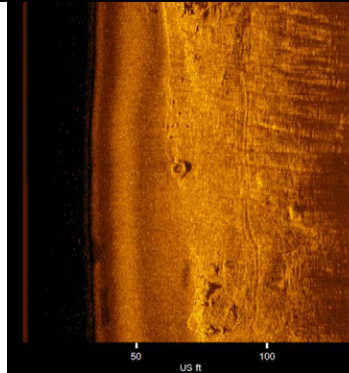
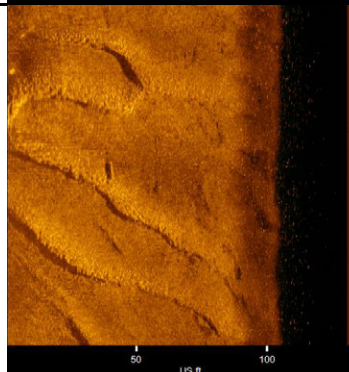
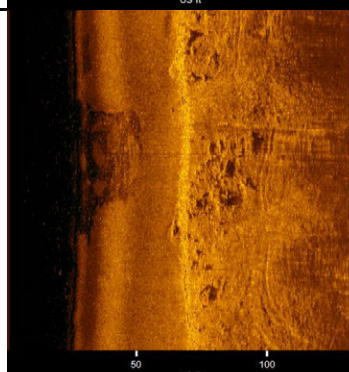
Target Image	Target Info	User Entered Info
	C0153 <ul style="list-style-type: none"> • Sonar Time at Target: 4/9/2017 12:46:13 PM • Click Position <ul style="list-style-type: none"> 34.0450430017 -77.9416566625 (WGS84) 34.0448705153 -77.9419471113 (NAD27LL) 34.0450430017 -77.9416566625 (Local LL) • (X) 2320637.00 (Y) 109094.97 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170409pow\2017APR09_0001.sds • Ping Number: 7347 • Range to target: 107.45 US ft. • Fish Height: 33.21 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR09_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.22 US ft. • Target Height: 0.58 US ft. • Target Length: 101.41 US ft. • Target Shadow: 2.01 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Wire Rope • Classification2: • Area: • Block: • Description:
	C0154 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:25:58 PM • Click Position <ul style="list-style-type: none"> 34.0444673075 -77.9391495825 (WGS84) 34.0442948100 -77.9394401306 (NAD27LL) 34.0444673075 -77.9391495825 (Local LL) • (X) 2321398.76 (Y) 108893.56 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 6294 • Range to target: 55.42 US ft. • Fish Height: 13.37 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 13.18 US ft. • Target Height: 2.00 US ft. • Target Length: 35.79 US ft. • Target Shadow: 10.04 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0155 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 3:28:00 PM • Click Position <ul style="list-style-type: none"> 34.0442999440 -77.9391653988 (WGS84) 34.0441274442 -77.9394559467 (NAD27LL) 34.0442999440 -77.9391653988 (Local LL) • (X) 2321394.62 (Y) 108832.60 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0001.sds • Ping Number: 2750 • Range to target: 35.14 US ft. • Fish Height: 14.69 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.88 US ft. • Target Height: 1.85 US ft. • Target Length: 3.12 US ft. • Target Shadow: 5.48 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Crab Pot • Classification2: • Area: • Block: • Description:
	C0156 <ul style="list-style-type: none"> • Sonar Time at Target: 4/9/2017 5:32:03 PM • Click Position <ul style="list-style-type: none"> 34.0442991882 -77.9387696052 (WGS84) 34.0441266878 -77.9390601685 (NAD27LL) 34.0442991882 -77.9387696052 (Local LL) • (X) 2321514.53 (Y) 108833.61 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170409pow\2017APR09_0005.sds • Ping Number: 50099 • Range to target: 22.62 US ft. • Fish Height: 10.28 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR09_0005 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.30 US ft. • Target Height: 1.69 US ft. • Target Length: 2.88 US ft. • Target Shadow: 4.89 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Crab Pot • Classification2: • Area: • Block: • Description:

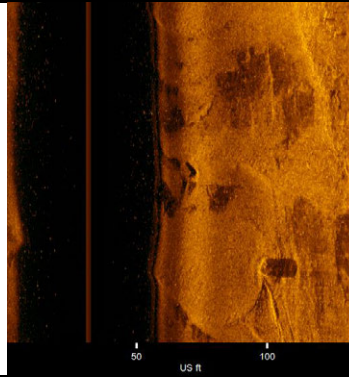
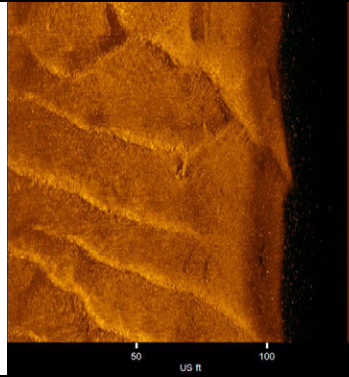
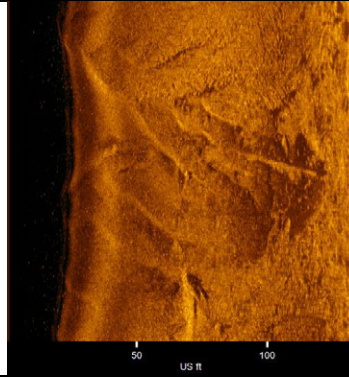
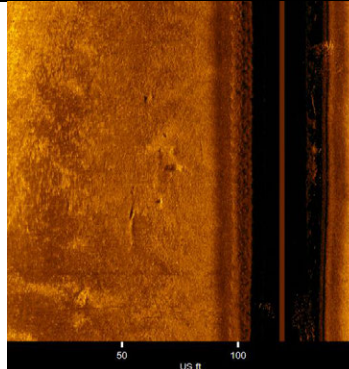
Target Image	Target Info	User Entered Info
	C0157 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 9:14:14 PM • Click Position <ul style="list-style-type: none"> 34.0440898669 -77.9415752896 (WGS84) 34.0439173674 -77.9418657443 (NAD27LL) 34.0440898669 -77.9415752896 (Local LL) • (X) 2320665.35 (Y) 108748.35 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0009.sds • Ping Number: 39957 • Range to target: 32.87 US ft. • Fish Height: 29.03 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0009 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 26.91 US ft. • Target Height: 5.40 US ft. • Target Length: 58.32 US ft. • Target Shadow: 10.02 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris or Outcrop • Classification2: • Area: • Block: • Description:
	C0158 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:25:28 PM • Click Position <ul style="list-style-type: none"> 34.0439174150 -77.9391421295 (WGS84) 34.0437449099 -77.9394326794 (NAD27LL) 34.0439174150 -77.9391421295 (Local LL) • (X) 2321403.16 (Y) 108693.46 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 5898 • Range to target: 54.34 US ft. • Fish Height: 15.15 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 10.90 US ft. • Target Height: 0.72 US ft. • Target Length: 21.73 US ft. • Target Shadow: 2.83 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris or Outcrop • Classification2: • Area: • Block: • Description:
	C0159 <ul style="list-style-type: none"> • Sonar Time at Target: 4/10/2017 2:04:14 PM • Click Position <ul style="list-style-type: none"> 34.0437575543 -77.9391099209 (WGS84) 34.0435850470 -77.9394004726 (NAD27LL) 34.0437575543 -77.9391099209 (Local LL) • (X) 2321413.54 (Y) 108635.39 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170410POW\2017APR10_0001.sds • Ping Number: 635 • Range to target: 87.36 US ft. • Fish Height: 28.02 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR10_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.80 US ft. • Target Height: 1.46 US ft. • Target Length: 1.90 US ft. • Target Shadow: 5.17 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description: Rationalized contact created from contacts: C0022, C0022_2
	C0160 <ul style="list-style-type: none"> • Sonar Time at Target: 4/10/2017 2:04:24 PM • Click Position <ul style="list-style-type: none"> 34.0436434314 -77.9391065821 (WGS84) 34.0435014567 -77.9393617434 (NAD27LL) 34.0436434314 -77.9391065821 (Local LL) • (X) 2321414.99 (Y) 108593.87 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170410POW\2017APR10_0001.sds • Ping Number: 694 • Range to target: 79.17 US ft. • Fish Height: 24.25 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR10_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.29 US ft. • Target Height: 1.99 US ft. • Target Length: 1.95 US ft. • Target Shadow: 8.01 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description: Rationalized contact created from contacts: C0021, C0021_2

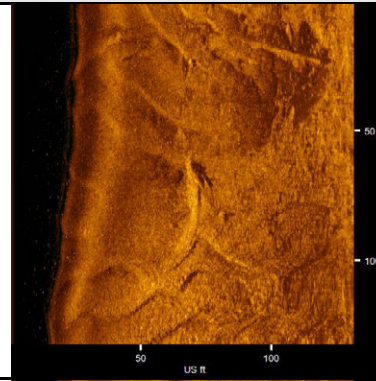
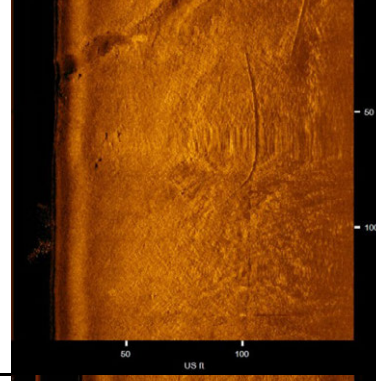
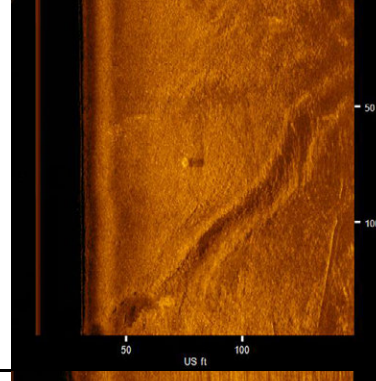
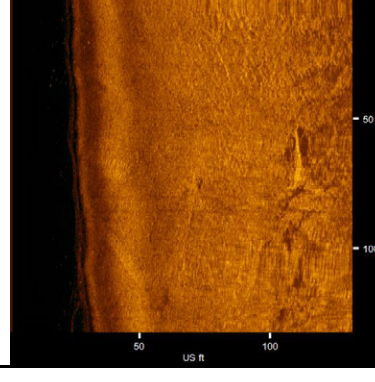
Target Image	Target Info	User Entered Info
	C0161 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 3:28:48 PM • Click Position <ul style="list-style-type: none"> 34.0432319938 -77.9389070152 (WGS84) 34.0430594791 -77.9391975763 (NAD27LL) 34.0432319938 -77.9389070152 (Local LL) (X) 2321477.05 (Y) 108444.78 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0001.sds • Ping Number: 3424 • Range to target: 47.81 US ft. • Fish Height: 15.30 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 6.66 US ft. • Target Height: 2.26 US ft. • Target Length: 59.51 US ft. • Target Shadow: 8.69 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0162 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:24:47 PM • Click Position <ul style="list-style-type: none"> 34.0431400843 -77.9391067462 (WGS84) 34.0429675686 -77.9393972998 (NAD27LL) 34.0431400843 -77.9391067462 (Local LL) (X) 2321416.90 (Y) 108410.68 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 5347 • Range to target: 60.45 US ft. • Fish Height: 15.42 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 12.70 US ft. • Target Height: 1.48 US ft. • Target Length: 26.20 US ft. • Target Shadow: 6.64 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris or Outcrop • Classification2: • Area: • Block: • Description:
	C0163 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 1:37:08 PM • Click Position <ul style="list-style-type: none"> 34.0428252373 -77.9420676140 (WGS84) 34.0426527213 -77.9423580533 (NAD27LL) 34.0428252373 -77.9420676140 (Local LL) (X) 2320521.11 (Y) 108286.52 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0002.sds • Ping Number: 9277 • Range to target: 76.63 US ft. • Fish Height: 29.45 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 50.44 US ft. • Target Height: 10.50 US ft. • Target Length: 69.36 US ft. • Target Shadow: 45.47 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris or Outcrop • Classification2: • Area: • Block: • Description:
	C0164 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 9:16:02 PM • Click Position <ul style="list-style-type: none"> 34.0422740754 -77.9418723120 (WGS84) 34.0421015517 -77.9421627605 (NAD27LL) 34.0422740754 -77.9418723120 (Local LL) (X) 2320582.41 (Y) 108086.57 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0009.sds • Ping Number: 41108 • Range to target: 76.27 US ft. • Fish Height: 36.44 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0009 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 7.76 US ft. • Target Height: 3.78 US ft. • Target Length: 46.05 US ft. • Target Shadow: 9.77 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Rectangular Contact • Classification2: • Area: • Block: • Description:

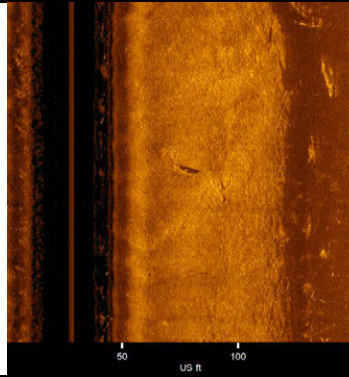
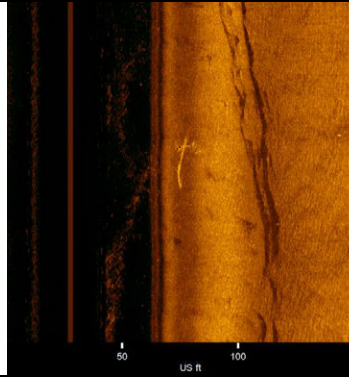
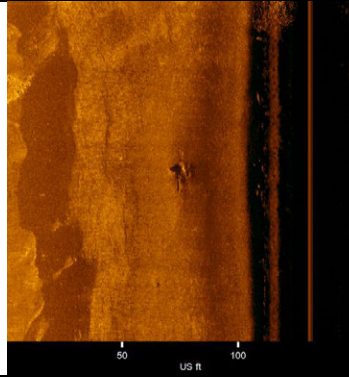
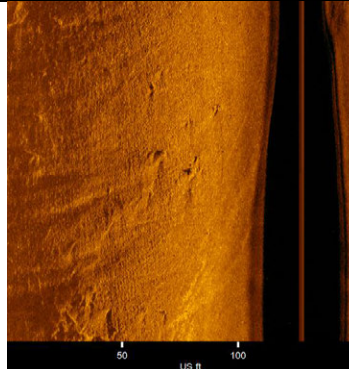
Target Image	Target Info	User Entered Info
	C0165 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:23:51 PM • Click Position <ul style="list-style-type: none"> 34.0421142031 -77.9390756828 (WGS84) 34.0419416734 -77.9393662405 (NAD27LL) 34.0421142031 -77.9390756828 (Local LL) • (X) 2321430.30 (Y) 108037.43 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 4628 • Range to target: 65.51 US ft. • Fish Height: 16.10 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.37 US ft. • Target Height: 1.14 US ft. • Target Length: 3.27 US ft. • Target Shadow: 5.15 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Rectangular Contact • Classification2: • Area: • Block: • Description:
	C0166 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:23:36 PM • Click Position <ul style="list-style-type: none"> 34.0418344195 -77.9391118081 (WGS84) 34.0416618860 -77.9394023652 (NAD27LL) 34.0418344195 -77.9391118081 (Local LL) • (X) 2321420.45 (Y) 107935.49 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 4437 • Range to target: 63.29 US ft. • Fish Height: 18.60 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.29 US ft. • Target Height: 0.82 US ft. • Target Length: 14.23 US ft. • Target Shadow: 3.05 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0167 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:23:32 PM • Click Position <ul style="list-style-type: none"> 34.0418063809 -77.9395845513 (WGS84) 34.0416338477 -77.9398750902 (NAD27LL) 34.0418063809 -77.9395845513 (Local LL) • (X) 2321277.33 (Y) 107923.75 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 4387 • Range to target: 78.01 US ft. • Fish Height: 19.01 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 4.91 US ft. • Target Height: 1.24 US ft. • Target Length: 4.45 US ft. • Target Shadow: 5.60 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Rectangular Contact • Classification2: • Area: • Block: • Description:
	C0168 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 1:36:11 PM • Click Position <ul style="list-style-type: none"> 34.0415862115 -77.9419461697 (WGS84) 34.0414136785 -77.9422366173 (NAD27LL) 34.0415862115 -77.9419461697 (Local LL) • (X) 2320562.71 (Y) 107835.99 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0002.sds • Ping Number: 8495 • Range to target: 39.82 US ft. • Fish Height: 32.24 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.01 US ft. • Target Height: 1.38 US ft. • Target Length: 8.34 US ft. • Target Shadow: 2.30 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:

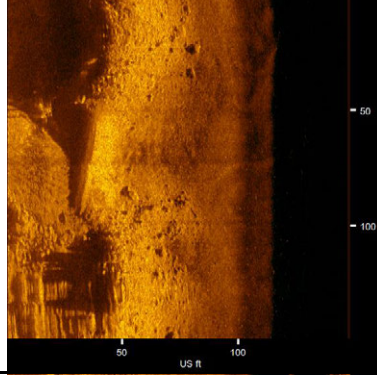
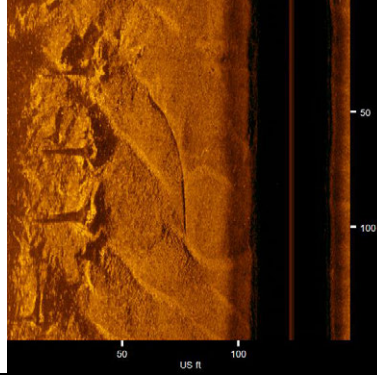
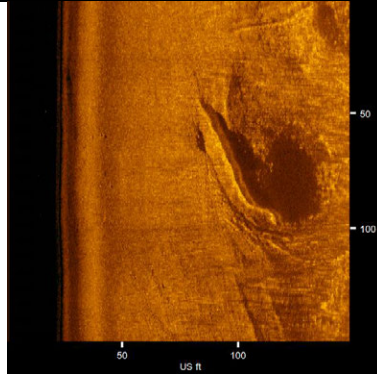
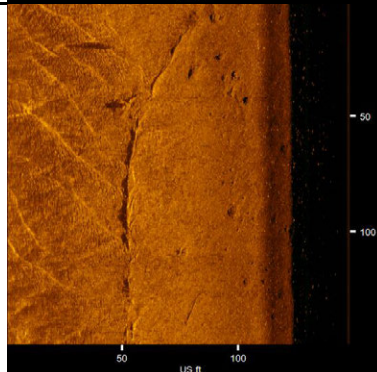
Target Image	Target Info	User Entered Info
	C0169 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 3:30:34 PM • Click Position <ul style="list-style-type: none"> 34.0409313426 -77.9390890910 (WGS84) 34.0407587968 -77.9393796517 (NAD27LL) 34.0409313426 -77.9390890910 (Local LL) (X) 2321430.84 (Y) 107606.90 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0001.sds • Ping Number: 4904 • Range to target: 44.89 US ft. • Fish Height: 13.02 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 11.27 US ft. • Target Height: 3.96 US ft. • Target Length: 58.36 US ft. • Target Shadow: 20.44 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:
	C0170 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:22:29 PM • Click Position <ul style="list-style-type: none"> 34.0406896246 -77.9391303136 (WGS84) 34.0405170756 -77.9394208733 (NAD27LL) 34.0406896246 -77.9391303136 (Local LL) (X) 2321419.29 (Y) 107518.80 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 3604 • Range to target: 52.87 US ft. • Fish Height: 23.63 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 6.70 US ft. • Target Height: 1.93 US ft. • Target Length: 13.64 US ft. • Target Shadow: 5.15 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0171 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 1:35:19 PM • Click Position <ul style="list-style-type: none"> 34.0405304465 -77.9414263246 (WGS84) 34.0403578984 -77.9417167956 (NAD27LL) 34.0405304465 -77.9414263246 (Local LL) (X) 2320724.30 (Y) 107453.44 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0002.sds • Ping Number: 7831 • Range to target: 108.37 US ft. • Fish Height: 31.88 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 10.98 US ft. • Target Height: 2.75 US ft. • Target Length: 13.25 US ft. • Target Shadow: 10.67 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0172 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:21:59 PM • Click Position <ul style="list-style-type: none"> 34.0401897001 -77.9389655611 (WGS84) 34.0400171441 -77.9392561287 (NAD27LL) 34.0401897001 -77.9389655611 (Local LL) (X) 2321471.15 (Y) 107337.39 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 3244 • Range to target: 96.42 US ft. • Fish Height: 24.15 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.48 US ft. • Target Height: 0.66 US ft. • Target Length: 55.80 US ft. • Target Shadow: 2.80 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Pipe • Classification2: • Area: • Block: • Description:

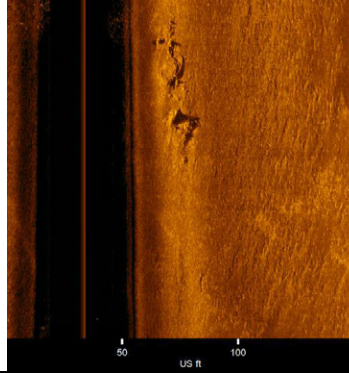
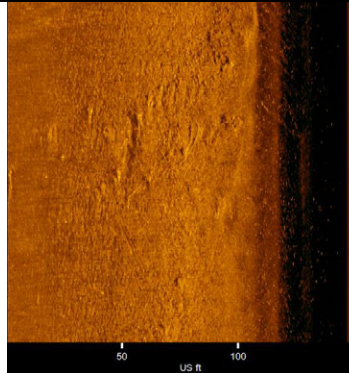
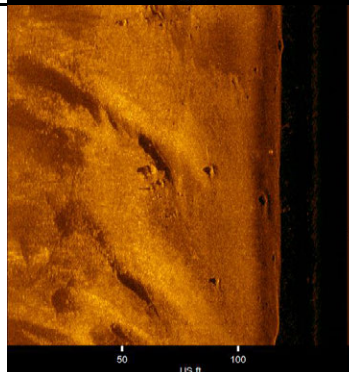
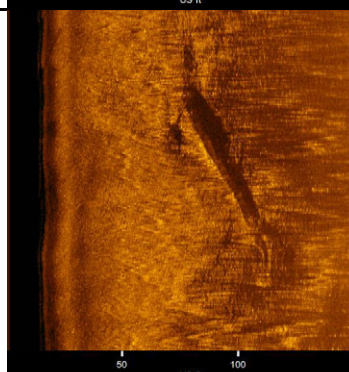
Target Image	Target Info	User Entered Info
	C0173 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:20:29 PM • Click Position <ul style="list-style-type: none"> 34.0386373331 -77.9390897656 (WGS84) 34.0384647561 -77.9393803329 (NAD27LL) 34.0386373331 -77.9390897656 (Local LL) • (X) 2321439.56 (Y) 106772.03 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 2149 • Range to target: 56.46 US ft. • Fish Height: 27.22 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 13.62 US ft. • Target Height: 2.89 US ft. • Target Length: 19.09 US ft. • Target Shadow: 7.44 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris • Classification2: • Area: • Block: • Description:
	C0174 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:20:18 PM • Click Position <ul style="list-style-type: none"> 34.0384594779 -77.9391099287 (WGS84) 34.0382868985 -77.9394004957 (NAD27LL) 34.0384594779 -77.9391099287 (Local LL) • (X) 2321434.14 (Y) 106707.24 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 2021 • Range to target: 51.90 US ft. • Fish Height: 25.68 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 5.97 US ft. • Target Height: 0.67 US ft. • Target Length: 5.90 US ft. • Target Shadow: 1.55 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Tire • Classification2: • Area: • Block: • Description:
	C0175 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:20:03 PM • Click Position <ul style="list-style-type: none"> 34.0382110602 -77.9395725507 (WGS84) 34.0380384780 -77.9398631004 (NAD27LL) 34.0382110602 -77.9395725507 (Local LL) • (X) 2321294.95 (Y) 106615.33 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 1843 • Range to target: 87.41 US ft. • Fish Height: 28.51 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.31 US ft. • Target Height: 0.62 US ft. • Target Length: 6.17 US ft. • Target Shadow: 2.06 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0176 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:20:02 PM • Click Position <ul style="list-style-type: none"> 34.0381862274 -77.9390215246 (WGS84) 34.0380136442 -77.9393120958 (NAD27LL) 34.0381862274 -77.9390215246 (Local LL) • (X) 2321461.99 (Y) 106608.08 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 1826 • Range to target: 79.57 US ft. • Fish Height: 28.38 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 20.66 US ft. • Target Height: 0.00 US ft. • Target Length: 44.34 US ft. • Target Shadow: 0.00 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris or Outcrop • Classification2: • Area: • Block: • Description:

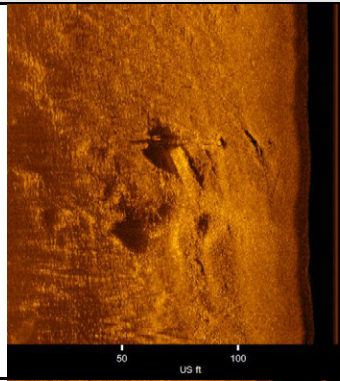
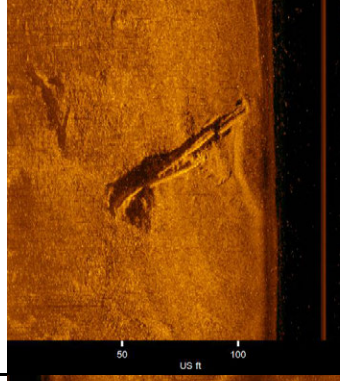
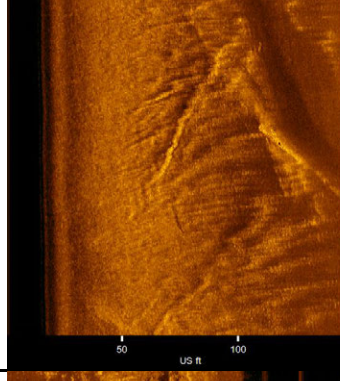
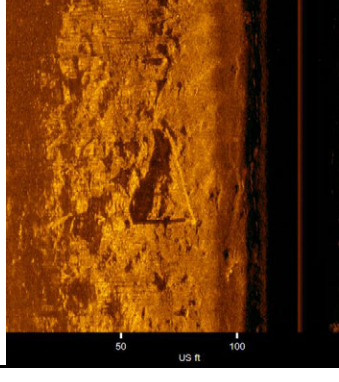
Target Image	Target Info	User Entered Info
	C0177 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:19:35 PM • Click Position <ul style="list-style-type: none"> 34.0377254520 -77.9391976411 (WGS84) 34.0375528627 -77.9394882068 (NAD27LL) 34.0377254520 -77.9391976411 (Local LL) (X) 2321410.42 (Y) 106439.82 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 1497 • Range to target: 23.14 US ft. • Fish Height: 28.89 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.71 US ft. • Target Height: 1.87 US ft. • Target Length: 4.52 US ft. • Target Shadow: 2.56 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Rectangular Contact • Classification2: • Area: • Block: • Description:
	C0178 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:19:09 PM • Click Position <ul style="list-style-type: none"> 34.0372820023 -77.9394514067 (WGS84) 34.0371094074 -77.9397419639 (NAD27LL) 34.0372820023 -77.9394514067 (Local LL) (X) 2321335.26 (Y) 106277.61 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 1185 • Range to target: 60.75 US ft. • Fish Height: 22.48 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.32 US ft. • Target Height: 0.77 US ft. • Target Length: 9.04 US ft. • Target Shadow: 2.31 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris • Classification2: • Area: • Block: • Description:
	C0179 <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:18:58 PM • Click Position <ul style="list-style-type: none"> 34.0371001936 -77.9388994065 (WGS84) 34.0369275954 -77.9391899856 (NAD27LL) 34.0371001936 -77.9388994065 (Local LL) (X) 2321503.21 (Y) 106213.23 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 1050 • Range to target: 105.26 US ft. • Fish Height: 24.40 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.66 US ft. • Target Height: 0.57 US ft. • Target Length: 26.59 US ft. • Target Shadow: 2.59 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0180 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 1:32:07 PM • Click Position <ul style="list-style-type: none"> 34.0369844172 -77.9418510592 (WGS84) 34.0368118215 -77.9421415240 (NAD27LL) 34.0369844172 -77.9418510592 (Local LL) (X) 2320609.37 (Y) 106161.55 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0002.sds • Ping Number: 5583 • Range to target: 39.82 US ft. • Fish Height: 20.20 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 23.95 US ft. • Target Height: 2.11 US ft. • Target Length: 51.88 US ft. • Target Shadow: 5.21 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:

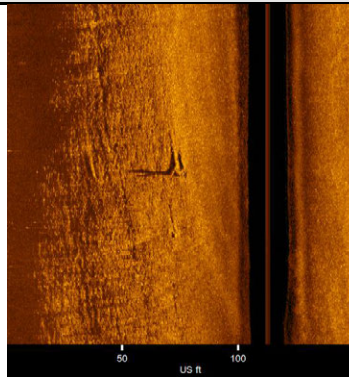
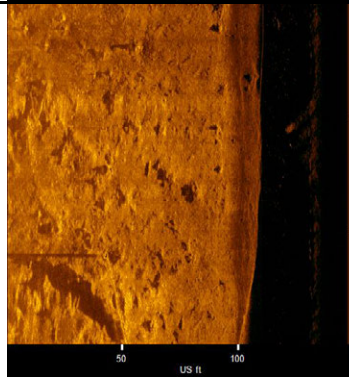
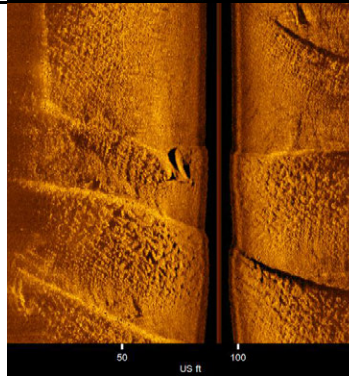

Target Image	Target Info	User Entered Info
	<p>C0181</p> <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:18:51 PM • Click Position 34.0369787208 -77.9390213831 (WGS84) 34.0368061212 -77.9393119578 (NAD27LL) 34.0369787208 -77.9390213831 (Local LL) (X) 2321466.73 (Y) 106168.63 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 964 • Range to target: 67.31 US ft. • Fish Height: 22.73 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> • Target Width: 6.24 US ft. • Target Height: 1.40 US ft. • Target Length: 10.61 US ft. • Target Shadow: 4.65 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	<p>C0182</p> <ul style="list-style-type: none"> • Sonar Time at Target: 4/13/2017 2:41:14 PM • Click Position 34.0365096979 -77.9417216632 (WGS84) 34.0363370956 -77.9420121344 (NAD27LL) 34.0365096979 -77.9417216632 (Local LL) (X) 2320650.42 (Y) 105989.20 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170413POW\2017APR13_0001.sds • Ping Number: 982 • Range to target: 102.95 US ft. • Fish Height: 19.33 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR13_0001 • Water Depth: 0.00 US ft. 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> • Target Width: 0.91 US ft. • Target Height: 0.33 US ft. • Target Length: 65.09 US ft. • Target Shadow: 1.82 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	<p>C0183</p> <ul style="list-style-type: none"> • Sonar Time at Target: 4/13/2017 2:41:31 PM • Click Position 34.0361888603 -77.9415778475 (WGS84) 34.0360162535 -77.9418683252 (NAD27LL) 34.0361888603 -77.9415778475 (Local LL) (X) 2320695.24 (Y) 105872.90 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170413POW\2017APR13_0001.sds • Ping Number: 1164 • Range to target: 59.33 US ft. • Fish Height: 19.47 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR13_0001 • Water Depth: 0.00 US ft. 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> • Target Width: 2.54 US ft. • Target Height: 1.79 US ft. • Target Length: 1.58 US ft. • Target Shadow: 6.31 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Crab Pot • Classification2: • Area: • Block: • Description:
	<p>C0184</p> <ul style="list-style-type: none"> • Sonar Time at Target: 4/5/2017 4:18:00 PM • Click Position 34.0361524128 -77.9388511677 (WGS84) 34.0359798017 -77.9391417515 (NAD27LL) 34.0361524128 -77.9388511677 (Local LL) (X) 2321521.51 (Y) 105868.46 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170405pow start CB\2017APR05_0001.sds • Ping Number: 366 • Range to target: 107.76 US ft. • Fish Height: 26.71 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR05_0001 • Water Depth: 0.00 US ft. 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> • Target Width: 2.32 US ft. • Target Height: 0.90 US ft. • Target Length: 26.92 US ft. • Target Shadow: 3.86 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:

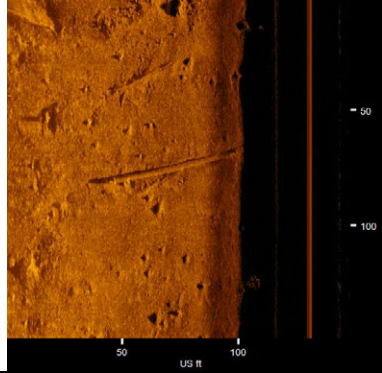
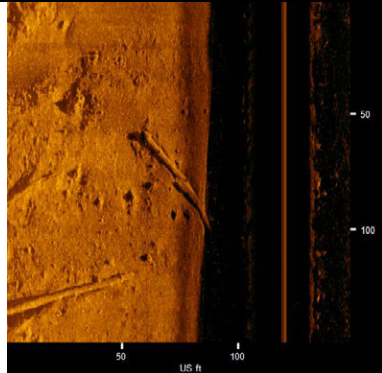
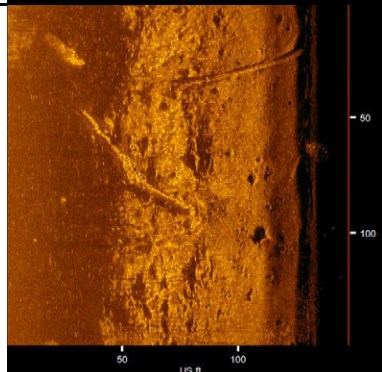
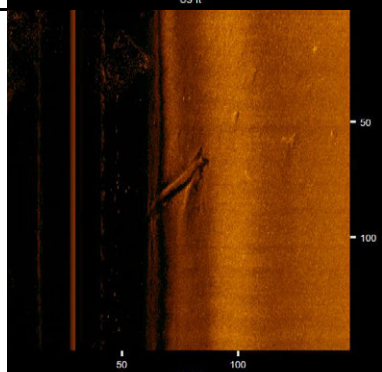
Target Image	Target Info	User Entered Info
	C0185 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 1:29:47 PM • Click Position <ul style="list-style-type: none"> 34.0343442327 -77.9415710055 (WGS84) 34.0341716008 -77.9418614888 (NAD27LL) 34.0343442327 -77.9415710055 (Local LL) • (X) 2320704.47 (Y) 105201.60 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0002.sds • Ping Number: 3899 • Range to target: 42.47 US ft. • Fish Height: 18.03 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.29 US ft. • Target Height: 2.09 US ft. • Target Length: 9.05 US ft. • Target Shadow: 6.06 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0186 <ul style="list-style-type: none"> • Sonar Time at Target: 4/10/2017 2:12:39 PM • Click Position <ul style="list-style-type: none"> 34.0338534133 -77.9391170341 (WGS84) 34.0336807713 -77.9394076141 (NAD27LL) 34.0338534133 -77.9391170341 (Local LL) • (X) 2321449.90 (Y) 105030.91 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170410POW\2017APR10_0001.sds • Ping Number: 6890 • Range to target: 27.12 US ft. • Fish Height: 37.97 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR10_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 10.10 US ft. • Target Height: 0.00 US ft. • Target Length: 20.82 US ft. • Target Shadow: 0.00 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0187 <ul style="list-style-type: none"> • Sonar Time at Target: 4/13/2017 2:44:40 PM • Click Position <ul style="list-style-type: none"> 34.0326950272 -77.9411688892 (WGS84) 34.0325223723 -77.9414593930 (NAD27LL) 34.0326950272 -77.9411688892 (Local LL) • (X) 2320832.71 (Y) 104602.70 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170413POW\2017APR13_0001.sds • Ping Number: 3397 • Range to target: 54.05 US ft. • Fish Height: 18.32 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR13_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 4.91 US ft. • Target Height: 1.61 US ft. • Target Length: 6.84 US ft. • Target Shadow: 5.48 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris • Classification2: • Area: • Block: • Description:
	C0188 <ul style="list-style-type: none"> • Sonar Time at Target: 4/8/2017 1:27:19 PM • Click Position <ul style="list-style-type: none"> 34.0313738023 -77.9415359026 (WGS84) 34.0312011300 -77.9418263960 (NAD27LL) 34.0313738023 -77.9415359026 (Local LL) • (X) 2320726.63 (Y) 104120.67 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170408pow\2017APR08_0002.sds • Ping Number: 2044 • Range to target: 52.10 US ft. • Fish Height: 18.03 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR08_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 31.11 US ft. • Target Height: 1.31 US ft. • Target Length: 39.27 US ft. • Target Shadow: 4.33 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:

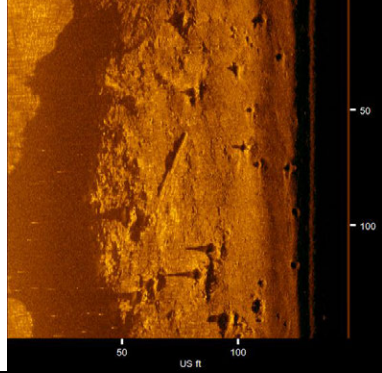
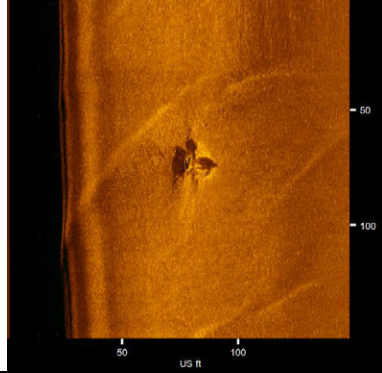
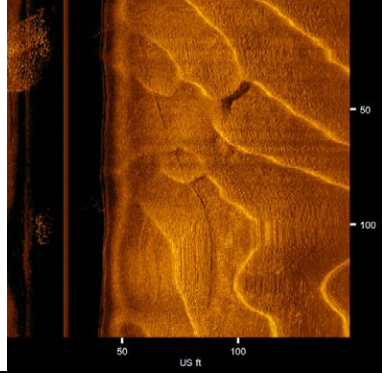
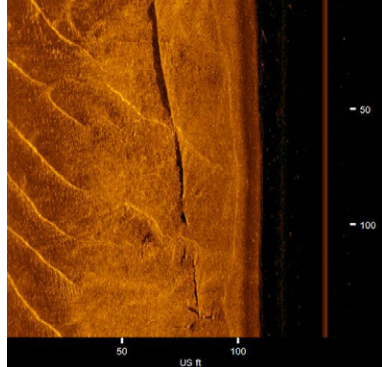
Target Image	Target Info	User Entered Info
	C0189 <ul style="list-style-type: none"> • Sonar Time at Target: 4/11/2017 10:08:00 PM • Click Position <ul style="list-style-type: none"> 34.0296659965 -77.9413646235 (WGS84) 34.0294933007 -77.9416551285 (NAD27LL) 34.0296659965 -77.9413646235 (Local LL) (X) 2320785.16 (Y) 103499.70 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170411pow1\2017APR11_0003.sds • Ping Number: 40095 • Range to target: 108.14 US ft. • Fish Height: 34.37 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR11_0003 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 7.89 US ft. • Target Height: 3.09 US ft. • Target Length: 42.27 US ft. • Target Shadow: 11.21 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown, Possibly Wreck • Classification2: • Area: • Block: • Description:
	C0190 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 10:07:25 PM • Click Position <ul style="list-style-type: none"> 34.0276809058 -77.9386739235 (WGS84) 34.0275081791 -77.9389645386 (NAD27LL) 34.0276809058 -77.9386739235 (Local LL) (X) 2321608.18 (Y) 102785.96 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0008.sds • Ping Number: 9440 • Range to target: 45.09 US ft. • Fish Height: 17.42 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0008 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.15 US ft. • Target Height: 1.51 US ft. • Target Length: 71.23 US ft. • Target Shadow: 4.58 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0191 <ul style="list-style-type: none"> • Sonar Time at Target: 4/14/2017 2:34:00 PM • Click Position <ul style="list-style-type: none"> 34.0259087697 -77.9419441906 (WGS84) 34.0257360237 -77.9422346841 (NAD27LL) 34.0259087697 -77.9419441906 (Local LL) (X) 2320624.12 (Y) 102130.44 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170414POW\2017APR14_0001.sds • Ping Number: 14943 • Range to target: 92.40 US ft. • Fish Height: 23.51 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR14_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 13.03 US ft. • Target Height: 6.49 US ft. • Target Length: 64.28 US ft. • Target Shadow: 36.35 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown, Possibly Wreck • Classification2: • Area: • Block: • Description:
	C0192 <ul style="list-style-type: none"> • Sonar Time at Target: 4/14/2017 4:59:56 AM • Click Position <ul style="list-style-type: none"> 34.0251034936 -77.9414953635 (WGS84) 34.0249307361 -77.9417858767 (NAD27LL) 34.0251034936 -77.9414953635 (Local LL) (X) 2320763.25 (Y) 101838.82 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170413pow1\2017APR13_0007_1.sds • Ping Number: 30722 • Range to target: 91.28 US ft. • Fish Height: 26.37 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR13_0007_1 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.19 US ft. • Target Height: 1.23 US ft. • Target Length: 140.63 US ft. • Target Shadow: 4.63 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:

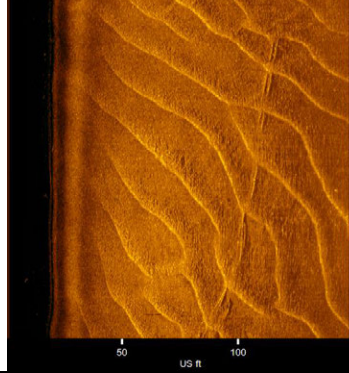
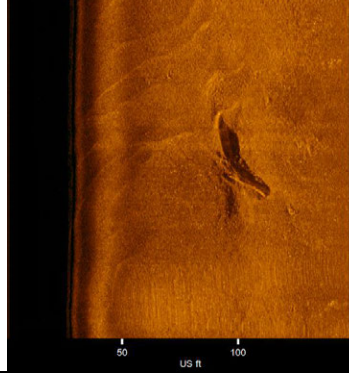
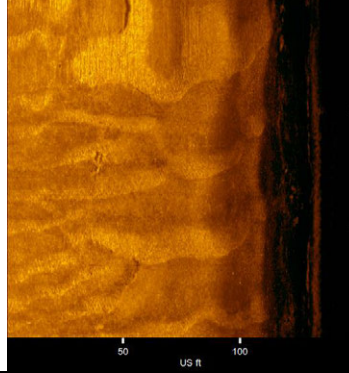
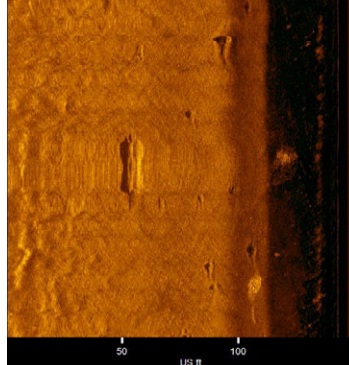
Target Image	Target Info	User Entered Info
	C0193 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 3:42:40 PM • Click Position <ul style="list-style-type: none"> 34.0247519046 -77.9389156709 (WGS84) 34.0245791384 -77.9392062851 (NAD27LL) 34.0247519046 -77.9389156709 (Local LL) (X) 2321546.32 (Y) 101719.21 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0001.sds • Ping Number: 15106 • Range to target: 35.69 US ft. • Fish Height: 20.91 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 13.30 US ft. • Target Height: 4.38 US ft. • Target Length: 61.92 US ft. • Target Shadow: 10.96 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:
	C0194 <ul style="list-style-type: none"> • Sonar Time at Target: 4/14/2017 4:52:57 AM • Click Position <ul style="list-style-type: none"> 34.0184133477 -77.9413162386 (WGS84) 34.0182404990 -77.9416067782 (NAD27LL) 34.0184133477 -77.9413162386 (Local LL) (X) 2320843.49 (Y) 99404.62 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170413pow1\2017APR13_0007_1.sds • Ping Number: 26493 • Range to target: 73.24 US ft. • Fish Height: 31.08 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR13_0007_1 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 0.65 US ft. • Target Height: 0.34 US ft. • Target Length: 42.78 US ft. • Target Shadow: 0.87 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Wire Rope • Classification2: • Area: • Block: • Description:
	C0195 <ul style="list-style-type: none"> • Sonar Time at Target: 4/10/2017 2:24:44 PM • Click Position <ul style="list-style-type: none"> 34.0166845140 -77.9386232804 (WGS84) 34.0165116376 -77.9389139293 (NAD27LL) 34.0166845140 -77.9386232804 (Local LL) (X) 2321666.32 (Y) 98784.15 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170410POW\2017APR10_0001.sds • Ping Number: 17708 • Range to target: 76.82 US ft. • Fish Height: 30.33 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR10_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 10.22 US ft. • Target Height: 1.89 US ft. • Target Length: 23.15 US ft. • Target Shadow: 5.48 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris • Classification2: • Area: • Block: • Description:
	C0196 <ul style="list-style-type: none"> • Sonar Time at Target: 4/14/2017 2:48:25 PM • Click Position <ul style="list-style-type: none"> 34.0089653709 -77.9424060853 (WGS84) 34.0087923955 -77.9426966103 (NAD27LL) 34.0089653709 -77.9424060853 (Local LL) (X) 2320549.85 (Y) 95962.64 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170414POW\2017APR14_0001.sds • Ping Number: 25751 • Range to target: 91.87 US ft. • Fish Height: 16.45 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR14_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 4.54 US ft. • Target Height: 1.96 US ft. • Target Length: 83.62 US ft. • Target Shadow: 12.64 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:

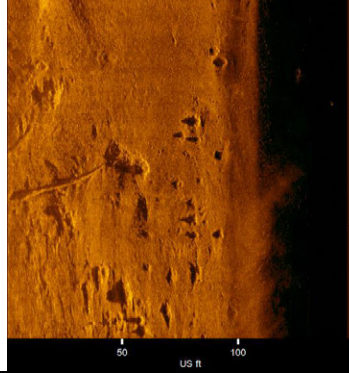
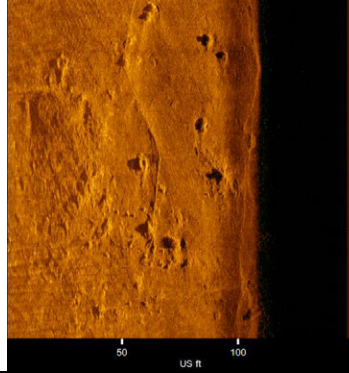
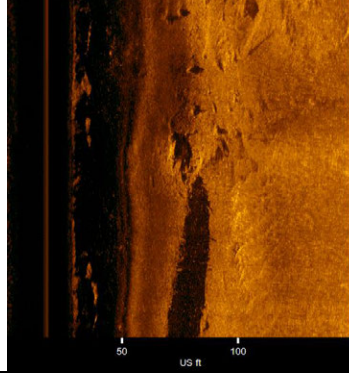
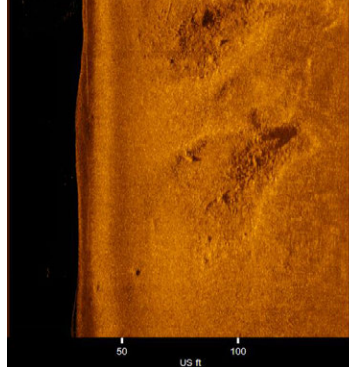
Target Image	Target Info	User Entered Info
 <p>50 100 US ft</p>	<p>C0197</p> <ul style="list-style-type: none"> • Sonar Time at Target: 4/14/2017 9:11:57 PM • Click Position 34.0055739358 -77.9432242865 (WGS84) 34.0054009158 -77.9435147898 (NAD27LL) 34.0055739358 -77.9432242865 (Local LL) (X) 2320315.01 (Y) 94725.74 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170414pow1\2017APR14_0002_1.sds • Ping Number: 16354 • Range to target: 66.60 US ft. • Fish Height: 10.86 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR14_0002_1 • Water Depth: 0.00 US ft. 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> • Target Width: 9.85 US ft. • Target Height: 1.79 US ft. • Target Length: 18.01 US ft. • Target Shadow: 13.32 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
 <p>50 100 US ft</p>	<p>C0198</p> <ul style="list-style-type: none"> • Sonar Time at Target: 4/14/2017 4:39:56 AM • Click Position 34.0053481223 -77.9429446734 (WGS84) 34.0051750988 -77.9432351882 (NAD27LL) 34.0053481223 -77.9429446734 (Local LL) (X) 2320400.63 (Y) 94644.46 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170413pow1\2017APR13_0007_1.sds • Ping Number: 18069 • Range to target: 58.09 US ft. • Fish Height: 21.97 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR13_0007_1 • Water Depth: 0.00 US ft. 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> • Target Width: 9.46 US ft. • Target Height: 4.79 US ft. • Target Length: 74.46 US ft. • Target Shadow: 17.31 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
 <p>50 100 US ft</p>	<p>C0199</p> <ul style="list-style-type: none"> • Sonar Time at Target: 4/13/2017 3:06:48 PM • Click Position 34.0045086706 -77.9435766307 (WGS84) 34.0043356367 -77.9438671236 (NAD27LL) 34.0045086706 -77.9435766307 (Local LL) (X) 2320212.34 (Y) 94336.91 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170413POW\2017APR13_0001.sds • Ping Number: 21452 • Range to target: 127.35 US ft. • Fish Height: 15.15 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR13_0001 • Water Depth: 0.00 US ft. 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> • Target Width: 4.52 US ft. • Target Height: 1.94 US ft. • Target Length: 49.84 US ft. • Target Shadow: 18.83 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
 <p>50 100 US ft</p>	<p>C0200</p> <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 9:48:08 PM • Click Position 34.0041984899 -77.9405302485 (WGS84) 34.0040254467 -77.9408208599 (NAD27LL) 34.0041984899 -77.9405302485 (Local LL) (X) 2321136.90 (Y) 94233.87 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0007.sds • Ping Number: 37847 • Range to target: 47.12 US ft. • Fish Height: 24.45 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0007 • Water Depth: 0.00 US ft. 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> • Target Width: 2.26 US ft. • Target Height: 7.81 US ft. • Target Length: 42.99 US ft. • Target Shadow: 24.91 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:

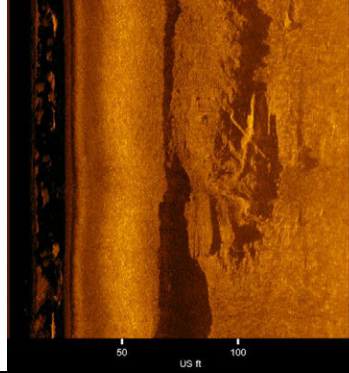
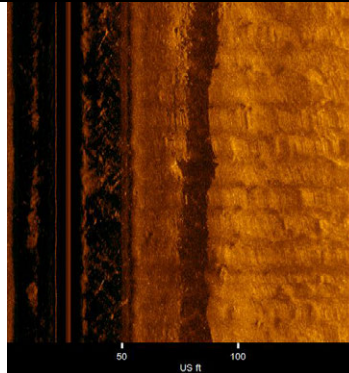
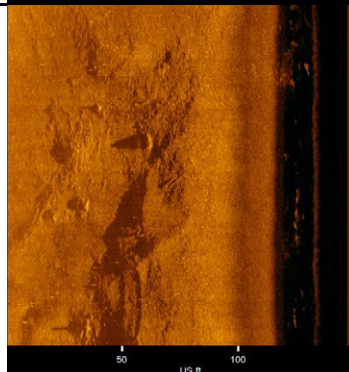
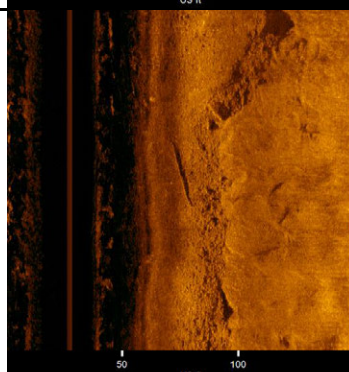
Target Image	Target Info	User Entered Info
	C0201 <ul style="list-style-type: none"> • Sonar Time at Target: 4/14/2017 2:52:38 PM • Click Position <ul style="list-style-type: none"> 34.0041699115 -77.9434726463 (WGS84) 34.0039968728 -77.9437631442 (NAD27LL) 34.0041699115 -77.9434726463 (Local LL) (X) 2320245.17 (Y) 94213.96 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170414POW\2017APR14_0001.sds • Ping Number: 28821 • Range to target: 37.48 US ft. • Fish Height: 9.28 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR14_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 7.52 US ft. • Target Height: 3.19 US ft. • Target Length: 12.09 US ft. • Target Shadow: 20.20 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0202 <ul style="list-style-type: none"> • Sonar Time at Target: 4/10/2017 2:33:33 PM • Click Position <ul style="list-style-type: none"> 34.0041624124 -77.9405351325 (WGS84) 34.0039893687 -77.9408257438 (NAD27LL) 34.0041624124 -77.9405351325 (Local LL) (X) 2321135.56 (Y) 94220.72 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170410POW\2017APR10_0001.sds • Ping Number: 25603 • Range to target: 96.40 US ft. • Fish Height: 40.43 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR10_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.46 US ft. • Target Height: 10.99 US ft. • Target Length: 2.45 US ft. • Target Shadow: 39.01 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object, Possible Piling • Classification2: • Area: • Block: • Description:
	C0203 <ul style="list-style-type: none"> • Sonar Time at Target: 4/14/2017 2:53:49 PM • Click Position <ul style="list-style-type: none"> 34.0028543246 -77.9439395688 (WGS84) 34.0026812688 -77.9442300525 (NAD27LL) 34.0028543246 -77.9439395688 (Local LL) (X) 2320108.74 (Y) 93733.66 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170414POW\2017APR14_0001.sds • Ping Number: 29683 • Range to target: 16.42 US ft. • Fish Height: 5.94 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR14_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 3.19 US ft. • Target Height: 1.12 US ft. • Target Length: 14.49 US ft. • Target Shadow: 4.04 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0204 <ul style="list-style-type: none"> • Sonar Time at Target: 4/10/2017 2:34:28 PM • Click Position <ul style="list-style-type: none"> 34.0027474779 -77.9409475419 (WGS84) 34.0025744156 -77.9412381414 (NAD27LL) 34.0027474779 -77.9409475419 (Local LL) (X) 2321016.05 (Y) 93704.44 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170410POW\2017APR10_0001.sds • Ping Number: 26509 • Range to target: 85.98 US ft. • Fish Height: 36.68 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR10_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 3.90 US ft. • Target Height: 5.49 US ft. • Target Length: 64.73 US ft. • Target Shadow: 16.45 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:

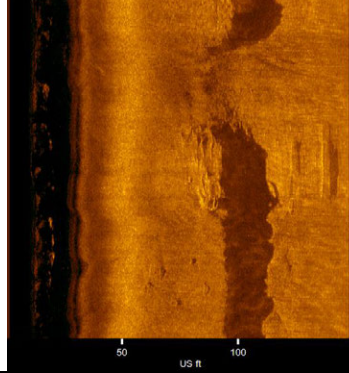
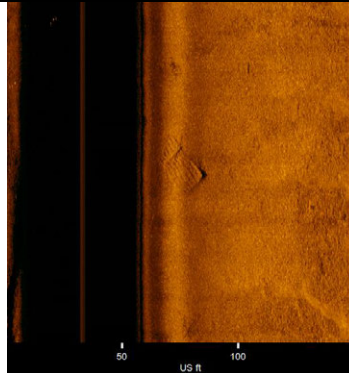
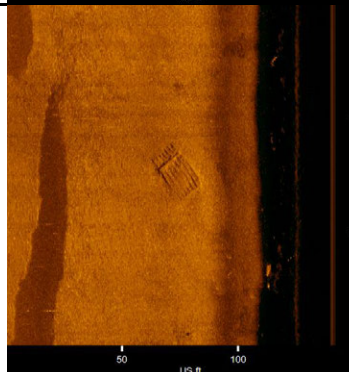
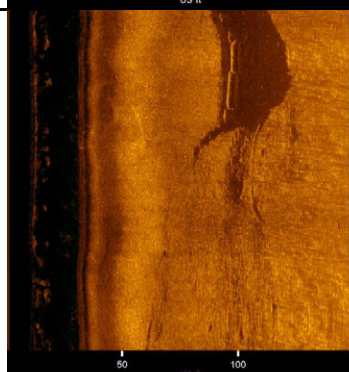
Target Image	Target Info	User Entered Info
	C0205 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 3:59:27 PM • Click Position <ul style="list-style-type: none"> 34.0026554136 -77.9409381158 (WGS84) 34.0024823501 -77.9412287160 (NAD27LL) 34.0026554136 -77.9409381158 (Local LL) (X) 2321019.27 (Y) 93670.96 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0002.sds • Ping Number: 5023 • Range to target: 48.85 US ft. • Fish Height: 29.61 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.61 US ft. • Target Height: 4.48 US ft. • Target Length: 59.09 US ft. • Target Shadow: 10.18 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact and Debris • Classification2: • Area: • Block: • Description:
	C0206 <ul style="list-style-type: none"> • Sonar Time at Target: 4/10/2017 2:34:34 PM • Click Position <ul style="list-style-type: none"> 34.0026125141 -77.9411415524 (WGS84) 34.0024394503 -77.9414321448 (NAD27LL) 34.0026125141 -77.9411415524 (Local LL) (X) 2320957.77 (Y) 93654.69 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170410POW\2017APR10_0001.sds • Ping Number: 26600 • Range to target: 32.47 US ft. • Fish Height: 33.21 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR10_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.11 US ft. • Target Height: 4.76 US ft. • Target Length: 53.90 US ft. • Target Shadow: 7.77 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0207 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 9:46:47 PM • Click Position <ul style="list-style-type: none"> 34.0026073903 -77.9411744189 (WGS84) 34.0024343266 -77.9414650100 (NAD27LL) 34.0026073903 -77.9411744189 (Local LL) (X) 2320947.83 (Y) 93652.72 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0007.sds • Ping Number: 36785 • Range to target: 91.07 US ft. • Fish Height: 23.50 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0007 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.25 US ft. • Target Height: 1.92 US ft. • Target Length: 64.21 US ft. • Target Shadow: 8.37 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0208 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 4:00:17 PM • Click Position <ul style="list-style-type: none"> 34.0015373050 -77.9416304028 (WGS84) 34.0013642275 -77.9419209795 (NAD27LL) 34.0015373050 -77.9416304028 (Local LL) (X) 2320813.77 (Y) 93261.81 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0002.sds • Ping Number: 5786 • Range to target: 34.40 US ft. • Fish Height: 32.91 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.90 US ft. • Target Height: 2.45 US ft. • Target Length: 35.56 US ft. • Target Shadow: 3.83 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:



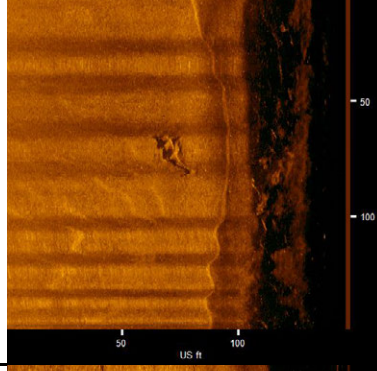
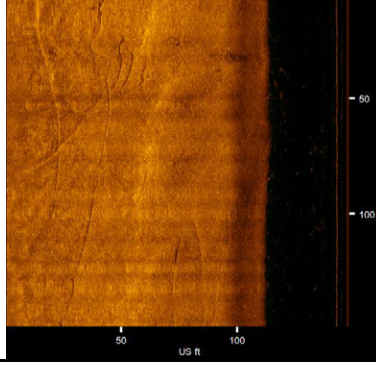
Target Image	Target Info	User Entered Info
	C0209 <ul style="list-style-type: none"> • Sonar Time at Target: 4/14/2017 2:59:17 PM • Click Position <ul style="list-style-type: none"> 33.9964346517 -77.9457147187 (WGS84) 33.9962615054 -77.9460051560 (NAD27LL) 33.9964346517 -77.9457147187 (Local LL) (X) 2319595.50 (Y) 91391.59 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170414POW\2017APR14_0001.sds • Ping Number: 33859 • Range to target: 72.81 US ft. • Fish Height: 22.50 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR14_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.09 US ft. • Target Height: 1.14 US ft. • Target Length: 29.81 US ft. • Target Shadow: 4.05 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0210 <ul style="list-style-type: none"> • Sonar Time at Target: 4/13/2017 3:17:23 PM • Click Position <ul style="list-style-type: none"> 33.9921167540 -77.9472432933 (WGS84) 33.9919435442 -77.9475336880 (NAD27LL) 33.9921167540 -77.9472432933 (Local LL) (X) 2319148.81 (Y) 89815.22 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170413POW\2017APR13_0001.sds • Ping Number: 29516 • Range to target: 75.05 US ft. • Fish Height: 23.22 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR13_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 6.93 US ft. • Target Height: 2.97 US ft. • Target Length: 9.05 US ft. • Target Shadow: 11.54 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris • Classification2: • Area: • Block: • Description:
	C0211 <ul style="list-style-type: none"> • Sonar Time at Target: 4/13/2017 3:21:24 PM • Click Position <ul style="list-style-type: none"> 33.9880391446 -77.9482757029 (WGS84) 33.9878658741 -77.9485660730 (NAD27LL) 33.9880391446 -77.9482757029 (Local LL) (X) 2318851.57 (Y) 88327.91 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170413POW\2017APR13_0001.sds • Ping Number: 32135 • Range to target: 45.96 US ft. • Fish Height: 15.00 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR13_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 0.64 US ft. • Target Height: 0.18 US ft. • Target Length: 136.84 US ft. • Target Shadow: 0.58 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0212 <ul style="list-style-type: none"> • Sonar Time at Target: 4/14/2017 4:20:53 AM • Click Position <ul style="list-style-type: none"> 33.9872914244 -77.9481557409 (WGS84) 33.9871181423 -77.9484461185 (NAD27LL) 33.9872914244 -77.9481557409 (Local LL) (X) 2318890.82 (Y) 88056.17 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170413pow\2017APR13_0007_1.sds • Ping Number: 6306 • Range to target: 55.51 US ft. • Fish Height: 28.59 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR13_0007_1 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.19 US ft. • Target Height: 1.86 US ft. • Target Length: 140.33 US ft. • Target Shadow: 4.34 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:

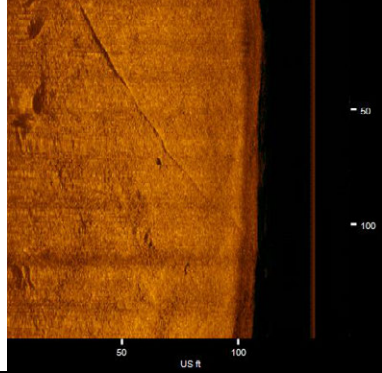
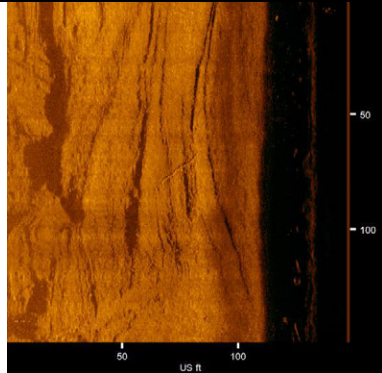
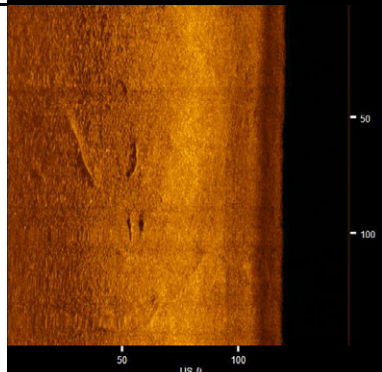
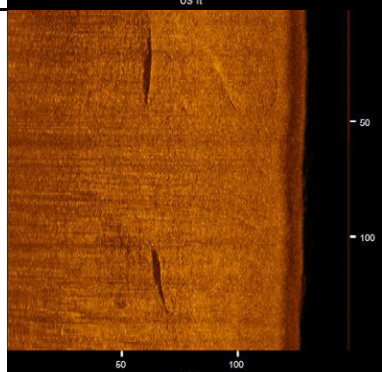
Target Image	Target Info	User Entered Info
	C0213 <ul style="list-style-type: none"> • Sonar Time at Target: 4/14/2017 3:10:47 PM • Click Position 33.9854086813 -77.9487369903 (WGS84) 33.9852353714 -77.9490273525 (NAD27LL) 33.9854086813 -77.9487369903 (Local LL) (X) 2318721.86 (Y) 87369.10 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170414POW\2017APR14_0001.sds • Ping Number: 41027 • Range to target: 105.26 US ft. • Fish Height: 19.76 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR14_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 0.58 US ft. • Target Height: 0.21 US ft. • Target Length: 136.46 US ft. • Target Shadow: 1.16 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Wire Rope • Classification2: • Area: • Block: • Description:
	C0214 <ul style="list-style-type: none"> • Sonar Time at Target: 4/13/2017 3:26:33 PM • Click Position 33.9827135843 -77.9486222910 (WGS84) 33.9825402329 -77.9489126678 (NAD27LL) 33.9827135843 -77.9486222910 (Local LL) (X) 2318767.02 (Y) 86388.62 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170413POW\2017APR13_0001.sds • Ping Number: 35523 • Range to target: 92.50 US ft. • Fish Height: 26.98 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR13_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.29 US ft. • Target Height: 2.22 US ft. • Target Length: 40.34 US ft. • Target Shadow: 8.66 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0215 <ul style="list-style-type: none"> • Sonar Time at Target: 4/14/2017 3:15:24 PM • Click Position 33.9803554729 -77.9485633128 (WGS84) 33.9801820854 -77.9488537007 (NAD27LL) 33.9803554729 -77.9485633128 (Local LL) (X) 2318793.99 (Y) 85530.60 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170414POW\2017APR14_0002.sds • Ping Number: 2394 • Range to target: 105.56 US ft. • Fish Height: 30.15 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR14_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 4.50 US ft. • Target Height: 0.62 US ft. • Target Length: 7.42 US ft. • Target Shadow: 2.32 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description: Rationalized contact created from contacts: C0206_2, C0206
	C0216 <ul style="list-style-type: none"> • Sonar Time at Target: 4/9/2017 6:25:58 PM • Click Position 33.9777924532 -77.9465800514 (WGS84) 33.9776190230 -77.9468705259 (NAD27LL) 33.9777924532 -77.9465800514 (Local LL) (X) 2319405.19 (Y) 84604.20 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170409pow\2017APR09_0006.sds • Ping Number: 41438 • Range to target: 81.75 US ft. • Fish Height: 35.94 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR09_0006 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 9.92 US ft. • Target Height: 1.99 US ft. • Target Length: 23.20 US ft. • Target Shadow: 5.23 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:

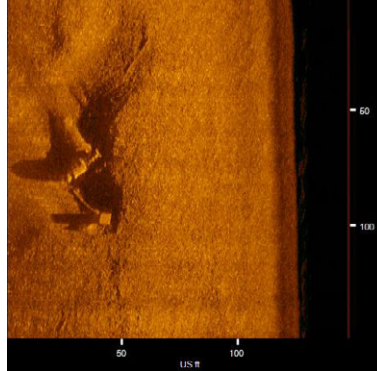
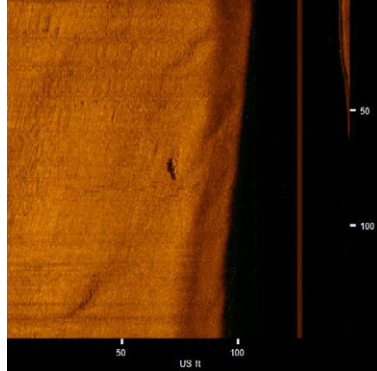
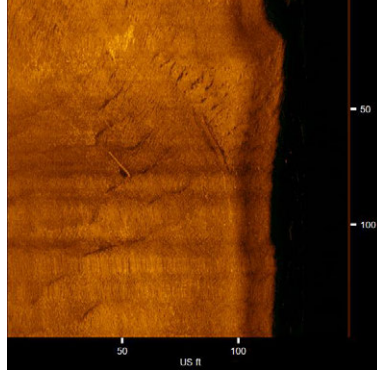
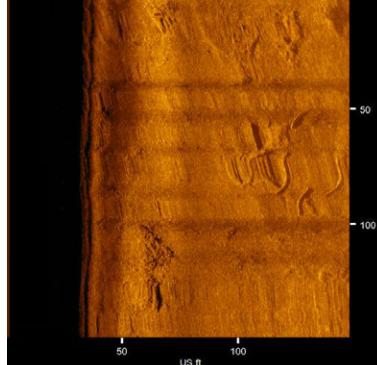
Target Image	Target Info	User Entered Info
	C0217 <ul style="list-style-type: none"> • Sonar Time at Target: 4/10/2017 2:55:07 PM • Click Position <ul style="list-style-type: none"> 33.9762312529 -77.9470771334 (WGS84) 33.9760577996 -77.9473675945 (NAD27LL) 33.9762312529 -77.9470771334 (Local LL) • (X) 2319260.51 (Y) 84034.42 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170410POW\2017APR10_0001.sds • Ping Number: 43536 • Range to target: 91.16 US ft. • Fish Height: 39.25 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR10_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 24.26 US ft. • Target Height: 0.00 US ft. • Target Length: 60.20 US ft. • Target Shadow: 0.00 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:
	C0218 <ul style="list-style-type: none"> • Sonar Time at Target: 4/10/2017 2:55:58 PM • Click Position <ul style="list-style-type: none"> 33.9751480533 -77.9472679446 (WGS84) 33.9749745838 -77.9475584024 (NAD27LL) 33.9751480533 -77.9472679446 (Local LL) • (X) 2319206.83 (Y) 83639.58 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170410POW\2017APR10_0001.sds • Ping Number: 44224 • Range to target: 74.32 US ft. • Fish Height: 40.28 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR10_0001 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 0.87 US ft. • Target Height: 0.00 US ft. • Target Length: 111.80 US ft. • Target Shadow: 0.00 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Wire Rope • Classification2: • Area: • Block: • Description:
	C0219 <ul style="list-style-type: none"> • Sonar Time at Target: 4/10/2017 8:00:41 PM • Click Position <ul style="list-style-type: none"> 33.9444311617 -77.9720865454 (WGS84) 33.9442572655 -77.9723761503 (NAD27LL) 33.9444311617 -77.9720865454 (Local LL) • (X) 2311797.43 (Y) 72381.58 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170410POW\2017APR10_0006.sds • Ping Number: 30793 • Range to target: 46.33 US ft. • Fish Height: 35.83 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR10_0006 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 34.85 US ft. • Target Height: 4.08 US ft. • Target Length: 43.92 US ft. • Target Shadow: 7.53 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:
	C0220 <ul style="list-style-type: none"> • Sonar Time at Target: 4/13/2017 4:11:39 PM • Click Position <ul style="list-style-type: none"> 33.9441163028 -77.9729481848 (WGS84) 33.9439424033 -77.9732377572 (NAD27LL) 33.9441163028 -77.9729481848 (Local LL) • (X) 2311537.26 (Y) 72264.28 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170413POW\2017APR13_0003.sds • Ping Number: 19769 • Range to target: 94.52 US ft. • Fish Height: 29.57 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR13_0003 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 25.54 US ft. • Target Height: 2.67 US ft. • Target Length: 59.59 US ft. • Target Shadow: 9.85 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:

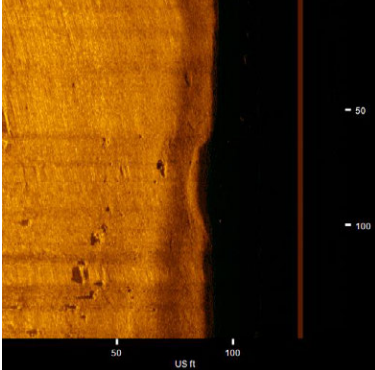
Target Image	Target Info	User Entered Info
	C0221 <ul style="list-style-type: none"> • Sonar Time at Target: 4/10/2017 7:57:45 PM • Click Position 33.9413908737 -77.9756636183 (WGS84) 33.9412169373 -77.9759530943 (NAD27LL) 33.9413908737 -77.9756636183 (Local LL) (X) 2310723.85 (Y) 71263.87 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170410POW\2017APR10_0006.sds • Ping Number: 28118 • Range to target: 92.55 US ft. • Fish Height: 28.85 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR10_0006 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 26.02 US ft. • Target Height: 2.80 US ft. • Target Length: 79.75 US ft. • Target Shadow: 10.43 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown, Possibly Wreck • Classification2: • Area: • Block: • Description:
	C0222 <ul style="list-style-type: none"> • Sonar Time at Target: 4/9/2017 7:03:53 PM • Click Position 33.9400182756 -77.9749066253 (WGS84) 33.9398443169 -77.9751961358 (NAD27LL) 33.9400182756 -77.9749066253 (Local LL) (X) 2310958.63 (Y) 70766.69 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170409pow\2017APR09_0007.sds • Ping Number: 24030 • Range to target: 40.37 US ft. • Fish Height: 25.35 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR09_0007 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.07 US ft. • Target Height: 6.23 US ft. • Target Length: 7.19 US ft. • Target Shadow: 15.52 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0223 <ul style="list-style-type: none"> • Sonar Time at Target: 4/14/2017 3:46:51 PM • Click Position 33.9358026703 -77.9828670588 (WGS84) 33.9356286611 -77.9831562728 (NAD27LL) 33.9358026703 -77.9828670588 (Local LL) (X) 2308559.66 (Y) 69207.61 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170414POW\2017APR14_0002.sds • Ping Number: 33266 • Range to target: 75.81 US ft. • Fish Height: 28.27 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR14_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 21.58 US ft. • Target Height: 4.97 US ft. • Target Length: 34.63 US ft. • Target Shadow: 17.24 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:
	C0224 <ul style="list-style-type: none"> • Sonar Time at Target: 4/10/2017 7:48:03 PM • Click Position 33.9324029114 -77.9870862250 (WGS84) 33.9322288576 -77.9873752857 (NAD27LL) 33.9324029114 -77.9870862250 (Local LL) (X) 2307292.40 (Y) 67957.20 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170410POW\2017APR10_0006.sds • Ping Number: 19852 • Range to target: 29.60 US ft. • Fish Height: 37.65 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR10_0006 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 0.87 US ft. • Target Height: 1.32 US ft. • Target Length: 32.79 US ft. • Target Shadow: 1.74 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:

Target Image	Target Info	User Entered Info
	C0225 <ul style="list-style-type: none"> • Sonar Time at Target: 4/10/2017 7:37:08 PM • Click Position 33.9232675929 -77.9995692390 (WGS84) 33.9230934216 -77.9998578415 (NAD27LL) 33.9232675929 -77.9995692390 (Local LL) (X) 2303539.00 (Y) 64594.05 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170410POW\2017APR10_0006.sds • Ping Number: 11090 • Range to target: 83.19 US ft. • Fish Height: 32.05 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR10_0006 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 11.88 US ft. • Target Height: 1.58 US ft. • Target Length: 36.17 US ft. • Target Shadow: 4.63 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:
	C0226 <ul style="list-style-type: none"> • Sonar Time at Target: 4/13/2017 4:40:57 PM • Click Position 33.9201384810 -78.0056178111 (WGS84) 33.9199642930 -78.0059062097 (NAD27LL) 33.9201384810 -78.0056178111 (Local LL) (X) 2301715.29 (Y) 63436.78 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170413POW\2017APR13_0004.sds • Ping Number: 2439 • Range to target: 34.14 US ft. • Fish Height: 23.22 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR13_0004 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 12.24 US ft. • Target Height: 1.37 US ft. • Target Length: 22.60 US ft. • Target Shadow: 2.59 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0227 <ul style="list-style-type: none"> • Sonar Time at Target: 4/14/2017 4:04:50 PM • Click Position 33.9201148710 -78.0056630843 (WGS84) 33.9199406828 -78.0059514814 (NAD27LL) 33.9201148710 -78.0056630843 (Local LL) (X) 2301701.64 (Y) 63428.05 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170414POW\2017APR14_0003.sds • Ping Number: 853 • Range to target: 60.58 US ft. • Fish Height: 29.72 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR14_0003 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 11.70 US ft. • Target Height: 0.50 US ft. • Target Length: 21.98 US ft. • Target Shadow: 1.16 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0228 <ul style="list-style-type: none"> • Sonar Time at Target: 4/10/2017 7:30:39 PM • Click Position 33.9191321755 -78.0067537994 (WGS84) 33.9189579781 -78.0070421612 (NAD27LL) 33.9191321755 -78.0067537994 (Local LL) (X) 2301374.28 (Y) 63067.09 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170410POW\2017APR10_0006.sds • Ping Number: 6488 • Range to target: 99.11 US ft. • Fish Height: 36.45 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR10_0006 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 0.58 US ft. • Target Height: 0.87 US ft. • Target Length: 44.97 US ft. • Target Shadow: 2.60 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Wire Rope • Classification2: • Area: • Block: • Description:

Target Image	Target Info	User Entered Info
	C0229 <ul style="list-style-type: none"> • Sonar Time at Target: 4/14/2017 4:07:24 PM • Click Position <ul style="list-style-type: none"> 33.9182943911 -78.0088165009 (WGS84) 33.9181201918 -78.0091047925 (NAD27LL) 33.9182943911 -78.0088165009 (Local LL) • Coordinates <ul style="list-style-type: none"> (X) 2300751.47 (Y) 62755.93 (Projected) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170414POW\2017APR14_0003.sds • Ping Number: 2869 • Range to target: 74.65 US ft. • Fish Height: 29.43 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR14_0003 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 7.97 US ft. • Target Height: 1.51 US ft. • Target Length: 26.28 US ft. • Target Shadow: 4.33 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object, Poss Machinery • Classification2: • Area: • Block: • Description:
	C0230 <ul style="list-style-type: none"> • Sonar Time at Target: 4/14/2017 2:56:30 AM • Click Position <ul style="list-style-type: none"> 33.9182573771 -78.0087830197 (WGS84) 33.9180461623 -78.0090378326 (NAD27LL) 33.9182573771 -78.0087830197 (Local LL) • Coordinates <ul style="list-style-type: none"> (X) 2300761.77 (Y) 62742.56 (Projected) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170413pow1\2017APR13_0005_1.sds • Ping Number: 8262 • Range to target: 61.56 US ft. • Fish Height: 38.96 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR13_0005_1 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 8.64 US ft. • Target Height: 2.14 US ft. • Target Length: 23.27 US ft. • Target Shadow: 4.33 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object, Poss Machinery • Classification2: • Area: • Block: • Description: Rationalized contact created from contacts: C0194_2, C0194
	C0231 <ul style="list-style-type: none"> • Sonar Time at Target: 4/14/2017 2:56:30 AM • Click Position <ul style="list-style-type: none"> 33.9182203631 -78.0087495384 (WGS84) 33.9180461623 -78.0090378326 (NAD27LL) 33.9182203631 -78.0087495384 (Local LL) • Coordinates <ul style="list-style-type: none"> (X) 2300772.06 (Y) 62729.19 (Projected) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170413pow1\2017APR13_0005_1.sds • Ping Number: 8262 • Range to target: 61.56 US ft. • Fish Height: 38.96 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR13_0005_1 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 9.32 US ft. • Target Height: 2.14 US ft. • Target Length: 20.25 US ft. • Target Shadow: 4.24 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object, Poss Machinery • Classification2: • Area: • Block: • Description:
	C0232 <ul style="list-style-type: none"> • Sonar Time at Target: 4/9/2017 7:33:38 PM • Click Position <ul style="list-style-type: none"> 33.9159764608 -78.0088380857 (WGS84) 33.9158022265 -78.0091263840 (NAD27LL) 33.9159764608 -78.0088380857 (Local LL) • Coordinates <ul style="list-style-type: none"> (X) 2300753.35 (Y) 61912.26 (Projected) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170409pow\2017APR09_0008.sds • Ping Number: 159 • Range to target: 99.51 US ft. • Fish Height: 34.80 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR09_0008 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 0.64 US ft. • Target Height: 0.19 US ft. • Target Length: 144.59 US ft. • Target Shadow: 0.58 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Wire Rope • Classification2: • Area: • Block: • Description:

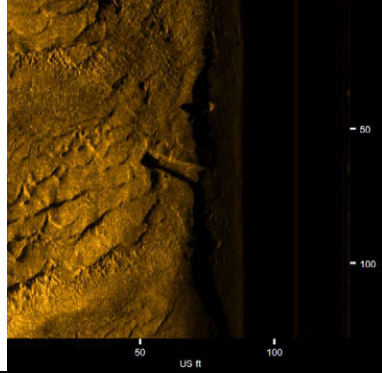
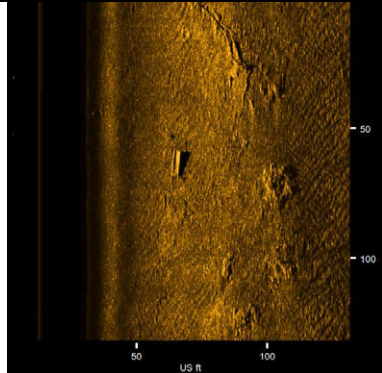
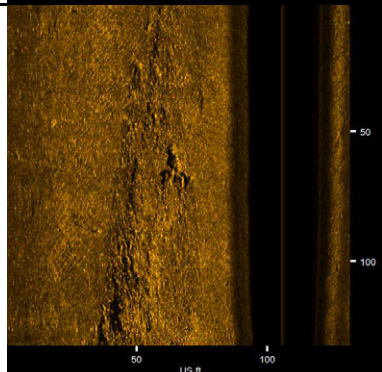
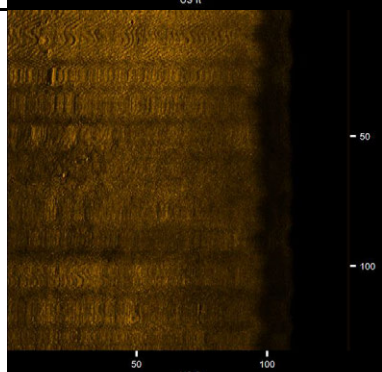
Target Image	Target Info	User Entered Info
	C0233 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 5:13:00 PM • Click Position <ul style="list-style-type: none"> 33.9156959213 -78.0097379290 (WGS84) 33.9155216874 -78.0100261964 (NAD27LL) 33.9156959213 -78.0097379290 (Local LL) (X) 2300481.33 (Y) 61807.43 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0003.sds • Ping Number: 17616 • Range to target: 52.68 US ft. • Fish Height: 23.55 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0003 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.31 US ft. • Target Height: 0.99 US ft. • Target Length: 183.35 US ft. • Target Shadow: 2.53 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0234 <ul style="list-style-type: none"> • Sonar Time at Target: 4/14/2017 4:12:03 PM • Click Position <ul style="list-style-type: none"> 33.9150395673 -78.0145482829 (WGS84) 33.9148653489 -78.0148363822 (NAD27LL) 33.9150395673 -78.0145482829 (Local LL) (X) 2299024.12 (Y) 61554.03 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170414POW\2017APR14_0003.sds • Ping Number: 6525 • Range to target: 65.77 US ft. • Fish Height: 35.05 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR14_0003 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.63 US ft. • Target Height: 0.53 US ft. • Target Length: 25.00 US ft. • Target Shadow: 1.15 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0235 <ul style="list-style-type: none"> • Sonar Time at Target: 4/10/2017 3:54:58 PM • Click Position <ul style="list-style-type: none"> 33.9132980766 -78.0139404288 (WGS84) 33.9131238287 -78.0142285552 (NAD27LL) 33.9132980766 -78.0139404288 (Local LL) (X) 2299214.85 (Y) 60922.05 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170410POW\2017APR10_0002.sds • Ping Number: 47543 • Range to target: 98.99 US ft. • Fish Height: 29.46 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR10_0002 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 26.84 US ft. • Target Height: 0.00 US ft. • Target Length: 71.89 US ft. • Target Shadow: 0.00 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:
	C0236 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 5:15:20 PM • Click Position <ul style="list-style-type: none"> 33.9132173911 -78.0138548590 (WGS84) 33.9130431415 -78.0141429886 (NAD27LL) 33.9132173911 -78.0138548590 (Local LL) (X) 2299241.11 (Y) 60892.94 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0003.sds • Ping Number: 19764 • Range to target: 84.42 US ft. • Fish Height: 20.38 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0003 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 1.08 US ft. • Target Height: 0.81 US ft. • Target Length: 130.91 US ft. • Target Shadow: 3.60 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:

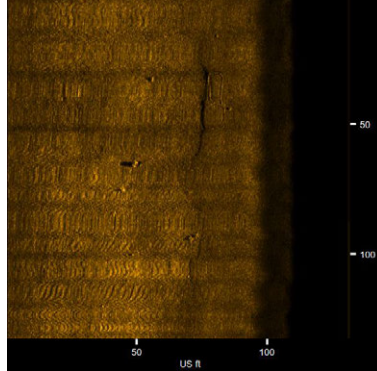
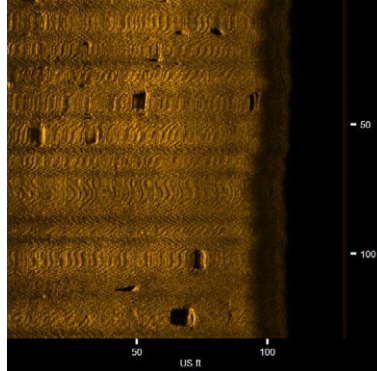
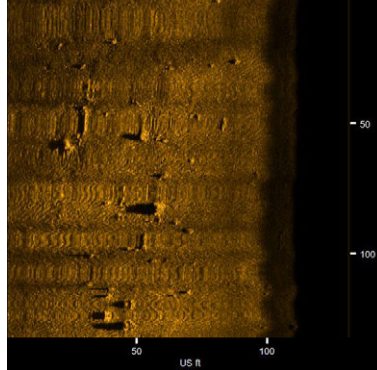
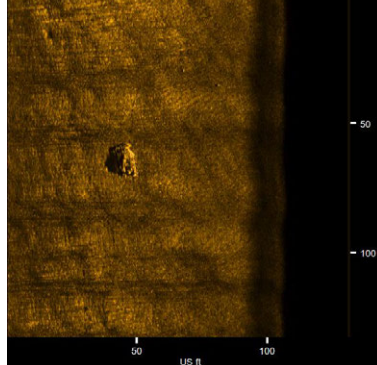
Target Image	Target Info	User Entered Info
	C0237 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 5:16:36 PM • Click Position 33.9118147712 -78.0160676588 (WGS84) 33.9116405122 -78.0163557145 (NAD27LL) 33.9118147712 -78.0160676588 (Local LL) (X) 2298574.73 (Y) 60375.80 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0003.sds • Ping Number: 20935 • Range to target: 107.27 US ft. • Fish Height: 23.98 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0003 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 24.69 US ft. • Target Height: 4.13 US ft. • Target Length: 50.75 US ft. • Target Shadow: 22.86 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Large Object Cluster, Possible Wreck • Classification2: • Area: • Block: • Description:
	C0238 <ul style="list-style-type: none"> • Sonar Time at Target: 4/13/2017 4:53:50 PM • Click Position 33.9108451422 -78.0214896683 (WGS84) 33.9106708975 -78.0217775350 (NAD27LL) 33.9108451422 -78.0214896683 (Local LL) (X) 2296932.95 (Y) 60006.65 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170413POW\2017APR13_0004.sds • Ping Number: 12672 • Range to target: 49.68 US ft. • Fish Height: 22.94 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR13_0004 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 2.36 US ft. • Target Height: 1.06 US ft. • Target Length: 10.32 US ft. • Target Shadow: 2.66 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Unknown Object • Classification2: • Area: • Block: • Description:
	C0239 <ul style="list-style-type: none"> • Sonar Time at Target: 4/12/2017 5:22:03 PM • Click Position 33.9048995397 -78.0181678039 (WGS84) 33.9047251879 -78.0184558069 (NAD27LL) 33.9048995397 -78.0181678039 (Local LL) (X) 2297962.35 (Y) 57852.71 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170412POW\2017APR12_0003.sds • Ping Number: 25792 • Range to target: 92.40 US ft. • Fish Height: 32.93 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR12_0003 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 0.81 US ft. • Target Height: 1.11 US ft. • Target Length: 14.10 US ft. • Target Shadow: 3.42 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Linear Contact • Classification2: • Area: • Block: • Description:
	C0240 <ul style="list-style-type: none"> • Sonar Time at Target: 4/13/2017 5:06:24 PM • Click Position 33.8968455911 -78.0144766288 (WGS84) 33.8966710979 -78.0147647884 (NAD27LL) 33.8968455911 -78.0144766288 (Local LL) (X) 2299111.60 (Y) 54932.60 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170413POW\2017APR13_0004.sds • Ping Number: 22709 • Range to target: 114.57 US ft. • Fish Height: 31.59 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR13_0004 • Water Depth: 0.00 US ft. 	Dimensions and attributes <ul style="list-style-type: none"> • Target Width: 50.08 US ft. • Target Height: 0.82 US ft. • Target Length: 66.01 US ft. • Target Shadow: 3.19 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:

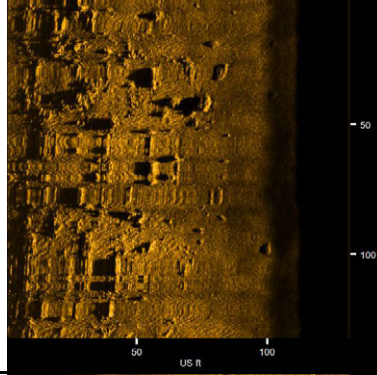
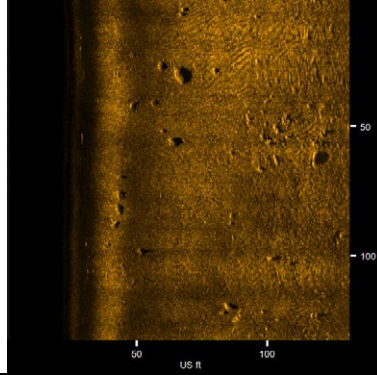
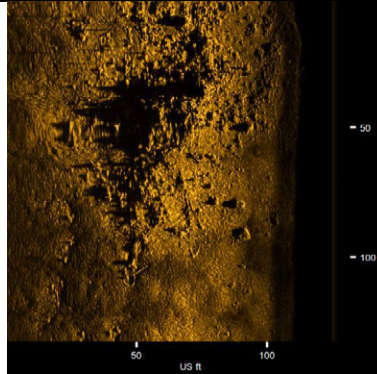
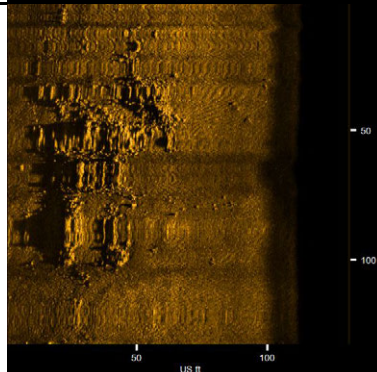
Target Image	Target Info	User Entered Info
	<p>C0241</p> <ul style="list-style-type: none"> • Sonar Time at Target: 4/10/2017 4:23:05 PM • Click Position <ul style="list-style-type: none"> 33.8755737979 -78.0068315039 (WGS84) 33.8753989400 -78.0071200048 (NAD27LL) 33.8755737979 -78.0068315039 (Local LL) (X) 2301509.31 (Y) 47213.88 (Projected Coordinates) • Map Projection: NC83F • Acoustic Source File: D:\Wilmington 2017\Wilmington SS\20170410POW\2017APR10_0003.sds • Ping Number: 19281 • Range to target: 57.25 US ft. • Fish Height: 43.02 US ft. • Heading: 0.000 Degrees • Event Number: (-1) • Line Name: 2017APR10_0003 • Water Depth: 0.00 US ft. 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> • Target Width: 24.56 US ft. • Target Height: 0.00 US ft. • Target Length: 84.65 US ft. • Target Shadow: 0.00 US ft. • Mag Anomaly: • Avoidance Area: • Classification1: Debris Scatter • Classification2: • Area: • Block: • Description:

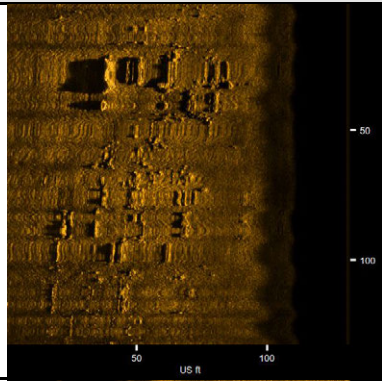
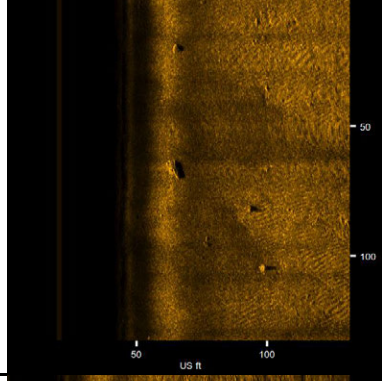
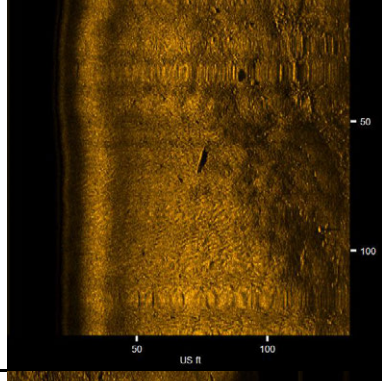
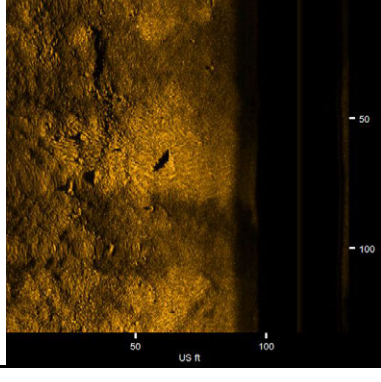
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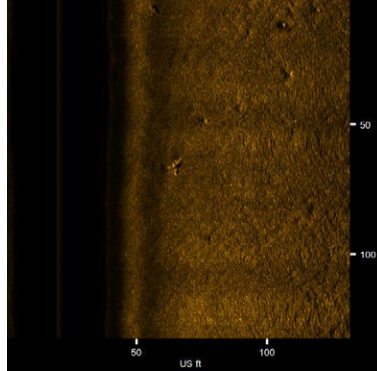
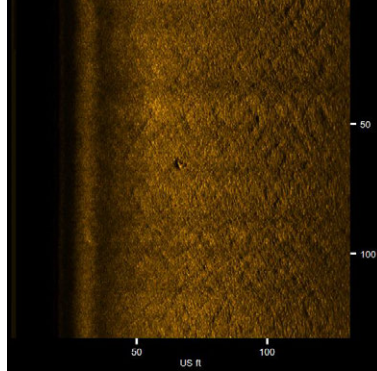
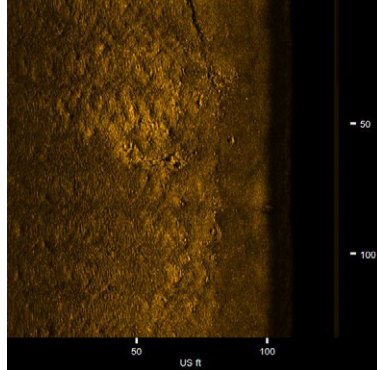
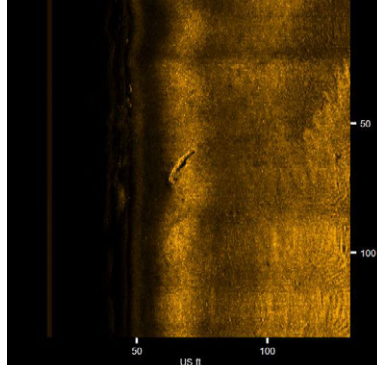
APPENDIX C: OFFSHORE SONAR TARGETS

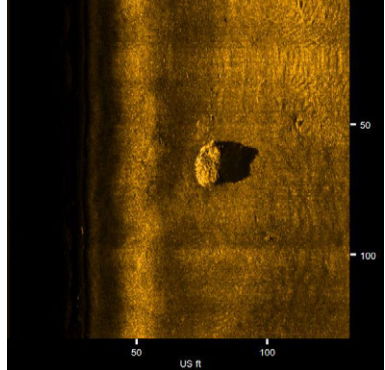
Target Image	Target Info	User Entered Info
	C0001 <ul style="list-style-type: none"> Click Position 33.8719894331 -78.0117529694 (Local LL) (X) 2300028.28 (Y) 45894.43 (Projected Coordinates) Map Projection: NC83F Acoustic Source File: C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171102\2017NOV02_0001.sds- C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171102\2017NOV02_0002.sds 	Dimensions and attributes <ul style="list-style-type: none"> Target Width: 6 US ft. Target Height: 3 US ft. Target Length: 24 US ft. Target Shadow: 7 US ft. Classification1: linear Classification2: Description: Unknown object
	C0002 <ul style="list-style-type: none"> Click Position 33.8528512726 -78.0275336213 () (X) 2295305.72 (Y) 38881.75 (Projected Coordinates) Map Projection: NC83F Acoustic Source File: C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171102\2017NOV02_0001.sds- C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171102\2017NOV02_0002.sds 	Dimensions and attributes <ul style="list-style-type: none"> Target Width: 3 US ft. Target Height: 1 US ft. Target Length: 11 US ft. Target Shadow: 4 US ft. Classification1: linear Classification2: Description: Unknown object, possibly debris
	C0003 <ul style="list-style-type: none"> Click Position 33.8512262520 -78.0277273224 () (X) 2295252.69 (Y) 38289.75 (Projected Coordinates) Map Projection: NC83F Acoustic Source File: C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171102\2017NOV02_0001.sds- C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171102\2017NOV02_0002.sds 	Dimensions and attributes <ul style="list-style-type: none"> Target Width: 1 US ft. Target Height: 1 US ft. Target Length: 21 US ft. Target Shadow: 2 US ft. Classification1: Unknown Classification2: Description: Debris or geological feature
	C0004 <ul style="list-style-type: none"> Click Position 33.8079649997 -78.0382299633 () (X) 2292215.98 (Y) 22513.52 (Projected Coordinates) Map Projection: NC83F Acoustic Source File: C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171103\2017NOV03_0003.sds- C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171103\2017NOV03_0005.sds 	Dimensions and attributes <ul style="list-style-type: none"> Target Width: 1 US ft. Target Height: 0 US ft. Target Length: 2 US ft. Target Shadow: 2 US ft. Classification1: small objects Classification2: Description:

Target Image	Target Info	User Entered Info
	<p>C0005</p> <ul style="list-style-type: none"> Click Position 33.8043791864 -78.0392604624 () (X) 2291915.52 (Y) 21205.40 (Projected Coordinates) Map Projection: NC83F Acoustic Source File: C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171103\2017NOV03_0003.sds- C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171103\2017NOV03_0005.sds 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> Target Width: 58 US ft. Target Height: 1 US ft. Target Length: 67 US ft. Target Shadow: 6 US ft. Classification1: wire rope and neighboring debris or geological Classification2: Description: scatter of relatively small debris
	<p>C0006</p> <ul style="list-style-type: none"> Click Position 33.8033755390 -78.0394907265 () (X) 2291849.09 (Y) 20839.44 (Projected Coordinates) Map Projection: NC83F Acoustic Source File: C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171103\2017NOV03_0003.sds- C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171103\2017NOV03_0005.sds 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> Target Width: 93 US ft. Target Height: 2 US ft. Target Length: 129 US ft. Target Shadow: 8 US ft. Classification1: debris scatter or geological Classification2: Description:
	<p>C0007</p> <ul style="list-style-type: none"> Click Position 33.8027469247 -78.0397735801 () (X) 2291765.36 (Y) 20609.82 (Projected Coordinates) Map Projection: NC83F Acoustic Source File: C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171103\2017NOV03_0003.sds- C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171103\2017NOV03_0005.sds 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> Target Width: 82 US ft. Target Height: 3 US ft. Target Length: 121 US ft. Target Shadow: 13 US ft. Classification1: debris scatter or geological Classification2: Description:
	<p>C0008</p> <ul style="list-style-type: none"> Click Position 33.8025437793 -78.0388951727 () (X) 2292032.98 (Y) 20538.46 (Projected Coordinates) Map Projection: NC83F Acoustic Source File: C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171103\2017NOV03_0001.sds- C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171103\2017NOV03_0003.sds 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> Target Width: 6 US ft. Target Height: 0 US ft. Target Length: 17 US ft. Target Shadow: 0 US ft. Classification1: Unknown Classification2: Description: Unknown object, possibly debris or geological

Target Image	Target Info	User Entered Info
	<p>C0009</p> <ul style="list-style-type: none"> Click Position 33.8020791385 -78.0400451529 () (X) 2291685.20 (Y) 20365.97 (Projected Coordinates) Map Projection: NC83F Acoustic Source File: C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171103\2017NOV03_0003.sds- C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171103\2017NOV03_0005.sds 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> Target Width: 91 US ft. Target Height: 2 US ft. Target Length: 129 US ft. Target Shadow: 9 US ft. Classification1: debris or geological Classification2: Description:
	<p>C0010</p> <ul style="list-style-type: none"> Click Position 33.8012960317 -78.0398438973 () (X) 2291749.11 (Y) 20081.55 (Projected Coordinates) Map Projection: NC83F Acoustic Source File: C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171103\2017NOV03_0001.sds- C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171103\2017NOV03_0003.sds 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> Target Width: 92 US ft. Target Height: 1 US ft. Target Length: 124 US ft. Target Shadow: 5 US ft. Classification1: debris or geological Classification2: Description:
	<p>C0011</p> <ul style="list-style-type: none"> Click Position 33.8012352551 -78.0425123290 () (X) 2290938.53 (Y) 20051.59 (Projected Coordinates) Map Projection: NC83F Acoustic Source File: C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171102\2017NOV02_0001.sds- C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171102\2017NOV02_0002.sds 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> Target Width: 2 US ft. Target Height: 3 US ft. Target Length: 54 US ft. Target Shadow: 14 US ft. Classification1: wire rope and geological Classification2: Description: wire rope and surrounding outcrop
	<p>C0012</p> <ul style="list-style-type: none"> Click Position 33.8010290909 -78.0403505934 () (X) 2291596.09 (Y) 19982.90 (Projected Coordinates) Map Projection: NC83F Acoustic Source File: C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171103\2017NOV03_0003.sds- C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171103\2017NOV03_0005.sds 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> Target Width: 60 US ft. Target Height: 4 US ft. Target Length: 82 US ft. Target Shadow: 21 US ft. Classification1: debris or geological Classification2: Description:

Target Image	Target Info	User Entered Info
	C0013 <ul style="list-style-type: none"> Click Position 33.8005630246 -78.0403812852 () (X) 2291588.40 (Y) 19813.18 (Projected Coordinates) Map Projection: NC83F Acoustic Source File: C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171103\2017NOV03_0003.sds- C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171103\2017NOV03_0005.sds 	Dimensions and attributes <ul style="list-style-type: none"> Target Width: 54 US ft. Target Height: 5 US ft. Target Length: 80 US ft. Target Shadow: 19 US ft. Classification1: debris or geological Classification2: Description:
	C0014 <ul style="list-style-type: none"> Click Position 33.8005418306 -78.0399502007 () (X) 2291719.46 (Y) 19806.74 (Projected Coordinates) Map Projection: NC83F Acoustic Source File: C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171103\2017NOV03_0001.sds- C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171103\2017NOV03_0003.sds 	Dimensions and attributes <ul style="list-style-type: none"> Target Width: 52 US ft. Target Height: 2 US ft. Target Length: 109 US ft. Target Shadow: 4 US ft. Classification1: debris or geological Classification2: Description: Several objects in a debris scatter
	C0015 <ul style="list-style-type: none"> Click Position 33.7999784500 -78.0429931230 () (X) 2290796.85 (Y) 19592.76 (Projected Coordinates) Map Projection: NC83F Acoustic Source File: C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171101-09\2017NOV01_0001.sds- C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171101-09\2017NOV01_0003.sds 	Dimensions and attributes <ul style="list-style-type: none"> Target Width: 1 US ft. Target Height: 1 US ft. Target Length: 11 US ft. Target Shadow: 3 US ft. Classification1: linear Classification2: Description:
	C0016 <ul style="list-style-type: none"> Click Position 33.7988315201 -78.0432483816 () (X) 2290723.31 (Y) 19174.58 (Projected Coordinates) Map Projection: NC83F Acoustic Source File: C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171102\2017NOV02_0001.sds- C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171102\2017NOV02_0002.sds 	Dimensions and attributes <ul style="list-style-type: none"> Target Width: 40 US ft. Target Height: 2 US ft. Target Length: 59 US ft. Target Shadow: 8 US ft. Classification1: debris scatter Classification2: Description:

Target Image	Target Info	User Entered Info
	<p>C0017</p> <ul style="list-style-type: none"> Click Position 33.7978803899 -78.0438254316 () (X) 2290551.30 (Y) 18826.72 (Projected Coordinates) Map Projection: NC83F Acoustic Source File: C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171102\2017NOV02_0001.sds- C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171102\2017NOV02_0002.sds 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> Target Width: 2 US ft. Target Height: 0 US ft. Target Length: 6 US ft. Target Shadow: 0 US ft. Classification1: debris or geological Classification2: Description:
	<p>C0018</p> <ul style="list-style-type: none"> Click Position 33.7975595571 -78.0439888052 () (X) 2290502.79 (Y) 18709.47 (Projected Coordinates) Map Projection: NC83F Acoustic Source File: C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171102\2017NOV02_0001.sds- C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171102\2017NOV02_0002.sds 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> Target Width: 2 US ft. Target Height: 0 US ft. Target Length: 2 US ft. Target Shadow: 2 US ft. Classification1: small object Classification2: Description:
	<p>C0019</p> <ul style="list-style-type: none"> Click Position 33.7975192363 -78.0435976772 () (X) 2290621.78 (Y) 18695.94 (Projected Coordinates) Map Projection: NC83F Acoustic Source File: C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171102\2017NOV02_0001.sds- C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171102\2017NOV02_0002.sds 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> Target Width: 69 US ft. Target Height: 1 US ft. Target Length: 47 US ft. Target Shadow: 3 US ft. Classification1: debris or geological Classification2: Description:
	<p>C0020</p> <ul style="list-style-type: none"> Click Position 33.7944597422 -78.0418159344 () (X) 2291173.93 (Y) 17587.63 (Projected Coordinates) Map Projection: NC83F Acoustic Source File: C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171103\2017NOV03_0001.sds- C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171103\2017NOV03_0003.sds 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> Target Width: 2 US ft. Target Height: 1 US ft. Target Length: 15 US ft. Target Shadow: 1 US ft. Classification1: linear Classification2: Description: linear object

Target Image	Target Info	User Entered Info
	<p>C0021</p> <ul style="list-style-type: none"> Click Position 33.7942513878 -78.0419934770 (L) (X) 2291120.71 (Y) 17511.28 (Projected Coordinates) Map Projection: NC83F Acoustic Source File: C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171103\2017NOV03_0001.sds- C:\Users\Tardis\Desktop\Wilmington Offshore 2017\Raw Data\SS\sonar\20171103\2017NOV03_0003.sds 	<p>Dimensions and attributes</p> <ul style="list-style-type: none"> Target Width: 9 US ft. Target Height: 4 US ft. Target Length: 20 US ft. Target Shadow: 13 US ft. Classification1: Unknown Classification2: Description: Unknown object